



Mapping Essential Labour Market Intelligence Sources at the National Level: Final Report

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Innovating the use of Labour Market Intelligence
within European Universities - LMI-EUniv



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LIST OF ABBREVIATIONS

AMS	Arbeitsmarktservice
BMAS	Bundesministerium für Arbeit und Soziales
CEDEFOP	European Centre for the Development of Vocational Training
CEET	Centre d'Etudes de l'Emploi et du Travail
EU	European Union
HBO	Hoger Beroepsonderwijs
HEI	Higher Education Institution
ILO	International Labour Organisation
INAPP	Instituto Nazionale Per l'Analisi delle Politiche Pubbliche
INSEE	Institut National de la Statistique et des Etudes Economiques
IO	Intellectual Output
IP	Internet Protocol
ISTAT	Instituto Nazionale di Statistica
LMI	Labour Market Intelligence
LMI-EUniv	Innovating the use of Labour Market Intelligence within European Universities
LMO	Labour Market Observatory
NGO	Non-Governmental Organization
NIS	National Institute of Statistics
OECD	Organisation for Economic Cooperation and Development
OJA	Online Job Advertisement
OVATE	Skills Online Vacancy Analysis Tool for Europe (Skills OVATE)
PES	Public Employment Service
RDC-IAB	Research Data Centre of the German Federal Employment Agency at the Institute for Employment Research
RMU	The Unique Matriculation Register
R&D	Research and Development
SIIR	The Integrated Informatics Education System of Romania
WIAB	Wiener Institut für Arbeitsmarkt- und Bildungsforschung
WO	Wetenschappelijk Onderwijs

EXECUTIVE SUMMARY

The Innovating the use of Labour Market Intelligence within European Universities - LMI-EUniv' project, funded under the Erasmus+ programme's Key Action 2, aims to explore the utilisation of Labour Market Intelligence (LMI) within European Universities. The project is developed by the West University of Timisoara in partnership with the University of Milano-Bicocca, the University of Tallinn, Prospektiker, and the Luxembourg Institute of Socio-Economic Research. The project focuses on enhancing the integration of Labour Market Intelligence (LMI) into the planning and delivery of educational programs offered by European Universities.

This report provides an overview of the diverse landscape of Labour Market Intelligence sources. It is based on information collected through desk research conducted in 19 European countries. Its aim is to support higher education institutions (HEIs) in accessing a centralised information point that lists the various LMIs available.

The research found out that the availability and accessibility of LMI sources vary across countries, with some exhibiting well-developed infrastructures while others have more limited resources. Despite these variations, common trends and key findings were observed.

Government databases and reports emerged as primary sources of LMI across all countries studied. These repositories, often maintained by national statistical agencies, public employment services, and labour market observatories, provide comprehensive data on employment rates, wage levels, job vacancies, and industry trends. Statistical institutes and offices also play a significant role, providing standardized and reliable labour market data on employment structure and unemployment.

National employment agencies collect data on job placements, job seekers, and employer demand, which HEIs can leverage to align their curricula with the skills and qualifications sought by employers, improving graduate employability. Several countries have dedicated labour market observatories that monitor and analyze LMI from various sources, producing regular reports on employment patterns, skills gaps, and emerging job opportunities. These

observatories serve as valuable resources for HEIs to stay updated on labour market dynamics and incorporate relevant insights into their curricula.

Government ministries and agencies contribute to the understanding of labour market dynamics and policy formulation and implementation. They gather, analyze, and disseminate labour market information, with ministries responsible for education, labour, and social protection playing crucial roles. Research institutes and centers conduct studies on working conditions, employment trends, and education systems, providing in-depth analysis and policy recommendations. Employers' organizations and associations also provide valuable data and insights into labour market trends from an employer's perspective.

Educational institutions themselves contribute to LMI sources by conducting surveys and research projects to assess graduate outcomes, employment rates, and employer satisfaction. This data can guide curriculum development and provide valuable feedback loops.

By understanding and utilising these sources effectively, HEIs can align their curricula with labour market demands, improve graduate employability, and contribute to informed policy-making and strategic decision-making processes.

INTRODUCTION

In today's rapidly evolving world, accurate and timely information has become essential in shaping decision-making processes across various sectors, particularly within higher education institutions (HEIs). Labour market intelligence (LMI) has emerged as a vital tool, providing valuable insights into the ever-changing dynamics of the job market. LMI encompasses a wide range of data and information, including employment trends, skills demand, wage levels, industry projections, and other factors influencing the labour market.

HEIs benefit from LMI by aligning their academic programs with the demands of the labour market. Understanding the skills and competencies sought by employers allows institutions to develop relevant curricula that equip students with the necessary knowledge and abilities for successful career entry and progression.

LMI serves as a valuable resource for guiding students in making informed choices about their educational and career pathways. By accessing LMI, students gain insights into employment prospects, salary expectations, and industry trends related to their field of interest. This information empowers them to make educated decisions about their educational choices, specialization areas, and potential career paths.

HEIs equipped with comprehensive LMI can develop effective employability initiatives that bridge the gap between academic knowledge and practical skills. By leveraging LMI, institutions can identify emerging job sectors, skill gaps, and future workforce needs, enabling the design of programs that foster the development of relevant skills and enhance students' employability.

LMI plays a crucial role in the strategic planning processes of HEIs. Analyzing LMI data allows institutions to identify emerging trends and shifts in the labour market, enabling them to anticipate future demands and adapt programs and resources accordingly. This data-driven approach ensures that HEIs stay ahead of the curve in meeting the needs of students, employers, and society.

Furthermore, LMI provides a solid foundation for evidence-based decision-making in HEIs. By utilizing reliable and up-to-date labour market data, institutions can make informed choices about resource allocation, faculty hiring, program expansion or contraction, and research priorities. This data-driven approach enhances the efficiency and effectiveness of decision-making processes.

LMI also serves as a common language that facilitates collaboration between HEIs, policymakers, employers, and regional development agencies. By sharing labour market insights, institutions engage in meaningful dialogues with stakeholders, align objectives, and collectively address the challenges and opportunities in the labour market. This collaboration ensures that the higher education supply effectively meets the current and future needs of the labour market.

To address the need for consolidated and accessible LMI sources, the LMI-EUniv project embarked on mapping essential LMI sources at the national level, with a particular focus on HEI usage. This final report presents a comprehensive list of the main labour market intelligence sources across Europe, built upon country fiches that systematize information and gather it into a centralized online LMI Hub.

During the inception phase of the project, it became apparent that while numerous LMI sources existed, comprehensive information about them was lacking. Recognizing the value of consolidating these diverse sources into a single point of access, this research initiative represents the first step towards achieving that objective by mapping LMI sources at the European level.

This groundbreaking study is the first of its kind to focus on LMI sources across Europe. It encompasses the largest seven EU countries, such as Germany, France, Italy, Spain, Poland, Romania, and the Netherlands, along with additional countries including Belgium, Estonia, Austria, Sweden, Ireland, Latvia, Lithuania, Portugal, Czech Republic, Bulgaria, Luxembourg, and Greece. This selection ensures comprehensive coverage, capturing a wide range of experiences, challenges, and best practices related to LMI usage within HEIs across Western, Eastern, Nordic, and Mediterranean countries. The findings and recommendations of this study reflect the diverse contexts and needs present throughout the European Union.

LABOUR MARKET INTELLIGENCE

Definitions

The International Labour Organization (ILO) defines Labour Market Information as “any information concerning the size and composition of the labour market or any part of the labour market, the way it or any part of it functions, its problems, the opportunities that may be available to it, and the employment-related intentions or aspirations of those who are part of it.” (Thuy et al. 2001: p. 57). In some situations, the concept of Labour Market Intelligence is used to point out that the information has been already analyzed and reduced to the important and relevant facts for decision-making (Lantra, 2005). Therefore, Labour Market Information includes descriptive data such as statistics or survey results while the Labour Market Intelligence includes analysis, interpretation, conclusions and policy recommendations.

However, both concepts are often interchangeable. To avoid confusion, a solution is to use LMI for both information and intelligence in the labour market (Woods and O'Leary, 2006). A LMI provides quantitative and qualitative information and intelligence, to help labour market agents in decision making. It should be noticed that recent developments insert the concept of Labour Market Analytics (Schneider and Deane, 2015).

Who produces LMI

There is a wide range of actors that are producing LMI. Practically, LMI could comprise any information and knowledge related to labour demand and supply, unemployment trends, employment and earnings, emergence of new occupations, new skills required on labour market, skills needed by occupation, post-graduate tracking, career expectations, etc.

Here is a list of actors that are producing LMI during their activity:

- International organisations (ILO, OECD, EU-Eurostat);
- National Government departments (Ministry of Labour, Ministry of Education, etc.);

- Governmental agencies (Institutes of Statistics, Public Employment Services, Labour Authority, etc.);
- Local governments;
- Trade unions;
- Professional organisations;
- Employers organisations;
- Higher Education Institutions and R&D units;
- Private specialised companies (EMSI).

Taking into account the large diversity of actors involved in this process, one of the most important aspects is to determine the quality of the LMI. The link between the quality of LMI (in terms of validity and reliability) is the official nature of the source and actor.

How are LMI produced

LMI represent information and knowledge about labour market dynamics that support decision-making processes carried out by diverse users, such as job seekers, researchers, consultants or business and governmental policy makers, educators and training institutions, public and private employment agencies and social services. Therefore, they are produced directly or indirectly within the activity of the various actors.

Below there is a list with the main sources of LMI:

- Surveys (Household Labour Force, Vacancies Surveys, Graduates Surveys/Tracer Studies);
- Administrative records (unemployment, migration, work contracts, work permits, etc.);
- National accounts data (income);
- Big data (LMI from OJA, LMI from IP location, LMI from social media, LMI from online search, LMI from mobile apps);
- Labour Market Indicators and projections (ILO Labour Force Estimates and Projections Model, Global Employment Trends Model);

Role of LMI for HEI

LMI is critical for understanding the new challenges on the labour market and therefore to help HEI to increase their capacity to match education supply to demand and for forecasting and fore-sighting skills needs.

There are at least three areas are of interest for HEI for which the LMI is important:

- Matching education/skills supply to local and regional labour market demand;
- Fitting curriculum content to a rapidly evolving world of work and the provision of new types of course;
- Evidencing impact and outcomes for policymakers (such as employability, graduate tracking, internships and placement provision).

MAPPING LMI SOURCES AT THE NATIONAL LEVEL

Aim of the study

The acquisition of comprehensive labour market intelligence (LMI) is crucial for higher education institutions (HEIs) in Europe. By gaining a deep understanding of the labour market dynamics, HEIs can effectively design curricula that align with the evolving requirements and expectations of employers. This alignment enhances the seamless transition of students from the academic realm to the professional world, ensuring that graduates are equipped with the relevant skills and knowledge. However, HEIs often encounter challenges in obtaining the specific LMI they need.

This study aims to address this gap by mapping LMI sources at the European level, providing valuable insights to aid in the optimisation of higher education curricula.

Objectives

The rapidly evolving job market landscape and the increasing demand for specialized skills necessitate a proactive approach by HEIs to ensure their programs remain relevant and meet industry needs. Traditional approaches to curriculum development often rely on outdated information or lack an accurate understanding of emerging trends and employer expectations. As a result, students may graduate without the necessary skills, leading to a mismatch between their qualifications and the demands of the labour market.

The primary objective of this study is to map LMI sources at the European level to provide HEIs with a comprehensive overview of the data repositories, reports, and platforms available to inform curriculum design. By systematically identifying and analysing various sources, this research aims to equip HEIs with the necessary tools to access up-to-date and accurate LMI, facilitating informed decision-making.

METHODOLOGY

Identifying the LMI sources

LMI comprises any information and knowledge about labour market dynamics. It covers topics such as labour demand and supply, unemployment, employment and earnings, emergence of new occupations, new skills required on labour market, post-graduate path, career expectations, etc.

The process of identifying LMI sources have started with a documentation of the following aspects:

- What institutions/organizations usually collect/produce data about labour market in each country (e.g. government education departments, national statistical institutes, employer survey, tracer studies);
- Where information about labour market is available in each country (e.g. online, freely available, by request);
- What kind of LMI are available (e.g. career path, employment structure, unemployment, skills shortage etc.);

In order to find out the most important LMI sources in each country, the following aspects were taken into account:

- The knowledge that the researcher already had about the labour market in the country studied;
- Professional networks to get more information about LMI sources available in the country studied;
- Conducting small desk research, review relevant academic literature, reports, media articles, professional blogs;
- Conducting interviews with stakeholders and consultations with experts;
- Employed google search using specific search terms related to the concept of LMI.

Assessing the sources of LMI

Once the sources of LMI have been identified, their quality was assessed. Since there are many organisations that produce LMI, only through a standardized evaluation process they can be considered as being qualitative.

We considered that the quality of LMI sources is sustained by their representativeness, validity and reliability. The proposed scoring methodology encompasses multiple variables, each contributing to the overall score based on well-defined scoring criteria. The identified variables are as follows:

1. Types of Labour Market Information (LMI): The first variable involved the identification of LMI types offered by each supplier. One point was assigned for each available type, including Employment Structure, Unemployment, Educational Structure, and Other.
2. Provision of Forecast Information: A binary score was assigned to indicate the presence (1 point) or absence (0 point) of provided forecast information.
3. LMI Provision Combination: This variable assessed the presence of labour market information and labour market intelligence according to predetermined criteria. A point was awarded for labour market information, 2 points for labour market intelligence, and 3 points for sources offering both.
4. Level of Granularity: The granularity of data was analyzed with respect to observations available for occupation, sector, or level of education. One point was assigned for each type.
5. Geographical Coverage: The geographical scope of data was evaluated in terms of national, regional, or local coverage. One point was granted for each level of coverage.
6. Data Sources: The sources of LMI were identified and assessed for diversity. Points were allocated based on the presence of data from sources such as International Surveys, National Surveys, Ad-hoc Surveys, Administrative Records, National Accounts, Big Data, Projections, and Qualitative Research.

7. Data Update Frequency: The frequency of data was verified based on the update frequency (e.g., monthly, yearly, quarterly). Information with a higher update frequency received higher scores.

8. Accessibility of Information: Accessibility was assessed based on whether data was provided in open access, easily accessible, and available for download in a useful format with associated metadata. Higher scores were awarded to sources that offered both types of LMI and were freely downloadable.

To ensure comparability and establish a standardised scale, the obtained scores were normalised between 0 and 1. This normalisation process facilitated straightforward interpretation and enabled meaningful comparisons between different information sources. Finally, based on these criteria, a score was calculated for each LMI supplier. Subsequently, the suppliers were categorised into five groups according to the position of their score in the score distribution of their respective country:

- ★ for scores that fell within the bottom 20% of the country's distribution,
- ★★ for scores between 20% and 39% of the country's distribution,
- ★★★ for scores between 40% and 59% of the country's distribution,
- ★★★★ for scores between 60% and 79% of the country's distribution,
- ★★★★★ for scores at the top 80% or higher of the country's distribution.

Distinguishing by types of LMI

Many LMI providers are specialised in specific types of LMI, such as unemployment or career paths, while others offer a broader range of labour market statistics. As a result, it becomes valuable to categorise the information provided by each LMI provider based on the specific type of LMI they offer. To achieve this, we have included in the database, which lists the main LMI providers by country, not only the overall information provided by each provider but also a detailed breakdown of information by the type of LMI offered by each provider.

This breakdown of information by type of LMI will empower the hub to guide Higher Education Institutions (HEIs) more effectively based on their specific requirements. By understanding the distinct types of LMI available from different providers, users can access the information that aligns with their particular needs and objectives.

For convenience, the database with the comprehensive listing of LMI providers and the respective breakdown of information by LMI type is available only online at www.lmi-euniv.eu/lmi-sources. Researchers, policymakers, and stakeholders can refer to this valuable resource to gain insights and make informed decisions in navigating the complex labour market landscape.

COUNTRY-WISE ANALYSIS

Overview of LMI sources at national level

By examining the diverse landscape of LMI sources in 19 European countries, we aim to support higher education institutions in accessing a single point of information that lists the various LMIs available.

The availability and accessibility of LMI sources vary across countries. During our mapping of LMI providers in these countries, we encountered a diverse and extensive range of sources. Some countries exhibit well-developed and extensive LMI infrastructures, while others have more limited resources. Furthermore, data collection methodologies, reporting formats, and the frequency of updates may differ between countries. However, some key findings and common trends were observed across the 19 European countries studied.

Government databases and reports emerged as primary sources of LMI. These comprehensive repositories provide data on employment rates, wage levels, job vacancies, and industry trends. They are often maintained by **national statistical agencies, public employment services and labour market observatories.**

Statistical institutes and offices are a main source of labour market data and indicators. For instance, in all countries, the national offices of statistics provide data series on employment structure and unemployment, enabling detailed analysis of labour market trends. These institutes ensure reliable and standardised labour market data for analysis and policy purposes.

National employment agencies play a significant role in LMI provision. They collect data on job placements, job seekers, and employer demand. HEIs can access this information to align their curricula with the skills and qualifications sought by employers, improving graduate employability.

Several countries have dedicated **labour market observatories** that monitor and analyse LMI. These entities gather data from various sources and produce regular reports on employment

patterns, skills gaps, and emerging job opportunities. HEIs can leverage these observatories to stay updated on labour market dynamics and incorporate relevant insights into their curricula.

Government ministries and agencies are also important stakeholders in labour market intelligence. They gather, analyze, and disseminate labour market information, playing a crucial role in policy formulation and implementation. Ministries responsible for education, labour, and social protection contribute to the understanding of labour market dynamics and develop strategies to address challenges.

Research institutes and centers play a vital role in generating valuable insights into labour market dynamics. They conduct studies on working conditions, employment trends, and education systems, providing in-depth analysis and policy recommendations. For example, in Austria, a prominent research institute conducts research and consultancy services focusing on labour market and education. Similarly, in France, research centers such as CEET and Cereq conduct studies on working conditions, employment, and training paths. Their work helps policymakers understand the evolving needs of the labour market and shape effective policies.

In many countries **employers' organizations and associations** provide valuable data and insights into labour market trends from an employer's perspective. These associations generate reports, surveys, and studies that provide insights into sector-specific trends, skill requirements, and job market outlooks. They serve as valuable resources for HEIs to tailor their curricula to industry needs. For example, Employers of Poland and Confederation Lewiatan in Poland are prominent employers' organizations that provide labour market data and analysis.

In some countries, **educational institutions** themselves contribute to LMI sources. Universities, colleges, and vocational training centers conduct surveys and research projects to assess graduate outcomes, employment rates, and employer satisfaction. This data can guide curriculum development and provide valuable feedback loops.

Austria

Austria has an assorted range of higher education programs, mainly offered by universities. A higher education plan (HoP 2030) was introduced in 2023 to coordinate and strategize the higher education sectors. The plan acts as an umbrella strategy for all 76 Austrian higher education institutions. The plan aims to enhance the quality of teaching, promote equality in teaching, research, and arts development, and encourage long-term, joint development of the higher education sectors. Key areas of focus include digital transformation, sustainability, and teacher training, which will shape the future of higher education in Austria.

Austria has among its main LMI suppliers the following three. The Viennese Institute for Labour Market and Education Research (WIAB) provides research and consultancy to public institutions, enterprises and (international) organizations in the field of labour market, gender, and education research. The Federal Ministry of Labour and Economy manages information on unemployed people, training attendances at the Public Employment Service (AMS), employment, job market, apprenticeship, international unemployment rates, and population statistics. The National Institute of Statistics responsible for the collection and dissemination of information on employment, unemployment, working conditions, average salary, and forecasting.

Belgium

The higher education system in Belgium is comprised of universities and higher education institutions. Universities typically focus on a more theoretical approach to learning, while higher education institutions prioritize practical training for specific occupations.

Universities and higher education institutions can take into account information provided by various organizations in order to align their training offerings with the demands of job market. While some LMI are provided at national level and allow for comparisons between regions, others are provided only at a regional level since Belgium is a federal state made up of three communities (Flanders, Wallonia and a German-speaking community).

The main national LMI suppliers include, for example, the Belgian office of statistics, which provides data series on employment structure, unemployment or skills gaps, or the national

social security office, which collects data on employment, wages or working hours. The federal public service employment, labour and social dialogue provides information on the structure of employment, skills gaps and shortages or career information.

Bulgaria

The higher education system in Bulgaria is organized into universities and colleges, offering undergraduate and graduate programs. There are 52 higher education institutions including universities, specialized higher education institutions, and self-dependent colleges. As of April 2020, there were 198,428 students in Bulgaria, with 54% enrolled in the top ten largest universities.

Several national-level sources provide labour market intelligence in Bulgaria. The National Statistical Institute (NSI) is the main provider of statistical information, offering data on economic, demographic, and social conditions. The NSI's Information System INFOSTAT allows users to access data on various indicators, visualize results graphically, and download data in different formats. The Public Employment Service, under the National Employment Agency, collects and provides labour market information, particularly focusing on unemployment data. The Ministry of Education provides statistical data on enrollment, graduation rates, funding, and educational attainment, with sources like the "Rating system of the higher schools in Bulgaria" web portal and web.mon.bg offering specific labour market information related to higher education. The Ministry of Labour and Social Protection and research institutes like the Institute of Market Economy also contribute to labour market intelligence. Non-governmental organizations like Education Bulgaria 2030 monitor trends in education and publish annual reports.

Czechia

The Czech higher education system is known for its high quality and affordability. It is overseen by the Ministry of Education, Youth and Sports and consists of public, private, and state universities. As of 2022, there are 26 public universities and 43 private universities in the Czech Republic. In terms of student enrollment, there are over 370,000 students enrolled in Czech universities as of 2022. This represents a significant increase from the early 1990s,

when there were only around 100,000 students in the country's universities. The majority of students are enrolled in public universities, with only about 10% attending private universities.

The Czech labour market is supported by various sources of labour market intelligence. The Czech Statistical Office (Český statistický úřad) is the official statistical agency providing comprehensive data on social, economic, and environmental aspects of the country. The Public Employment Service (Úřad práce České republiky) assists job seekers and employers with employment services, vocational training, and job vacancy information. Employers organizations such as the Confederation of Industry of the Czech Republic and the Confederation of Employers and Business Associations of the Czech Republic also contribute valuable data on employment, salaries, and labour market indicators. These diverse sources of labour market intelligence contribute to a comprehensive understanding of the Czech labour market.

Estonia

The higher education system in Estonia is similar with the rest of EU through the Bologna Process where degrees are divided into three levels: basic level, advanced level and doctoral level. It is possible to acquire higher education at a university and a professional higher education institution. At the beginning of the 2021/2022 academic year, 44,611 students were studying in 18 higher education institutions. Among the biggest higher education institutions there can be found University of Tartu, University of Tallinn, TalTech, Estonian Academy of Arts and Estonian University of Life Sciences.

LMI is provided by different kinds of institutions from ministries to private organizations. For example, Kutsekoda is also responsible for developing and implementing the anticipation and monitoring system for labour and skills demand - OSKA. The Ministry of Social Affairs manages social insurance and welfare services, develops, and implements the working life and labour market policy, to ensure prevailing of people with long-term working capacity and employment. Statistics of Estonia provides different statistics and analysis which can be used by universities for developing their curricula.

France

The French higher education system consists of various types of institutions, including universities, grandes écoles (elite schools), administrative public institutions, and private higher institutions. There are over 3,500 public and private institutes of higher education in France. The number of students enrolled in private schools has been steadily increasing since 2000. As of 2021, a small percentage of the population holds a doctoral degree. In the 2023 university rankings, 39 French institutions are among the top universities globally, with Paris being the most represented city. Overall, the French higher education system offers a diverse range of institutions and has witnessed a steady increase in student enrollment over the years.

LMI providers in France are divided between public and private institutions, research centers, statistical institutes, and employment services. Anact is a public employment service that aims to improve working conditions by focusing on work organization and professional relations. CEET and Cereq are research centers conducting studies on working conditions, employment, training paths and organizational changes. Dares and INSEE are national statistical institutes providing official statistics on employment, unemployment, wages, and labour income. Pôle Emploi is a public employment service that assists jobseekers in finding work, provides benefits, supports companies in recruitment, and collects contributions. Finally, the Ministries of labour and education refer to official data and statistics for policy implementation and legislation.

Germany

The German HE system consists of three types of institutions: Universities, Universities of Applied Sciences and Universities of Art and Music. In total there are 390 universities, most of them being public institutions. The number of students enrolled in HEIs has been growing constantly to now more than 2.9 million students. HEIs are either state or state-recognized institutions. Both are subject to higher education legislation. The responsibility for higher education lies with the sixteen federal states which have their own laws governing higher education.

The German LMI providers taken into consideration are: RDC-IAB a research department creating standardized research, provides data access, and conducts research on labour market research and policy evaluation. IZA is a nonprofit research institute and global network in labour economics, supporting research and providing policy advice. It aims to bridge the gap between science and society for a better future of work. The Federal Ministry of Labour and Social Affairs (BMAS) is responsible for labour market policies and social policy in Germany. The Bundesagentur für Arbeit (BA) is the public employment service agency implementing ALMPs and providing services to unemployed and employed individuals, including labour market statistics and research.

Greece

In Greece, higher education is offered by 25 higher education institutions (HEIs) and is comprised of two separate and distinct sectors. The university sector encompasses universities, national technical universities, and the Higher School of Fine Arts. The technological sector consists of technological educational institutes (TEIs) and the School of Pedagogical and Technological Education (ASPETE). The country's higher education system includes institutions such as the National and Kapodistrian University of Athens and the Aristotle University of Thessaloniki.

Various sources provide labour market intelligence in Greece. The National Institute of Statistics (NIS) is the official statistical agency responsible for collecting and publishing official statistics on demographics, economics, and social data. The Public Employment Service (DYPA/OAED) offers data on unemployment by sector and occupation at regional and national levels. The Ministry of Education and Religious Affairs, Ministry of Labour, Social Security and Social Solidarity, and the Bank of Greece also contribute labour market statistics and analysis. Employers organizations like the Hellenic Federation of Enterprises (SEV) and non-governmental organizations (NGOs) such as Solidarity Now, ActionAid Greece, and Klimaka conduct research and advocacy related to labour market issues, although comprehensive labour market statistics from Greek NGOs were not readily available.

Ireland

A wide range of institutions in Ireland provide third-level education. The university sector, the technological sector and the colleges of education are substantially funded by the State, but they are generally autonomous. In addition, there are a number of independent private colleges.

The Higher Education Authority is the statutory agency responsible for the funding of universities, institutes of technology and certain other higher education institutions. It has an advisory role in relation to the whole sector of third-level education.

Various organizations, both governmental and non-governmental, provide labour market intelligence in Ireland. The Government, through agencies like the National Institute of Statistics, and the ministries of Education and Labour plays a significant role in gathering and disseminating labour market information. Professional Associations also contribute valuable labour market data and analysis. Additionally, non-governmental research institutes like the Economic and Social Research Institute (ESRI) provide independent and high-quality research on labour market dynamics.

Italy

The Italian system of higher education at university and equivalent level is made up of 141 institutions, spread throughout the country, whose educational offerings are normally divided into three levels, with some exceptions. There are 99 universities: most are state universities, flanked by the seven special-order university institutes of excellence, the legally recognized non-state universities of the traditional type, and the more recent telematic universities. The total number of students enrolled at university, updated to 2023, is 1.6 million.

The main Labour Market Intelligence providers in Italy are: National Institute of Statistics (ISTAT) that produces official statistics on demographics, employment, unemployment, etc. The Ministry of Education and Merit oversees school education, university training, scientific research, and other areas related to education in Italy. AlmaLaurea is a consortium that supports students and graduates throughout their educational journey, offering guidance, learning, and employment services. Unioncamere represents and coordinates the Italian

chamber system, promoting links between chambers of commerce and business organizations. INAPP is a public research body that analyzes and evaluates public policies related to employment, education, and social matters in Italy.

Latvia

Higher education is provided as academic and professional programmes in two types of institutions: non-university (up to Masters's degree) and university (up to Doctoral degree) *augstskola*. Most higher education institutions run both academic and professional programmes. Short-cycle professional higher education programmes are offered also by *koledža*. In 2021 there was 29 higher educational institutions and 24 colleges in Latvia. Most known and biggest are University of Latvia, Riga Technical University, Ventspils University, Latvian University of Agriculture and Riga Stradins University. In 2021, a total of 77,376 students studied.

LMI is provided by different kinds of institutions from ministries to private organizations. For example, Latvijas Banka and Statistics of Latvia are providers of statistics and analysis. The State Employment Agency promotes employment opportunities for the unemployed and jobseekers and to help employers find the necessary employees, but it also provides LMI information.

Lithuania

There are two types of higher education institutions: universities and colleges both as a state or non-state institutions. At the beginning of the 2020-2021 academic year, professionals with the highest qualification were prepared by 41 higher education institutions: 19 universities and 22 colleges; there were 104 thousand students in these schools. Among the biggest higher education institutions there can be found Vilnius University, Vilnius Gediminas Technical University, Mykolas Romeris University, Vytautas Magnus University and Kaunas University of Technology.

LMI is provided by different kinds of institutions from ministries to private organizations. For example, The Statistics of Lithuania provides various data and analysis. The areas of activity

of Lietuvos Bankas are, for example, supervision of financial market participants, development of the financial sector, economic analysis and forecast and statistics. Ministry of Social Security and Labour is a ministry in Lithuania, and it is responsible for policies concerning areas of activity as labour market and employment.

Luxembourg

Higher education is characterized by a single public university composed of three faculties (the Faculty of Science, Technology & Medicine; the Faculty of Humanities, Education & Social Sciences; the Faculty of Law, Economics & Finance) and three interdisciplinary centres (Interdisciplinary Centre for Security, Reliability & Trust; Luxembourg Centre for Systems Biomedicine; Luxembourg Centre for Contemporary & Digital History). The university's offer is completed by other institutions, foreign and private, which are specialized in higher education. In 2022, university hosted nearly 7,000 students who came from 130 countries.

Various organizations, governmental and non-governmental, provide labour market information in Luxembourg. This information is, in some cases, provided in the form of interactive statistical tables and in other cases distilled through study and analysis papers. An employment observatory was launched, in 2011, to provide data on Luxembourg labour market and to develop synergies between institutions and organisations, collecting data or carrying out socio-economic analyses on the labour market and employment.

Netherlands

Higher education in the Netherlands is structured around two primary types of institutions: institutions for higher professional education (HBO) and universities (WO). In HBO, the teaching is practice-oriented and professional. It prepares bachelor's and master's degrees in specific fields of study (e.g. economics, health and care, education, applied arts, agriculture). In WO, theoretical teaching is provided in a professional or fundamental field.

Higher education institutions can use information provided by various organizations in order to align their training offerings with the demands of job market. For instance, the National Institute of Statistics regularly publishes a comprehensive dashboard that sheds light on the

labour market dynamics within the country. The employee insurance agency offers insights into unemployment rates and job vacancies, highlighting the prevailing labour market tensions. Additionally, research institutes like ROA (Research Centre for Education and the Labour Market) and the Central Planning Bureau contribute to a deeper understanding of the labour market through their research.

Poland

The country is home to 362 higher education institutions, with over 1.2 million students enrolled. The fields of business and administration, health, social and behavioral sciences, and engineering and engineering trades are among the most popular choices. The availability of data and insights through the POL-on system, RAD-on system, and the ELA Polish graduate tracking system contributes to evidence-based policy-making and supports graduates in making informed decisions about their careers.

Various organizations, both governmental and non-governmental, provide labour market intelligence in Poland. The Government, through agencies like the Central Statistical Office, Ministry of Education, and Ministry of Labour, plays a significant role in gathering and disseminating labour market information. Employers' organizations such as Employers of Poland, Confederation Lewiatan, and the Polish Chamber of Commerce also contribute valuable labour market data and analysis. Additionally, non-governmental research institutes like the Institute for Structural Research and the Polish Economic Institute provide independent and high-quality research on labour market dynamics, economic policies, and social issues.

Portugal

Educational institutions in Portugal are divided into traditional universities and polytechnical schools that provide more practical and profession-oriented training. Both types of institutions have public and private counterparts spread across Portugal. There are currently 14 public universities and 36 private universities in Portugal, with 20 public polytechnics in Portugal and 64 private polytechnics.

Polytechnic universities provide vocational, career-based training in fields such as nursing, education, accounting and healthcare, while degrees in medicine, law, natural sciences, economics or psychology are offered by universities. There is also some crossover, with fields of study including engineering, technology, management, education, sports and humanities being taught in both university and polytechnic systems.

To support evidence-based decision-making, Portugal relies on various governmental LMI sources at the national level. The National Institute of Statistics provides valuable data on employment, unemployment, and education. In the same way, the Public Employment Service provides information on the group on unemployment. Additionally, the Ministry of Labour, Solidarity and Social Security or the Bank of Portugal contribute to the LMI landscape.

Regarding non-governmental sources, Portugal has the Foundation Manuel Dos Santos, created to study the great national problems and stimulate the knowledge of civil society, which has a tool called Pordata, where statistical information on Portugal and Europe is published.

Romania

Romania boasts a diverse range of institutions (universities, study academies, institutes, higher studies schools), with several universities achieving top rankings. In 2022, there were registered 46 public civil higher education institutions, 7 public military higher education institutions and 39 private higher education institutions. It is essential for higher education institutions to align their programs with the changing demands of the labour market. This requires leveraging labour market intelligence (LMI) to develop relevant curricula, address skill gaps, and enhance students' employability.

To support evidence-based decision-making, Romania relies on various LMI sources at the national level. The National Institute of Statistics provides valuable data on employment, unemployment, and education, while the Ministry of Education utilizes platforms like the Integrated Educational Register and the National Student Enrolment Single Registry. Additionally, the Ministry of Labour and Social Protection and employers' organizations contribute to the LMI landscape.

Spain

Spain has a long history of university education, the university system dating back to the Middle Ages. Currently, there are 76 universities of which 50 are public and 26 are private. There are some 1.5 million university students in Spain, a figure generally considered to be too high for a country with a population of 47 million.

Various organizations, both governmental and non-governmental, provide labour market intelligence in Spain. The Government, through agencies like the National Institute of Statistics, Public Employment Service, and different ministries (Education, Labour and Social Economy, Social Rights and Inclusion, Social Security and Migration), plays a significant role in gathering and disseminating labour market information. Employers' organizations also contribute valuable labour market data and analysis. Additionally, non-governmental research institutes like Randstad, Caixabank or Once provide independent and high-quality research on labour market dynamics, economic policies, and social issues.

Sweden

Stockholm University is the largest university in Sweden in terms of registered students. 38,500 students were registered at the university in the Swedish capital in 2021. The University of Gothenburg was the second largest, followed by Lund University, Uppsala University and Linköping University. About 385,000 students were studying in universities and other higher education institutions in Sweden in the 2021.

LMI is provided by different kinds of institutions from ministries to private organizations. For example, Statistics Sweden develops, produces, and disseminates the statistics. Swedish Agency for Growth Policy Analysis task is to analyze and evaluate Swedish growth policy. National Institute of Economic Research main tasks are to analyze the economic development and making forecasts.

LMI HUB: CENTRALISED REPOSITORY

The Labour Market Intelligence Hub (LMI-HUB) is an initiative designed to enhance the utilisation of labour market intelligence (LMI) within European Universities. The development of the LMI-HUB is centered around the report that compiles LMI sources at the European level. It is available at www.lmi-euniv.eu/lmi-euniv-hub.

Acting as a centralised repository, the LMI-HUB will house identified LMI sources and information, accompanied by a guide to assist Higher Education Institutions (HEIs) in effectively incorporating LMI into their planning activities. This comprehensive online platform aims to provide open access to HEIs, teachers, and strategic decision-makers. By promoting evidence-based practices, the LMI-HUB seeks to yield various benefits for learners, universities, and the broader economy and society. It encourages universities to utilise LMI to optimise curriculum design, offer appropriate career guidance, and provide comprehensive support to students, ensuring their skills align with the evolving demands of the labour market. This, in turn, fosters collaboration between universities and employers, facilitating curriculum improvements and enhancing extracurricular support systems within European Universities. Moreover, by centralising and disseminating LMI, the LMI-HUB aims to amplify the impact of universities and ultimately benefit learners, universities themselves, and the broader society that benefits from the contributions of graduates. Additionally, the LMI-HUB strives to create a collaborative community of regional experts across partner institutions and beyond. This fosters knowledge exchange and enables stakeholders to pool their expertise.

Through this collaborative approach, the LMI-HUB aims to strengthen the utilisation of LMI, enhancing the educational experience for students and generating positive outcomes for universities and society as a whole.

IMPLICATIONS FOR HIGHER EDUCATION INSTITUTIONS

The mapping of Labour Market Intelligence (LMI) sources conducted within the LMI-EUniv project holds significant implications for Higher Education Institutions (HEIs) in terms of effectively utilizing LMI for decision-making, strategic planning, curriculum development, student guidance, and employability initiatives. Moreover, the insights provided by LMI can foster collaborations between HEIs and other stakeholders, leading to mutually beneficial partnerships and initiatives.

By comprehensively identifying and mapping essential LMI sources at the national level, HEIs gain access to a wealth of information about the dynamics and trends within the labour market. This information serves as a valuable resource for HEIs to make informed decisions regarding the design and development of educational programs that align with the needs and demands of employers and industries. It enables HEIs to tailor their offerings to ensure graduates possess the skills, competencies, and knowledge required for successful integration into the labour market.

Furthermore, LMI plays a crucial role in curriculum development within HEIs. By incorporating LMI insights into the curriculum design process, institutions can ensure that their programs remain relevant, up-to-date, and responsive to the evolving needs of the job market. LMI helps HEIs identify emerging industries, in-demand occupations, and key skills that students should acquire to enhance their employability. By integrating LMI into curriculum development, HEIs can bridge the gap between academic knowledge and practical application, equipping students with the skills needed for successful careers.

LMI also has a significant impact on student guidance and support services within HEIs. By utilizing LMI, institutions can provide students with accurate and up-to-date information on career pathways, job prospects, and industry trends. This empowers students to make informed decisions about their education and career choices, ensuring they align their aspirations with the realities of the labour market. LMI-guided student guidance initiatives

enable HEIs to offer targeted support, mentoring, and internship opportunities that enhance students' employability and facilitate a smooth transition into the workforce.

Moreover, collaborations between HEIs and other stakeholders, including employers, industry associations, and government agencies, based on LMI insights can yield fruitful partnerships. LMI serves as a common ground for dialogue and collaboration, enabling HEIs to establish connections with employers and industry representatives. Through these collaborations, HEIs can engage in joint initiatives such as internships, research projects, curriculum advisory boards, and professional development programs. These partnerships enhance the employability of graduates, promote knowledge exchange, and ensure that educational programs remain aligned with industry needs.

CONCLUSION

Acquiring comprehensive labour market information is important for higher education institutions as it enables them to design curricula that align with the requirements and expectations of employers, thereby enhancing the seamless transition of students into the professional world. However, higher education institutions may face challenges in obtaining the specific information they seek. One of these challenges holds in the multitude of LMI providers. The mapping of LMI providers that we carried out in 19 countries identified the co-existence of at least 10 main LMI providers in 9 of the countries studied. While some LMI suppliers are easily identifiable as such because of the missions they are assigned (National statistical institutes, National employment agency, Ministry), others are less so (employer organisations, research centres, etc.).

LMI providers generally specialize in certain types of LMI (structure of employment, unemployment, skills sought on the labour market, etc.). This segmentation of information can make the search for information difficult and time-consuming for HEIs. It should be noted, however, that some countries are making efforts to centralize data. France, for instance, has taken the initiative by providing an open data inventory of existing public datasets on employment. Moreover, several countries have dedicated labour market observatories that monitor and analyse LMI. These entities gather data from various sources and produce regular reports on employment patterns, skills gaps, and emerging job opportunities.

The data sources used by LMI providers vary according to their area of expertise. These sources may be based on European surveys (such as the Labour Force Survey), administrative data (employed persons, unemployed persons, etc.) or national surveys (on working conditions, for example, or on the integration of young people into the labour market). These data sources vary according to how often they are updated, their granularity (eg. overall information, by sector, by occupation) and their coverage (national, regional, local).

The mapping of LMI providers that we have carried out identifies, for each LMI provider and by type of information, the data sources used, the level of granularity of the information

available, the frequency with which it is updated, its coverage and the accessibility of the information.

This mapping of the main providers of labour market information (LMI) is the first step in enabling higher education institutions to access a single information point listing the various LMIs. Thanks to the Hub based on this mapping, they can be directed to the most relevant LMI providers depending on the information they are looking for.

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