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International Conference Proceedings

The EHEA and the ERA: The role of the universities and research centers in smart specialization and growth

Piraeus **18-19 April 2019**

Edited by Foteini Asderaki, Jean Monnet Chair on European Union's Education, Training, Research and Innovation Policies

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International Conference: The EHEA and the ERA: The role of the universities and research centers in smart specialization and growth

Conference Program

Day I: Thursday, 18 April 2019

9:30 – 9:45	**Welcome Remarks** *Michael Sfakianakis,* Dean of the School of Economics, Business and International Studies
9:45 – 11:00	**Session 1** ***"The European Higher Education Area and the European Research Area"*** *Foteini Asderaki,* Associate Professor, Jean Monnet Chair on European Union's Education, Training, Research and Innovation Policies. ***"The role of the future university: visions and inspirations for future research"*** *Todd Davey,* Associate Professor, Institut Mines-Télécom Business School. ***"A map of the state of University-Business Cooperation in the European Higher Education Area"*** *Victoria Galán Muros,* Policy Analyst at the Organisation for the Economic Cooperation and Development (OECD) Q&A
11:00 – 11:40	**Session 2** **Moderator:** Giorgos Galanos, Assistant Professor, University of Piraeus, Greece **"*Παρεμβάσεις των Διαρθρωτικών Ταμείων για την στήριξη της έρευνας και των νέων ερευνητών στην Ελλάδα, κατά την Προγραμματική Περίοδο 2014-2020. Αποτύπωση και αξιολόγηση των σχετικών πολιτικών*** **(*Structural Fund interventions to support research and young researchers in Greece during the 2014-2020 programming period. Presentation and evaluation of relevant policies*)** *Giorgos Ioannidis,* Secretary Special, Secretariat Special for the Management of Sectoral Operation Programmes of the European Social Fund, Ministry of Economy and Development *Stefanos Tsemperlidis,* Ministry of Economy and Development

	Stavros Petsalakis, Ministry of Economy and Development
	Q&A
11:40 – 12:00	**Coffee Break**
12.00 – 13:30	**Session 3**
	Moderator: *Irene Fafaliou,* Professor, Department of Economics, Director of the Laboratory of Entrepreneurship, Technology and Economic Strategy, University of Piraeus
	"Exploring Corporate Entrepreneurship in Universities: The Launch and Development of a Higher Education Program"
	Elisabetta Marafioti, Associate Professor in Strategic Management at the University of Milano Bicocca, Dipartimento di Scienze Economico-Azienzali e Diritto per l' Economia, Università degli Studi di Milano-Bicocca
	Mattia Martini, Assistant Professor in Management, University of Milano Bicocca
	"University – Business cooperation for organising postgraduate studies programs in Greece"
	Dr. Charalampos Chrysomallidis, Laboratory of Industrial & Energy Economics, National Technical University of Athens
	"Education & Entrepreneurship: The Role of Universities as Strategic Directors"
	Yiannis Papageorgiou, Trainee Lawyer
	Irene-Alexandra Katopodis, Political Risk Analyst
	Q&A
13:30 – 14:30	**Break**
14:30 – 15:30	**Session 4**
	Moderator: *Spyros Roukanas,* Assistant Professor, Department of International and European Studies, University of Piraeus
	"*Education and Competitiveness: Can Greece use education for an economic recovery*?"
	Giorgos Galanos, Assistant Professor, University of Piraeus, Greece
	"The Role of Employability in Context of High Job Insecurity: A Framework for University Researchers"

	Mattia Martini, Assistant Professor in Management, University of Milano Bicocca.
	"***Tech Parks Ecosystem and Best Practices: Evidence from Existing Literature"***
	Victoria Pekka, Professor, Department of Business Administration, Director of MSc in Law & Economics, University of Piraeus
	Athanasios Charemis, PhD Candidate, University of Piraeus
	Q&A
15.30-16.30	**Session 5**
	Moderator: *Mattia Martini,* Assistant Professor in Management, University of Milano-Bicocca
	"Knowledge Management in Doctoral Education in the context of Global Knowledge Economy"
	Adamantia Stamou, PhD Candidate School of Electrical and Computer Engineering, National Technical University of Athens ***"Teaching effectiveness of HEIs in the context of Greece"***
	Sofia Mastrokoukou, PhD Candidate, University of Milano Bicocca
	Q&A
	"The role of Museums in enhancing teachers' and students' skills"
	Maria Drakaki, PhD Candidate, University of Aegean
16:30 – 17:00	**Coffee Break**
17:00 – 18:00	**Session 6**
	Moderator: *John Paravantis,* Associate Professor, Department of International & European Studies, University of Piraeus
	"*An Innovative Method for promoting the Business Opportunities Recognition Skills in undergraduate university students"*
	Ioannis Stagias, PhD Candidate, Department of Digital Systems, University of Piraeus, Greece
	Symeon Retalis, Professor, Department of Digital Systems, University of Piraeus, Greece
	"Enriching University Curricula with digital motion-based touchless game making activities for promoting algorithmic skills"

Ioannis Altanis, PhD Candidate, Department of Digital Systems, University of Piraeus, Greece

Symeon Retalis, Professor, Department of Digital Systems, University of Piraeus, Greece

"Outlier detection using One-Class Support Vector Machines with hyper parameter adjustment to identify public opinion deviations"

Dimitrios Dardanis, CERN and PhD Candidate University of Geneva

Q&A

Day II: Friday, 19 April 2019

10.00 – 11:00 **Session 7**

Moderator: *Simona Comi,* Associate Professor, Dipartimento di Scienze Economico-Azienzali e Diritto per l' Economia, Università degli Studi di Milano-Bicocca

"Higher education Institutes as places of implementing Sustainable Development Goals"

Varvara Dilari, UNESCO expert, Ministry of Education, Research and Religious Affairs

"The Role of Universities in Sustainable Development Goals: The Erasmus program focus"

Joseph Thukia Wanjiku, Kenyatta University

"The Active Welfare State as a prerequisite on addressing Brain Drain"

Ioannis Tzagkarakis, Postdoctoral researcher, University of Crete

Q&A

11.00-12.00 **Session 8**

Moderator: *Foteini Asderaki,* Associate Professor, Jean Monnet Chair, Department of International & European Studies, University of Piraeus

"Now you see me, now you don't. Mapping the role of employers within the framework of traineeships for university students"

Sofia Boutsiouki, Assistant Professor, University of Macedonia, Greece

"The role of HEIs in supporting regional development"

	Christos Skouras, PhD Candidate, Dept of Mediterranean Studies, University of the Aegean ***"Higher Education Mobility Consortia under the Erasmus+ International Credit Mobility: The case of the Higher Education Consortium of Greek Universities"*** *Christina Kontogoulidou,* Adjunct Lecturer, Head of the International Relations Office University of Piraeus Savoula Maria Oikonomou, Assistant Officer of the International Relations Office University of Piraeus *Q&A*
12.00 – 13:00	**Session 9** **Moderator:** *Victoria Pekka,* Professor, Department of Business Administration, Director of MSc in Law & Economics, University of Piraeus ***"Disability, tertiary education and labour market in Italy"*** *Simona Comi,* Associate Professor, University of Milano Bicocca, Italy *Mara Grasseni,* Assistant Professor in Economics, University of Bergamo, Italy ***"The Integration of Deaf students in Italian HEIs"*** *Enrico Dolza,* Assistant Professor of Special Education, Department of Philosophy and Education Science, University of Turin (UniTo) and Director of the Turin Institution for the Deaf Q&A **End of the Conference**

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Περιεχόμενα

The European Higher Education Area and the European Research Area: The role of the universities and research centers in smart specialization and growth

Foteini Asderaki, Associate Professor, Jean Monnet Chair on European Union's Education, Training, Research and Innovation Policies, Department of International and European Studies, University of Piraeus Greece

Dear distinguished speakers, colleagues, and students,

It is a great pleasure to host you at the University of Piraeus. A warm welcome and many thanks to our colleagues, and co-organisers of this Conference, coming from the Bicocca University of Milano, Professors Simona Comi, Elisabetta Marafioti, Mattia Martini, Mara Grasseni from the University of Bergamo, and Enrico Dolza from the University of Turin.

I am also grateful to our Dean, Professor Michalis Sfakianakis, and to all the members of the Scientific and the Organising Committee including our students-volunteers. We are fortunate to have with us as key-note speakers Todd Davey, Associate Professor, Institut Mines-Télécom Business School, France, Victoria Galán Muros, Policy Analyst at the OECD and Giorgos Ioannidis, Secretary Special, for the Management of Sectoral Operation Programmes of the European Social Fund, from the Ministry of Economy and Development. I would like to thank all speakers and especially the young researchers for their contribution to this conference.

The main scope of this conference is to highlight the importance of the European Higher Education Area and the European Research Area for the enhancement of the *Europe of Knowledge* and to reveal the new role of universities and research centers in smart specialization and growth. Smart specialization, according to the European Commission, is a place-based approach, which builds on the strengths and resources available to regions and Member States taking into consideration their specific socio-economic challenges (European Commission, 2017). The European Commission motivated through funding the national and regional authorities to develop smart specialisation strategies for R&I (ibid). By 2020 it is estimated that the EU's smart specialisation strategies would result in 15.000 new products to market, and they would create 140.000 new start-ups and up to 350.000 new jobs (European Commission, n.d.).

A competitive European Union (EU) based on the *Knowledge Economy and Society* (Commission of the European Communities, 1997) should develop relevant knowledge policies, namely education, training, lifelong learning, research, and innovation (Asderaki, 2016). Knowledge policies have had a central position in the EU agenda under the Lisbon (2000-10) and the Europe 2020 strategy, for a smart, sustainable and inclusive development aiming at promoting innovation, productivity and competitiveness (Chou and Gornitzka, 2014). However, the Member States were and some of them still are reluctant to transfer competences at the EU level. Thus, knowledge policies have been developed in discrete, individual 'areas' with evolving character, at different moments of

the European integration process consisting of various numbers of members and modes of governance (Asderaki, 2022). In this sense, these policy areas are examples of differentiated integration (Asderaki, ibid; Dyson and Sepos, 2010).

The development of the Europe of Knowledge is crucial for the EU to tackle globalization and the emergence of new economic competitors in Eastern Asia. It is also crucial to handle the economic crisis and its consequences by creating growth and new jobs. In the light of the above, education, research and innovation have been considered as the boosters for growth and employment. This is a discussion that we need to focus on within our countries since both Greece and Italy are according to the European Commission *Moderate Innovators* (European Commission, 2019a). This is striking for Greece taking into consideration the high-level of educated human capital and the dynamic university-based research centers. It is obvious that there is a missing link between the education and research sector and the labor market in respect of the exploitation and contribution of the scientific personnel to the economy. The linkages between academia and economy/industry regarding the knowledge transfer process should also be enhanced.

Employment rates for recent graduates (20-34) from Tertiary Education (ISCED 2011 levels 5-8), recorded in both Greece (64.2%) and Italy (64.9%) in 2019, are the two lowest in the EU (Eurostat, 2019). As research shows unemployment and economic stagnation leads to brain drain which has serious implications for the economy and society. According to the Athens Medical Association almost 18.000 doctors left the country since 2009. This makes Greece the biggest doctor exporter in the world.

It is well known that both Greece and Italy have a long tradition in higher education. Ancient Greek academies are the predecessors of the medieval universities presented in Italy. The scientific terminology is full of Greek and Latin words, in almost all the scientific fields, while the University of Bologna is considered as the oldest university in the Western world. This was the reason behind the decision to inaugurate the process for the establishment of the European Higher Education Area in the University of Bologna in 1999. In a few weeks, in June, we are going to celebrate the 20 years' anniversary since the first ministerial conference of the Bologna Process (Bologna Declaration, 1999).

The original idea for the establishment of a Higher Education Area was introduced by the Delors' Commission which inaugurated the Erasmus, the Lingua and the Commet programme during the late 1980s and issued a Memorandum on higher education in 1991. These initiatives were reluctantly perceived by the Member-States but fortunately, due to Delors' strategic management, the programmes were successfully introduced and today offer unique opportunities for the higher education institutions, students and researchers. A few years later in Sorbonne the Ministers of the four leading European countries, France, Germany, U.K., and Italy, adopted the Joint declaration on the harmonisation of the architecture of the European higher education system. This initiative was again negatively perceived by the Member States that were not invited in the meeting. Thus, Italy took the initiative to organize a meeting in Bologna where

twenty-nine European countries participated. Despite the primary hesitation, the initial frame was maintained as well as the main goals of the cooperation. The EHEA was finally launched in the Budapest-Vienna Ministerial Conference in 2010 (Budapest-Vienna Declaration, 2010).

Today, forty-nine European governments, the European Commission, the Council of Europe, UNESCO and various stakeholders set together the principles, norms, rules, and decision-making procedures of this regime following an Open Method of Coordination. What we have achieved so far is really important: compatible higher education study programmes under a three-cycle system (BA, MA, Doctoral), a European Qualification Framework, joint standards for Quality Assurance, and common tools for the recognition of degrees. Thus, Europe has become an attractive place for international talented students while it actively promotes a Global Agenda on common issues such as the Sustainable Developments Goals, the recognition of Qualifications according to the Lisbon Convention (1997) and the QA standards (Asderaki, 2019).

The establishment of the European Research Area has been even more complicated. The European leaders, while considering that Europe lagged behind the United States and Japan in Research and Technology and introduced relevant provisions in the Treaties, they also established intergovernmental frameworks of cooperation outside the Treaties. Despite the enhanced role of the European Commission, the European Research Area established in 2000 has been based on intergovernmental coordination, the 3 percent R&D expenditure target as a percentage of GDP, National Reform Programmes, mutual learning and peer review. Although the Lisbon Treaty enhanced the legal basis "the implementation of the ERA framework is still not complete…and remains a partnership approach based on the OMC" (EPRS, 2016). In addition, the R&D expenditure benchmark stood at 2.1 percent in 2019, much lower than the EU's competitors, like South Korea (4.52 per cent in 2018), Japan (3.28 per cent in 2018) and the United States (2.82 per cent in 2018), while eight Member States reported R & D expenditure that was below 1.00 per cent (Eurostat, 2019b). The Monitor Report in 2018 clearly demonstrated that progress on ERA implementation has been slowing and that major disparities still exist between countries or are growing in part (European Commission, 2019b).

Following the EU 2020 strategy which upscaled the EHEA and the European Research Area (ERA) as the driving forces for innovation, growth and job creations, the Bologna Ministers decided to link more intensively the two areas by establishing interaction between the Bologna Follow Up Group and the European Research Area and Innovation Committee (Paris Communiqué, 2018). The EU's next research and innovation (R&I) framework programme — Horizon Europe, an ambitious almost €100 billion programme intends not only to enhance *the triple helix model* of innovation, which refers to a set of interactions between academia, industry and governments, to foster economic and social development but also to engage stakeholders and civil society in order to achieve cross-disciplinary, cross-sectoral and cross-actor innovation.

Meanwhile the new Erasmus+ programme will enhance networks, strategic partnerships, and knowledge alliances. Knowledge and Innovation Communities which bring together enterprises, research centres and higher education institutions are implemented under the auspice of the European Institute of Research and Technology. According to the recent study of the European University Association the Role of Universities in Regional Innovation Ecosystems (EUA, 2019)

> *The central role of knowledge creation in post-industrial economies and societies has given universities a pivotal role in society. In the regional quest for increased connectivity to fuel innovation dynamics, the university's new centrality becomes inextricably intertwined with its role of orchestrating multi-actor innovation networks.*

We definitely need to re-examine our research agenda regarding higher education and the synergies with research and innovation. This Conference aims to bring together leading academics, researchers, and junior scholars to share their experiences and research results on the role of the European Higher Education Area and the European Research Area in smart specialization, growth and employability. The Conference will provide an interdisciplinary forum for researchers, practitioners and educators.

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Now you see me, now you don't. Mapping the role of employers within the framework of traineeships for university students

Sofia Boutsiouki, Assistant Professor, Department of International and European Studies, University of Macedonia

Abstract

The establishment of a multidimensional cooperation between universities and the labour market is one of the most important aims of the European Higher Education Area (EHEA). The importance of such cooperation derives from its significant advantages for all parties involved, especially from its capability of enhancing the employability of future graduates and the competitiveness of the economy. Work experience schemes are one of the most prominent aspects of the university-employer interaction, which helps students to develop their professional skills and qualifications and facilitates their transition to employment. The paper discusses the role of employers within the framework of work placements offered to university students. Students can participate either in international traineeship opportunities through the Erasmus+ programme or in –subsidized or not– national work experience schemes managed by the career services of higher education institutions. The paper offers a critical insight in the organisational characteristics of work experience schemes with a special focus on the employers' involvement and attempts to evaluate the influence of the relevant European guidelines on them. The investigation reveals the satisfactory levels of employers' participation in the implementation of work placements. However, their engagement largely remains typical and limited, while they are not involved in many aspects of the schemes where their contribution would be valuable. The paper concludes by considering the implications of the findings of the investigation into the current role of employers in student traineeships and by formulating specific suggestions for the improvement of the employer-university interaction and of the schemes' quality.

Keywords: traineeship, work placement, university, employer, EHEA

Introduction

By signing the Bologna Declaration (1999) European countries pledged to introduce common reforms in their higher education systems in order to establish the European Higher Education Area (EHEA). Since the launch of the Bologna Process member states have made special efforts to build a common operational framework for higher education, which among others sets the interaction between higher education institutions (HEIs) and the labour market very high in the agenda. Such cooperation is seen as a means for the improvement of the quality and the effectiveness of curricula, of graduates' skills and employability, and of the productivity and the competitiveness in the economy.

Work experience schemes for university students are an important area of interest in the process towards the EHEA. They are a form of work-based learning and may be offered in the national labour market or in that of other EU countries. Higher education work placements are promoted as an important component of the university-employer interaction, while they are associated with significant benefits for different stakeholders: for tertiary education institutions, who (try to) prepare their students for employment and act as intermediaries between them and the labour market; for employers, who are the providers of work placement positions for students; and finally, for students (or recent graduates), who are the beneficiaries of the work experience schemes.

This paper aims to offer an overview of the role of employers in work placements offered to university students. It is organised in three parts. First, it makes reference to the main lines of action through which the EHEA framework seeks to increase the capability of higher education to confront the ongoing changes in employment and production, and discusses the potential contribution of employers. Secondly, the paper focuses particularly on the employers' role in work experience schemes for university students, which are one of the most prominent forms of their involvement. The analysis of the paper is based on the relevant guidelines that are promoted by the European policy makers and the civil society. Thirdly, the paper discusses the deficiencies in the implementation of the work experience programmes by designating hurdles and limitations imposed on employers' engagement, while it indicates potential useful interventions for more effective schemes with long-term benefits.

Work experience programmes in the European policy context

Work placements and European initiatives

Due to their increased importance in the school-to-work transition and the professional integration of young especially people, work experience programmes gradually became very attractive among potential beneficiaries and quite popular among the public and private policy makers seeking ways and means to increase youth employability. The European labour market has developed many different forms of higher education work experience programmes that are often refered to as traineeships or internships; some of them are mandatory and inseparably connected to the professional rights of higher education graduates; others are non-mandatory and are offered to university students by their institutions as an extra-curricular option or as an elective course incorporated in the curriculum (i.e. Erasmus+ placements). However, work placements appearing outside the formal education system are more difficult to monitor and frequently replace permanent employment positions. In spite of the many different forms of their endorsement and promotion in the European policy context, the paper will make reference only to the most emblematic ones with regard to the EHEA rationale.

The entities pursuing proactive engagement in the development of traineeships/internships belong to the public (European and national institutions and

authorities) and private (employer associations and trade unions) sector, as well as to the civil society. One cannot but observe that the civil society often leads the way in the introduction of the necessary guidelines, thus affecting the overall development of the institutional and the implementation framework of traineeships.

The European Youth Forum is an excellent example of a civil society entity with special interest in work placements. In 2011 it published the "European Quality Charter on Internships and Apprenticeships". Although scattered provisions for work experience programmes and their quality characteristics had been included in previous international youth-oriented policy consultations, the publication of the charter had a significant impact on the European mobilisation on the matter in the following years. The charter recognised the need for such schemes, but highlighted several issues of concern, where specific interventions were required: learning content, rights, conditions and remuneration. The Charter invited all parties involved to ensure that work experience schemes (often unpaid or low paid) will not replace regular employment. Furthermore, it suggested that a legally binding contract regulates the schemes and defines the terms and conditions of their implementation. Work placements should be carried out under careful guidance in a safe environment, while some form of remuneration should be provided. Also, it considered necessary the existence of evaluation criteria and of a system of certification and recognition of the knowledge and skills acquired through the schemes (European Youth Forum, 2010).

Soon, the European institutions enriched their initiatives with more provisions for work placements. Under the influence of the European Youth Forum Charter and as the need for better regulation of the schemes became more apparent, the Council of the European Union issued a Recommendation on a "Quality Framework for Traineeships" in 2014. The recommendation recognised the importance of work experience for the employability and the productivity of young people, the better matching and the more effective operation of the labour market. In addition, it emphasised that the quality of the traineeships in terms of learning content and working conditions are the elements that define their value in serving their purpose: making the transition to employment easier, improving the labour market matching and promoting mobility, whilst decreasing the relevant costs for trainees and companies. The need for close cooperation between education providers (such as universities) and social partners, mainly employers, was extensively highlighted. Such cooperation can ensure that information about skill needs, career opportunities and trainee rights and responsibilities becomes available to potential beneficiaries and that the traineeship schemes fulfil the necessary quality criteria. Furthermore, social partners were included in the application of the Quality Framework in order to ensure their contribution to the proper integration of the work experience schemes in the labour market. Social partners were also invited to work together with other stakeholders with the intention of contributing to all stages of the schemes: from the organisation of traineeships and the definition of the learning content

to the selection of trainees, the regulation of the working conditions and the evaluation processes for trainees and employers. Special reference was made to the conclusion of a traineeship agreement reporting the placements' components and the provisions for compensation, if any (Council of the European Union, 2014).

The launch and the evolution of the European Youth Strategy reinforced the initiatives targeting the challenges faced by young individuals by introducing diverse actions, methodologies and tools. Work experience programmes became an important component of initiatives that aimed at confronting high youth unemployment and improving the employability of young people.

Both the European Commission (2009) and the European Parliament (2010) underlined the need for the introduction of reformative policy interventions by member states in order to help youth social and professional integration. Also, they expressed their endorsement to the establishment of interrelated youth-oriented policy initiatives regulating the content, the objectives and the funding of specific actions. Many of their suggestions became primary components of youth policies that followed. Among others, they gave emphasis to the increase in opportunities for young people to participate in education, to develop work-related skills and to access employment.

The presentation of the Youth Opportunities Initiative (European Commission, 2011; European Parliament, 2012; Lecerf, 2014) brought in light a comprehensive plan for interventions supporting people of young age, which was further specified by initiatives that followed. Good quality traineeships were seen as an important part of the supportive actions, while businesses were invited to commit to more traineeship and work positions as an indication that they exercise their corporate social responsibility. The consultations resulted in the proposal for the Youth Employment Package, whose basic objectives were realised through the introduction of the Youth Employment Initiative (YEI) and the Youth Guarantee (YG) (European Commission, 2012a; 2012b; European Council, 2013; European Parliament and Council of the European Union, 2013).

The Youth Employment Initiative (European Commission, 2013) was assigned to support such projects by drawing the necessary funds from € 8.8 bn. allocation. Due to their vulnerability, regions with youth unemployment over 25% and with high rates of NEETs are eligible to receive YEI funding. Most of them are concentrated in Southern and Eastern Europe, while only a few regions of Western European countries may apply (Figure 1). Also, over the years most eligible countries gave greater emphasis to work experience schemes than to other forms of interventions, thus indicating their conviction that they can enhance trainees' employability (Table 1).

In April 2013 the Council introduced the YG that is funded by the EU through the YEI and the ESF. The YG invited member states to ensure that all young people up to the age of 25

years receive a good-quality offer of employment, continued education, an apprenticeship or a traineeship within four months of becoming unemployed or leaving formal education (Council of the European Union, 2013). By inciting the implementation of a large number of projects that foster youth transition to employment, the YG endorses the concept of work placements; thus, their value increased and they became more recognisable and attractive to youth.

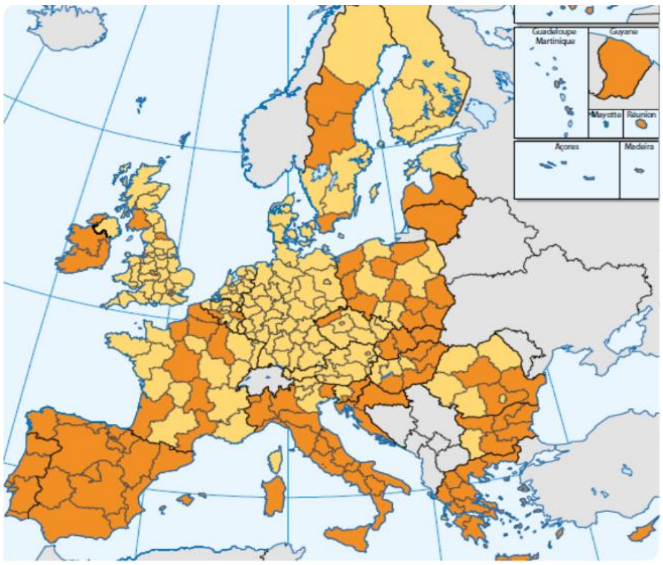

Figure 1. EU regions currently benefiting from Youth Employment Initiative (YEI)
Source: European Commission, 2016b, p. 9

Table 1. EU regions currently benefiting from Youth Employment Initiative (YEI)

Type of measure	Share of EU member states implementing measure
First job experience	83%
Traineeships and apprenticeships	72%
VET courses	65%
Job and training mobility	59%
Start-up support for young entrepreneurs	53%
Wage and recruitment subsidies	47%
Second chance programs for early school leavers	44%
Other (including job counselling and mentoring, national and regional civic service and activities to include early school leavers)	39%
Reduction of non-wage labor costs	24%

Source: European Commission, 2016a, p. 94

Table 2. Timely and positive offers by type of offer and the proportion that is subsidized (EU28, 2015, 2016, 2017) (%)

2017	Employment	Education	Apprenticeship	Traineeship	Subsidised (all types)
Total 15-24	66.8%	12.4%	7.1%	13.7%	27.5%
Men	66.3%	12.6%	7.8%	13.3%	28.3%
Women	67.4%	12.2%	6.2%	14.2%	26.6%
15-19	48.8%	19.7%	15.9%	15.6%	30.9%
20-24	72.9%	10.0%	4.0%	13.2%	26.7%
2016	**Employment**	**Education**	**Apprenticeship**	**Traineeship**	**Subsidised (all types)**
Total 15-24	67.2%	12.0%	6.9%	13.9%	25.9%
Men	66.8%	12.2%	7.6%	13.4%	26.5%
Women	67.7%	11.6%	6.2%	14.5%	25.1%
15-19	49.1%	18.6%	15.8%	16.6%	29.3%
20-24	73.1%	9.8%	3.9%	13.1%	25.2%
2015	**Employment**	**Education**	**Apprenticeship**	**Traineeship**	**Subsidised (all types)**
Total 15-24	70.0%	12.1%	4.2%	13.6%	27.3%
Men	70.8%	12.3%	4.8%	12.2%	26.8%
Women	69.1%	11.9%	3.6%	15.3%	27.9%
15-19	56.1%	18.5%	9.0%	16.4%	32.7%
20-24	73.9%	10.4%	2.8%	12.9%	26.1%
25-29	79.4%	5.3%	1.1%	14.2%	21.7

Source: European Commission, 2017, p. 22; 2018a, p. 25; 2018b, p. 22

Traineeships vary in type, focus, and duration, and range from short-term work placements to longer-term schemes linked to education. Traineeships are the second most preferred option among YG projects for all beneficiaries (Table 2). In most countries providing traineeships within the scope of the YG, the schemes last no more than six months, which is in line with the Council recommendation on a quality framework for traineeships. Also, almost all YG traineeships provide some form of financial support directly to participants and are regulated by a written agreement.

Work placements and Erasmus+

Erasmus+ Traineeships are a distinct type of work placements offered by the Erasmus+ programme under Key Action 1 "Learning Mobility of individuals" (European Commission, 2019, p. 33 ff.). They are completed by students in a different country than that of their enrollment and are open to university students of all levels (bachelor or equivalent/EQF 5, master/EQF 7, doctoral/EQF 8), as well as to recent graduates. The traineeship has a duration of 2-12 months and is regulated by a binding Traineeship

Agreement, which is signed by the sending and the host organisation, as well as by the student. The agreement sets out the rights and responsibilities of the all parties, a detailed programme of the traineeship and information on insurance and on the recognition of the traineeship upon successful completion. As regards universities, they have the responsibility to award ECTS and to include the traineeship in the Diploma Supplement after the completion of the scheme. They also have the option to provide styudents with the Europass mobility document; although by default the preparation of Europass Mobility should involve both organisations, the sending (university) and the host (public or private institutions and enterprises), in practice employers are missing from the process.

The overall organisation of the Erasmus+ Traineeships shows that the role of employers remains limited. Employers offer students or graduates trainee positions through which they have the opportunity to develop their professional and social skills and to acquire valuable experience of the working environment. Erasmus+ Traineeships usually provide no payment or other benefits; however, students are entitled to remuneration paid by the EU, which varies between countries and is calculated according to the cost of living. Before the mobility employers are obliged to include a short summary of the trainees' work responsibilities in the training agreement, while after the mobility they have to report a general assessment of their performance and an evaluation of the achieved learning outcomes. However, they are obliged to provide neither a detailed report on the various aspects of the offered work experience, nor some form of compensation. Moreover, they lack support for the management of the administrative requirements of the schemes, as well as for the effective deployment of existing European instruments for mobility and qualification recognition.

The Erasmus+ programme includes provisions for additional initiatives that foster the communication and the cooperation between higher education institutions and the world of work. Under Key Action 2 the Erasmus+ offers support to various projects that promote the cooperation of stakeholders for innovation and exchange of good practices. Knowledge Alliances and Sector Skills Alliances are indicative examples of partnerships between education institutions and employers. Knowledge Alliances are transnational, structured and result-driven projects, notably between higher education and business. They seek proactive universities-employers collaborations and are open to any discipline, sector and to cross-sectoral cooperation targeting innovation. Sector Skills Alliances are transnational projects identifying or drawing on existing and emerging skills needs in a specific economic sector and/or translating these needs into responsive vocational curricula. They focus on issues concerning vocational education and training of all levels, where higher education is included. The projects have to fall into categories of actions pre-defined by the Erasmus+ and may include a work experience component in their implementation, thus reinforcing the employers' role in the education-oriented interventions (European Commission, 2019, p. 132 ff.; 141 ff.).

Work placements in the EHEA context

The Bologna Declaration signalled the beginning of a pan-European effort for the confrontation of common internal and external challenges in higher education. The Declaration went beyond a mere political statement and, although it constituted a non-binding agreement, it expressed a strong commitment to coordinated reformative interventions founded on common principles, clearly defined goals and specified objectives. Through its subsequent stages the Bologna Process sought the establishment of a European Higher Education Area (EHEA) and the convergence of the member states' higher education systems in key areas of interest (Asderaki, 2008).

The employability of university graduates and the relevance of the study programmes with the labour market have been primary issues of concern in the consultations about EHEA. The success of interventions fostering employability and enhancing the university-labour market interrelation depends on different factors appertaining to both the demand and the supply side (Kleinman, West & Sparkes, 1998; McQuaid, & Lindsay, 2005; Asderaki, 2010). The EHEA framework recognises many different areas of interest where various stakeholders may be engaged; however the form and the levels of such an involvement greatly vary between countries depending on the extent of decentralisation of their higher education systems.

The establishment of close communication between universities and employers draws the interest of both education and labour market actors. However, the role of employers has not been explicitly referred to since the beginning of the Bologna Process, but was hidden under the much broader objective of employability. It has been brought to the epicentre of attention when the EHEA entered a deepening phase in its development. Member states were encouraged to associate employers with many aspects of the operation of higher education, while the monitoring of the Bologna Process included provisions for their engagement with interesting results (Curaj, Deca, & Pricopie, 2018; European Commission/EACEA/Eurydice, 2015; 2018).

Employers' involvement can be identified along three different axes: the participation in the curriculum development and the governance of HEIs, which includes the design and the methodological support of the study programme, the decision making and the management of the institutions; the quality assurance, which includes the consultations on the quality dimensions and criteria, as well as the monitoring and the promotion of educational reform; the interaction of higher education with the labour market, which involves collaboration in research projects and skills forecasting, the offering of traineeships and the use of recognition tools (ECTS, NQFs, Diploma Supplement). Finally, the role of employers in providing funding, guidance and networking for student or graduate start-ups cannot by overlooked (Bologna Process, London Communiqué, 2007; Bologna Process, Budapest-Vienna Declaration, 2010; Bologna Process, Yerevan

Communiqué, 2015; Bologna Process, Paris Communiqué, 2018; Curaj, Deca & Pricopie, 2018; European Commission/EACEA/Eurydice, 2018).

Higher education traineeships: visible vs. invisible employer

Work experience programmes (traineeships, internships) are an important aspect of the cooperation between HEIs and employers with significant benefits for all parties involved, students/graduates, employers, universities. The importance of traineeships for higher education led to the establishment of specific regulatory frameworks and of incentives by most countries in order that their inclusion in the universities' study programmes is promoted (Figure 2).

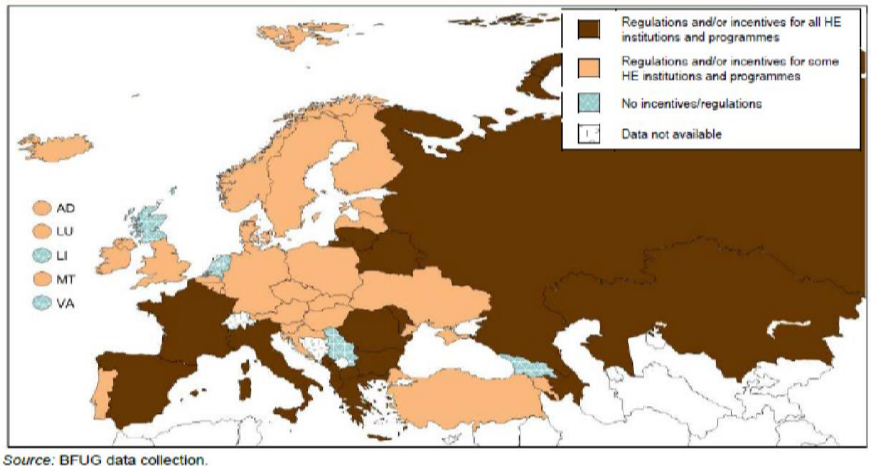

Figure 2. Regulations and incentives on including work placements in HEIs programmes (2016/2017)
Source: European Commission/EACEA/Eurydice, 2018, p. 234.

The role of employers in traineeships has to be investigated as part of the main actors' actions and initiatives; national authorities, universities and employers contribute to the final operational framework of traineeships according to their individual goals and perceptions, and within their competence. National authorities attribute great importance to work experience schemes and usually align their policy planning to the relevant EU initiatives instead of creating and financially supporting their own projects from scratch. However, in the case of traineeships for university students almost all countries introduce the basic institutional framework, but allow HEIs to determine their work-based learning policy and the terms and conditions on a more individualised basis. Consequently, the planning and the implementation of higher education traineeships may provide for "visible" or "invisible" employers depending on the form and the extent of their engagement.

The consultations regarding university work experience schemes led to the establishment of an articulated operational framework, which all EHEA members conform to. This framework allows employers to undertake more concrete roles within

the work placements' context. They make a number of trainee positions available to universities, which are invited to implement such schemes. The recruitment of students/trainees is done through an "application and interview" procedure managed by enterprises, thus allowing them to select the proper candidates, while students have a first-hand experience of the actual job search and hiring processes. The necessary guidance and councelling are offered by the university career services, while employers' participation in orientation events is not always part of the formal procedures.

The terms and conditions of all higher education placements are based on a written contract signed between the student, the institution and the employer. Although necessary, the agreement usually does not mention in a clear and detailed way the work duties, the expected learning outcomes and the criteria for evaluation of the trainees' performance, whereas in some occasions they are articulated in a generalised way. Moreover, in many cases the enterprises do not appoint a particular and especially trained employee in order to be responsible for the students' on-the-job-training and help them to maximise the learning outcomes.

As regards the monitoring and the evaluation of the process by HEIs, they are normally done by the universities' career services in collaboration with professors, who act as supervisors during the entire traineeship period and as evaluators after its conclusion. The evaluation is done through short questionnaires with general questions, which unfortunately cannot ensure an in-depth approach of the experience. Similarly, the final evaluation of the trainee by the employer is general and formal instead of including specific details about the duties assigned and the skills tested or acquired. The trainee is also invited to assess the contribution of both the university and the employer during the traineeship. However, one can observe a lack of an overall assessment at individual, institutional or national level, in order that further reformative interventions can be applied.

In spite of the efforts targeting the inclusive regulation of work experience schemes in order that more employers undertake a visible role in the traineeships, indications of employers' non-involvement in certain aspects of their implementation still exist.

The numbers of traineeships remain limited, while in many countries there is a notable lack of a comprehensive system of incentives that encourages the creation of more trainee positions, while at the same time it takes account of the actual socioeconomic challenges confronted by the world of work. Furthermore, employers (or their employees who are expected to act as supervisors at the workplace) are not offered the necessary preparatory training in order to be able to successfully exercise their multilevel roles as trainers and mentors: to contribute to targeted skill development; to understand and manage the bureaucratic burden; to make good use of skill recognition instruments and of quality criteria; to participate in exchange of good practices. Similarly, employers are

not provided with assistance to any legal inquiries related to the implementation of the schemes and thus are discouraged from being engaged in such activities. A closer collaboration between HEIs and employers' associations would serve these purposes satisfactorily.

As regards the training part of work experience schemes, it often appears to be incomplete. The preparation of potential trainees is insufficient, because they are not offered opportunities to develop awareness of the workplace conditions and expectations in advance. Therefore, in many cases they are exposed to a superficial and mostly empirical training process. Moreover, the traineeship often lacks significant components, such as a detailed learning programme and a step-by-step monitoring and evaluation of trainees, processes and learning outcomes, while its connection with particular aspects of the operation of the enterprise is often missing. The lack of provisions for remuneration offered to trainees by employers aggravates further the traineeships' attractiveness, whereas the extensive use of EU funds cannot balance the absence of such commitments from them. Finally, students and universities do not have access to sufficient information about the profile and the behavioural consistency of participating employers and enterprises; for this reason, they are unable to assess the offered opportunities and adjust their choices accordingly.

Conclusions and Suggestions

The design of policies that aim to increase the employability of university graduates has to take into consideration two perspectives: on one hand, the demand side that concerns the labour market needs to which education must respond; on the other hand, the supply side that concerns the learning output in terms of graduates' knowledge and skills, which must be provided by HEIs. There is no doubt that employers can play an important role by becoming involved in activities related to (or bridging) both sides; traineeships are one of the most prevalent fields of their engagement.

The paper focused on the role of employers in the planning and the implementation of traineeships for university students as provided by the EHEA framework. The particular form of work-based learning constitutes one of the most promising initiatives that attempt to link students/trainees with the labour market and to increase their employability. The paper presented indicative examples of the increased interest of various entities in work experience schemes for university students. Stakeholders are invited to proactively participate in different stages of the training activities. EU/national and public/private authorities, higher education institutions, employers and employer associations, trade unions and the civil society shape their contribution based on their perceptions about the management and the implementation of the programmes, and on their individual objectives. However, it is a common belief that, at bottom, all parties are able to cooperate and to find common ground in order to ensure mutual advantages.

The investigation of the regulatory framework reveals that compulsory or optional traineeships have been well integrated in higher education and are associated with the improvement of graduates' employability and transition to the labour market. Although employers can play a significant role in the design and implementation of the schemes, their involvement remains confined to basic aspects and generic approaches of traineeships. Moreover, this involvement is subject to limitations posed either by the regulatory framework or by the intentions of institutions and of employers themselves, while other potential forms of intervention are kept beyond consideration.

The increasing importance of work placements calls for greater involvement of stakeholders, especially of employers, in supportive initiatives for better quality and more effective traineeships. As regards the demand side, employers and employer associations should be encouraged to formulate suggestions regarding the curriculum and the courses content in order that they become more responsive to the labour market needs and better connected with work experience schemes. In addition, employers can contribute to the development of proactive networks with public authorities and private entities, as well as networks establishing the communication of HEIs and students with labour market actors. Thus, not only do they help the implementation of work experience programmes that are properly organised and clearly oriented to the existing skill needs, but also can prepare the ground for a broader cooperation with higher education beyond traineeships.

As regards the supply side, students need special preparation in order to enhance their capability to confront the traineeship challenges. To this end, preparatory seminars and continuous support from students associations can be valuable on issues such as recruitment documentation and processes, information about collaborating employers, guidance and mentoring services, networking opportunities, future deployment of work experience, etc. In the case of students from vulnerable groups with low income or without word or mouth connections the barriers to traineeships have to be raised with indivisualised interventions including some remuneration in return for more general incentives for the participating companies. Finally, the creation of a comprehensive database of employers involved in traineeships at national level would greatly facilitate students' informed decisions about traineeships, while the use of online applications and platforms would ensure easy access to information about the processes and the available options for work experience.

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Postgraduate study programs in Greece. Facts, institutional settings and trends

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Abstract

This paper presents background information and general references on postgraduate studies in Greece, and quantitative data, both over time, as well as comparatively, on a cross country level. Qualitative analysis sheds light on the role of enterprises in the organization and operation of postgraduate studies in Greece.

Key words: Academia, business, cooperation, postgraduate studies, Greece

Introduction

The article presents the Greek case on postgraduate studies and the way this pillar of higher education operates, laying emphasis on aspects of synergies between HEIs and businesses, aspiring to shed light on the role enterprises have in the organization, preparation and, finally, operation of postgraduate study programs in Greece. Analysis of this topic relies on desk research, quantitative data analysis, and mostly on the results of a relevant survey conducted by the Laboratory of Industrial & Energy Economic of the National Technical University of Athens, covering this particular research question, based on feedback from both academia -for instance Directors of Masters Programs in Greek HEIs- and enterprises that have initiated and carried on collaboration with Greek HEIs for the purposes of postgraduate studies.

In practice, synergies between higher education institutes, business and entrepreneurship has been currently a hot issue that is consistently recognized as important in international literature regarding development, and HEIs' contribution to economic growth, productive transformation, applied research, technology transfer, etc. Both theoretically and empirically, this aspect of HEIs' operation is directly related to the promotion of the so-called "third" mission of universities. Based on this ground, several relevant theoretical and analytical schemes have been developed, such as the so-called "triple helix" theory and the knowledge triangle approach that focus on the interaction of research, education and innovation (Dasgupta and David 1994, Florida and Cohen 1999, Etzkowitz et al. 2000, Phan and Siegel 2006, Gulbrandsen and Slipersaeter 2007, Rothaermel et al., 2007, O'Shea et al., 2008). Relevant to all this discussion is also the issue of promoting and implementing the idea of modern and "entrepreneurial university" that is able to modernize its operation, alter its mindset and tradition and improve its social accountability, coming finally closer to the market, the society and their needs.

In terms of methodology, only formal postgraduate education programs offered by Greek HEIs have been examined, namely ISCED7 level studies, according to UNESCO's international classification. Furthermore, it should be clear that analysis does not deal with other programs offered by HEIs, such as distance learning programs, provided mostly by other entities, such as HEIs' Centers for Life-long Learning and Training.

The first phase of our survey relied on desk research, based on official documents and factual analysis. The second phase of research was based on feedback from contacts, made at the Exhibition on Postgraduate Studies in Greece and Cyprus that took place in Spring 2018, in Athens, by a private-non-profit organization, "Eduguide". Furthermore, field research was organized, on the basis of these contacts, deepening further relevant information through direct interviews (and semi-structured questionnaires) that were addressed to Administrative Heads and/or Academic Directors of Greek HEIs' Masters Programs, covering both Universities and TEIs. The third phase, that followed, dealt with field research among businesses that were appointed by HEIs, or were selected through internet sources and references related to synergies with Greek Master Programs.

Institutional settings on Postgraduate studies in Greece

Postgraduate studies in Greece were institutionalized in the early 1990s, and the institutional framework on postgraduate studies has slightly changed since then, at least until 2011, when a new law on tertiary education was introduced. The framework that emerged from the law of 2011 was widely accepted *firstly* to have responded to domestic demand for change and *secondly* to be in accordance with similar dynamics, gradually developed by the European Commission, towards the so-called "modernization" of higher education institutes (Chrysomallidis 2013).

New changes were introduced by a new law in 2015 that altered once again the broader institutional framework of the national higher education system, reversing some of previous accepted reforms. Moreover, a new law was introduced in 2017, referring in particular to the operation of postgraduate studies in Greece. The new law sets a new regulatory context for postgraduate studies, trying to promote no-fees MSc studies, or at least, to set some limitations or controls on MSc Programs' fees. The new law intended to organize –up to a point- the landscape on postgraduate studies, as it was regarded to be rather sketchy (National and Social Dialogue on Education 2016).

On the whole, it is accepted that reforms of postgraduate studies in Greece do not deal with Bologna process and decisions related to the operation of the European Higher Education Area. On the contrary, they may be regarded to be mostly the result of domestic social and political demand for change, in order to modernize or (re)define higher education system. However, some of these developments –at least until 2016 and before the introduction of the new regulatory framework- are directly or indirectly related to international interdependence (economic, academic, etc.), and relevant trends towards

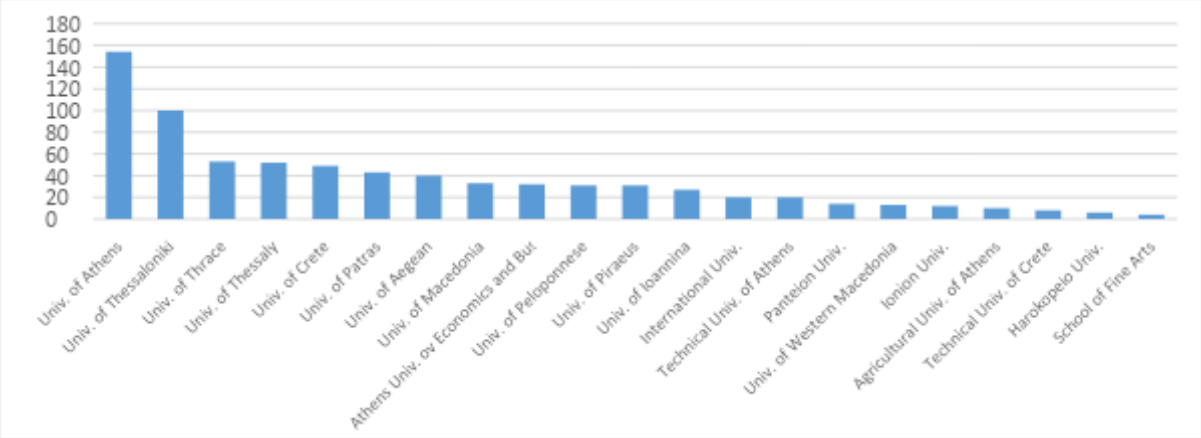
HEIs' autonomy and creation of an education market -in which universities will be key actors. In this context, Greek practice seems to follow –more often unwillingly, at least for a part of academic world- international trends that support a paradigm shift from public intervention and state control over universities to a lighter supervision, where HEIs' social accountability is critical.

Factual analysis and data on postgraduate studies in Greece

When trying to map postgraduate studies in Greece, the starting point may deal with data on MSc Programs' number. At least until 2018 and before the re-establishment of HEIs' postgraduate Programs –that was a regulation of the new institutional framework on postgraduate studies- there were no precise data on that. For instance, according to MoERRA (2016) there were 737 Programs (85% of which operating in Unis and 15% in TEIs). From these, 30% were free of charge and 70% had fees, with a vast fluctuation of cost (from about some hundred euros up to 10.000 euros). However, other unofficial surveys and reports present different numbers. In fact, our own survey counted more than 900 Programs (906), including executive Programs, and also some that seemed to be inactive, in terms of the time of their last call for applications (~20 Programs). In any case, due to regulation introduced by the 4485 law (2017), this particular number is estimated to have become even higher, due to the fact that according to the law, HEIs should establish completely autonomous programs, even for different "areas of specialization", which, before that, used to be part of the same MSc Program.

The next figures show the number of Masters Programs among Greek HEIs (Universities and TEIs), according to the results of our survey[1].

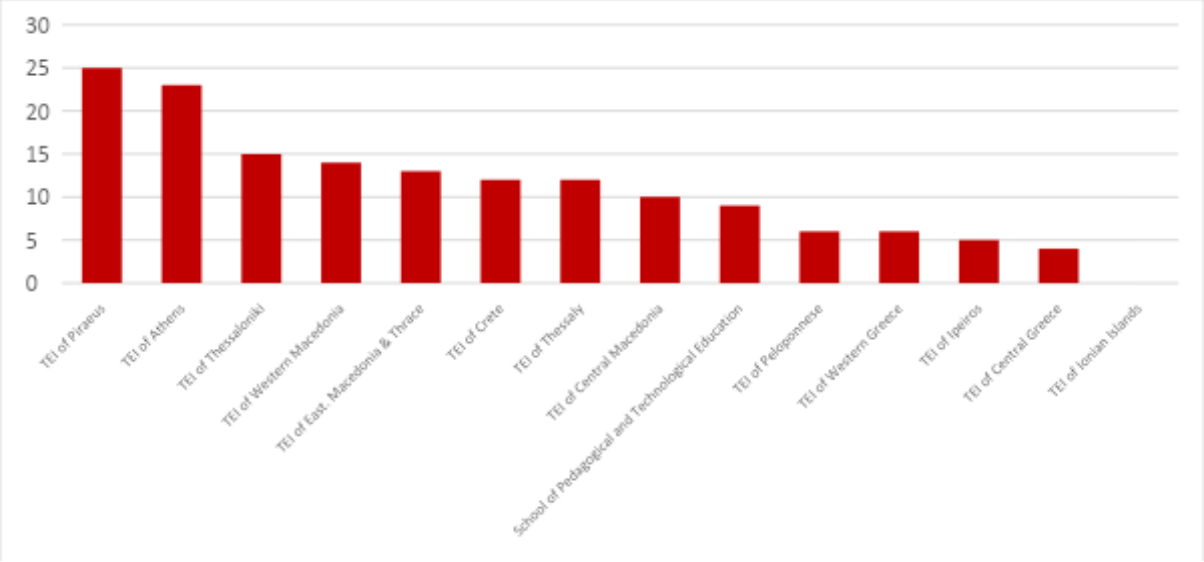
Figure 1: Indicative number of Master Programs in Greek Universities (until spring 2018)



source: HEIs' websites and eduguide.gr, elaborated data

[1] For reasons of simplicity, Masters Programs that follow alternative teaching methods, such as distance learning, mainly related to the Greek Open University are not included in this analysis.

Figure 2: Indicative number of Master Programs in Greek TEIs (until spring 2018)



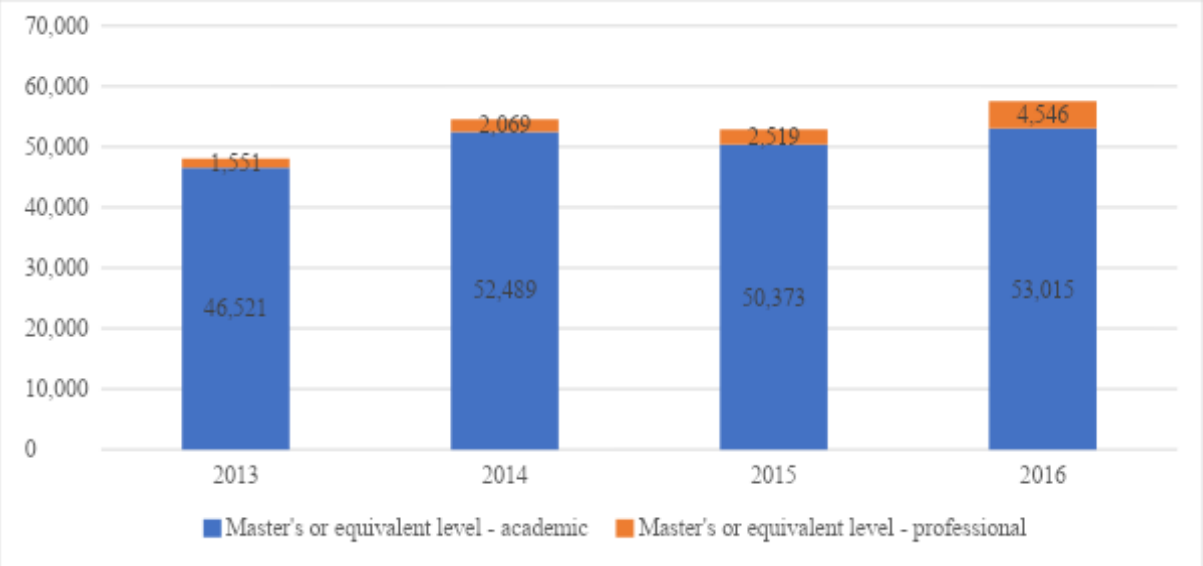
source: HEIs' websites and edugide.gr

As it is expected, the largest HEIs (National and Kapodistrian University of Athens, Aristotle University of Thessaloniki on the one hand, and TEI of Athens, on the other) used to operate most postgraduate study programs among Universities and TEIs, respectively. However, it is remarkable that Universities specializing in the broader field of Economic Science and Business Administration, such as the University of Macedonia, the Athens University of Economics and Business and the University of Piraeus, record a relatively high number of Masters programs, especially given their relative size in the Greek higher education system (e.g. in terms of students, graduates per year, but also academic staff).

According to MoERRA (2016), Universities have established since the 1900s a growing number of postgraduate programs that has attracted an increasing number of students, which was over-doubled in the 2000s (an increase of 119.8%). Nevertheless, only about a quarter of them graduate and hold a postgraduate degree. Also, TEIs have in recent years established an increasing number of postgraduate programs that attract a growing number of students. Accordingly, the number of graduates ranges from 25% to 50%.

In more detail, and as far as enrolled students and graduates in postgraduate programs is concerned, it seems that the number of MSc students is rising in Greece, slowly but steadily over the last four years for which data are available from Eurostat, distinguishing ISCED7 from ISCED8 studies. Full-time post-graduate students exceed considerably –as expected- part-time students, although there is a significant increase of the latter (Figure 3).

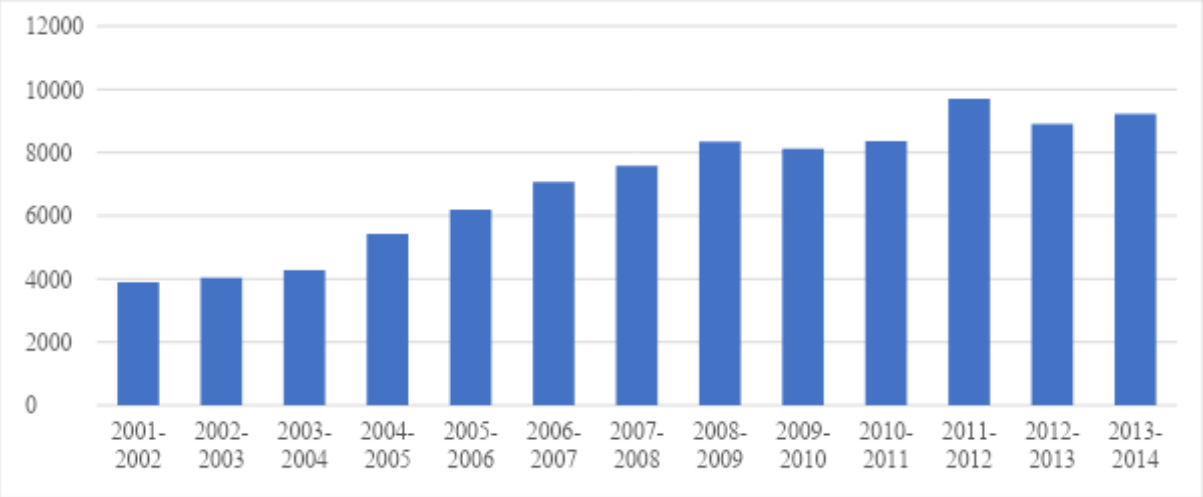
Figure 3: Number of enrolled students in Masters Programs in Greek HEIs (2013-2016, head count)



source: Eurostat (educ_uoe_enrt03)

On the other hand, establishment and operation of new Masters Programs may have retained –up to a point- the number of Greek students, who undertake postgraduate studies abroad, since there has been a significant increase of graduates from Greek HEIs' Masters Programs (Figure 4).

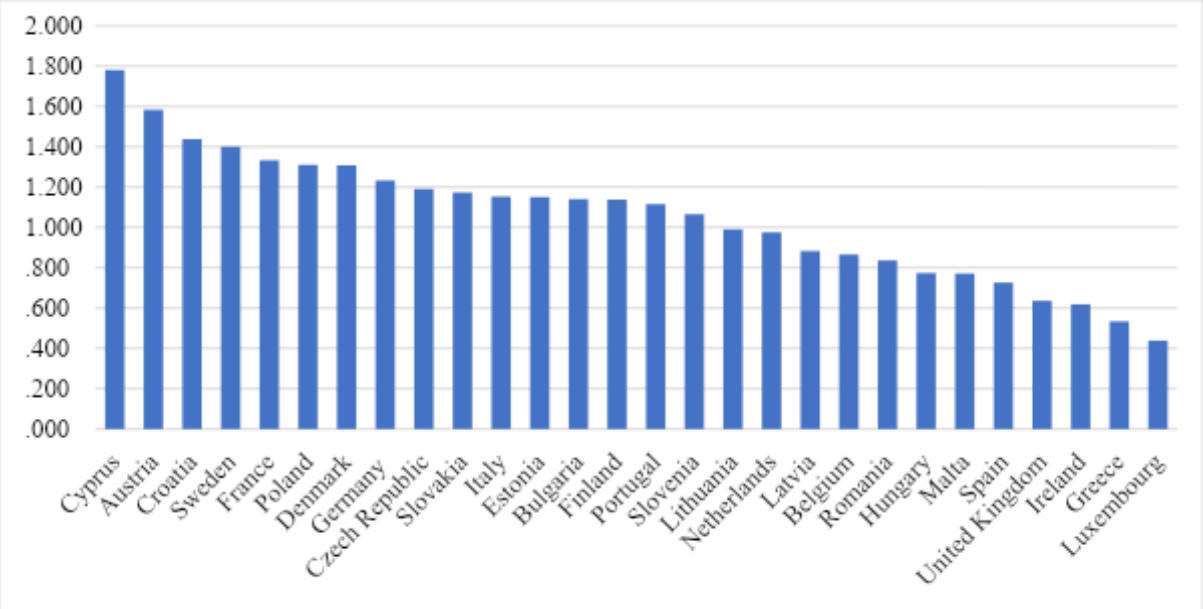
Figure 4: Number of graduates from Greek HEIs' Masters Programs (2013-2016, head count)



source: National Statistical Authority (ELSTAT)

However, when making a cross-country comparison, the country is placed at the bottom of the relative ranking (Figure 5). Obviously this position may be not identical to a relatively low ranking of the country, in terms of available human resources and the level of human capital, since a significant number of Greek postgraduate students do study abroad.

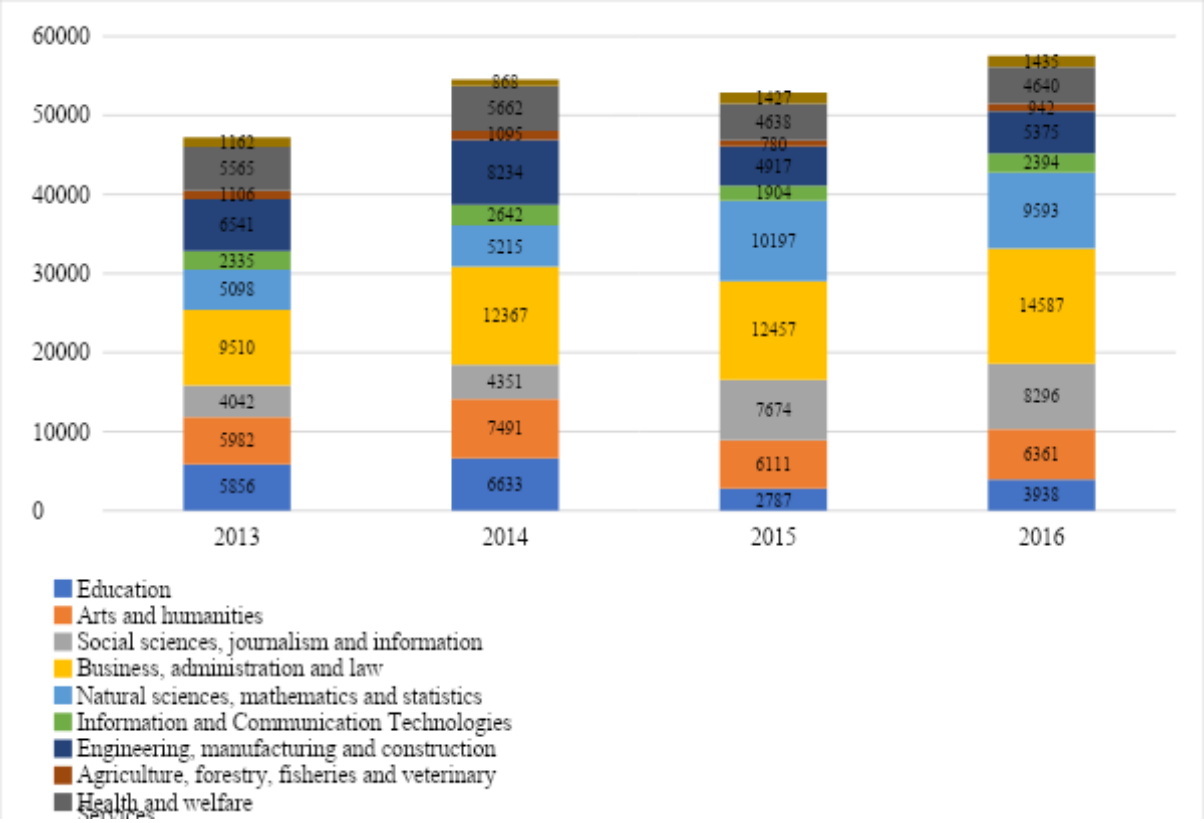
Figure 5: Number of enrolled ISCED7 students in EU (2016, as percentage of total population)



source: elaborated data Eurostat (educ_uoe_enrt03 and demo_pjan)

Moreover, according to data on the distribution of postgraduate students among different educational disciplines, it is clear that there is some fluctuation among different fields over time, most notably the increase between 2014 and 2015 in the fields of Natural Sciences, Mathematics and Statistics, Social Sciences, Journalism and Information, as well as the remarkable decrease in the field of Education from 2013-2014 to 2015-2016. In accordance to what was already mentioned about the relatively high number of students in the area of Economics and Business administration, the bulk of students participating in the Greek postgraduate programs are specialized in the field "Business, Administration and Law" (Figure 6).

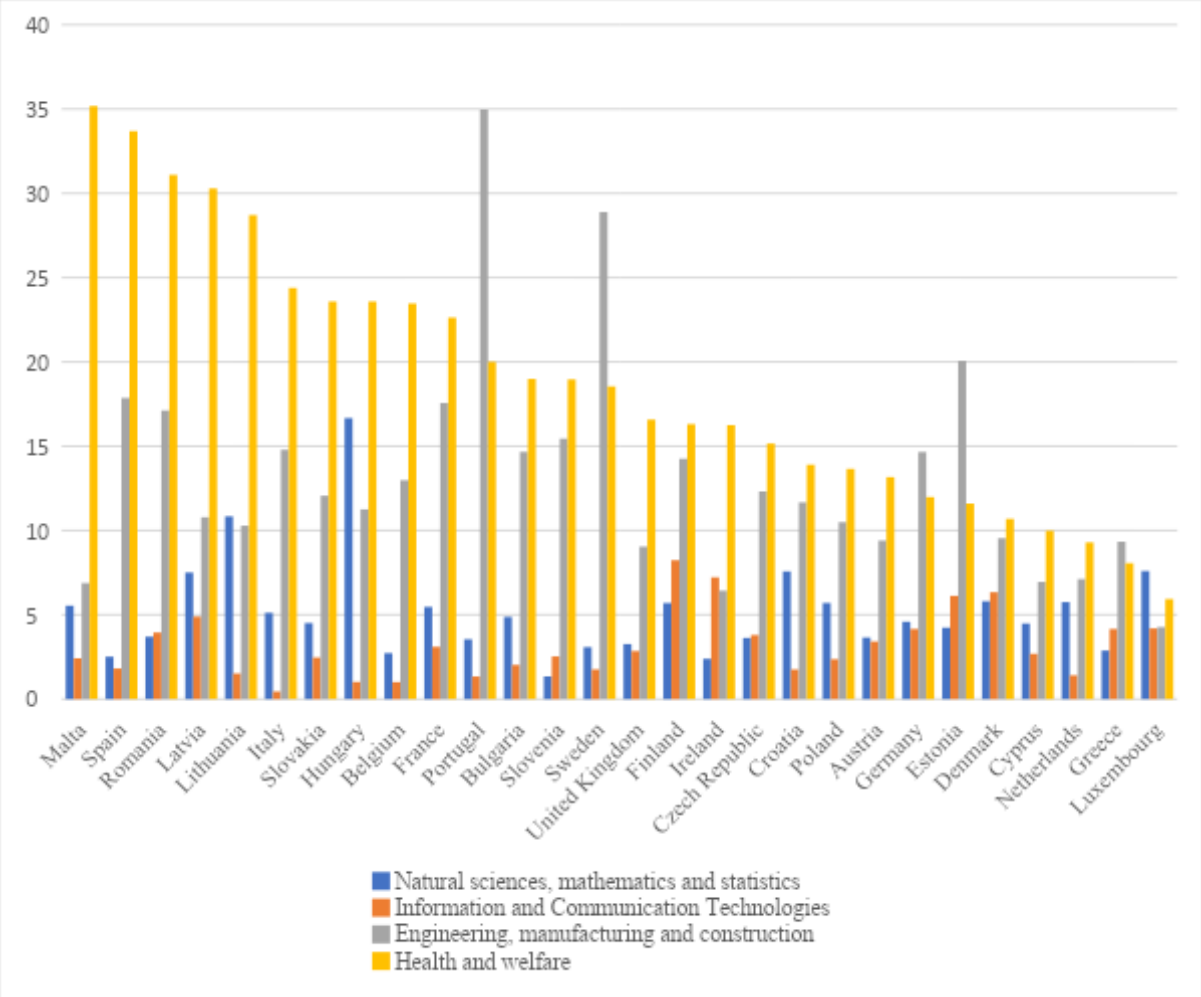
Figure 6: Distribution of enrolled students in Masters Programs in Greek HEIs among educational disciplines (2013-2016, head count)



source: Eurostat (educ_uoe_enrt03)

In this context, it is important to mention explicitly for selected fields of education, namely "Natural Sciences, Mathematics and Statistics", "Information and Communication Technologies", "Engineering, Manufacturing and Construction" and "Health and Welfare" that the share of Greek postgraduate students (as a percentage of total number of ISCED7 students per country) is rather low in all these fields, apart from that of "ICT", where the Greek performance (4.2%) brings Greece to the 8th place, following countries like Finland, Ireland, Denmark, Estonia, Latvia, Luxembourg and Germany (Figure 7). This element has three interesting readings: (a) national performance is relatively low in areas of education and science that are usually considered to be critical in enhancing the competitiveness and innovation potential of an economy; (b) one may again assume that this does not reflect necessarily the dynamics and structure of available human resources in the country, because as already mentioned, a significant number of young people immigrate to study abroad, (c) these data are definitely indicative of the structure of the Masters Programs in Greece and of the fact that most programs in the country deal with other areas of specialization, such as Business Administration.

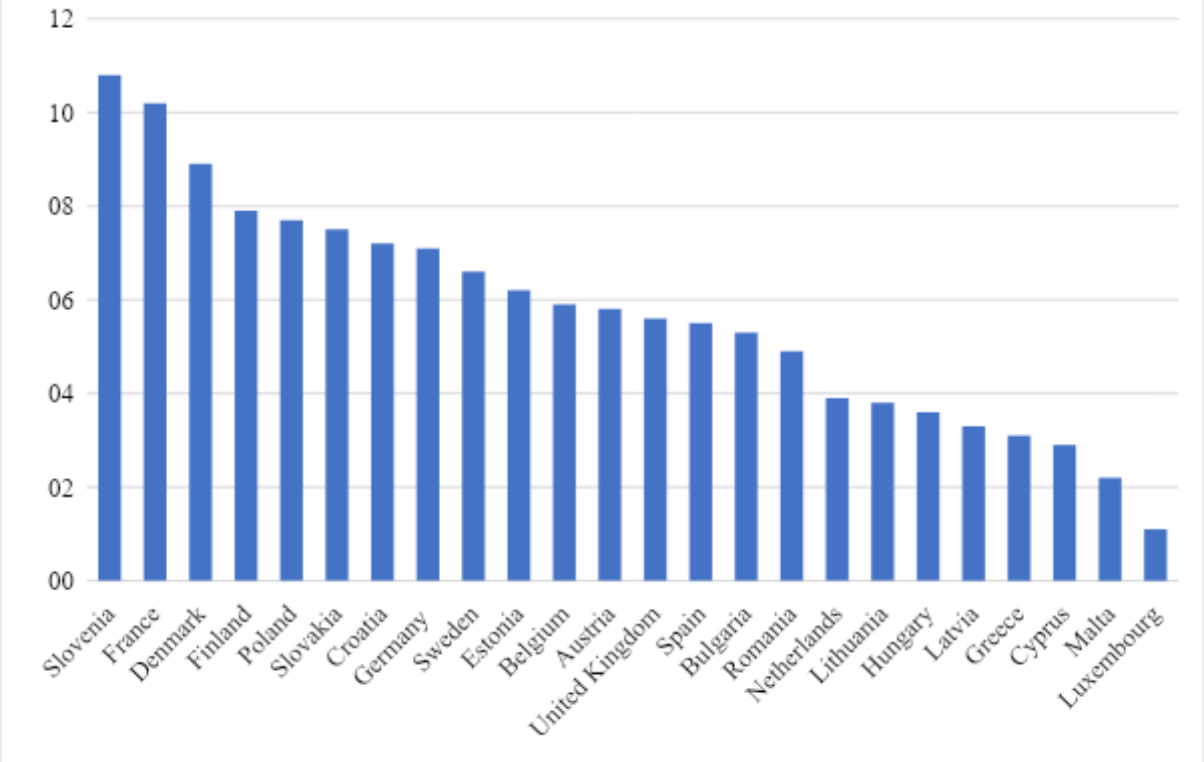
Figure 7: Cross-country comparison of shares of enrolled ISCED7 students in particular educational disciplines in EU (2016, as percentage of total Masters students)



source: elaborated data Eurostat (educ_uoe_enrt03)

Directly related to that, Figure 8 presents the share of postgraduate graduates per 1000 inhabitants in the so-called STEM areas (Science, Technology, Engineering and Mathematics) among EU member states. According to this indicator, the share of ISCED7 graduates from Greek HEIs is low, too, compared to countries such as Slovenia, France, Denmark and Finland. Conclusions seem to be similar to what already mentioned. On the whole, these data imply that although the postgraduate study system is growing, cross-country analysis reflects that it is still rather small.

Figure 8: Cross-country comparison of ISCED7 graduates in STEM educational disciplines (2016, per 1000 inhabitants)



source: Eurostat (educ_uoe_grad04)

The HEIs-Business cooperation in postgraduate study programs

According to the results of the survey that was conducted by the Laboratory of Industrial and Energy Economics, HEIs-Business collaboration in postgraduate studies in Greece is mainly expressed through collaboration in field study projects and dissertations, internship for MSc students, synergies in teaching, preparation of workshops and seminars directly related to MSc programs' and businesses' fields, launching of academic competitions organized by HEIs and businesses, in common, direct or indirect funding of educational programs, visits of students to enterprises, etc.

Although it was expected that cooperation is also about funding and covering part of MSc programs' operational costs, in most cases examined, this was not the case. Apart from some very specific cases of programs and businesses (mostly large ones that may be related -to a point- to the public sector) cooperation does not seem to deal with financial issues, such as providing stipendiums, donations, sponsorships, etc. However, provision of specific resources and consumables is also a form of collaboration. These are usually necessary for experimental and educational purposes, being in most cases sophisticated and specialized in some fields of education and science (e.g. software, equipment, specialized seminars, etc.).

Another dimension of cooperation between HEIs and businesses is enrollment of employers as postgraduate students in a larger scale on a synergistic and not an individual basis, in an effort of enterprises to improve their human capital, in terms of acquiring new knowledge and skills. This way of cooperation may be expressed through

subsidizing or fully paying tuition fees from enterprises. However, according to the primary data of the survey, it seems that this type of cooperation has been gradually limited and reduced, as evidenced by similar international surveys (OECD 2017), or due to crisis conditions that Greek firms faced during last decade that has contributed to significant reduction of firms' investment in activities, such as skills acquisition. In any case, it is promising that in the Greek case overcoming economic crisis and enterprises' return to economic normalcy may broaden again this kind of cooperation.

From their side, students do gain practical experience and may have a privileged access to labour market through internships. In this context, they regard this kind of synergies as an important part of their education, combining it also with professional networking with modern businesses and working environment. This parameter is important, but becomes crucial for a country like Greece that faces extremely high unemployment rates –especially among young people- after the 10-year long financial crisis.

In addition, financial crisis and hard funding conditions for HEIs have made them more open and receptive to partnerships with the business world that were not the common practice in previous decades, due to a completely different mindset that was embedded among academia and businesses, regarding their potential cooperation (EKT 2016). However, beyond the economic crisis and its effects, there have been specific cases of HEIs, MSc programs and enterprises that used to be and still remain very active in this field of activity. This element depends mostly on HEIs' and businesses traditions, activities, perceptions and finally attitude regarding HEIs-Business cooperation. In any case, there are still important differences and cleavages, as far as HEIs are concerned, in terms of their tradition, history and their postgraduate programs' character, defining existing collaboration with the business world, on the whole, as rather limited.

Moreover, other parameters that should be taken into account, when assessing HEIs-Business cooperation in postgraduate studies are indicatively the following: At *first*, the fact that the subject and content of a significant part of the MSc programs is today related to a field or subfield of economic science and business administration enables interconnections and synergies of HEIs with businesses. On the other hand, the return of economic and productive life to growth after almost a decade of deep recession makes business investment in human capital, and further cultivation of skills –for instance through investment in MSc programs- more feasible.

Conclusions

Linking higher education institutes to business and entrepreneurship is a hot issue of the discussion about transforming traditional productive structures towards knowledge economy. Within the broader area of HEIs-businesses collaboration, this article lays emphasis on a particular area of potential cooperation between HEIs and business, namely postgraduate studies. In Blenker's et al. words (2008), "*…the development from 'ivory tower' to the entrepreneurial university involves more than just the establishment of*

courses in entrepreneurship. Such courses rather seem to be the manifestation of more profound developments in university context. Changes in university context, however, seem to be followed by different approaches towards both what students should learn and how they should learn it" (Blenker et al., 2008: 54).

In Greece, both the postgraduate study system and collaborative culture between academia and the business sector did not have a long tradition. However, in several cases it appears that cooperation between HEIs and enterprises aspires to provide better education to students and their familiarization with entrepreneurship, labor market and business environment. In any case, systematic cooperation appears to be limited among specific HEIs and MSc programs at first place, namely to those MSc programs whose subject is closer to economics and business administration, while the vast share of enterprises –mainly small and medium-sized enterprises, SMEs- avoid partnership.

Thus, some of the weak points of the HEIs-Business cooperation in organizing and operating postgraduate study programs that hinder prospects of further collaboration deal first of all with the existing institutional framework on MSc studies that does not favor or enable relevant synergies, as well as with the unclear regulation, regarding the status of postgraduate students' internship, especially for private companies. Furthermore, enterprises' short-sighted strategy that does not support deep collaboration with other entities, such as HEIs, or the fact that the typical tertiary education system in Greece is limited to public HEIs, excluding private institutes that are probably more receptive to the business world may be regarded to be hurdles for further development of postgraduate studies and more specifically collaboration between academia and enterprises.

In any case, it seems that most programs do not have synergies with businesses, although their cognitive area and field of specialisation would allow it. Thus, one could probably expect that there is unexploited potential for more synergies and interaction between HEIs and enterprises.

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Outlier detection using One-Class Support Vector Machines with hyper-parameter adjustment to identify public opinion deviations

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Abstract

Outlier detection is a well-studied area that affects multiple domains, each having its own set of problems and challenges. One of them is the political and social sciences. In the last decade, social networks and digital platforms played a key role in circulating huge amount of information, thus influencing public opinion and in many cases impacting crucial political events such as the European elections or the British referendum. More recently, the wide and fast spread of information through the World Wide Web tended to shape public opinion and possibly guide it towards unpredicted results based on true or false information, thus creating "outliers". This growing flow of information has limited the ability of scientists to analyze social issues and political events fast and efficient in order to detect outlier's events. Although a human decision over a specific data set can be reliable, the main limitation falls in the timing of the decision. To alleviate this limitation researchers rely on computers (machines) to make different types of analysis. Machine Learning is a field that uses statistical techniques to give computers the ability to learn from data and perform classifications. In this paper, we present a novel outliers detection mechanism using a One-Class Support Vector Machine with adjusting hyper parameter selection, to detect possibly "anomalies" in Google searches around crucial political events in Europe in the last five years. The purpose of this approach is to provide political scientists and\or decision makers with a tool able to detect deviating user searches around key political periods in Europe, in order to identify the way public opinion is affected by fake news and guided by mainstream media.

Keywords
data analysis; outlier detection; ocsvm; public opinion deviations; hyper parameter adjustment.

Introduction

"In nature, we never see anything isolated but everything in connection with something else which is before it, beside it, under it and over it.", Johann Wolfgang von Goethe.

Since 2005 the amount of data transferring through the World Wide Web (WWW) has exponentially increased in comparison with the previous years. The free flow of information enabled individuals to be informed fast and efficiently for incidents happening all around the world. From natural disasters to political and social events, information transferred through WWW affects the way people perceive and understand the world around them. Although this enormous flow of information has been benefici al to the public, sometimes it is used to affect public opinion and steer it towards "decisions". [1] Nulty et al. analysed the way social media play an increasingly important role in political campaigns in order to spread their views and policies to the public. From the Greek economic crisis to the US elections and the British referendum, social media and

search engine platforms have been used to spread information; in some cases giving useful insight to political events and in others providing false information, thus generating inconsistencies on social behavior or so-called "outliers". In the world of Machine Learning an outlier [2] is a piece of data that deviates from the average dataset that is being under analysis. [3] Outliers detection is an important task in a variety of different domains such as electronic commerce, fraud detection, discovery of criminal activities, public opinion deviations and more.

In this paper, we present a novel outliers detection mechanism that aims at providing decision makers and political scientists with a tool which enable them to detect abnormal political and social events and how they have affected public opinion. In this context, we define public opinion deviation as the online user behavior measured within the scope of internet searches using Google search engine. To that end, with the use of [4] Google trends API we exported the number of user searches for the period 01/01/2015 to 10/03/2019 and using our novel outlier detection technique, we identified those moments in time when user behavior slightly shifted. We collected results for all 28 members of the European Union collectively and also independently for each member state. For the purpose of this research, an outlier is defined as the sudden change of user "searching behavior". We analyze the user behavior within each country independently and provide domain experts with information regarding the time period these deviations have occurred in order to connect them to a national European political/social incident.

We tackle the outliers detection as an unsupervised problem since the data exported from [4]Google trends API are unlabeled. To that end, we use One Class Support Vector Machine (OC-SVM) for the training and classification tasks of the algorithm with cross validation in order to identify the optimal hyper parameters settings.

In section 2, we present the state of the art around the methodology that this research has been built upon and similar empirical research. In section 3, we present the methodology that was used for this type of analysis and the model that was built to provide increasingly better result. Section 4 presents the dataset that was collected, statistics around the accuracy of the proposed model and the results of the outlier detection and how they are connected to real world events. In section 5, we present the conclusions and future work that is to be implemented for this particular problem.

Related Work

Outlier detection is an area that has been well studied for a number of years since it is problem that affects multiple domains. Each domain has its own set of problems and challenges; that is one of the reasons that outlier detection mechanisms tend to focus on domain specific solutions. [5] Simon and Rinehart developed an anomaly detection mechanism for aircraft engine measurements, [6] Lee et al. a mechanism for cloud data center temperatures and [7] Klerx et al. an ATM fraud detection system. Since these

approaches have been developed for specific cases, deploying them in different domains might not give back the expected results. The requirements for new computing systems change and evolve over the years, and so does the need for faster processing, analysis and detection of anomalies in Big data. Since the flow of information is continuously growing and there is no information over its size and volume, one needs to consider streaming outlier detection techniques in order to adjust the detection parameters. Streaming outlier detection methods are gaining more attention in the recent years and a lot of research has been done in that field [8, 9, 10, 11]. Most of the research on the field of outlier detection in data streams focus on using a time window to detect whether an incoming data point is anomalous or not. Some of the algorithms use the historical window to make the analysis; they compare the new point based on the historical data while other solutions compare the data points within the same time window as they can stored in memory. In order for a data point to be an outlier, it has to deviate above a specific threshold of the data distribution. [12] RS-Hash falls outside the sliding window concept and uses continuous counting in which case the data points are weighted by their recency.

Moreover,[13] Zhang et al. proposed a "semi-online" outlier detection method for high dimensional data streams, which requires preprocessing of a part of the data in order to detect and split the feature space in sub-spaces. One common aspect that all of this research follow is the notion that individual data points arrive in different times and the dimensionality of this new point is already known to the system. Support Vector Machines have been broadly used in order to tackle the outliers detection problem. [14] Wang et al. proposed a One-Class Support Vector Machine with a hyper parameter adjustment mechanism that generates high quality pseudo-outliers in order to identify the optimal hyper parameters. [15][16][17] A variety of OC-SVM solutions have been used in the domain of network trafficking in order to monitor all the events happening and moving through networks and identify those that are either malicious or generated from sensor failing. Outliers detection is a problem that tends to be domain specific as the meaning of an outlier from one domain to the next is modified. In the case of intrusion detection systems, an action could be labelled as outlying action if it is originated from malicious software or resulting from an unusual user behavior.

Since outliers detection is a domain specific problem, how does it translate with public opinion deviations in the fields of social and political sciences? [18] Since 1955 Katz and Lazarsfeld have defined the notion of *"opinion leaders"*. In their definition that is still relevant today, an *"opinion leader is not an individual that tends to influence his immediate environment"*, he rather influences small networks of random individuals. Such an entity is not defined as a public figure or a high prestige organization but is rather a simple individual who's status is shaped as highly informative and respected amongst its peers. [19] Watts and Dodds analysed the "opinion leader" concept and proved that it can create influence networks. [19] Combining the fields of economics, sociology, social psychology, mathematics, marketing and political sciences they created a model that proves there is

an increasing probability for an individual to make a choice B over a choice A, when the number of similar individuals are going to choose B. Considering [18] Katz and Lazarsfeld's definition with respect to [19] Watts and Dodds's, one can analyse the way influence networks of unknown origin meaning they are not verified for their validity can create a series of unusual social, political or economical events. Although a lot of research has been done by political scientists to identify public opinion deviations and the way public opinion is shaped around crucial social and political events, not a lot of work has combined Machine learning and outlier detection techniques in order to identify these deviations in a broader scale and based on data generated by users, therefore citizens. The main goal of this paper is to explore whether outliers detection techniques can be applied in order to monitor and identify "out of standard user searches" around specific moments in time and whether they are connected with crucial political or economical events in Europe.

Support Vector Machines

A Support Vector Machine (SVM) is a discriminative classifier which is defined by the separation of a generated hyperplane, and is used in a large number of research areas. [20] SVMs use the structure risk minimization principle by maximizing the margin between the separated hyperplane and the data and use kernels to extend to nonlinear cases. The most common approaches in Machine Learning use the SVM solution when trying to classify or make predictions about data points. SVMs use a Decision Boundary to make the distinction of different data points, therefore the classification. Sometimes SVMs give a more powerful and much cleaner way of learning complex non linear functions in respect to Neural Networks (NN). Furthermore, SVM is often used for supervised machine learning, meaning there is a known set of labelled data. One-Class SVM is an extension that is used to tackle the issue of not having labels in a data set. When trying to identify outliers in a sequence of data, one is trying to identify the label (outlier / inlier) and therefore OC-SVM is the optimal solution.

[21] Vector spaces defined by pairwise dissimilarities computed between objects offer an interesting way to bridge the gap between the structural and statistical approaches to pattern recognition. Dissimilarity measure is used to compare objects to a fixed set of representation objects. Such dissimilarity vectors construct a vector space, which is called the dissimilarity space. Traditional classifiers, designed for feature spaces, can be constructed in the dissimilarity space. In lots of cases SVM is used in order in order separate two different classes of data which can be separated linearly or not. For this distinction to take place SVM uses a hyperplane.

One Class SVM

Outlier detection techniques may vary from statistical-based, cluster-based, classification-based to spectral decomposition-based approaches. SVM based techniques allow the detection of outliers without a predefined statistical model, they "avoid" the curse of dimensionality and by maximizing the decision boundary of the classification they provide

a trustworthy solution. Using One-Class SVM one can make use of non-linear functions in order to map vectors of an original space to higher dimensions. This way the decision boundary of the normal data points is identified and those vectors falling outside of this boundary will be identified as anomalies (outliers). In general outliers detection is a problem that tends to be an unsupervised learning problem, since the analysed data set might not be labelled.

A key issue to the effectiveness and performances of OC-SVM solutions is the hypermeter selection. In a standard Gaussian kernel, the two parameters that need to be tuned carefully is the regularization coefficient and the kernel width. The [22] kernel width is used in order to find the optimal decision boundary around the data, while the regularization coefficient sets the upper limit of rejected target data, thus filtering noise. One of the [23] main issues of using a standard hyper-parameter scheme such as cross-validation in a streaming environment lies on the very definition of an outlier and the fact that aren't any outlying data to begin with.

OC-SVM is an extension of a binary SVM that was suggested by [22] Scholkopf et al. The target data belongs to a space X with a mapping φ(.) that maps target data from their original feature space to a new feature space H. The algorithm is looking for the optimal hyper-plane Π in H that has the largest distance to the origin and all mapped target data φ(xi) belong to the opposite side of the hyper-plane:'

- Π: , where w is a normal vector of Π

The primal optimization problem can be expressed as:

- , 0, 0, where v is the regulation coefficient and ξ the slack variable that determines the soft margin of the SVM.

The above problem can be solved using its dual form:

- , where , where K(= (ϕ(is the inner product of the mapped data and is the dual variable.

In most cases instead of using the mapping ϕ(x) one uses the Gaussian kernel directly:

-)

In order to identify ρ one can choose any that corresponds to (obtained by solving the dual optimization problem) when 0 and calculate ρ from:

- ρ =

Any with a corresponding is a support vector that will assist the decision boundary of the OCSVM. A new data point is an outlier if:

-

3.2 Methodology

In this study we intend to identify the optimal values for the regularization coefficient and

the kernel width in order to capture the optimal hyperplane for the analysed data set. In that regard we calculate the distance of a data point x_i from the decision boundary in order to determine whether there is a need for hyper parameter adjustment. If a data point x_i has a distance (x_i) that is too close or on the decision boundary, the retraining process is initiated. The notion of distance is dependent on the identified support vectors that exist in the buffered data.

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The aggregated values for all the EU 28 that have been analysed are stored in a buffer. Buffer is the physical and temporary memory of a computer, a cache that stores data. It is used as an intermediate point because it stores information while processing other information. The reason a buffer is needed in this setting lies on [24] Steinwart that stated that as the number of samples tends to be extremely big in volume (n -> ∞) the number of support vectors rises linearly with the sample size, thus creating performance challenges.

In order to identify the optimal hyperplane for a given data set D, we are adjusting the hyper parameters of the OC-SVM to avoid data variance problems. To that end, we make use of the [25, 26] Cross Validation methodology in order to identify the optimal settings and prove that the proposed solution will not be biased for that particular problem. For the implementation of the OC-SVM we use [27] version 0.21.2 of scikit-learn.
Data extraction consisted of an 11-dimensional space from [4] Google trends API. The algorithm is first trained upon the aggregated values that characterize the whole EU 28 Google searches which are also pushed into the buffer. We performed data normalization for each input data set D_i in the range of [0,1]. The normalized value for each data point is given by:

- $Norm\_val = (\frac{- Q1\ (x)}{Q3\ (x) - Q1\ (x)})$.

We split the normalized D_i in training () and test set (T_s). For the training of the OC-SVM we perform a Cross Validation in order to identify the optimal hyper parameters in regard with T_r and 50% of the normalized aggregated data existing in the buffer. We identify the optimal hyper parameters for this data set D_i and we apply the new setting in the SVM classifier. A data point x_t will be labelled as an outlier if:

- $f(x_t) = \sum_{ai>0} a_i K(x_t, x_j) - \rho < 0$

If data point x_t is labeled as an outlier, the algorithm identifies the point in time (week format) that this event has occurred and reports back the results after every iteration (every country) has been analysed.

Data Collection and Results

Data Collection

The purpose of this case study is to show that outliers detection techniques can be used in order to identify public opinion deviations and allow domain experts to link them with political, social or economic events that happened in Europe the last 4 years. Using [4] Google trends API, we extracted user searches conducted by regular citizens of the European Union. We collected the aggregated data representing the whole EU 28 and also data corresponding to individual countries. The time range for the extracted data varied from 01/01/2015 to 10/03/2019 in a weekly format.

[28] In his study Thomassen, identified that a large percentage of EU citizens do not feel like the EU institutions like the European Parliament or the Commission act on their best interest. Citizens with that perspective usually are not aware of the responsibilities and benefits of those institutions, thus generating a false opinion regarding their role. [29] Grabbe and Lehne analysed the way EU citizens feel disconnected from the EU due to the lack of knowledge regarding the benefits that EU provides. [30] Hix conducted an analysis for the United Kingdom citizens in which he pointed out that a large fraction of the population was unaware of the role EU institutions thus generating disconnection

between them and the EU in general. Furthermore, the economic crisis of [31] 2009, the immigration crisis of [32, 33] 2015 and the [33] terrorist attacks of 2015 in France, modified "radically" policies in national and European level and affected the perception of many people towards the EU. In our study we extracted searches that were under the scope of the following topics which reflect key areas of political and social discussion in the last four years: 1) Defense, 2) European Commission, 3) European Parliament, 4) European Council, 5) Immigration, 6) Security, 7) Terrorism, 8) Threat, 9) Economy.

Since outliers detection techniques vary from one domain to the other and they are dependent on the definition of an outlier. In this particular study, we define as an outlier the abnormal user behavior; in this setting a sudden modification of user Google searches (user behavior) in the context of a specific country would be flagged as an outlier and the returned result would be the point of time (in week format) when this event is triggered. The "abnormality" of this user behavior is contextual to the aggregated data collection of the EU28. These "out of standard user searches" can be linked to political, social or economical events that happened all around Europe. In some cases this "abnormal" user behavior takes place after a major social event has taken place, like the terrorist attack in Paris that triggered an enormous interest on the topic of terrorism and European defense programs, or it can lead up to an event like the Greek and British referendums.

Outlier Detection per country

We processed user searches under the aforementioned topics for every member of the European Union from 01/01/2015 to 10/03/2019. The average accuracy of our methodology is approximately 98,65%. In that perspective,, the accuracy of the model is specified as:

- Accuracy = (True Negatives + True Positives)/ (True Negatives+ True Positives + False Negatives + False Positives).

In the following table we present a small size of the detected "out of standard user searches" for France, Greece, Italy and the United Kingdom in order to show case some of the detected results.

Table 1.

Country	Outliers Number	Weeks
France	3	15/11/2015, 09/09/2018, 23/12/2018
Greece	4	08/02/2015, 05/07/2015, 15/11/2015, 20/03/2016
Italy	3	15/11/2015, 20/03/2016, 04/06/2017
United Kingdom	4	28/06/2015, 15/11/2015, 21/05/2017, 04/06/2017

The weeks that appeared to have "out of standard user searches" in France are shown in Table 1. [34] November of 2015 was marked by the terrorist attacks in Paris, costing the lives to many innocents. The next period that was spotted from the detection was the [35] September of 2018, a time with many political turbulences for President Emmanuel Macron and declared by *Le Monde* as "the week of crucial choices". The last identified result for France was December of 2018 which was marked mostly by [36] the yellow vest protesters in the whole country. This particular event does not represent the first yellow vest protest in the country, but rather the most important one which "sparked" a series of protests across the country for many months.

In Greece, the economic crisis of [37] February 2015, the [38] referendum on July of the same year, the [34] Paris terrorist attacks that occurred on November of 2015 and the [39] immigration crisis of 2016 were the detected events that also shaped the public opinion. Italy's results represent a very interesting case of detected events that were affected by other countries and also affecting European policy. The first result for Italy in Table 1, is connected with [34] the terrorist attacks in Paris, while the next two results are connected with the immigration crisis that started in 2016. [39] The week of 20/03/2016 seems to be repeated in both Greece and Italy, as they were two of the countries that had to respond to this humanitarian crisis. Although in Greece the results normalized after 2016 due to the EU- Turkey immigration deal, we notice that the Italian public opinion was affected again on [40] June 2017, due to the spike of immigration in the Italian shores that shaped the Italian politics and worsened tensions between the country and the EU.

In the United Kingdom the detected events occurred in regards with the [41] British referendum of 2015, [34] the Paris terrorist attacks of the same year, [42] the Manchester suicide bombing of 2017 and [43] the national elections of 2017.

From Table 1 we notice that some public deviations occur at the same time in multiple countries. The terrorist attacks in France of 2015 and the European immigration crisis of 2016 are two major social and political events that sparked public interest in these domains and modified user behavior in a European scale. One might argue that in the case of the immigration crisis, these public opinion deviations (in regards with past behavior) lead to changes in EU policy, but also allowed the right-wing parties gain visibility and electorate wins. The British referendum is another interesting case. An outcome that not many political scientists predicted, but by analyzing the Google searches from the United Kingdom, one can identify the high rise of user searches around EU institutions and the benefits of a United Kingdom within the European Union, thus making the argument that a large percentage of the public might have voted without having the required information and knowledge.

Although the "meaning" of these results can only be interpreted by domain experts (political and social scientists), the detection of "abnormal user behavior" around these

events that shaped the European public opinion can be considered as clear evidence that outlier detection techniques can be used in order to identify public opinion deviations and facilitate large scale research in the fields of political and social sciences.

Conclusions

The purpose of this case study is to assess the value of Machine Learning techniques in regards with political and social sciences. Its intention is to provide political scientists with a tool that can identify crucial political and social events that affect the European public opinion. For that reason, the analysis of this paper aimed to show that outliers detection techniques can be used in order to detect those points in time when public opinion is shifted due to an important event or it shapes a new "unpredicted" social outcome. In this research we used historical data between 01/01/2015 to 10/03/2019 in order to show that such a solution would benefit experts in the domain of political and social sciences to conduct large scale research and explain social phenomena. The future of this research aims to increase the capabilities of our current OC-SVM solution, by analyzing real-time events and classifying them as outliers or not. Moreover, be able to process data in high-dimensional spaces that are not known a-priori and allow domain experts to modify the decision boundary of the algorithm, thus generating results that best fit to their specific field of interest.

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Exploring corporate entrepreneurship in universities: the launch and development of a higher education program

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Abstract

This paper focuses on corporate entrepreneurship's managerial aspects and its implications in Universities. This article aims to contribute to a better understanding of corporate entrepreneurship in the public sector focusing on the mechanisms that determine the successful implementation of corporate entrepreneurship in a public service context, with specific reference to the role of trust, consensus building and operating mechanisms such as performance measurement systems. The study is an exploratory analysis of corporate entrepreneurship based on participatory ethnography. The final conceptual model is therefore rooted in literature at the crossroad between entrepreneurship and innovation, and entrepreneurship and public context. The results highlight differences between corporate entrepreneurship in a private and public setting, where entrepreneurship in a public setting is the result of systemic entrepreneurship where trust and consensus are core, and performance measurement systems and monitoring are fundamental tools for conflict resolution and consensus building. The implications this has for public service management can be seen in how the implementation and fostering of these strategies can lead to successful and innovative entrepreneurship.

Keywords: Corporate entrepreneurship – innovation – higher education programs - case study – participatory ethnography

Introduction

Entrepreneurship is directly linked to being an entrepreneur, undertaking innovations, or introducing new things in an effort to transform innovations into economic goods. This may result in the launch of new organizations or the restructuring of existing organizations. The act of starting a new business is commonly associated with entrepreneurship; however, in recent years, the term has been extensively used to identify entrepreneurial activities within social and political contexts. When innovative activities happen within the organizations, entrepreneurship is brought back to corporate entrepreneurship (or intrapreneurship), which is defined as the process used

to develop new businesses, products, services or processes inside of an existing organization (Shane 2003).

Corporate entrepreneurship in the public sector has also appeared in the entrepreneurship literature and studies exist that analysis antecedents, processes and consequences of innovation within public service organizations (Moon 1999; Zerbinati and Souitaris 2005; Meynhardt and Diefenbach 2012). Malik and Malhood (2012) have also developed a conceptual model of public sector corporate entrepreneurship specifically oriented to public higher education institutions, depicting its main antecedents and impacts on performance. Apart from this exception, most of the debate on the academic entrepreneurship still focuses on the "third mission" of higher education institutions outlining the relevance of spin-offs and of the link between research and the business sectors (Mars and Rios-Aguilar 2010; Hannon 2006).

The focus of this exploratory paper is on corporate entrepreneurship in public services and, the goal is specifically, to improve understanding of the processes and conditions that favour corporate entrepreneurship. The public context is characterized by a combination of sometimes conflicting economic, social and political goals. For this reason, this particular perspective requires the adoption of a multi-stakeholder perspective which can help to understand the mechanisms through which business ideas are launched and managed. Building on the above discussion, the present paper aims to address the following questions: How can corporate entrepreneurship be conceived, planned and executed in a public context? What are the mechanisms that can increase the probability of success of corporate entrepreneurship? How do they operate?

The paper is structured in three parts: the first is dedicated to setting the theoretical framework, the second to methodology and empirical analysis and the third and final presents the model, the discussion, and conclusions.

Corporate entrepreneurship and innovation in public sector

The definitions of corporate entrepreneurship have varied considerably over time (Kuratko & Audretsch, 2013). According to Morris and Kuratko (2002, p.11) corporate entrepreneurship is "a term used to describe entrepreneurial behaviour inside established mid-sized and large organizations". However, corporate entrepreneurship has also been described as "the process whereby an individual or a group creates a new venture within an existing organization, revitalizes and renews an organization, or innovates" (Dess et al. 1999). Corporate entrepreneurship embraces innovation as a key ingredient, which is measured in terms of frequency and relevance of product innovation (Covin and Slevin 1991) that can be aimed at introducing improvements, new production methods, procedures and technologies (Schollhammer 1981) and services (Knight 1997). Scholars agree on the important impact of new business creation on growth and profitability (Zahra, 1991; Zahra, Neubaum, & Huse, 2000). However, just a limited

portion of academic research is centred on how new businesses are created within established companies (Zahra et al 2006).

According to Drucker (1985), public service institutions such as government agencies, universities and schools, hospitals, and community and charitable institutions must be as entrepreneurial and innovative as any other enterprise. Entrepreneurship in the public sector has been defined as a "group desire in (an) organization to change, adapt, innovate and entertain risk" (Sadler, 2000, p. 29). In a broader perspective, Bernier and Hafsi (2007) suggest entrepreneurship in public sector to be a systemic phenomenon, which require high level of cooperation among different actors within the system (Bernier and Hafsi 2007). In this vein, Roberts (1992) has identified several categories of actors that can be jointly involved in one or more processes of entrepreneurship in public contexts, including policy entrepreneurs, bureaucratic entrepreneurs, executive entrepreneurs, and political entrepreneurs. More recently, Bartlett and Dibben (2002) suggest that there are two independent roles of a 'champion' and their 'sponsor' who are required to activate and entrepreneurial government. Furthermore, Shockley et al. (2002) have classified the different roles involved in public entrepreneurship as "policy", "political", "bureaucratic", or "administrative".

Most of the managerial literature have explored the antecedents of corporate identifying external environment and internal conditions as the main influencers of corporate entrepreneurship (Zahra 1993; Antoncic and Hisrich 2001; (Stevenson 1997; Sadler 2000; Quinn, 1985). Instead, only a limited number of publications in the field of public entrepreneurship have focused their attention on the nature, processes, incentives constraints and boundaries of entrepreneurship (Klein et al. 2010). The few existing studies highlight that it is more difficult to promote innovation in public service organizations (Louvel 2013; Kearney et al. 2010; Malik and Mahmood 2012; Morris and Jones 1999; Sadler, 2000; Markowski and Hall, 2007) due to the fact that here many external and internal forces - e.g. high regulation of external environment, limited competition, multiple and ambiguous goals, short-term budgets, risk-aversion, resource constraints, bureaucratic culture, complex decision processes, scarce autonomy - are likely to play a negative effect on entrepreneurial behaviour.

Finally, the studies on the consequences of entrepreneurial orientation highlight the positive effect it appears to have on economic and financial performance (Covin and Slevin 1991; Morris and Sexton 1996) and on companies' competitiveness and competitive advantage (Zhara and Covin 1995; Covin and Myles 1999), while within public sector corporate entrepreneurship is explored as a means of achieving effectiveness, flexibility and adaptability in a turbulent environment (Moon 1999; Kearney et al. 2010; Malik and Mahmood 2012; Caruana et al. 2002; Kearney et al. 2010).

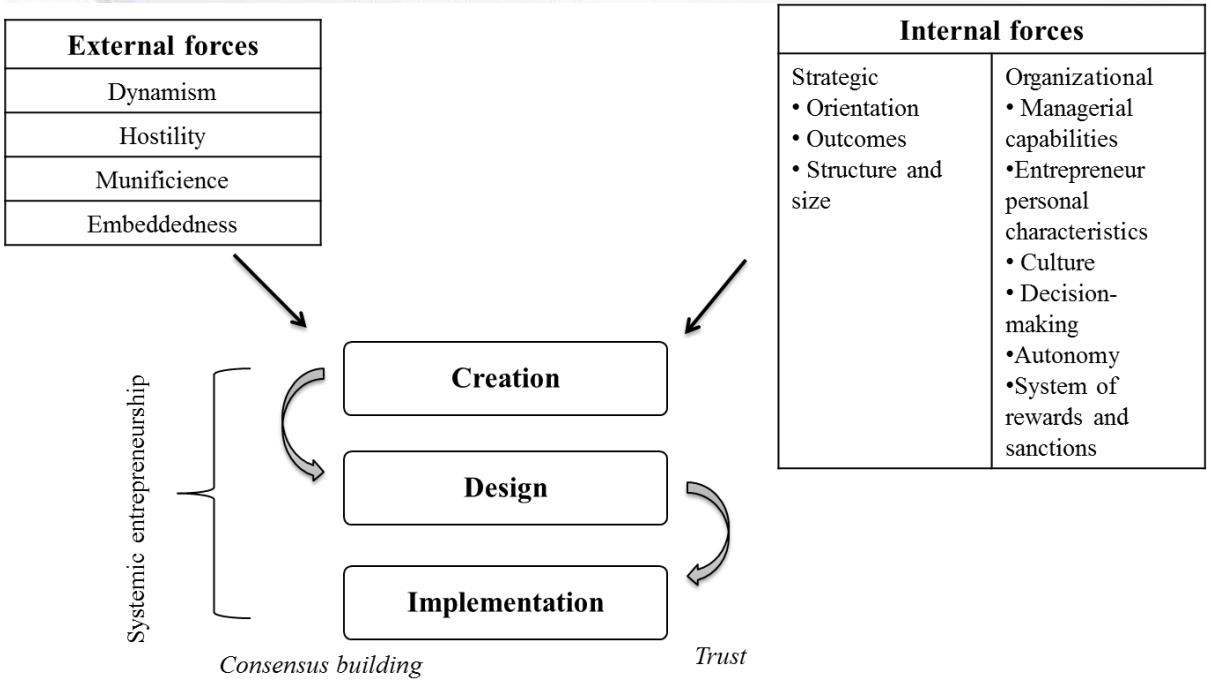
The role of trust and consensus building in corporate entrepreneurship

As some studies have highlighted, there are other conditions that can increase the risk level associated to a new venture/activity: conflict and tension within the organization (Dess et al. 2003), resistance to change on the part of some members of the organization (Bartlett and Dibben 2002), involved people's expectations and formal and informal behaviours (Nandram and Klandermans 1993) and differences in managers' beliefs (Weick 1995; Kotter 1995; Floyd and Lane 2000). As a consequence, the ability of an organization to build consensus with its stakeholders, is of fundamental importance (Swaab et al. 2002; Van Boven and Thompson 2003; Olekalns and Smith 2005). Thus, trust emerges as an effective tool to smooth uncertainty and conflict propensity and simultaneously manage interdependencies (McEvily et al., 2003).

Trust contributes to entrepreneurship in many ways (Kostas, 2007). Firstly, it has proved to be a catalyser of events and processes especially in the launch and development of a new business (Beckinsale et al., 2011; Lockett et al., 2008) and in the achievement of a common purpose and an alignment of perceptions, interpretations, evaluations, and goals (Nooteboom, 2002). In second place, trust can be conceived as a facilitator in the creation of a sustainable strategic advantage for firms (Fink, 2010) through the sharing of knowledge (Venkataraman, 1997), the decreasing of costs and risks of business transactions (Manolova et al., 2007; Puffer et al., 2010), the creation of a positive organizational climate that promotes productive interactions among organizational members (Nooteboom, 2002) and can also act as a governance mechanism (Eddleston et al., 2010) As suggested by Zhara et al. (2006), a reliance on trust can give established companies advantages at the various stages of the entrepreneurial process.

Literature distinguishes between low and high-trust environments (Welter, 2011) without exploring the process of creation and development of trust and sometimes considering trust as a by-product of social capital formation or network development (Audretsch et al., 2011; Jack et al., 2008; Mackinnon et al., 2004). This process is linked to the sharing of competencies, motivations and sense of fairness among organization members. (Bowey and Easton, 2007). Apart from the cited examples there is a substantial lack of focus on the mechanism of trust formation in entrepreneurship, probably because only few studies have analysed this process longitudinally (Welter and Alex, 2011) (Figure 1).

Fig.1 Conceptual model of public entrepreneurship and innovation



Source: authors' own elaboration

Empirical context

The research has been conducted at the University of Milan Bicocca (UNIMIB), a public university located in Milan, Italy. UNIMIB was founded in 1998 as a spin-off of the University of Milan. The focus of the analysis has been on the launch and development of a Graduate program in Service Science and Management (MAGES) in 2009; it was founded by three Departments in UNIMIB - Sociology, Law and Statistics – that were involved in research projects on Service Science and approaching the field from very different perspectives. The program was conceived by a non-sociologist member within the Department of Sociology, with a management background.

Method

A participatory ethnographic of MAGES was conducted for the present study. Each authors spent at more than one day a week doing participative observation from September 2008 to October 2009 (Le Compte and Schensul 1999). Fieldwork continued at a less intensive level through May 2012 and later between June 2012 and June 2013, and intensified again with the accession to managerial roles within the program by two of the three authors.

Data collection relied on a series of activities such as semi structured interviews with all relevant stakeholders (professors staff and managers), participation to formal and informal meetings, official documents analysis. All reports were shared with other participants and validated by them, in order to ensure the triangulation of data (Rothbauer, 2008).

The development and growth of a new program

An innovation process is characterized by an innovative idea conceived by a team of people who are later involved in the prototyping and implementation and management of this idea. There is a wide variety of actors involved in the process: researchers of the departments of Sociology, Law and Statistics specializing in Service Science, a research centre focusing on personal services like Centro di Ricerca per i Servizi alla Persona (Research Centre for Personal Services) - from now on named CRISP- and other researchers specializing in services and service science and not belonging to the aforementioned departments.

Creation

The incubator of the idea can be considered the research centre CRISP. Since its foundation in 1997, CRISP researchers were involved in an innovative research project focusing on services in healthcare and employment. In 2011, the head of management research at CRISP since 2005[2], was exposed to the experience of some US universities in the computing and engineering fields who were launching research centres and training programs on service science. The idea of interpreting the service science experience from a managerial perspective, and substituting engineering with management, led to the publishing of a book on service science, a unique experience within the Italian as well as the broader European context. The publication of the book was followed by the launch of a post experience program targeting service science industries' managers. This initiative was promoted within CRISP and launched by the head of management research who, after two successful editions, decided to launch a Master of Science in Service Science and Management (MAGES) as a spinoff of previous successful experience and taking advantage of the multidisciplinary competencies available both at CRISP and UNIMIB. The founder of MAGES carried out a benchmark analysis on the US universities which had already launched graduate programs focusing on Service Science. That experience could provide useful inspiration to MAGES, even if, since it was nested in completely different cultural contexts (information systems and engineering), it required adaptation. Based on this experience, the director of the Sociology Department strongly supported the idea of further developing this area of competencies by designing a training program. The immediate action was to create an alliance with the department of law that would allow for a minimization of the costs associated with the project. The Department of Statistics was also involved and assigned a role in promoting external institutional relations. This type of operation immediately required external legitimization, and can be considered as a relevant prerequisite to the development of internal consensus. For this reason, the initial goals and ideas of this innovative training program were tested with external stakeholders (representatives of services associations) who could share the project and

[2] In 2005-2006 the head on management research in CRISP created a group of people dedicated to the research on services. In 2008 he has launched the first "Corso di perfezionamento sui servizi" (Advanced program on service management).

support it with their professional credibility and reputation.

Design

The initial consensus acquired from external opinion leaders induced the Dean to delegate a small initial team with representatives from the Departments of Sociology, Law and Statistics to design the preliminary draft of the project and build consensus around it. The timing of the launch was adequate since a general reform of the university system was carried out at the time, and a deep restructuring of training programs was required but available resources were limited, particularly in a period when the Ministry of Education was trying to put through reform to rationalize the training offer, because of a reduction in financial resources.

Furthermore, the only way to make available the resources that were necessary for the launch of MAGES was to pool forces with other departments in order to compensate low resources with high resource availability. The Department of law was a net provider and because of that in this initial phase acquired managerial leadership within the process; the Department of Sociology continued to be a very important institutional actor, widely contributing in terms of competences. The end of this phase made the launch of this course public : on one side, some conflict was determined by a cultural aversion to innovation, an excessive bureaucratization that is typical of the university system and some sort of ideological prejudice. On the other side, some conflict and tension were caused by those players who perceived MAGES as a menace to the status quo and, namely, to existing graduate and undergraduate programs partially addressing the specificities of Science Management. Objections were linked to both a limited understanding of the project and an internal debate. The project was later approved by the three groups. Conflicts arose internally within each department.

Implementation

The conflict that followed the formal launch of the program was both ideological and political, and led to the original coordinator being removed from his position and replaced by a member from the department of law who was involved in the initial design team. The result of the conflict was the restructuring of the program, which redesigned the contents in order to rebalance the role of the three disciplines involved (1/3 sociology and organization, 1/3 law, 1/3 statistics). The conflict did not affect the positive climate of cooperation that had been created among the professors who were involved as lecturers in the program.

Progressing from idea generation and prototyping to implementation determined a change in the climate and attitude within UNIMIB. There was a perception that the launch of an education program could to some extent compete with existing programs offered by UNIMIB, and therefore a strong internal resistance to change and opposition to the new program was activated, particularly within the Department of Sociology where the

project was initially conceived and where the majority of competencies were available. Additional opposition came from other colleagues and departments not directly involved in the project. These internal oppositions determined a preliminary evolution of the approach: from a perspective focused on public and service to a perspective focused on service first and public later. The role of coordinator, which had been assigned to a member of the department of law lasted three years after the launch of the program. After two interim years, the initial proponent of the program was elected as coordinator of the program.

The success of MAGES was somehow a surprise, considering that it had limited visibility due to its being a "land of no man" because of its being interdisciplinary. This appeared to be at the same time a strength and a weakness: richness in terms of disciplines and competencies but also problems connected to the coordination of activities.

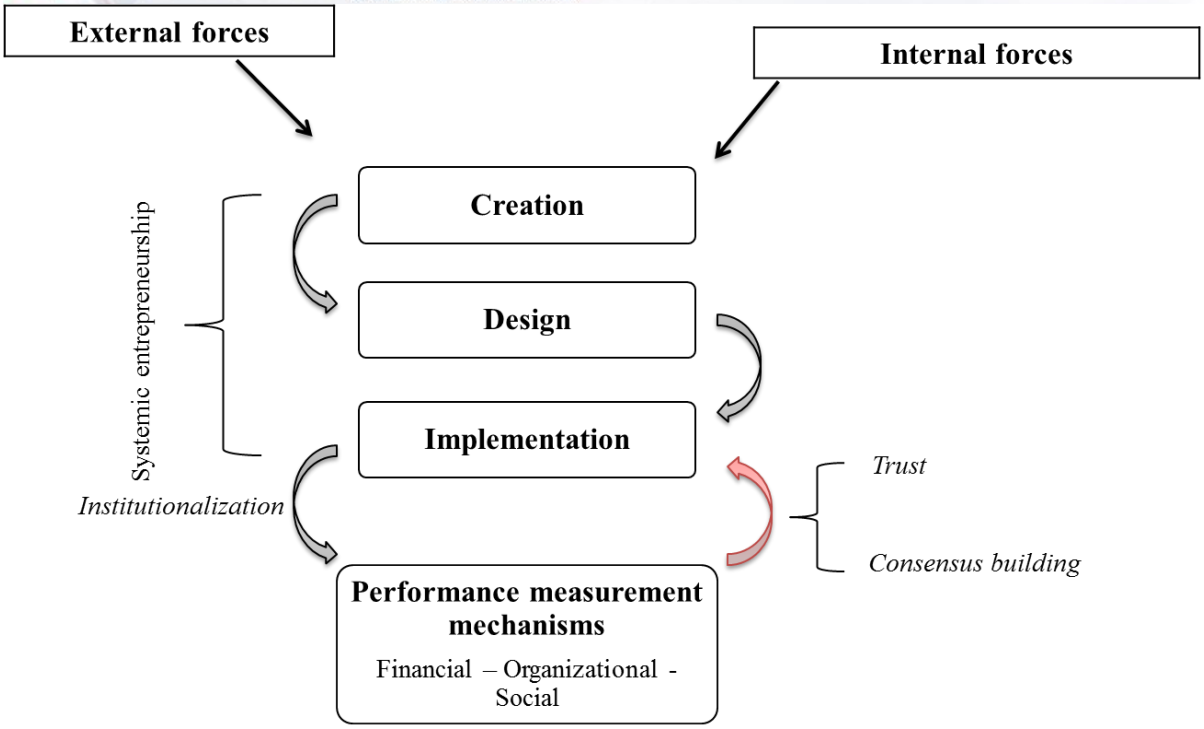
This generated a very high customer satisfaction. Another indirect way to measure this contradiction is analysis of the data regarding enrolment in terms of numbers and background of the students choosing MAGES. What emerges, as a very relevant variable, is the unclear brand identity of the program and therefore the contradicting image that the program conveys to potential participants. In the last year the new management team have tried to approach these issues, intervening on technological homogenization and identity building.

Many actions were implemented to improve communication. A budget was allocated to improve the visibility of the program and to improve internal communication. The most important of these actions was the launch of a website designed by an external agency and managed internally. The final step of this restructuring was the change of the title of the program from Scienze e Gestione dei Servizi" to "Management and Design of Services"

Discussion and conclusions

The literature review and the analysis of the case study allow us to outline a conceptual model (Figure 2) aimed at explaining the phenomenon of entrepreneurship within the public sector. Interestingly, all the previously described constraints apply fully to MAGES (Table 2).

Fig. 2 Conceptual model of corporate entrepreneurship in a public setting



Note: Authors' own elaboration

Tab. 2 Features which influence corporate entrepreneurship in MAGES university context.

External factors	
Dynamism	Stable and highly regulated environment which is opening new windows of opportunity (Gelmini Law)
Hostility	Due to a strong reduction in resources, competition among national and local players has become more intense as well as internal competition among departments for resource allocation
Munificence	Education is an highly regulated sector at the national level
Embeddedness	Broad spectrum of both internal and external actors involved
Internal factors	
Strategic orientation	Yearly based budget and weak attention to the third-mission of the University
Outcomes	Slow introduction of evaluation systems, however without a clear identification of goals
Structure and size	University of Milano Bicocca is classified as a large University in Italy

Managerial capabilities	Cultural distance between administrative and academic staff; academic staff often involved in administrative operations
Entrepreneur personal traits	Personal traits are dominant in determining the appearance of innovation and it's outcomes
Culture	No economic incentives and substantial risk-aversion within academic staff
Decision making	Variety of actors with different visions (e.g. different academic disciplines)
Autonomy	Strong political interference – either positive or negative - at all stages of the process
Systems of rewards and sanctions	Not based on merit and performance but rather on administrative criteria

The decision makers strategic orientation is based mainly on the short-term (eg. yearly based budget) and the goals are often not well defined and shared within the organization. The University of Milano Bicocca can also be classified as a medium public organization which is a favourable condition for the escalation of cultural distance between administrative staff and academic staff. Within the University context personal traits dominate in determining the initiation of innovation and its outcomes. It appears that most of the staff show substantial risk-aversion, in addition, there are a lack of concrete economic incentives aimed at promoting innovativeness and pro activity among both academic and administrative staff. Finally, the decision making process could be considered more complex than in other contexts due to the presence of a variety of actors with different specializations and visions while individual autonomy is limited by strong political interference at all stages of the process.

Evidence shows that in a public context collective action is fundamental in developing successful entrepreneurial initiatives. These results are in line with researches on public entrepreneurship (Roberts 1992; Bartlett and Dibben 2002; Bernier and Hafsi 2007) and academic entrepreneurship (Savenije and Rosmalen 1988) which highlight the importance of external and internal networks and the role of co-production in the entrepreneurial innovations. Indeed, entrepreneurship in the public sector seems to be a systemic, rather than an individual phenomenon, where different actors both internal and external to the organization play a different role in different ways co-operating for the creation, design and / or implementation of the new business idea. In MAGES the policy entrepreneur and the executive entrepreneur coincide in the figure of the professor in charge of management studies at CRISP, the bureaucratic entrepreneur was

the professor from the law department who was initially appointed as course director and finally, political entrepreneurs were the three directors of the departments involved who, at an early stage, decided to shelve the new program by creating a hidden restricted group of actors.

In MAGES some kind of internal conflict and tension was present in the entrepreneurial process and it could well be that such conflict is inevitable during innovation within public organizations (Bartlett and Dibben 2002). This was mainly due to resistance from organizational interests representing the status quo, and to the interdisciplinary nature of MAGES and the involvement of professors belonging to different departments opposing responsibilities and leading to internal role conflict, which was experienced by the professor in charge of management studies (the policy entrepreneur). As a consequence, consensus building and trust development between members within the organization play a critical role guaranteeing the long-term success of the entrepreneurial initiative. What is needed is a mechanism by which leaders can help their organizations develop the consensus and trust needed to support corporate entrepreneurship (Dess et al. 2003). Evidence shows that the evaluation process is very important to support the overall entrepreneurship process. Namely, service performance evaluation plays a double role: (1) the results of the evaluation serve to revise and reformulate the innovative proposal (in our case MAGES, a new graduate course), in order to increase the value of the initiative and its contribution in responding to the needs and concerns of different stakeholders; (2) the evaluation phase, and the subsequent reconfiguration of the new idea, serves to strengthen consensus among different actors, inside and outside the system, who participate and/or are interested in the specific entrepreneurial initiative.

The paper suggests that the topic of corporate entrepreneurship assumes a greater importance in the public sector and, specifically, in a higher education setting. Moreover, due to relevant differences between private and public organizations –concerning external environment, strategic orientation and organizational models – it seems more difficult for entrepreneurship to occur in public contexts. However, the case of MAGES has shown that certain conditions, an in particular the adoption of a systemic approach and the continuous search for internal and external consensus, make it possible to overcome internal and external barriers, and favour innovation even within public universities.

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Education and Entrepreneurship: The Role of Universities as Strategic Directors

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Abstract

"The future belongs to those who believe in the beauty of their dreams"

- Eleanor Roosevelt

Higher educational institutions (HEIs) are widely accepted as the instruments that help shape the future of today and the progress of tomorrow. In today's dynamic landscape of innovation and technology, we can see a competitive wave of entrepreneurship driven by the leaders of tomorrow. But can entrepreneurship be learned? And if so, how can higher educational institutions be involved vis-à-vis entrepreneurship education? First, this paper gives an overview of how entrepreneurship and entrepreneurship education are understood in pre- existing theory. The composition of an entrepreneurial mindset and attitude are explored, outlining intrinsic motivation, drive to succeed, and perseverance as key components of the mindset of intent. The significance of creativity is also discussed, in achieving entrepreneurial behaviors. It then looks at the role of universities as strategic directors in promoting entrepreneurship and supporting entrepreneurship education. The authors distinguish two approaches of HEI direction to do so: explicit direction and implicit direction. Finally, a real-life, practical, and current example is brought forward: the Wharton Entrepreneurship Club, at the Wharton School of Business, University of Pennsylvania, as to showcase the HEI's implicit and effective support of MBA students' entrepreneurial mindset and behaviors. Insight from the Co- President of the Wharton Entrepreneurship Club lends invaluable on-the-ground, student- entrepreneur perspectives. The authors conclude that entrepreneurial education must not consist necessarily of a linear didactic relationship from faculty to student, and with the implicit support of the HEI, students' self-engagement with entrepreneurship education is entrepreneurial in itself.

Keywords: Entrepreneurship, Entrepreneurship Education, Mindset of Intent, Implicit Direction,UPenn

Introduction

Higher educational institutions (HEIs) are widely accepted as the instruments that help shape the future of today and the progress of tomorrow. They are the ones responsible for the preparations required for young people to identify and address challenges and opportunities. Stimulating and inspiring students to strive for and grasp these opportunities should be promoted throughout modern day curricula; creative problem solving skills, leadership abilities, experience working on effective teams, and adaptability in an ever-changing environment. These particular skills are considered cornerstones of entrepreneurship education (Seelig, 2017). Is the traditional classroom approach the only one available to be applied in entrepreneurship education? In today's dynamic and innovative landscape, the importance of entrepreneurship is more than evident, and it is also widely accepted that HEIs should play a role in teaching students how to become entrepreneurs. It is understandable that they *should*, but the question is *how.* How does one learn to become an entrepreneur?

In this paper, we begin with an exploration of the definitions of "entrepreneurship" and the corresponding education. We discuss the theory behind mindset and attitude in learning entrepreneurship. The role of creativity vis-à-vis entrepreneurship is also explored. We then look at the role of HEIs as strategic directors, promoting ways in which entrepreneurship can be learned: through the shaping, inspiration, and ultimately, the attainment of a certain mindset and attitude. We distinguish between two types of HEI direction: explicit direction and implicit direction, and we comment on ways in which an HEI can be an implicit strategic director, through the provision of a supportive platform, thereby allowing students to challenge themselves entrepreneurially. As with all social science, the impact of a study lies in its ability to be practically applied. The Wharton Entrepreneurship Club of the University of Pennsylvania will therefore be showcased, as to exhibit ways in which a student-run organization aims to inspire and foster the aforementioned cornerstones of entrepreneurship education in its student- members. The paper concludes that the role of universities vis-à-vis entrepreneurship education is incredibly significant. Their specific potential as implicit strategic directors in entrepreneurship education is however overlooked, as there is much untapped opportunity for an HEI to support its students in this way, with little effort and no extra funding. In this way, HEIs are able to promote and inspire the mindset to achieve desired behaviors, a creative attitude, and offer a platform to their students to realize their entrepreneurial intentions. Academic efforts in entrepreneurship education are critical, but paired with an implicit direction, HEIs can effectively assist students in their growth from young minds into entrepreneurs.

Learning Entrepreneurship

While there are several understandings surrounding the concept of entrepreneurship (as touched upon in the study of Mayhew et al. (2012), this paper focuses less on the definition of entrepreneurship regardless of its type, and more on how an HEI can promote and inspire students to become entrepreneurs in any capacity within a broad understanding of the term. The focus is on entrepreneurship as an abstract concept with which students can interact, under the direction of HEIs. Throughout the paper, we maintain a broad definition of "entrepreneurship", unconnected to any one industry or specialization, contrasted with how much of the literature chooses to engage with the concept. Drawing from Shane's entrepreneurship literature review (2003), we purposefully use an abstract and broad definition: "identifying opportunities...taking advantage of the identified opportunity, developing a strategy, and developing the opportunity" (Mayhew et al., 2012, p. 834), so as to delve into a wider understanding of entrepreneurship, applicable in a variety of educational environments. Below, we discuss the concept of entrepreneurship education. Later in the paper, we will touch upon and differentiate between explicit and implicit direction of the HEI, and its role vis-à-vis the students. In our attempt to contribute to the pre-existing research, we seek to support an approach that is broad enough to avoid becoming prematurely outdated, but relevant enough to entrepreneurship practice, insofar that it can identify and isolate a mindset that will promote and cultivate entrepreneurial thinking. We therefore explore theory on the interaction between mindset and behavior such as Ajzen's "Theory of Planned Behavior" (1991), and research on attitudes that help to cultivate student-centric skills that allow them to engage with a variety of environments and self-mobilize to undertake entrepreneurial initiatives. Such discussion can be found in Rasmussen and Sørheim's "action-based entrepreneurship education" (2006), Morris and Liguori's "entrepreneurial mindset" research (2016), and Heuer and Kolvereid's study on shaping attitudes (2014), and more.

With the aforementioned, broad definition of entrepreneurship in mind, teaching entrepreneurship equips young people to learn to identify and seize opportunities around them. These skills are critical not only for organizations they will join after university, but also for the progress of the individual and for that of society. The teaching of entrepreneurship has come to be understood as "entrepreneurship education". There is a widely accepted school of thought within this type of education, which agrees that "mindset and skill set" must be developed in order to engage in "various entrepreneurial contexts... although it [is] unclear exactly what this skill set or mindset actually are" (Neck and Corbett, 2018, p.20). Entrepreneurship education aims to develop certain behaviors that are deemed necessary for innovation, involving creative thinking and distancing oneself from standardized approaches to education (Mayhew et al, 2012, p. 833). The discussion in this paper uses as an analytical foundation, Ajzen's "Theory of Planned Behavior" (1991), which posits that behavior is ultimately a function of intention, and that individuals have volitional control over their behaviors. Heuer and Kolvereid explore the application of Theory of Planned Behavior in relation to entrepreneurship education

and in their empirical results, find "a strong link between attitude, perceived behavioral control and entrepreneurial intention" (Heuer and Kolvereid, 2014, p. 317). This means that those (e.g. students) who intend to perform a behavior are more likely to perform the behavior and that the said intention is influenced by attitude. Therefore, in order to learn entrepreneurship, the mindset of intent that precedes an effective entrepreneurial behavior is a key step in attaining the desired behaviors thereafter (Jabeen et al. 2016, p. 151). Mindset of intent within this paper is understood as intrinsic motivation, drive to succeed, and persevering attitude.

Below, we explore the concept of entrepreneurial education, and shed light on some of the different ways in which it can be understood. As Morris and Liguori (2016) point out, "the emergence of entrepreneurship has occurred so rapidly that it has outpaced our understanding of what should be taught by entrepreneurship educators, how it should be taught, and how outcomes should be assessed" (Morris and Liguori, 2016, p. 2). It is widely agreed that the objective of entrepreneurship education should be the teaching and learning of entrepreneurship (Neck and Corbett, 2018, p.9). This might sound like a redundant statement, but it nods at the inherent problem of defining entrepreneurship and how to engage with its teaching approach.

There are many takes on how to organize entrepreneurship education, but as Morris and Liguori aptly write, "entrepreneurship education is not static. It represents a moving target, with continuous additions to both the depth and breadth of the content of the discipline" (Morris and Liguori, 2016, p. 3). They attempt to outline three general areas of emphasis that seem to fall in line with entrepreneurship education practices: business basics, entrepreneurship basics, entrepreneurial mindset. Much of the research on this topic remains broad, attempting to explain a dynamic concept such as entrepreneurship education and put it in a static box. For example, Béchard and Grégoire (2005) review seven different approaches to entrepreneurial education in HEIs. This particular work attempts to outline a methodology that has the potential to boost entrepreneurial spirit among students. The strength in such dynamic methodologies is that they are relevant to a variety of environments and are able to adapt along with the real-life practice and understanding of entrepreneurship. The danger by contrast, of broad-stroke theoretical research attempting to explain dynamic concepts, is becoming prematurely outdated and irrelevant.

The connection between creativity and entrepreneurial intentions is also examined in the literature. Many scholars argue that creativity is strongly associated with entrepreneurial intentions, and that future research should draw from the "rich literature on creativity in psychology and other social sciences" (Heuer and Kolvereid, 2014, p. 317) to further understand the impact of creativity. Research on the intersection between creativity, intentions, and entrepreneurship education shows that creativity influences entrepreneurial behaviors positively, "in terms of innovation, product development, marketing" (Heuer and Kolvereid, 2014, p. 317). It can be deduced therefore that the

promotion of creative thinking is significant, such that "integrating creativity approaches and skills into entrepreneurship education, students will gain new and much-needed skills to interact with the dynamic marketplace of today" (Heuer and Kolvereid, 2014, p. 317). Using regression analyses, Hamidi et al. (2008) conducted a study exploring the relationship between creativity of graduate students and entrepreneurial intentions. They concluded that creativity is positively associated with these intentions, and should be "considered in theoretical models" (Hamidi et al, 2008, 318). With these findings, they discussed the role of entrepreneurship education for developing intentions as well as realizing entrepreneurship. While the study did not define exactly what it means to realize entrepreneurship, the scholars isolated "team working, divergent thinking, and interpersonal communication" (Hamidi et al, 2008, 318) as focal points for entrepreneurship education to promote creativity, and as a result, entrepreneurship realization. The next section explores the role of the HEI in entrepreneurship education, as an explicit but also as an implicit director, in promoting and supporting its students' entrepreneurial mindsets.

Role of the Higher Education Institute (HEI)

The role of the HEI vis-à-vis teaching entrepreneurship is a much-discussed topic. There exist various opinions on the extent an HEI should be involved, as well as on the necessity of an HEI involvement. For example, one of the arguments is that a 'learning by doing' approach is ultimately the most effective in achieving innovative initiatives. This approach argues that an HEI's involvement is superfluous as learning entrepreneurship is something that happens outside the traditional educational environment. The measurement of entrepreneurship education however, is very difficult, but studies have made attempts to depict correlations. Kolvereid and Moen (1997) find that among students within a traditional educational environment, "graduates with an entrepreneurship major were more likely to start new businesses and have stronger entrepreneurial intentions than other graduates" (Kolvereid and Moen, 1997, p. 154). The study showed that entrepreneurship education programs at universities can significantly change the intentions of participants; given the repeated (and to an extent, theoretical) practice that a student gets within this educational platform, he/she would be much more competent in eventually running a personal business, or practically assisting other entrepreneurs. The assumption here is that students who undertake any forms of entrepreneurship education will exhibit heightened entrepreneurial intentions as a result. While there are outlier entrepreneurs who did not follow the traditional educational environment path and have shown significant personal success, these individuals tend to be considered exceptional cases. More and more, HEIs are adhering to the school of thought that places importance on entrepreneurship education, which can be seen in the rapid growth of such academic programs in universities. The significance and impact potential of these programs is becoming more accepted, but there seems to be no "common framework or agreed best practice for how to educate entrepreneurs" (Rasmussen and Sørheim, 2006, p. 186). This would be a valuable avenue for further research, transcending theoretical discussions and models as we have

presented thus far, in order to isolate certain practical activities and attempt to measure resulting impacts on students.

Within this paper, we do not attempt to find correlations between a certain educational activity or initiative, nor measure the entrepreneurial impact. Instead, we distinguish two separate ways in which a HEI can direct entrepreneurship education: explicit direction and implicit direction (Katopodis and Papageorgiou, personal research). Much of the literature on entrepreneurship education focuses on an HEI's explicit educational methods vis-à-vis its students, such as offering certain classes, curricula, or didactic methods, and passing them on to students by faculty. These methods generally follow a typical classroom approach, i.e. professor- to-student knowledge transfer. And while there are many widely accepted arguments that support explicit education, and deem it important in passing on key foundations of knowledge, we highlight the significance and impact potential of an HEI's implicit educational direction in challenging students to interact with entrepreneurship education.

The capacity for implicit education lies in an HEI's provision of a platform wherein students can be inspired and supported to think entrepreneurially, where they can mobilize themselves to further interact with entrepreneurship, and where they can learn from their mistakes in an educational, no-risk environment. Providing this platform can be very straightforward, and much of the motivation to engage with entrepreneurship education must come from the students themselves, but this in itself - finding intrinsic motivation, drive, and perseverance - is characteristic of entrepreneurship too. An HEI can direct entrepreneurship education implicitly by providing access to facilities, faculty supervision, or even simply access to specific information needed by students. The creation and provision of this platform inherently allows students to continue to activate the entrepreneurial mindset that we have outlined above, and stimulate their creativity, both specific concepts that are shown to be correlated with entrepreneurial behaviors. Revisiting Shane's definition of entrepreneurship, the existence of an HEI's platform challenges students to "identify opportunities...take advantage of the identified opportunity, develop a strategy, and develop the opportunity" (Mayhew, 2012, p. 834). The provision of this platform is in itself an invitation to think and act entrepreneurially. We argue that entrepreneurship education need not only come from the HEI; the students, with the strategic support of the HEI, can mobilize and inspire their own entrepreneurship education.

Thus far, our interaction with the concept of entrepreneurship and entrepreneurship education has been largely theoretical. Entrepreneurship, though, is a practical matter. In order to aid the reader in understanding and simultaneously to explore practical, real-life, and current examples of an HEI's implicit entrepreneurship education, we turned to the Wharton School of Business, at the University of Pennsylvania (UPenn), in Philadelphia, USA. This HEI is home to many extracurricular clubs,[3] individually dealing

Having said this, we recognize that there are many possible HEIs' clubs to showcase. The particular club was

with a variety of disciplines, concentrations, and interests. The club on which we chose to focus is called the "Wharton Entrepreneurship Club" (E-Club), an MBA-student-run community that functions within the implicit direction of the HEI, aiming to inspire, connect, and organize young entrepreneurs. In this case, UPenn offers facilities for club meetings and events, the prestige of its brand in furthering initiatives and networks, and some faculty supervision. To the fullest extent though, the work in organization and execution of the club and its initiatives is student-run, exemplifying the aforementioned entrepreneurial mindset: intrinsic motivation, drive to succeed, persevering attitude.

To explore the Wharton E-Club, and learn about its function vis-à-vis entrepreneurship education at UPenn, we interviewed Daniel Chui, the Co-President of the E-Club, and an MBA candidate at The Wharton School of Business. In our semi-structured interview with Daniel, we learned of the efforts of the E-Club, Daniel's views on entrepreneurship education, and his perception of UPenn as a strategic director within this framework. Daniel's opinions provide on- the-ground understandings of a student-entrepreneur, and explore the role of the HEI vis-à-vis its students.

In an attempt to provide real-life applications to our theoretical exploration in this paper, we asked Daniel about the meaning of entrepreneurship, and what it means to be an entrepreneur. He mentioned the concept of creation, and establishing "a mindset of wanting to start something and going ahead and doing it" (Katopodis and Papageorgiou, 2019). This reminded us of the concepts of intrinsic motivation, drive, and perseverance, the outlined entrepreneurial mindset of intent. While Daniel had never heard of the term "entrepreneurship education", he maintained that the teaching of entrepreneurship has "become a priority" at UPenn, and more specifically at Wharton - greatly because of the feedback of demand from students. Classes are offered specifically on entrepreneurship, some introductory level, some more advanced. Daniel was aware of the school of thought that entrepreneurship should not be taught in HEIs, and while he understands that the effectiveness of learning entrepreneurship varies from person to person, he disagrees: "there is a big role for the university in entrepreneurship education...the university should stay current, offer practical but rigorous classes...and provide resources" (Katopodis and Papageorgiou, 2019). Daniel considers the club supplementary to the academic curricula taught at UPenn. Contrasting the rigorous environment of the classroom, the E-Club's casual setting allows students to engage, explore, and learn about the topic, driven by their own motivation and creativity.

The efforts of the E-Club encompass promotions and executions of a variety of events and initiatives. For example, lunchtime sessions are organized with founders of companies and other relevant entrepreneur speakers. The Club invites these representatives to the HEI campus, connecting them with members, Penn groups, and

chosen as the University of Pennsylvania is the alma mater of one of the authors and therefore, there was heightened access to primary information regarding the club and its larger impact within its environment.

other students who collaborate with the E- Club. "Pitch Nights" are held, where members of the club can "pitch" an idea, much like one would in a growing business or start-up meeting. This idea is supplemented with a strategy or a business model, and the rest of the club then gives feedback. This is an example of an educational, no-risk environment, in which a student can challenge him/herself in engaging with entrepreneurial and creative thinking. The student can learn from his/her mistakes as perceived and supported by the club. Emphasis is given on hearing others' stories, interacting with them, and drawing inspiration from others' experiences. Trips to networking expos, or entrepreneurship conferences are also organized, including visits to start-ups around the country.

The model of the E-Club showcases the entrepreneurial mindset in action, in the formation and maintenance of this extracurricular club. The role of the HEI is one of implicit direction: there is little involvement from university staff or representatives, save for minor and intermittent consultation with supervisors. UPenn acts as a strategic, but implicit director in this case, requiring little effort and no extra funding to support the students' E-Club. While the nuances of each situation and each case are vastly different, a general obstacle to HEI's efforts across geographies is allotment of funding for extracurricular activities. The model of the E-Club represents an extracurricular initiative that is mutually beneficial to the HEI in this scenario.

Students are able to apply what is learned in the classroom and engage and inspire each other to grow entrepreneurially. As Kailer (2009) outlines, "boosting the entrepreneurial skills [of students] by exchanging ideas, information and experience" (Kailer, 2009, p. 141), the E-Club posits much emphasis on the interpersonal learning of entrepreneurship, a model which is easily applicable in environments where there is intrinsic student motivation for this topic. The role of the HEI is to promote the skills of the entrepreneurial mindset to its students, but the applied practice is achievable without its explicit involvement. Entrepreneurship education allows young people to "see the world as opportunity rich, and to craft the lives they dream to live" (Seelig, 2017). As shown above, achieving implicit entrepreneurship education need not be complicated, and can be attainable for various HEIs in different regions.

Conclusion

The dynamic nature of entrepreneurship makes it a difficult subject to interact with through theoretical research. In this paper, we attempted to minimize interactions that would lead to prematurely outdated and thus, ultimately irrelevant conclusions. Through our research on theories of mindset of intent, and attitudes promoting entrepreneurial behavior, we discovered that it is an effective approach to cultivate versatile, student-centric skills such as intrinsic motivation, drive to succeed, and perseverance. These allow students to engage with a variety of environments, and equip them with the tools required to self-mobilize in undertaking entrepreneurial efforts. As a result, the skills are

adaptable, and can be applied in the dynamic landscape of entrepreneurship. The role therefore, of the HEI, is to promote the cultivation of these skills, and to provide a platform through which students can engage with entrepreneurship with their own agency, challenging themselves and each other to think creatively, innovatively, and entrepreneurially. The case study of the E-Club exemplified perfectly the strategic role of the University of Pennsylvania, in its position as an implicit director for the MBA students. The provision of facilities and network, as well as the access to faculty consultation if required, creates for the club a relaxed but productive environment, within which they continue to learn and grow outside of the traditional classroom setting. We therefore conclude that entrepreneurial education must not consist necessarily of a linear, didactic relationship from faculty to student. Students' self-engagement with entrepreneurial education is in itself the practice of entrepreneurial behavior, and it is effective for universities to support this.

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Vulnerable Students and their learning needs: a preliminary note

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Introduction

Higher education (HE) across Europe has been subject to significant changes over recent years. Key are variations in fee regimes (and the extent of government support); differentiation in the types of institutions providing HE; and a general upsurge in student numbers (massification) combined with moves towards 'widening participation', targeting vulnerable students (Padilla-Carmona et al., 2017). In a nutshell, vulnerable students are those underrepresented in HE – and whose participation may be limited by structural factors. They involve first generation students (first in family to participate in HE), mature students, students with disabilities, students with special learning difficulties, single parents, students from low-income families, and minority ethnic groups (Crosling et al., 2009). If Europe is to compete internationally, opportunities for widening participation in HE must be accelerated (Osborne, 2003).

While vulnerability is extensively used as a conceptual idea in many fields of human activities, such as in social and natural disaster management, psychology, medicine, its use in the field of education, particularly in higher education (HE), is severely under-conceptualized. Yet, vulnerable university students affront varying forms of learning difficulties to both external as well as internal factors, which could have negative consequences for fulfilling their academic path. Incidences of unsatisfactory levels of student performance, and completion rates and repetition point out a prevalence of student vulnerabilities in the field (Maringe & Sing, 2014). Undoubtedly, there is a large corpus of research on the causes and consequences of such wastage (Pierrakeas et al., 2004; Vergidis & Panagiotakopoulos, 2002).

Nevertheless, it can be claimed that a large proportion of this research draws evidence from secondary data to arrive at conclusions about the nature, extent, causes and effects of the wastage phenomenon in HE and does not focus on ways of teaching that can affect student performance and consequently increase student satisfaction. There thus exists little to none, as far as we know, evidence which demonstrates which teaching style vulnerable students in universities need and feel comfortable with. Same stands for the mapping of the learning needs of this specific group. Thus, the voices of the vulnerable have not been adequately captured in existing research.

To be more specific, as regards the Greek HE context, increasing the capacity of Higher Education Institutions (HEIs) to address vulnerable students' learning needs has been deemed essential due to the financial crisis. The voices of these vulnerable students have not been sufficiently and effectively captured in existing research and can be best sought

through quantitative research which targets the very vulnerable students experiencing such learning difficulties. Thus, this chapter is framed within the conceptual theory of vulnerability and complements the analysis with descriptive regression models to describe the teaching styles vulnerable students find more adequate to their learning needs and to explore their learning challenges related to the course delivery.

The chapter begins by exploring the concept of vulnerability, drawing from the extant literature in other fields, and identifying critical approaches that have been used in these fields, which can potentially be used in HE. Based on the theoretical frameworks for exploring vulnerability, the chapter presents some preliminary results concerning the teaching style that vulnerable students prefer. The chapter ends with emerging findings and early implications for strengthening processes, which might help in interrogating student vulnerabilities in HE.

Literature Review

This research was influenced by the theory of Social Justice Knowledge which relies on five conceptual and pedagogical philosophies which include: democratic education, critical pedagogy, multicultural education, culturally responsive education, and social justice education (Mayne, 2019).

Re-envisioning an inclusive model for teacher style in the Greek context should be responsive to preparing teachers to become transformative intellectuals (Giroux, 1985). "Transformative intellectuals develop a language of critique which enables them to speak out against social injustices within and outside of school; essentially leading students to view the world through the democratic ideal. The practice of critical pedagogy should also be included as it does not transfer knowledge but rather create the possibility for its production." (Giroux, 1985, p. 4).

Conceptualizing vulnerability

Early development of the theory of vulnerability can be found to discourses on natural disasters and hazards. Weichselgartner (2001) understands vulnerability in the sense of being open to abuse as a consequence of the weight of disadvantaging circumstances. Such circumstances can affect people who, for example, may be exposed to challenging nuclear, environmental, climate change, health and disease factors over which they have little or no control. The consequences of such vulnerabilities can present severe socioeconomic consequences and can cause psychological damage to the victims. In this context, Hewitt (2014, p. 143) views vulnerability as being: "essentially about the human ecology of endangerment ... and is embedded in the social geography of settlements ... and the space of distribution of influence in communities and political organization".

On the other hand, vulnerability can be defined as the capacity of individuals or communities to cope with the effects of such natural disasters and hazards. Some other

scholars (Blaikie et al., 2014) define vulnerability as the characteristics of a group or individual regarding their capacity to predict, manage, resist, and recover from the effect of a natural hazard. It includes a mixture of factors that determine the degree to which someone's life and livelihood is at risk by an isolated and identifiable event in nature or society.

Basically, vulnerability can be perceived from a wide range of contexts and levels, including individual, community, institutional, organisational, systemic, and even global levels. The implications of such vulnerabilities can enhance an understanding that when people are in hazardous situations over which nobody (neither the vulnerable people nor the people in power) has any control, they experience further vulnerability because social, economic, and political structures are not considered adequate to offer them support. In other words, it is possible to put in place strategies and structures that will help vulnerable people to cope in the face of disaster. As such, this correspondence may be applied in an HE context. Research, which investigates vulnerabilities at any of these levels, often sheds light on the vulnerabilities of other levels. For example, understanding individual student vulnerabilities at an HEI could provide insight into how the institutions, their systems, and organisation harbour their own vulnerabilities. Such insight could lead to new ways in which they could harness resources differently in order to assist students with vulnerabilities.

For the purposes of the current chapter, we adapt the view of Blaikie et al. (1994) and define vulnerability in the context of HE as the conditions that influence the capacity of students to finish successfully their studies; vulnerability thus represents those factors which may jeopardise the achievement of learning goals and educational outcomes.

The notion of being vulnerable

At HEIs, vulnerable students are usually defined as those students who, for example: have consumed more time to complete their studies; are viewed by their teaching staff as being at risk of failing; or are repeating their courses including those who are experiencing a combination of contributing factors that are impacting on their academic proficiency (Aldridge & Rowley 2001, p. 61). It is often supposed that the vulnerable in HE are more concentrated among students: who have some form of disability, psychological problem or special learning difficulties; who are second language learners; who are coming from fragile socioeconomic backgrounds; who are from environments with inherent prejudice; who learn in highly gendered curricula areas; and those who graduated from schools in puzzling circumstances. Nevertheless, there is a need to beware of making assumptions as to who vulnerable people are in order to avoid unproductive categorisation and stigmatisation in researching people with different manifestations of vulnerability (Maringe, 2014).

More notably, it is claimed here that such categorisation, though it may be generative in terms of setting a basis for designing targeted interventions, hides the possibility, nevertheless, of omitting a quiet majority who suffer several forms of less apparent but nonetheless equally if not more debilitating vulnerabilities. Often their voices are silenced carelessly through being ostracised from the conventional classification of those typically thought to be vulnerable. Consequently, vulnerable students are often marginalised, sidelined, discriminated against, and most importantly, are silenced in the academic literature. The incentive behind giving such students a voice has been a key driver of research with vulnerable people.

The student voice

Vulnerable student voices are a matter for concern in current higher education, but that concern is focused more on identifying vulnerable groups, and searching for broadening their participation in higher education (Batchelor, 2006).

The concept of the student voice utilises "an epistemological voice for knowing, a practical voice for doing, and an ontological voice for being and becoming" (Maringe, 2014, p.5). These three dimensions describe the key elements needed to comprehend the nature of being vulnerable (Batchelor, 2006).

Therefore, on reflection, HEIs should concentrate on the creation of a space for vulnerable students to share their narratives in order to provide the adequate scaffolding needed to have their voices, needs and challenges heard. Giving vulnerable students a voice is related to hearing, listening and doing. Doing can be defined as the action that will include active engagement "with the depth of meaning siphoned from vulnerable students' lived experience" (Maringe, 2014, p.5). In that sense, vulnerability is the significant characteristic of life, that can be traced at the heart of the essence of the human condition, of organisational conditions, of systemic conditions, and of the global condition.

Research in education can become an answer to the vulnerability of the humans' condition, their organisations, their communities and their systems (Füssel, 2007). Therefore, exploring the human, organisational, systemic, and even global conditions through vulnerability can generate conditions, which free others from the fetters of their daily life vulnerabilities. Nevertheless, vulnerability has an inclination to magnify when being interrogated, as there is always a danger of aggravating such vulnerability. Thus, conducting research with vulnerable people intensifies the need for an enhanced sense of ethical and methodological attentiveness. With this in mind, we confronted the idea of developing a theoretical or empirical framework for researching vulnerability in HE.

Theoretical and Empirical Framework

Three main approaches to the study of vulnerability have been identified in the literature (Füssel 2012). Firstly, the *risk-hazard approach*, studies the relationship between

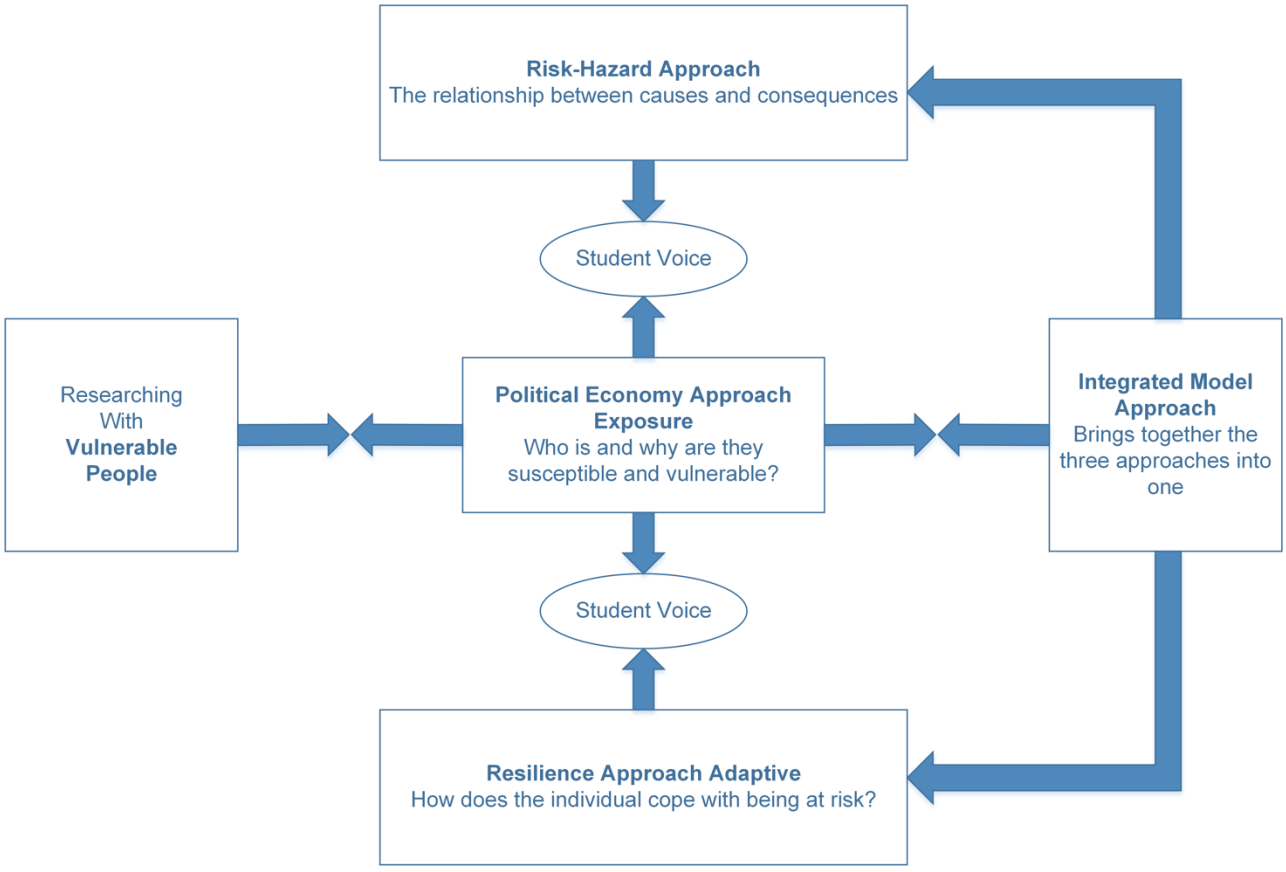
elements and factors, which create vulnerabilities, and their consequences. In other words, it examines the relationship between cause and effect.

Secondly, the *political economy approach*, searches for answering the question – who is vulnerable and why? In other words, it tries to comprehend a person's susceptibility to a risk or hazard and the extent to which they feels included or excluded according to their vulnerabilities. It indicates not only socioeconomic vulnerability exposed to multiple stresses, but to internal social vulnerability or cross-scale social vulnerability, that is, vulnerability within the person at risk, in relation to one or more social situations.

Thirdly, the *resilience approach* asks the questions– how does a system, a group or an individual affront the hazard and how do they deal with vulnerability. In other words, it examines a person's capacity to manage with and adapt to stress.

The three approaches help us understand vulnerable students and their needs better. Nevertheless, since all three approaches interpret different aspects of vulnerability, an integrated approach combining all three of them to study vulnerability amongst students at risk was adopted, as illustrated in Figure 1.

Figure 1. *Theoretical framework: Theorising vulnerability research in HE (adapted from Batchelor 2006 and Füssel 2007)*



Research Methodology

The purpose of this study is twofold: to describe the preferred teaching styles of vulnerable students at a Greek University and to identify their learning needs and difficulties related to course delivery.

Methodological Challenges Associated With Researching Vulnerable Students

In designing and conducting the current research, a range of methodological challenges were identified which are briefly defined below.

Accessing the sample

Gaining access to vulnerable students provided formidable challenges. To avoid labeling, which may aggravate stigmatization and exclusion (Goffman, 1982), a decision was made that students willing to participate must: a) self-identify, rather than be identified externally by someone else, posing ethical questions associated with anonymity and confidentiality b) have received at least one time some of the supportive services of the accessibility unit of the University of Piraeus.

Prior to conducting the study, ethical approval was obtained from the institutional board as well as agency approval from the four departments. Then an email was sent to the accessibility unit[4], which was subsequently distributed to students. The email did not mention the notion of being vulnerable, but only indicated an interest to recruit for the research those students who felt they wanted to share their experience about studying and, especially, to identify their learning needs and challenges. Students were assured that their participation was voluntary, their responses would remain confidential, and that they could withdraw at any time without incurring negative consequences. Questionnaires were submitted online and anonymously. Data collection took place midway through the 2018–2019 academic year to (a) ensure that students had sufficient information upon which to evaluate their teachers' effectiveness and (b) to minimise any honeymoon biases that may occur at the start of students' relationships with their 'new teachers' at the beginning of the academic year (Beauchamp et al., 2010).

The role of generative deception

It can be claimed that by not telling participants that they were being invited to represent vulnerable students, the approach could have been deceptive. However, much evidence shows that students generally do not want to be associated with labels, which may be construed to be negative. They usually choose to steer away from participating in research in which they seem to be presented as victims or in deficit (Maringe, 2014;

[4] This primary accessibility unit has been set in order to offer psychosocial support (counselling centre) to students in need. To be more specific, this unit is part of a project co-financed by Greece and the European Union (European Social Fund-ESF) through the Operational Programme "Human Resources Development, Education and Lifelong Learning 2014- 2020". The project aims to offer support to students with low family income or a certified disability, monitor their psychosocial and learning needs, increase their accessibility to psychosocial care, and improve their academic outcomes.

Swanson & Ward, 1995). For this reason, we decided that avoiding conventional labels would aid to yield a valuable sample of participants for the research.

Participants and Student Grouping

The sample was made up of 1808 university students of four departments (Banking and Financial Management, Business Administration, Statistics and Insurance Science, and Industrial Management and Technology) of the University of Piraeus, who at least once during the previous year contacted the accessibility unit. Among them, 978 defined themselves as vulnerable students[5]. We provide evidence that in self-defining themselves as vulnerable, these students are indeed coming forward and signaling their perceived fragility. This group should be treated cautiously, and we will discuss this definition of vulnerability later in the study. The other 830 of students in the sample asked at least one of the services of the accessibility unit and we are going to consider their different needs as well. 51.66% were women and 48.34 men. Most of the students (72.83%) claimed to attend class frequently or always, while 18.67% said they attended class sometimes, and 8.5% stated that they rarely or never attended class. The vast majority of them (90.93%) pointed out the need to have at their disposal supportive teaching material. Accordingly, 94.58% expressed the need for extra supportive teaching hours. Over half of them (54.31) asked for career counseling sessions. Lastly, few of them asked for extra digital material (23.67%) and psychological support (20.02%).

Table 1. *Average characteristics of Vulnerable Students*

	Freq.	Percent
Vulnerable student		
Yes	978	54.09
No	830	45.91
Gender		
Male	874	48.34
Female	934	51.66
Department		
Business Administration	600	33.08
Banking & Financial Management	80	4.41
Industrial Management & Technology	432	24,14
Statistics & Insurance Science	696	38.37
Attendance		

[5] They responded positively that they belong to one of the following categories: have some form of disability, psychological problem or special learning difficulties; are second language learners; are from fragile socioeconomic backgrounds; are from environments with inherent prejudice; learn in highly gendered curriculum areas; graduated from schools in puzzling circumstances.

Always	1.316	72.83
Often	338	18.67
Sometimes	94	5.19
Rarely / Never	60	3.31
Services Needed		
Supportive teaching material		
Yes	1.644	90.93
No	164	9.07
Supportive teaching hours		
Yes	1.710	94.58
No	98	5.42
Career Counseling		
Yes	982	54.31
No	826	45.69
Psychological Support		
Yes	362	20.02
No	1.446	79.98
Extra digital material		
Yes	428	23.67
No	1.380	76.33

Measures of teaching style

All participants responded to the 4 items of the *Teaching Style* construct adapted from the short version of Teacher Effectiveness Questionnaire in Greek Higher Education (TAGGED) presented in Chapter 3. The questionnaire was related to courses in these four subjects: mathematics, economics, statistics and ICT. Participants indicated their level of agreement on a scale ranging from 1 ("I fully disagree") to 5 ("I fully agree"). A principal component factor analysis with varimax rotation was conducted on the 4 items. This analysis yielded a single factor for *Teaching Style* (eigenvalue= 2.73), and Cronbach's alpha presented good internal consistency (.84)[6].

Empirical strategy

We started our analysis by comparing vulnerable students with the other students in terms of their evaluation of teaching style. To carry out the empirical analysis, we used an econometric approach to be able answer to this question: anything else equal, does

[6] Factor loadings are reported in the Appendix Table A1.

being vulnerable change students' opinion about the teaching style of teachers? The econometric model was as follows:

$$Y_{isd} = \langle + \circledR Vulnerability_{isd} + \lfloor X_i + \mid_d + \copyright_s + \varepsilon_{it} \quad (1)$$

where the suffix "*irst*" denotes the *i-th* student in department *d* and subject *s*. Y, the dependent variable, is the teaching style, as defined in section 3.3. X is a vector of students control variables (gender and level of attendance), $Vulnerability_{isd}$ is a dummy equal to one if the student defined himself as vulnerable. γ_s and τ_s are fixed effects for the subject of the course and the department and ε is an error term. We estimated equation (1) using a linear OLS model, progressively adding to the equation each set of fixed effect. The coefficient of interest will measure the difference in the evaluation of teaching style between students that rated themselves as vulnerable and those who did not consider themselves as such, anything else being equal.

We then concentrated our analysis to the different students' needs and estimated the following equation:

$$Y_{isd} = \alpha + \beta Student\ need_{isd} + \lambda X_i + \tau_d + \gamma_s + \varepsilon_{it} \quad (2)$$

In which we include alternatively a dummy variable for each different service asked to the accessibility unit and supposedly needed. All the other variables are the same as in equation (1). In estimating this regression, the coefficient of the variable *Student need* measures the difference in the evaluation of teaching between students that asked for that specific service and those that did not asked for it.

Results

Table 2 presents the estimates of equation (1). The estimates show that on average students that consider themselves as vulnerable are more critical in evaluating the teaching style of their teacher, once we added the relevant controls and irrespectively of the set of fixed effect included in the specification. As it can be seen, two students that attend the same course in the same department on the same subject and differ from one another only in self-reported vulnerability express a statistically different opinion of the instructor teaching style. In particular, vulnerable students' evaluations are around 14 percent of a standard deviation lower than that of other students. No significant coefficient is associated with the gender of the student, while the evaluation of teaching increases with attendance. These results are very preliminary and should be interpreted cautiously, since they clearly reflect some issues related to the self-reported definition of vulnerability, as if the perceived and acknowledged vulnerability truly reveal a difficulty in following lectures and teachers' explanations, and our regression could be picking up this reverse relation.

Table 2. *Evaluation of teaching style by vulnerable students*

	(1)	(2)	(3)
VARIABLES	Teaching style	Teaching style	Teaching style

Vulnerable	-0.142**	-0.142**	-0.142**
	(0.0616)	(0.0614)	(0.0574)
Female	-0.0164	-0.0165	-0.0147
	(0.0429)	(0.0428)	(0.0400)
Attendance	0.355**	0.357**	0.332**
Sometimes	(0.150)	(0.149)	(0.139)
	0.279**	0.283**	0.229*
Often	(0.127)	(0.126)	(0.118)
	0.452***	0.455***	0.422***
Always	(0.120)	(0.119)	(0.111)
	-0.0164	-0.0165	-0.0147
	(0.0429)	(0.0428)	(0.0400)
Constant	0.471***	0.516***	-0.971***
	(0.170)	(0.173)	(0.127)
Observations	1,804	1,804	1,804
R-squared	0.194	0.202	0.306
Department FE	YES	YES	NO
Subject FE	NO	YES	NO
Course FE	NO	NO	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

We, thus, proceed with the analysis considering alternatively each need for which the unit has been contacted by each student. Table 3 reports the result of the estimation of equation (2).

As it can be seen, the only need that correlates negatively and significantly with teaching style evaluation is career counseling. Students that asked for this service report an evaluation of teaching style 7 percent of a standard deviation lower than other students.

Table 3. *Evaluation of teaching style by vulnerable students*

	(1) Teaching style	(2) Teaching style	(3) Teaching style	(4) Teaching style	(5) Teaching style
Supportive teaching hours	0.0233				
	(0.0957)				
Supportive teaching material		0.116			
		(0.0764)			
Career Counseling			-0.0804*		

			(0.0428)		
Extra digital material				-0.0565	
				(0.0502)	
Psychological Support					0.0183
					(0.0541)
Female	-0.0291	-0.0306	-0.0214	-0.0288	-0.0291
	(0.0428)	(0.0425)	(0.0426)	(0.0425)	(0.0427)
Attendance	0.394***	0.399***	0.405***	0.396***	0.394***
Sometimes	(0.149)	(0.148)	(0.148)	(0.148)	(0.149)
	0.308**	0.302**	0.312**	0.304**	0.308**
Often	(0.126)	(0.126)	(0.126)	(0.126)	(0.126)
	0.474***	0.470***	0.479***	0.472***	0.475***
Always	(0.119)	(0.119)	(0.119)	(0.119)	(0.119)
	-0.0291	-0.0306	-0.0214	-0.0288	-0.0291
Constant	0.339*	0.268	0.412**	0.388**	0.352**
	(0.186)	(0.171)	(0.162)	(0.161)	(0.162)
Observations	1,804	1,804	1,804	1,804	1,804
R-squared	0.200	0.201	0.201	0.200	0.200
Department FE	YES	YES	YES	YES	YES
Subject FE	YES	YES	YES	YES	YES

Once again, our results point out the fact that students that are aware of their difficulty are more critical towards the teaching style of the instructor. In fact, a negative correlation has been found for those students who consider themselves as vulnerable or have asked for career support having in a way realized that their choice of the type of degree was not the correct one.

These results are clearly non conclusive, but they are suggestive of a discomfort that some subgroups of vulnerable students have. An ideal empirical research would indeed try to compare more clearly defined vulnerable students with the other students. Only in this way, in fact, differences in need in university classes will clearly emerge and could be studied more in depth.

Conclusions and recommendations

The chapter has gone some way, in the limited context of the data, to make a strong case for locating vulnerability as a generative theoretical framework for exploring the lives of students at risk in HE. Based on the literature and the empirical study, a key contribution of the chapter is the development of a design model for researching student vulnerabilities at Greek HEIs.

Additionally, taking cautiously into consideration the preliminary results of the empirical analysis, we came to some preliminary conclusions. Many students that are facing some kind of vulnerability either because of internal or external factors do not want to be self-defined as vulnerable in order not to be associated with labels and thus not to be discriminated or stigmatized. But in order to certify that suitable support is in place, it is imperative that HEIs continue to encourage vulnerable students to disclose prior to commencement of studies. Cultural change is required and HEIs should be more proactive in encouraging students to disclose. A starting point could be at university open days and career fairs, an idea also argued by Mortimore (2013).

Moreover, although the University of Piraeus has formulated inclusive policies and established vulnerable student support services, a gap between rhetorical policy and practice is apparent, with most vulnerable students struggling to receive ad hoc support or being more critical regarding the offered teaching styles. As such, the ideal of constructing fully inclusive institutions in which anticipatory adjustments are inserted will undoubtedly take some time to accomplish.

Furthermore, we identified a lack of information to support vulnerable students in making choices about their futures, principally in relation to gaining information about pursuing HE. Therefore, without information to make informed choices, vulnerable students not only experienced stress and anxiety but also difficulty in preparing themselves for HE. This multi-faced insecurity follows them during their studies and their early career choices and challenges.

Again, according to students' responses, it is clearly suggested that there must be a commitment on the part of HEI to develop student support services and personal development planning must be embedded.

To conclude, as Konur (2007) suggested vulnerable students or students at risk should have opportunities to reach the same academic standards as their non-vulnerable peers – and the issues raised within this chapter that have come directly from these students would be a valuable starting point for proactive action.

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Appendix 1: Statistical Information

Table A1. *Factor loadings*

Factor analysis/correlation Number of obs = **1.808**
Method: principal-component factors Retained factors = **1**
Rotation: (unrotated) Number of params = **4**

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	2.54355	1.98357	0.6359	0.6359
Factor2	0.55998	0.03003	0.1400	0.7759
Factor3	0.52995	0.16342	0.1325	0.9084
Factor4	0.36653	.	0.0916	1.0000

LR test: independent vs. saturated: chi2(6) = 2325.56 Prob>chi2 = 0.0000

Factor loadings (pattern matrix) and unique variances

Variable	Factor 1	Uniqueness
The content being taught was well organised.	**0.7977**	**0.3637**

The teacher stimulates interest in the topic of the course.	**0.7965**	**0.3656**
The teacher delivers course-related concepts in an effective way.	**0.7961**	**0.3663**
The teacher encourages students to participate and ask their questions.	**0.7994**	**0.3609**

The Role of Employability in Context of High Job Insecurity: A Framework for University Researchers

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Abstract

Due to a recent reform of the Higher Education (HE) system in Italy, the academic researchers now suffer for a higher job insecurity, which may have negative impact on their attitude and behaviour towards the job. The present work assumes that employability, here conceptualized as an individual perception of his/her chances in the labour market, can help researchers to deal with job insecurity. By reviewing recent literature, the present work presents a conceptual framework and the underlying hypothesis to examine the role of self-perceived employability in moderating the relationships between job insecurity and professional attitudes of academic researchers towards their job. In particular, the framework highlights the importance of contract type for the constructing of employees' expectations toward the academic career development, with potential effects on individual public service motivation, and organizational outcome. The work also provides information on the road to test the proposed framework by illustrating the measures and the data collection process for completing the next stages of the research project. Although the work presents only a theoretical treatment of the issue, it is possible to identify the contribution of the research to the extant literature and the potential implications at both managerial and individual level.

Keywords: Employability – Academic researchers – Higher Education - Public service motivation – Work attitudes

Introduction

For a few years, the Higher Education (HE) system in Italy have been going through a phase characterized by a substantial reduction of the public resources targeted to the Higher Education Institutions (HEIs) and by an increased flexibility of the early careers for the academic researchers. In particular, academic researchers in Italy today suffer for a high job insecurity along their careers with potentially negative consequences on their attitudes and behaviour towards their profession and employers.

The International Conference "The EHEA and the ERA: the role of the universities and research centres in smart specialization and growth" highlighted that HEIs are expected to play a new and more active role within the local arenas. In particular, HEI should cooperate more closely with the business actors and the local stakeholders more in

general, to be more effective in contributing to the economic development of a country. However, there are no doubts that it is not possible to achieve this ambitious goal, without the contribution of university researchers who work in and for HEIs. Therefore, a relevant issue in this expected transformation of HEIs concerns the incentives that the university systems should and could use to promote virtuous behaviour of academic researchers, in a context characterized by an increased job insecurity, such as that in Italy.

The underlying assumption of the present paper is that, as job security decreases, it becomes important to find new organizational mechanisms that could favour and sustain workers' attitude towards their profession and employers. Thus, the study focus on employability as a potentially valid alternative for workers in a context of increased job insecurity. An emergent literature affirms that self-perceived employability, conceptualized as an individual belief about his/her chances to find a job in the internal and external labour market, can buffer and moderate the negative consequences of job insecurity on workers' professional attitudes.

The aim of the present paper is to present a conceptual framework to examine the role of self-perceived employability in moderating the relationships between job insecurity and professional attitudes of academic researchers towards their job. The conceptual framework is the result of the first phase of a wider research project that will proceed with an ad hoc data collection aimed at empirically test the proposed model.

The structure of this paper is the following. After introducing the Italian university system and the role of employability in context of higher job insecurity, the conceptual framework will be presented which highlights the potential role of employability as moderator in the relationships between job insecurity and professional attitudes of researchers. Subsequently, the measures selected for testing the proposed model and the procedure for data collection will be described. In the last section, the main the theoretical and practical implications of the study will be discussed.

University system in Italy: main challenges for academic researchers

The sector of Higher Education (HE) in Italy is primary composed by public universities depending on the Ministry of University and Research (MIUR) with a certain degree of autonomy in determining their curriculum, and teaching activities. Central Government, in contrast, is the main authority for the definition of degrees, job positions and salaries: according to the Italian Constitution, in fact, universities belong to the public sector and academics cover civil service positions.

In December 2010, a comprehensive reform (Law 240/2010, or 'Gelmini reform') changed the institutional governance and internal organization of Italian state universities, transforming, in particular the employment conditions of researchers within

the University system. One of the points of the Reform includes the substitution of the traditional positions of assistant professors (Ricercatore a tempo indeterminato) employed on a permanent base by the University, with different forms of temporary researchers.

Nine years after the Reform, together with the permanent positions of full professor and associate professor, different types of researchers actually coexist in HEIs, each characterized by a different employment contractual condition namely: (1) permanent assistant professors hired with a pre-reform contract; (2) type B assistant professors; (3) type A assistant professors; and (4) post-doc research fellows.

The main starting position for a career in Italian academia is usually that of assistant professor (*ricercatore*). Before the reform, this was a permanent position, with a probationary period of three years. In substitution to previous *ricercatori*, the reform introduced two types of assistant professor contract – type A and type B assistant professor – with different lengths and prospects, but similar duties. Type A assistant professor is hired for three years and the contract can be extended for additional two years after evaluation. In contrast, type B assistant professors have a tenure track toward associate professor after a three years contract and after obtaining a national scientific certification (*Abilitazione Scientifica Nazionale*). Both contract types involve teaching duties. These duties were not included among those of previous permanent assistant professor positions whose teaching activities were performed on voluntary bases.

In the last ten years, the public University System in Italy is facing some challenges, with significant impact on the working experience and the career paths of academics of Higher Education Institutions (HEIs). In fact, due to the recent economic crisis, the public found for HEIs has been substantially reduced, and one of the consequence of public spending review for University is represented by a restriction in the career opportunities for researchers in the earlier careers.

In particular, according to their employment condition, academics can experience a higher or lower degree of job insecurity. Moreover, the lack of economic resource provided by the government to guarantee the internal mobility of researchers, contribute to increase the overall job insecurity of academic researchers within the Italian HEIs. Thus, once could be wondered about the possible negative consequences of these contextual conditions on the attitudes and behaviour of the academic researchers towards their job and institutions (i.e. professional and institutional commitment, intention to turnover and productivity).

Employability: a critical resource in context of high job insecurity

Although employability is not a new concept, it is assuming ever-greater importance due to the changes in the labour market and the increased flexibilization of the working career paths. Employability has been defined as the capability of an individual to independently

move within the labour market to realize potential through sustainable employment (Hillage and Pollard, 1998). Accordingly to this definition, employability should not be confused with a synonymous of "employment" as it concerns the ability of individuals to gain initial employment, to maintain it and to obtain new employment opportunities, simultaneously (Forrier & Sels, 2003; Fugate, Kinicki, & Ashforth, 2004; Van der Heijde & Van der Heijden, 2006).

Employability is critical for temporary workers who are incumbents of dependent jobs of a limited duration and tend to change workplaces very frequently. Temporary workers cannot count on job security and tenure-related incentives for career advancement (De Cuyper & De Witte, 2010) and should rely on employability, which is not connected to one specific job or employer but to the security of remaining in employment and reaching upward mobility in the labour market.

Although it is widely debated in literature, workers' employability is both an individual and an organisational responsibility (Zhang et al., 2015). First, employability is an individual's own responsibility to acquire knowledge, skills, abilities that can be appreciated by the employers and help her/him to be more employable in the labour market (Fugate et al., 2004). However, the employers, together with other societal actors, are play a critical role in providing opportunities for workers to strengthen and develop their skills on the job (De Vos et al., 2011). In this regard, employability is a managerial issue with the underlying idea that to attract, motivate and retain human resource, employers should develop and sustain the employability of their employee, as the latters will reciprocate with better behaviour in the workplaces.

Finally, there is no consensus on the way employability should be measured (Forrier and Sels, 2015). The objective approach, usually measures employability by looking at the employment conditions and the transitions realized by an individual in the labour market. The subjective approach, instead, considers the individual perceptions about their future employment chances and their overall marketability in the labour market. Building on a growing number of studies, the present study embraces a subjective approach to employability (e.g. Arnold & Rothwell, 2007; De Cuyper & De Witte, 2011; Van der Heijde & Van Der Heijden, 2006) with the assumption that self-perceived employability can represents a "critical resource" for workers in the high job insecurity context (De Cuyper & De Witte, 2011).

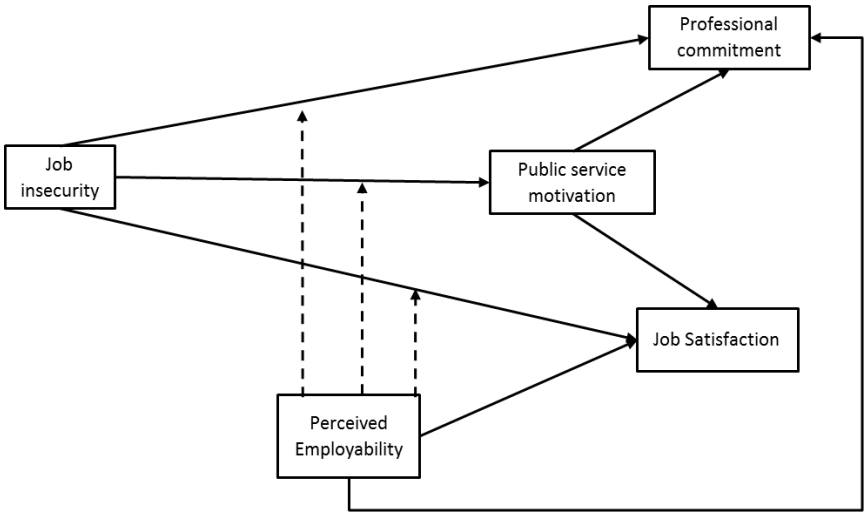
Conceptual framework

The conceptual framework developed by the authors to analyse the role of perceived employability in the relationship between job insecurity and researchers' attitudes towards their profession and employer, is reported in figure 1. The underlying idea in the proposed framework is that job insecurity may affect researchers' attitudes and behaviour of academic researchers towards their profession (i.e. professional commitment and job satisfaction). Due to the public nature of the university system in

Italy, Public Service Motivation (PSM) is included as a possible mediator in the relationship between job insecurity and researchers' professional attitudes. Finally, self-perceived employability, as a critical resource in context of high insecurity, is added as potential moderator in the expected negative association between job insecurity and researchers' attitudes towards their profession.

The hypotheses underlying the proposed framework are presented in detail below.

Figure 1: Proposed framework



Notes: Control variables: age; gender, job seniority, scientific sector, university of reference

As already stated, academic researchers in the Italian University system may experience a higher or lower degree of job insecurity, depending on the type of contract with which they are employed by the HEI. Job insecurity has been defined in literature as "an overall belief of an individual about the continued existence of his job in the future" (Sverke & Hellgren, 2002). Job insecurity has proved to be prominent work stressors for employees, which is related to a number of negative individual and organizational outcomes, like lower job satisfaction and reduced organizational commitment (e.g. Cheng and Chan, 2008). Important to note, job insecurity depends, at least in part, by the approaches and practices adopted by the employers to manage their employees in the organizations. HRM literature, for example, leads back job security - which can be considered the opposite of job insecurity - to the High Performance Work Systems (HPWS), and then a set of HR practices that allow organizations to achieve positive financial performance by increasing employees' attitudes and behaviour towards their job and employers (i.e. Boxal, 2012). According to the discourse above, the first hypothesis in the proposed model is that:

HP 1: *Job insecurity will negatively related to professional commitment and job satisfaction of researchers within the university.*

Public Service Motivation (PSM) captures the degree to which employees are committed to serving the public or the community at large and has been defined as "a person's

predisposition to respond to motives that are mainly or distinctly grounded in public institutions" (Perry and Wise 1990). PSM is one of the major topic of investigation in public administration today, as it is considered important not just to motivation but also to productivity, improved management practices, accountability and trust in government. More specifically, PSM has proved to predict employees' attitudes towards their job and proved to be particularly useful in understanding employees' behaviour in public organizations (Maynihan and Pandley, 2007). Although PSM is usually considered an inherent dimension of the individual - something that a person has or does not have, in relation to their personal and family background - recent studies states that public employers can foster or hinder individual PSM depending on how the work is organized and people managed within the organization (i.e. Maynihan and Pandley, 2007). For example, the study of Mostafa and Bottompley (2015) reveals that the adoption of High Performance Work Practices, including job security in the workplace, was positively associated with higher public service motivation employees, beside an increase of their affective commitment and organizational citizen's behaviours. According to the discourse above, and taking into account the public nature of the HEIs in Italy, Public Service Motivation (PSM) has been included in the proposed model, as a potential mediator in the relationship between job insecurity and researchers' attitudes towards their job.

HP2: Public Service Motivation will positively related to (a) employees' professional commitment and (b) job satisfaction.

HP3: Job insecurity will negatively related to Public Service Motivation.

HP4: Public Service Motivation will mediate the relationship between job insecurity, (a) professional commitment and (b) job satisfaction.

Employability is conceived in this study as "the worker's perception of his or her possibilities to achieve a new job in the internal and/or external labour market". Such perceptions develop from both individual and contextual factors, where the firsts typically concern aspect of human, social and psychological capital (Forrier and Sels, 2003), while the latter include issues related to the labour market conditions and support received in the work experience. Previous literature suggests that self-perceived employability can positively influence employees' outcomes on the job, as employees who believe to be employable are also less vulnerable to the negative impact of insecurity (De Cuyper et al, 2009). Moreover, research also suggests that perceived employability helps workers to cope with job insecurity (Forrier and Sels, 2003) on the assumption that self-perceived employability promotes feeling of being in control over one's career (Fugate et al, 2004). This, in turn, may reduce the harmful effects associated with job insecurity. As consequence, perceived employability could moderate the negative consequences of job insecurity on employee attitudes and behaviour. More specifically, once should expect that the negative association between job insecurity and researchers' attitudes and behaviour would be weaker for individuals reporting higher levels of employability.

Hp5: Perceived employability will positively related to (a) professional commitment and (b) job satisfaction of university researchers

Hp6: Perceived employability will moderate the association between job insecurity and (a) public service motivation, (b) professional commitment, and (c) job satisfaction of researchers

Road to test the proposed framework

In order to come up with findings for theoretical and practical implications, the research will proceed through a survey for an ad hoc data collection. An online questionnaire has been already designed and a set of measures and items for each variable included in the model have been identified. Among the measures, these have been selected from those already used and validated in extent empirical studies and in different organizational contexts. The full list of variables and related items included in the questionnaire are reported in Appendix 1. Below, a short description of the chosen measures is provided.

Job insecurity. With reference to the independent variable, two different measures of job insecurity are considered. Firstly, an objective measure of job insecurity concerns the type of contract with which the researcher is employed in HEI, where each contract – permanent contract, temporary contract with tenure track, temporary contract without tenure track is associated with a different degree of job insecurity for the individual. Furthermore, a subjective measure of job insecurity is taken from a five-item scale developed by De Witte and De Cuyper (2014). Perceived job insecurity in particular, detect an individual perception about the continued existence of his job in the future.

Perceived employability. A scale from De Cuypier & De Witte (2010) measures self-perceived employability. The original scale was adapted and integrated to achieve a better fit with the empirical setting of present study. In particular, the items were built to distinguish different levels of employability, including internal employability, external employability within the university system, and external employability outside the university systems. Twenty-four items, distinguishing both quantitative (similar job) and qualitative (better job) employability, compose the final scale.

Public Service Motivation. Public Service Motivation is measured through a widely used scale composed by 11 items and originally developed by Perry (1996). The scale includes three sub-factors - "compassion", "self-sacrifice" and "civic duty" - that together provide an overall measure of an individual PSM.

Researchers' attitudes on the job. Different workers' attitudes and behaviour can be considered. However, the present study focuses on professional commitment and job satisfaction, as they are particularly relevant for the specific empirical context. Professional commitment concerns the affective commitment or emotional attachment of an individual to his or her profession and is measured by an eight-items scaled provided by Arnold and Rothwell (2007). Important to note, the study focus on professional commitment rather than organizational commitment, as one could expect

researchers to be mainly committed to their profession rather than to the employer. Finally, a three-item scale adapted from Lee and Bruvold (2003) measures job satisfaction, which could be considered a significant proxy of workers well-being and organizational performance.

Control variables. In line with previous research on the relationships between job insecurity, perceived employability and employees' attitudes (i.e. De Vos et al., 2011) a set of control variables are included, such as age, gender, citizenship, and job tenures. Furthermore, in order to check for any differences related to the employment condition of researchers, additional control variables are the prevalent disciplinary sector of the researcher and the HEI in which he/she is employed.

The online survey will be administered to a reference population represented by about 28 thousands individual, who actually researchers in public HEIs in Italy. For each individual the database provides the personal institutional mail address and an ad hoc data collection will be implemented following a two-step approach. In the first step, the online survey will be administered to a sub-sample of academic researchers (about 1.000), which will be representative of the overall population concerning the employment contract, the disciplinary sector and the university of affiliation. The aim of the first step is to test the validity and reliability of each measure in the specific context of Italian HEIs. As result of the first step, the questionnaire will be revised by delating the invalid items and retaining only those that demonstrate statistical validity. In the second step, the revised online survey will be administered to the overall population with the aim to test the hypothesis included in the proposed model.

Discussion and conclusion

In this chapter, we have aimed to advance the general understanding of the consequences of being temporarily versus permanently employed from a theoretical perspective through the development of a conceptual framework aimed at examining the role of self-perceived employability in moderating the relationships between job insecurity and professional attitudes of academic researchers towards their job. This framework, in particular, highlights the importance of contract type for the constructing of employees' expectations toward the academic career development, with potential effects on individual public service motivation, and organizational outcome. Moreover, it may provide additional information on the road to test the proposed framework by presenting the measures and the data collection process that will be used by the authors in the next stages of the research project.

Although the work presents only a theoretical treatment of the issue, it is already possible, even at this stage, to identify a possible contribution of the research to the extant literature and the implications at both managerial and individual level.

One of the innovations of the proposed approach, in particular, concerns the inclusion of practices aimed at increasing individual employability among HR practices. This study, in fact, addressed the two topical themes of the labor market research - employability and

job insecurity – under a different perspective. Through the investigation of the relationship between employability and employees' satisfaction and professional commitment, in particular, we suggest that employability should not be considered only an instrument for labor market policies, rather it can also be used as a HR instrument able to advance employees' well-being and, consequently, organizational performance. Our hypothesis is that the development of individual employability can be an important instrument able to compensate for job insecurities due to the institutional context of HE.

The study could bring a relevant contribution to existence and emerging literature on the role of employability, and in particular perceived employability, as potential driver and moderator of employee outcomes on the job and organizational performance, with a specific attention to the underexplored field of public sector organizations. In this vain, the present study is the first, at least in our knowledge, that tries to explore the relationship between employability and public service motivation. Doing this, and beyond the results that will emerge, the study will propose a lens through which employability-performance relationship should be investigated within the public organizations.

In addition, the setting of Italian HE also allows considering the dimension of employees' heterogeneity that, in previous research on temporary workforce (Greese and Schalk 1996), emerges as a significant factor affecting the relationship among job insecurity, employability, and organizational outcomes. Differentiated categories of workers, in fact, may differ in the extent to which they engage in transactional or relational contracting with the organization (De Cuyper, De Witte 2008).

In this vein, the presence in the empirical setting of employees whose roles have different level of job insecurity - from research fellow to type B assistant professor – allows the identification of alternative paths and combination of HR practices that the organizations can implement in order to improve public service motivation, professional commitment, and job satisfaction.

Furthermore, whether the hypothesis will be confirmed, the study will offer valuable implications and suggestions to both managers of HEs and researchers themselves. If perceived employability will emerge as a moderator of the effect of job insecurity on the attitudes and behaviour of university researchers towards their profession, one could also ask what the researchers could do to develop their own employability. Indeed, and according to the proposed theoretical framework, maintaining and developing his/her employability would not only allow him to positively face with involuntary job changes during the academic careers, but may also help him/her to achieve better performance within the academia, thus increasing his/her chances to remain and grow within the University system. However, employability is not solely an individual responsibility, and one could ask what the University could/should do in order to promote and sustain the employability of its members. For example, the performance management system adopted by the Universities could play a significant role in affecting – both directly and

indirectly – the employability of researchers. In addition, than it could be relevant to think how the performance management system should be designed (and maybe changed) so that it could be able to enhance the engagement of the researchers for their employability? How could Universities provide incentives to researchers to increase their willingness to do varied activities that may go beyond traditional academic tasks, and embracing a greater involvement with the business sector and the stakeholder of local development?

Appendix 1 – Variables and scales

For all the following items, except for job insecurity, respondents will be asked to what extent they agreed with the following statements on a 5-point Likert scale (1=completely disagree, 2=rather disagree, 3=neutral, 4=rather agree, 5=completely agree).

Variable	**Items**
Job insecurity*	1. Researchers employed on a permanent base 2. Researchers employed on a temporary base, with a tenure track 3. Researchers employed on a temporary base, without a tenure track 4. Research fellows employed on a temporary base
Perceived job insecurity	1. Chances are I will soon lose my job 2. I am sure I can keep my job. (R) 3. I feel insecure about the future of my job. 4. I think I might lose my job in the near future.
Self-perceived employability	1. I am optimistic that I would find another job with this university, if I looked for one 2. I will easily find another job with this university instead of my present job 3. I could easily switch to another job with this university, if I wanted to 4. I am confident that I could quickly get a similar job with this university 5. I am optimistic that I would find a better job with this university, if I looked for one 6. I will easily find a better job with this university instead of my present job

	7. I could easily switch to a better job with this university, if I wanted to 8. I am confident that I could quickly get a better job with this university 9. I am optimistic that I would find another job with another university, if I looked for one 10. I will easily find another job in another university instead of my present job 11. I could easily switch to another job in a different university, if I wanted to 12. I am confident that I could quickly get a similar job in another university". 13. I am optimistic that I would find a better job outside in another university, if I looked for one 14. I will easily find a better job in another university instead of my present job 15. I could easily switch to a better job in another university, if I wanted to 16. I am confident that I could quickly get a better job in another university 17. I am optimistic that I would find another job with outside the university system, if I looked for one 18. I will easily find another job outside the university system instead of my present job 19. I could easily switch to another job outside the university system, if I wanted to 20. I am confident that I could quickly get a similar job outside the university system 21. I am optimistic that I would find a better job outside the university system, if I looked for one 22. I will easily find a better job outside the university system instead of my present job 23. I could easily switch to a better job outside the university system, if I wanted to

	24. I am confident that I could quickly get a better job outside the university system
Public Service Motivation	1. I seldom think about the welfare of people I don't know personally 2. I have little compassion for people in need who are unwilling to take the first step to help themselves 3. Most social programs are too vital to do without 4. It is difficult for me to contain my feelings when I see people in distress 5. Much of what I do is for a cause bigger than myself 6. I am one of those rare people who would risk personal loss to help someone else 7. Making a difference in society means more to me than personal achievements 8. I think people should give back to society more than they get from it 9. I unselfishly contribute to my community 10. Meaningful public service is very important to me 11. I consider public service my civic duty
Professional commitment	1. I am willing to put in a great deal of effort beyond that normally expected in order to help make my profession successful. 2. I would accept almost any type of job assignment in order to keep working in areas that are associated with this profession. 3. I find that my values and my profession's values are very similar. 4. I am proud to tell others that I am part of this profession. 5. Being a member of this profession really inspires the best in me in the way of job performance. 6. I am extremely glad I chose this profession over others I was considering at the time I joined. 7. Often, I find it difficult to agree with this profession's policies on important matters relating to its members. 8. I really care about the fate of this profession. 9. For me this is the best of all professions to be a member of.
Job satisfaction	1. Generally speaking, I am satisfied with my job

	2. Knowing what I know now, if I had to decide all over again whether to take the job I have now, I would definitely take it 3. I would recommend a job like mine to a good friend

Note: *Job insecurity is a categorical variable that can assume value 1, 2, 3 and 4, according to the employment condition of the researcher within the University.

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Disability, tertiary education and labour market in Italy

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Abstract

This essay is an empirical study of the relationship between disability and labour market, with a sharp focus on the protective role of education. Using data collected by ISFOL, we investigate how tertiary educated people with disabilities fare in the labour market compared to highly educated people without disabilities. We find that the negative gap in the activity rate, employment rate and wages between people with and without disabilities decreased with education: having a tertiary education not only drastically reduced the disability gaps but it seems to increase the probability of being active and the probability of receiving a higher wage. Instead, the negative gap in job satisfaction persists at higher level of education.

Introduction

The integration of people with disability in the labour market represents one of the biggest challenges for social and labour market policies. The European Disability Strategy 2010-2020 identifies several actions in order to foster their inclusion and to improve their wellbeing. The labour market integration of disabled people represents an essential issue in enhancing their autonomy and improving their life satisfaction.

In the last decades, globalisation and skill biased technological changes have increased the demand for highly-skilled jobs and have reduced the demand for less qualified types of labour. This change has disadvantaged people with disability more than other people, since they are characterised by a lower average level of education than the rest of population. In 2007, the share of disabled persons with less than upper secondary education was almost twice that of people without disability and this education gap has increased for younger aged groups (OECD, 2010).

The recent economic downturn has worsened the situation also increasing their inactivity and their unemployment rates. There has been an increase of temporary jobs with a consequent reduction of job security, together with heavier workloads and work pressure. These patterns of course are more alarming for disabled persons as they make their access to jobs more challenging.

It is well-known that education contributes to human capital formation and

therefore it is a key factor in determining employment opportunities and personal well-being. Thus, the level of inclusiveness of the educational system is extremely important in shaping the future of young pupils with disabilities. The United Nations Convention on the Rights of Persons with Disabilities (CRPD) recognizes the right of all children with disabilities both to be included in the general education systems and to receive the individual support they require, which seems to be the best way to ensure and adequate level of education to disabled pupils.

This paper focuses on the interaction between access to work and education of people with disability. In the economic literature, there are several studies that explore the relationship between disability and labour market. Overall, they show that the probability of participating to the labour market, or activity rate, is lower for disabled people than that for non-disabled (Gannon 2005; Jones et al. 2006; Hotchkiss 2004; Wilkins 2004)[7]. Literature also confirms the evidence that age and education are factors that influence the substantial disadvantages of disabled individuals.

In Italy, Addabbo et al (2014) using ISTAT data in 2004, find that the probability of being in the labour force for people with disability varies according to the type of disability. Addabbo and Sarti (2016) confirm the lower activity rate of disabled people and highlight that education plays an important role in the access to employment for disabled than for non-disabled people. Agovino et al. (2014) using IT-SILC data, develop a dynamic model focusing on present and previous disability. They find that current disability reduces labour market participation of disabled people; furthermore, previous disability reduces the probability of being active.

Besides, Italy is of particular interest, since it is a country bearing one of the preeminent examples of inclusive education. Since mid-1970s Italy adopted an inclusive education system model, based on the inclusion of children with disabilities in regular schools, which was then refined along the years. According to the Law 104/1992, persons with disabilities have the right to attend schools and universities, following education in inclusive classes. Nonetheless, the share of individuals with a low level of education is still higher for people with disability than for the non-disabled OECD(2011) and the transition from secondary to tertiary education is still difficult. In 2010 the number of students with disabilities enrolled in Italian universities was about 0.9% (Maggiolini and Molteni, 2013). Regarding the labour market, Italy is one of the countries with the highest employment quota and non-compliance sanctions. The Law 68/1999

[7] See also Jones (2008) for e review of the empirical evidence on disability and labour market outcomes.

establishes that firms have to employ disabled workers according to their size[8]. The prerequisite to benefit from this law is to be registered in a specific employment list.

The aim of the present paper is to investigate the relationship between disability and labour market outcomes focusing on the role of education.

Unlike other works, we are interested in evaluating the protecting role of education in facing labour market, which we expect to be greater for people with disabilities. Tertiary education in particular, could play an important role not only in entering but even in remaining in employment for people with disabilities. Among the outcomes considered, we focus also on job satisfaction. As it is well documented, people with disability tend to have a lower job satisfaction with respect of people without disability (Uppal, 2004 and Baumgarter 2015 for a review). We aim to understand if this is a generalized occurrence or rather is related with the content of the job and thus individuals with disability and a high level of education will be as satisfied as those without disability. There is no clear evidence on the relationship between disabilities and job satisfaction. On the one hand, some studies document a positive relationship that is then ascribed to lower expectations due to the disadvantaged position in the labour market (Pagan and Malo, 2009 and Clark , 1997). On the other hand, a negative gap is often documented and related to harsher work-related challenges faced by people with disabilities, such as non optimal accommodations (Stone and Colella, 1996), less economically and psychologically rewarding position (Yelin and Trupin, 2003) and more general discrimination (Colella and Stone, 1996 and 2005). The rest of the paper is organised as follows: Section 2 and Section 3 present respectively the data and the methodology. In Section 4 the results are presented and discussed, and Section 5 concludes.

Data

The data used in this paper are from ISFOL PLUS survey for the years: 2005, 2008, 2011 and 2014. The ISFOL PLUS survey collects socio-economic variables including information on health. Disability is identified by self-reported data on duration and seriousness of activity limitations. In particular, the question on disability allows three different answers: permanent limitation, partial and temporary limitation, no limitation. Therefore, the information refers to the perceived limitations with respect to daily activities, in other words, disability is seen as a reduced from of interaction, whatever its origin may be. We are aware

[8] Public and private employers with more than 15 employees, are obliged to employ disabled people as follow: Number of employees: 15-35, one disabled worker. Number of employees: 36-50, two disabled worker More than 50 employees: 7% of workers.

that measuring disability is not straightforward. Disability is a multidimensional and dynamic phenomenon, and therefore, it is not easy and not always possible to identify it clearly. We perfectly know that disability varies by type, severity and duration but, unfortunately, the dataset does not allow us to collect information on the type of disability. However, the measure used in this paper may be considered good enough to provide suggestive evidence of the labour market disadvantages experienced by persons with disability. For this reason, we define a measure of disability which is a dummy variable equal to one in case of permanent limitation, and zero otherwise.

As in our analysis we are interested in working-age individuals, we consider individuals aged 18-50 and the final sample includes 102,240 observations, of which 1,492 are disabled (1,42 percent). For each individual we also have information on educational level, gender, age, employment status, wage and job satisfaction.

Employment and labour force participation are dummy variables, equal to one if the individual is employed and active (employed or searching for a job) respectively. A synthetic measure of job satisfaction is defined starting from the several questions on job satisfaction included in the survey[9]. The answers ranked between 1 and 4, where 4 means low level of satisfaction and 1 means high level of satisfaction. We measured satisfaction as the mean of the answers reported in each item. Thus, a higher value of the variables is associated with less satisfaction.

Tab.1 shows the number and the share of persons with and without disability according to their educational level. Only 14% of persons with disability have a tertiary education, while about 46% of them exhibits a secondary education. This confirms their difficulties in the transition from secondary school to university.

Tab. 1 Number of disabled and non-disabled persons by education

	Disabled		Non-disabled	
Less than secondary education	592	39.68%	19,822	19.67%
Secondary education	693	46.45%	56,684	56.26%
Tertiary education	207	13.87%	24,242	24.06%

[9] The questions cover nine dimensions of satisfaction: safety, career, pay, skills stability, relationships, working hour,
burden and job content

Tot.	1,492	100,748

Tab. 2 shows the same distinction between persons with disability and without disability by gender and geographical areas. The percentage of female with disability is greater than male, and the highest number of disabled are concentrated in southern regions.

Tab. 2 Number of disabled and non-disabled persons by gender and geographical areas.

	Disabled		Non-disabled	
Female	932	62.47%	64,158	63.68%
Male	560	37.53%	36,590	36.32%
North-West	292	19.57%	21,002	20.85%
North-East	246	16.49%	18,516	18.38%
Centre	319	21.38%	19,638	19.49%
South	635	42.56%	41,592	41.28%
	1,492		100,748	

Finally, in Tab. 3 are reported the descriptive statistics of the outcome variables for disabled and non-disabled and by educational level. As shown, disability is associated with a lower activity and employment rate and a lower wage for lower levels of education, while the reverse is true for people with tertiary education. In this case, the disabled are more likely to be occupied and to participate to the labour force and have the same average wage than non-disabled. The t-test on the equality of means confirms the significance of the differences among the two groups. Finally, persons with disability seem less satisfied than their counterparts, and this pattern does not change with education.

Tab. 3 Descriptive statistics

	Disabled	**Non disabled**	**Disabled**	**Non disabled**	**Disabled**	**Non disabled**
	Less than secondary education	Less than secondary education	Secondary educ.	Secondary educ.	Tertiary educ.	Tertiary educ.
Activity rate	55.57 %	63.87 %	71.14 %	65.34 %	87.44 %	81.19 %

Emloyment rate	23.65 %	35.96 %	40.40 %	44.07 %	60.87 %	59.01 %
(Log) wage	9.486	9.617	9.646	9.671	9.761	9.726
	(0.877)	(0.725)	(0.731)	(0.700)	(0.962)	(0.850)
t-test 0.132**	t-test 0.025	t-test -0.035				
Job	2.501	2.279	2.331	2.180	2.466	2.220
satisfaction	(0.804)	(0.677)	(0.654)	(0.605)	(0.633)	(0.594)
t-test		-0.226***	t-test -0.151***		t-test	-0.246***

Note: standard deviation in parenthesis

Methodology

The aim of the paper is to evaluate the gap between disabled and non-disabled in terms of different labour market outcomes and the role of education in loosening this disadvantage. Therefore, in our econometric analysis we include an interaction term between disability and education. The estimated equation is the following:

$$y_{jt} = \alpha + \beta_1 Disability_{jt} + \beta_2 Disability_{jt} * Educ_{jt} + \beta_3 Educ_{jt} + \boldsymbol{X_{jt}} + \gamma_r + r_t + \varepsilon_{jt} \quad (1)$$

Where, y_{jt} is an r outcome variable of individual j at time t; $Disability_{jt}$ is a dummy variable; $Disability_{jt} * Educ_{jt}$ are the interaction terms; $Educ_{jt}$ are educational dummy variables; $\mathbf{X}_{it}$ is a vector of time-varying individual characteristics; γ_r regional fixed effect; and τ_t time fixed effect.

Education is defined as a set of dummy variables, Less than secondary education, Secondary

education, Tertiary education, which are equal to one if the individual has the corresponding level of education.To evaluate the percentage point difference in the probability of being in certain employment conditions between persons with and without disability, we have to consider the sum of the two coefficients: β_1 and β_2. In using this specification we are comparing individual with and without disability but with the same level of education.

We add to the specification several variables to control for individual characteristics: age, age square and gender, as well as regional dummies to control for geographical time-invariant fixed effect and time dummies to control for any other source of heterogeneity in the evolution over time of other factors, for example the recent crisis. When the outcome variable is the activity of individual, we regress equation (1) over the whole working age population. When we study the employment probability, we focus only on the sample of

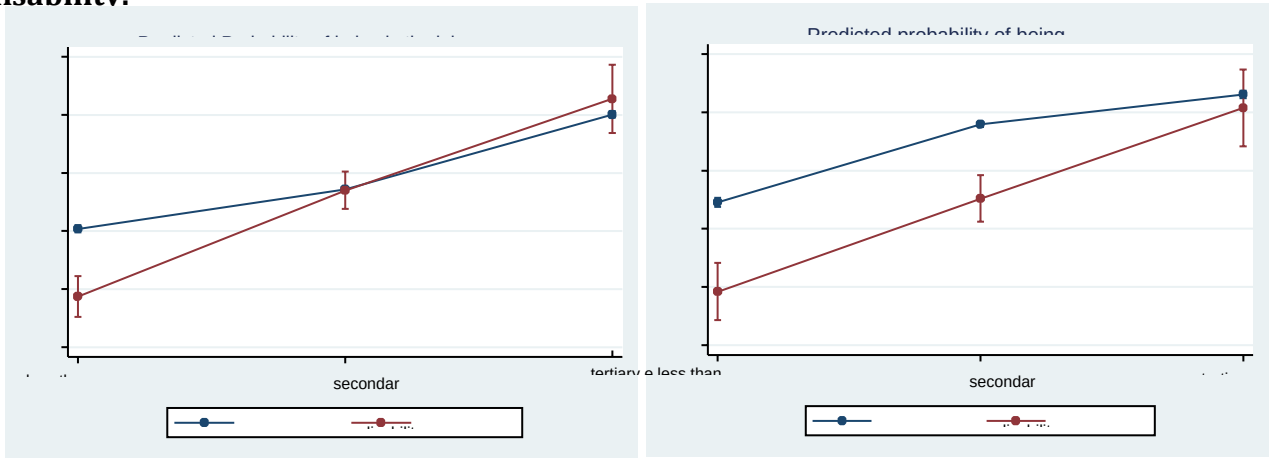
active individuals. Finally, in studying wage and satisfaction, we consider only those who are employed.

Results

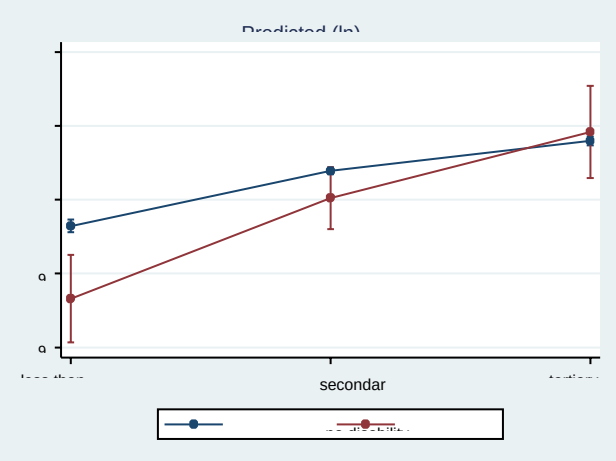
To better illustrate the gap between persons with disability and persons without disability for each level of education, the graphs 1-3 reports the predicted probability for every outcome variable, while the results of the estimation of equation (1) are reported in the appendix (Tab.A1).[10] As it can be seen in Panel 1, the probability of being active increases with education for both groups. But the gap in the activity rate between individual with and without disability decreases with the level of education and becomes positive for tertiary education. The same pattern is confirmed for employment probability, Panel (2). In this case having tertiary education just reduces the employment gap of persons with disability respect to non-disabled with a lower level of education (-2,4%). Regarding wage, Panel (3) shows that a significant wage gap associated with disability exists only for the lower educated. Overall, disabled people with less than secondary level of education are the most disadvantaged.

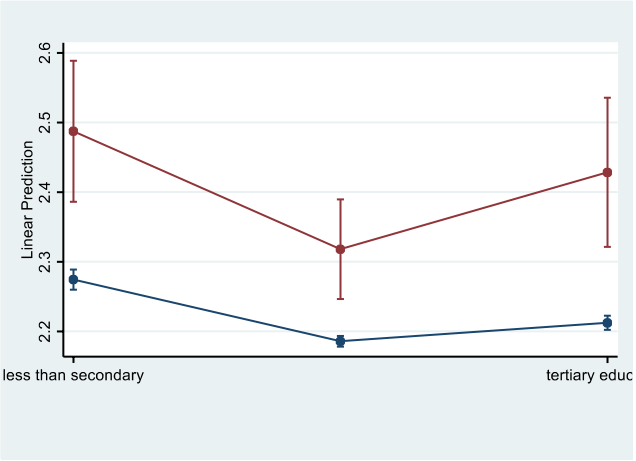
To sum up, our hypothesis that the negative gap in activity rate, employment rate and wages between people with and without disabilities should decrease with education, seems confirmed. The econometric analysis suggests that having a tertiary education not only drastically reduced the disability gap but it seems to increase the probability of being active and the probability of receiving a higher wage.

Figure 1. Predicted probabilities of being in the labour force, of being employed, predicted wage and job satisfaction by level of education and disability.



[10] The coefficients of other control variables confirm what is known in the literature. Education increases the likelihood of entering the labour market. There is clear evidence of a significant inverted-U shape relationship between the probability of participating in the labour market and age. Being older reduces the chances of gaining access to work. Finally, as regards gender differences, women are more penalized than men.





Clearly, this result has some policy implication, as it suggests wider investment and more targeted policy interventions in facilitating the people with disability in attaining at least a secondary education, and possibly also the transition from secondary school to university. This requires developing ways of teaching that respond to individual differences and therefore more suitable for the different types of disabilities, as well as providing additional supports like teaching assistants and technological instruments.

Finally, Panel 4 shows the results for our measure of job satisfaction. We do not find evidence of the role of education in mitigating the job dissatisfaction experienced by persons with disability. If anything, a larger negative gap is associated with tertiary education. Previous studies suggest that firms' organizational environment could play a role in influencing the job satisfaction of people with disabilities: a more flexible working arrangement seems to be beneficial (Baumgärtner et al, 2014). We do not have such information in our dataset, and thus we cannot add them to our specification. Thus, we leave a deeper analysis of this negative relationship and its mechanisms to future research.[11]

Conclusion

The purpose of our study was to document the role that education has for people with disabilities facing the labour market. We found that activity and employment rate and wage increase with the level of education. But, more crucially, a negative gap associated with disability emerge for the less educated individual, while a positive one is found for people with a higher education degree. Having a tertiary education degree is associated with a higher activity rate and wage for people with disabilities, and no difference emerge in term of employment rate. While for individual with a lower level of education, a negative gap emerges. Our results are also relevant from a policy point of view, as they focus on a country (Italy) which is considered a flagship model in the international context given its specific legislation in favour

[11] We have estimated each item of job satisfaction separately (not reported) but we still find the same pattern

of the job placement of disabled people and its inclusive educational system. Even such an inclusive setting has some shortcomings: the share with a low level of education is still higher for people with disability than for the non-disabled OECD (2011) and the transition from secondary to tertiary education is still difficult. Our results show that people with disabilities with higher education indeed fare better when facing the labour market than less educated one. Combining these evidences we can conclude that much more should be done in order to eliminate the existing barriers and increase and encourage university enrolment among people with disabilities.

Finally, we show that job satisfaction is always lower for people with disabilities regardless the level of education. We leave a deeper study of this evidence and its mechanisms to future research.

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Appendix

Tab Aa1. Estimation results. Labour force participation, Employment, wage and job satisfaction.

	(1)	(2)	(3)	(4)
VARIABLES	Labour Force	Emloymen t	Wage	Job Satisfaction
Disability	-0.117***	-0.154***	-0.197***	0.213***
	(0.0181)	(0.0253)	(0.0611)	(0.0521)
Secondary educ.	0.0681***	0.134***	0.149***	-0.0886***
	(0.00368)	(0.00473)	(0.00977)	(0.00833)
Tertiary educ.	0.197***	0.186***	0.230***	-0.0622***
	(0.00424)	(0.00528)	(0.0107)	(0.00910)
Disabiliy-secondary educ.	0.115***	0.0261	0.124*	-0.0808

	(0.0245)	(0.0326)	(0.0747)	(0.0637)
Disability-tertiary educ.	0.144***	0.130***	0.222**	0.00310
	(0.0352)	(0.0422)	(0.0885)	(0.0757)
Age	0.0654***	0.0203***	0.0376***	0.0103***
	(0.00138)	(0.00182)	(0.00359)	(0.00306)
Age square	-0.000780***	-0.000211***	-0.000254***	-7.11e-05*
	(2.00e-05)	(2.58e-05)	(5.03e-05)	(4.29e-05)
Female	-0.224***	-0.0583***	-0.316***	0.0549***
	(0.00287)	(0.00353)	(0.00687)	(0.00586)
Constant	-0.497***	0.298***	8.863***	1.995***
	(0.0230)	(0.0308)	(0.0614)	(0.0523)
Observations	102,240	70,380	46,557	46,608
R-squared	0.128	0.076	0.103	0.018
Regional FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Note: ***p<0.01; **p<0.05; *p<0.1

The role of HEIs in supporting regional development

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Abstract

More and more Higher Education Institutions are claiming and assuming new tasks and responsibilities: faced with budgetary constraints due to a steady decline in public funding, mandated to tackle geographical disparities, to prove their public liability or to contribute to societal sustainable growth, HEIs often need to re-determine their role towards the societal context in which they operate. Aiming at providing the society not only with high-skilled graduates but more with engaged, active citizens, they become pillars and main partners in the processes that take place towards the regional development building synergies with numerous local partners: SMEs, Chambers of Commerce, local entrepreneurs and start-ups and the regional authorities among others. It has become necessary and apparent that HEIs need to leverage their key resources to this aim in order to remain competitive and socially responsible and accountable. Being in the centre of such procedures provides HEIs with the credibility required towards the civil society and the local business world. Higher education, evidently, can neither distantiate itself from the needs of the local society nor should it be secluded like an ivory tower. It should cater for the needs of the local society but also experiment through collaborative schemes in an effort to promote the regional untapped talent and opportunities that could bring sustainability and growth.

Keywords: regional development, sustainability, growth, HEIs

Introduction

> 'States, including their governments, parliaments and other decision-makers, should: develop innovative schemes of collaboration between institutions of higher education and different sectors of society to ensure that higher education and research programmes effectively contribute to local, regional and national development' (UNESCO 1998)

Already two decades since the October 1998 UNESCO World Conference on Higher Education, the debate around the broadened responsibility of Higher Education Institutions (HEIs) and the multi-faceted roles they need to assume in society is still profound. Apparently, HEIs needed to reformulate their mission and role in order to meet and respond to contemporary trends and challenges. An abundance of policy documents

and reports make strong references to the substantial role HEIs need to play in their regional contexts, describe the deep impact they may bring upon their region and indicate the significant contribution they can make to the regional development in terms of socio-economic growth and sustainability. A wide range of conditions and trends have reformulated the societal landscape and have put pressure on HEIs to assume different roles; public funding constraints, global fluctuation, youth unemployment and the need for new skills are only some of the various factors that have influenced HEIs and have led them to expand their functions and responsibilities beyond the traditional role of providing knowledge and research opportunities. HEIs have acquired a wide array of roles such as the support of the sustainable growth of the region, the training on innovative skills, the contribution to the region's inventory of assets, the undertaking of a civic role and the contribution to the active citizenship identity, the liaison with diverse stakeholders, just to name a few. Numerous heterogeneous partnerships of HEIs with regional authorities, enterprises and SMEs, research centres and other regional partners attest to the fact that HEIs are able to enact a vital role in such collaborations and use them as a path to sustainable growth in the region. Still, persisting challenges such as the insufficient policy coherence, the limited funding, the lack of infrastructure and the lack of vision, hinder the positive contribution of higher education to the regional development and growth. Consequently, multi-level coordinated efforts are required to be put in effect in order for HEIs to overpower those challenges.

This paper will attempt to shed light on the instrumental role of academia in the regional growth, the contemporary challenges and the ways to overcome them. Existing scientific literature by high caliber experts and important policy documents and reports will be used as tools of reference.

Background

The discussion on the Triple Helix Model of Innovation (Etzkowitz and Leydesdorff, 2000), stipulating that HEIs should collaborate with research and business to create collaborations that would lead to regional development and national growth, is not new in the world of academia and one could add it has been extensive. Reports and studies have been favourable to the idea of HEIs taking on coordinating roles in their regions. In this context, policy makers and national governments have been requested to facilitate the processes. In an extensive but not exhaustive list of policy documents it has been stressed that via 'effective links between education, research and business – the three sides of the knowledge triangle' (European Commission, 2011) sustainability and job growth can be attained while a Council Conclusion clearly stated that 'a more joined-up policy-making and cooperation' (2009) is fundamental in building partnerships of the three knowledge triangle ingredients. HEIs specifically can play a part in their regions by providing the conditions for innovative environments. However, a discussion on the Quadruple Helix Model (Carayannis and Campbell, 2000) adds a further aspect; the

engagement of HEIs with the civil society. These four notions encourage 'the co-evolution of different knowledge and innovation modes as well as balances non-linear innovation modes in the context of multi-level innovation systems' (Carayannis and Campbell, 2000, p. 227). Additionally, the 2017 revised agenda has explored the role of HEIs with the civil society as a fourth element.

New Conditions

The question whether academia lies in its ivory towers has long been discussed and this detachment of HEIs from society has often created debate. Knowledge creation has always been the main mandate for academia but, faced with increasing pressures to better fit and respond to contemporary trends, challenges and new societal conditions, it needs to redefine its role and interact more with its surroundings. New trends and needs stipulate new types of co-operation for HEIs and the assumption of increased roles. Different stakeholders exert different types of influence on HEIs and create different expectations from them. HEIs are then expected to be responsive to all those diverse societal pressures for regional engagement.

The recent global-scale crisis has severely affected many different aspects of society with funding of public higher education being seriously affected. Funding constraints in all aspects of social life have put HEIs under additional scrutiny making them more accountable to the channeling of public funds towards society as well as from the perspective of the activities in which they engage. This increased liability has also increased HEIs obligation to constantly prove their value to the severely inflicted society. HEIs are dynamic learning environments always interacting with the society where they belong, forming living ecosystems with community stakeholders. In this context, they can use ground-breaking research to contribute effectively proposing sustainable solutions to current economic and social challenges or to address environmental issues of concern to the regional community via policy advocacy. Particularly with regards to Research and Innovation strategy for Smart Specialisation (RIS3), their contribution can be immense as they have a unique ability to help regions realise their own competitive advantage, showcase their dynamics and unlock untapped regional talent. As Robert Madelin has stressed 'Instead of every region going silicon, trying to match global excellence in disciplines in which they have no track record, each region can identify home-grown strengths' (2016). One could say that HEIs are key in assisting the regions identify priority sectors, niche areas and key domains, diagnose weaknesses, foresee threats and assess their opportunities and strengths for sustainability and growth. To put it differently, HEIs can facilitate the matching process between regional needs and the potential available and 'define innovation goals at regional level' (Madelin, 2016).

Youth unemployment rates owing to the global economic crisis have been soaring. Again higher education seems vital in intercepting this ominous impetus by helping young people foster innovative and transversal skills. It has become apparent during the recent

years that, for young people to live up to the expectations of global competitiveness, more than the traditional knowledge that higher education used to provide is required. The ever-changing society requires from young people and future active citizens a much more broadened and intricate set of skills which plain knowledge does not seem to satisfy. HEIs become the mediators between what the labour market requires and what young people are ready to do in the context of the knowledge-intensive society. They are expected to cultivate more advanced competences like digital skills or creative thinking, which will also tackle the phenomenon of skills mismatch.

The Quadruple Helix Model approach already established in 2000 their civic responsibility in an effort to bridge the distance between higher education and the civil society. Tragic incidents of extremism, radicalization and hate speech around the world have left in the meantime a gruesome footprint on all aspects of social life and higher education could not remain callous. In the above context, 15 years later during an extraordinary Ministerial meeting in Paris on 17th March 2015 EU Ministers of Education were unanimously reconfirming their loyalty to the fundamental values and the commitment of higher education specifically to safeguard and secure those values through the Declaration on Promoting citizenship: freedom of speech, respect to difference, non-discrimination and tolerance, the cornerstones of the inclusive society. This stressed the multiple roles of HEIs and their re-established and broadened span of cooperation. HEIs can contribute in equipping young students with more advanced competences; civic, social and intercultural competences and skills that will permit them to engage socially in a multi-cultural environment, have a critical mind towards media propaganda and indoctrination and fight for social cohesion. They can make active and responsible citizens ready to participate dynamically in protecting and ensuring fundamental values like freedom and tolerance for all. In the long run, this can have substantial impact in the path towards a socially cohesive society. Target 4.7 of the United Nations Sustainable Development Goals undertakes to 'ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development' (United Nations 2015, para. 4.7).

In addition, HEIs can really support societies in achieving the 17 United Nations' Sustainable Development Goals (SDGs) and their 169 targets through research and education in an array of sectors and contribute to conditions for a better future at global scale by drawing upon the characteristics of the region to develop research. The UN Summit of September 2015 of world leaders launched the 2030 Agenda for Sustainable Development (with official effect in January 2016) with the view to eradicate poverty and ensure global peace and prosperity for all; in other words, it set principles conducive to a cohesive and inclusive society for all without discrimination with strong emphasis on

the more vulnerable groups; the UN General Assembly specified them as 'children, youth, persons with disabilities (of whom more than 80 per cent live in poverty), people living with HIV/AIDS, older persons, indigenous peoples, refugees and internally displaced persons and migrants' (U.N. 2015, p.7).

In this context, higher education comes forth as a global multi-player who can lead to sustainable development and regional boom. It has the potential to play a coordinating role in regional hubs of knowledge thus reducing youth unemployment. In the new types of partnerships with research centers and SMEs, HEIs can facilitate the infusion of knowledge transfer through multi-level channels. Particularly, they can further explore ways to match regional potential to innovative methods and equip youth with entrepreneurial, creative and innovative skills that will help them overcome unemployment barriers but also become more global players, beyond their regional frontiers. HEIs can reinforce their role within the region to integrate their huge research capacity and innovative practice in the local business sector, especially in cases where they have not explored the full capacity of the region and they have not unlocked the untapped regional potential which can be remarkable. Escalating youth unemployment rates can be really tackled to a certain extent, especially at regions with uneven employment of young people. Goal 4 of the Sustainable Development Goals of the United Nations corroborated in the most undeniable way the fact that 'quality education is the foundation to creating sustainable development' (United Nations 2015), while further on, in the targets, education becomes the unquestionable actor that will 'substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship' (United Nations 2015, para. 4.4).

The Challenges

Still, there are impediments that hamper the impetus of HEIs in encouraging processes that strengthen their relationship with their region;

- At national level, there is often inadequate policy coherence or even absence of the indispensable policy framework to stir the procedures that amplify such links between HEIs and the region. In numerous occasions, there is paucity of the legal framework and, in the case of succinctly outlined frameworks, stakeholders are faced with implementation challenges. Erratic policy frameworks also challenge the coordination required among all regional partners; HEIs, the regional authorities, businesses among others. Also, funding initiatives to encourage research between HEIs, industry and other regional stakeholders are often non-existent or not exploited to a full degree where specific results can be brought forward

- Funding is key in supporting the regional dimension within HEIs. Both at national level, when it comes to funding of public higher education, and institutional level, HEIs need

to foresee this aspect when they compartmentalise their funds. This links to the institutional autonomy which is another important matter. As the PLA about HEIs as centres of regional development and innovation of the ET 2020 Working Group on Modernisation of Higher Education showed 'many HE systems in Europe still limit HEIs' institutional autonomy with regard to human, financial and physical resources, governance system, academic profile and programmes, which makes it difficult for HEIs to align their education and R&D offer with the needs and potential of the region.' (European Commission, n.d.). Public HEIs in particular have been extremely liable and accountable to governments and society as far as the way they channel public funds. This often leaves little space for HEIs to differentiate their strategies and dedicate more funds on the regional dimension, especially if the results and gains are pretty long-term and most importantly not easily quantifiable

- At institutional level, HEIs are often faced with the challenge of too traditional or old-fashioned curricula that do not reflect contemporary needs and, particularly, regional needs. Often, they do not cater for the needs and potential of the region where they operate or they lack the flexibility to adapt accordingly. Thus they fail to translate the needs of the society into academic courses with concrete results that can really interact with society and positively contribute to it

- At regional level, local enterprises do not frequently match the potential of local HEIs. There might be a mismatch between the academia potential and the regional needs. Academia might as well meet national level criteria and successfully collaborate with big enterprises but might miss the opportunity to collaborate with regional SMEs and lose their potential to contribute to sustainable development. At the same time, SMEs miss on the huge opportunity to gain from quality research and patents regional HEIs might be able to share. In numerous cases, local HEIs seem to be able to provide very high qualifications, services or products that SMEs find hard to easily assimilate. As a result, a wide gap between these two important partners appears and disheartens cooperation and common efforts

Measures

Unless measures are set in place, the opportunities available to fully utilise the regional aspects will unfortunately remain unexploited;

- A distinct regional dimension must be included in policy-making meeting specific criteria and satisfying specific standards. Clearly, at national level, countries can profit from investing in regional policies that promote smaller chunks of collaborative schemes where HEIs enact a coordinating role. National governments must by all means ensure that HEIs have their institutional autonomy, without this meaning diminished accountability. On the opposite, well-structured HEIs, with a comprehensive regional strategy, can really provide evidence-based performance

results to the society if KPIs are set in place to measure the advantages and gains from the regional cooperation. This way, they will be able to fine-tune their budget in accordance with their needs, comprising a distinct regional aspect within their strategy, while at the same time they will have concrete impact statements to distribute within the local community as proof of positive impact

- At institutional level, HEIs need to increase curricula relevance, enhanced through regional expertise, that can further be built with the cooperation of local employers, regional authorities and various other stakeholders such as business or youth associations. HEIs need to assume a more coordinating role in cluster development and in building up regional eco-systems through co-working and co-creation spaces. They can help innovative ideas thrive by supporting the engagement of local employers in research and young students and faculty interaction with them thus providing regional actors with access to globalised knowledge networks and supply chains. To this end, they can also set the criteria for good quality industry traineeships as mechanisms that can facilitate the matching between students' skills and labour market needs. Similarly, learning programmes within the HEIs need to further enhance the skills of students to be quick in the uptake of realising the regional opportunities, while careers services within HEIs need to facilitate processes of integrating those skills into the local society to its own interest. What is more, HEIs need to inspire and coordinate regular volunteering activities that engage students with the local society and any region-specific challenges (European Commission, n.d.)

- HEIs need to integrate the regional aspect in their strategy and vision rather that just a 'marginalised third mission' (European Commission, n.d.). However, this is not an easy endeavour as it requires a more strategically-oriented approach on behalf of the institution that is capable of mapping the region where it is located and identifying its strengths and opportunities, weaknesses and threats; the available infrastructure, the local market specificities, the community demands on HEIs and the levels of entrepreneurship, the local unemployment rates, the migration levels, the priority sectors of the region, the equilibrium between SMEs and MNEs, the age of the local population, the existing interaction and relations between the HEI and its local counterparts, the recruitment strategies the HEI has set up for attracting foreign faculty and students and the way it mediates in integrating them in the local society, just to name a few of the many components that need to be taken into account in order to delineate a successful action plan. Only then, and with a thorough knowledge and understanding of the region, will the institution be able to embed in its vision a clearly developed plan of the regional potential. 'Weak levels of corporate culture and different intellectual traditions within universities' (Goddard, 2003) exist and as a result regional development is translated into a tremendously different way. Indeed, depending on the responsibilities, level of engagement to issues relating to the region, the perspective and the personal interest, a wide variety of thoughts on what regional development is

comes up. There is also a lot an institution must do and take into account in order to prepare itself for such interactions with the regions and it all boils down to leadership and infrastructure within the institution; delegation and assumption of responsibilities, level of interaction with the region and the historic links the HEI has had with it, the mechanisms that need to be put in place to ensure a smooth cooperation, rewards and motives for academic staff for being regionally engaged, the channels of communication with the region, the funding and monitoring instruments and processes, any policies or frameworks existing to help the HEI commercialise its research products in the interaction with the regional stakeholders to name a few. Above all however, it is a matter of changing the institutional culture to a more regionally-oriented and of the HEI itself being already able to be aware of its own qualities and special characteristics and the added value it can bring to the region long before starting to interact with it. As the Council Conclusion (2009) specified policies should be set out to encourage universities to accelerate their efforts to develop an "innovation culture"

- HEIs need to embed entrepreneurship horizontally in all their functions and curricula, in other words adopt 'an entrepreneurial culture' that will help them disengage to a certain extent from the 'dependency on state funding' (European Commission, n.d.). Taking into account the public funding restrictions, this approach comes even more natural. On top of this, it will 'enhance graduate employability and create businesses that can attract investments and generate jobs' (European Commission, n.d.) and thus support sustainability and growth through regional development. Simultaneously, national governments need to re-establish their perspective towards the regional dimension and find ways to later translate the effort some are already making to include it in their strategy into channeled reward funding. The compensation motive is key to HEIs striving to be radical in the engagement with the local counterparts under extreme circumstances

- At regional level, the regional authorities must keep a pretty detailed inventory of their resources; skills, expertise, personnel and infrastructure, not to mention the fact that the regional dimension should be a part of their strategic action plan clearly described and included in their mission. Without having a clear idea of themselves, they will not be able to successfully cooperate with the local HEIs.

Conclusions

HEIs are mandated to support the sustainability of the region where they function and contribute to the regional growth. The truth is that to keep pace with a rapidly evolving environment full of challenges and new global trends, HEIs put forward more coherent and inclusive policies in order to adopt more roles and support the region in multiple ways. Actually, it is the reality itself that sets the contexts to which the society has to respond and responsive HEIs need to quickly adapt. Apparently, they need to constantly redefine their roles and this is no easy task taking into consideration the complexity of the arising challenges.

The engagement of academia with the external business community, the civil society and other regional stakeholders is getting steadily intensified and becomes broader and more structuralised. Gradually more and more HEIs make room in their strategies and vision statements for clear and direct regional dimension references not only in order to outline the form of partnership among all regional actors but also to ensure that the society knows this is clearly taken into consideration as if they cannot afford any misconception on the issue. Evidently, academia has realised the value of this type of collaboration, the positive outcomes it can bring. Already in 1998 during the UNESCO World Conference on Higher Education it was becoming perceivable that 'the links between higher education, the world of work and other parts of society should be strengthened and renewed' (UNESCO, 1998) through revised curricula, traineeships and the engagement of faculty and students in the labour market and vice versa. More responsive HEIs have already been constructing sustainable pathways for cross-cooperation with other equally responsive HEIs in order to exchange best practice and benchmark their performance as main regional players. In the light of the above, it seems contemporary challenges and trends exert great impact in academia, maybe a bit more than in the past. Simultaneously, it seems that no fragmented action can make regional development occur. Only complementary and coordinated actions by all relevant partners like academia, the business sector, the local society could really trigger this change.

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The Active Welfare State as a prerequisite on addressing Brain Drain

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Abstract

The financial crisis that occurred in 2009 has boosted the brain drain phenomenon in Greece, by forcing a huge number of young people who have completed their studies in Greece, to emigration in order to find adequate work. Ten years later, brain drain remains an ongoing phenomenon and the objective to force a return back to Greece of the highly qualified young people who have left, is a key challenge. At the same time, many young people who complete their studies in Greece and do not emigrate yet, are not able to manage to find work, close to their professional specialization. Therefore, after all these years of crisis and economic strain, the main objective for the post-crisis period is to foster the conditions for increasing social welfare by activating the welfare state's employment policies and transform the brain drain and brain loss into brain gain, which will directly enhance economic development and welfare to the society. In particular, investing in social and human capital is a broader strategy that includes measures for the lifelong development of human resources while maintaining an economically viable social protection system. The method for achieving these goals is to re-structure the welfare state in order to replace passive measures with beneficial productive investments in the skills and competences of the present and future workforce, as well as to give incentives to the labor market forces in order to create the conditions for viable inclusion of the young and skilled people, without simultaneously de-structuring the social welfare framework of the welfare state that guarantees the release from immediate social risks. This will only be achieved by focusing on the problems of young people in terms of capabilities exploitation, thus forming the conditions to gain both the "lost brains" as well as the "drained brains".

Keywords: Brain Drain, Welfare, Brain Loss, Brain Gain, Activation

Introduction

During the crisis an increased number of well-educated young people left Greece in order to find better working conditions and welfare prospects in other countries. Ten years from the beginning of the crisis, the lack of investments, the

structural problems of the labour market, the passive welfare state as well as the high percentages of unemployment and underemployment are main factors which lead to brain drain as well as to brain loss, the condition when a well-educated young person is employed in low skilled and far from her/his specialization jobs. These two conditions as well as unemployment and underemployment constitute the basic parameters of the brain drain danger. This paper aims at presenting, tentatively, some factors that led to the Greek brain drain and to the relevant vulnerability conditions for young people and at the same time drawing the importance of the construction of an active welfare state that will offer the opportunity to reverse brain drain into brain gain. Thus, the first part focuses on some theoretical aspects of the brain drain phenomenon, the second at the socio-economic background in Greece during the crisis as well as some aspects of the Greek brain drain and the third, at the importance of a reverse into active welfare state policies in order to create lucrative ground for brain gain.

Preliminary Theoretical Considerations

The term "brain drain" refers to the situation in which large numbers of scientific and specialized human resources, such as doctors, engineers, economists and other professionals, leave their country looking for better socio-economic and working conditions (Chatziprodromidou et al., 2017; Latif, 2003). However, there is not a clear consensus about the meaning of the term as long as various definitions of brain drain exist (Marinakou et al., 2016). Exemplarily, according to Brezis and Soueri (2012: 2), "the brain drain theory describes the decision of the individual when he has already acquired some human capital in his country, and then decides to move", while Ifanti et al. (2014: 211) underline that the term brain drain portray "the large-scale immigration of educated and qualified individuals, mainly doctors, scientists, engineers and financial professionals, from their countries to seek better social and/or working conditions abroad".

As it can be easily understood, brain drain is a widespread phenomenon which began to be indicated after the end of the World War II and has been expressed as the constantly increasing mobility of scientists or well educated people, due to the rising post-war labour migration and nation state interconnection (Cheng and Yang, 1998). Thus, the internal movement of scientists within a given country has been exaggerated and became an outward international movement. Nevertheless, globalization along with economic recession, high levels of unemployment and low or diminishing living standards, not only in developing but also in developed countries, exacerbate this phenomenon for countries from both categories (Ifanti et al., 2014).

Therefore, brain drain constitutes a potential counterpoint to welfare state's policies in general. There is a long term brain drain risk of scientific talent for countries which high percentages of students sent to study abroad. This trend deprives them of researchers and consequently, of talented employees in key sectors of the economy, such as information technology, economics, mathematics and medicine. Although this is sometimes considered as an issue mainly affecting developing countries, it gives rise to concerns in developed countries as well (Keeley, 2009), especially in the European periphery (this includes especially the Southern European countries which faced an unprecedented crisis since 2009).

Consequently, brain drain is often regarded as one of the main risks of migration, even though hazards for the countries that suffer from brain drain are sometimes misrepresented, and may lead to negative consequences (Keeley, 2009). Thus, it constitutes a) a loss of human resources, which are normally the suppliers of innovation and new ideas, b) a loss of economic resources as long as the funds invested in these people's education do not have any real impact in this country but in a different one and c) a potential risk of specialized staff shortages in specific scientific categories. On the contrary, it may be also considered as a phenomenon with positive outcomes in terms of bringing back new skills when braindrainers return to their home countries, thus fostering brain gain. However, this is rare in cases that the home countries continue to face economic and social strain, such as current Greece.

The brain drain phenomenon is constantly connected with high levels of youth unemployment, which is one of the main reasons that forces the high skilled human capital to emigrate, as well as it is also connected with high levels of "brain lost young people". With the term "brain lost young people" we describe the "brain loss phenomenon" which is the lack of exploitation of high skilled human capital and thus its inclusion in low skilled employment that is not connected with their expertise. Thus, there is a loss of expertise which is not used and therefore drives to loss of human capital. Some scholars connect brain loss with a loss in productivity (Li, 2008), which is one of the crucial problems of the Greek labour market (OECD, 2018) and constitutes a depreciation of human capital (Lianos, 2007). Based on that, there is a twofold danger for "brain lost young people". On the one hand, they are losing their human capital by working in low skilled employment, diminishing their productivity, their potential as well as their future career prospects and on the other hand, they may emigrate and become braindrainers. The exploitation of this human capital and the creation of new career prospects for them is a crucial challenge for every active welfare state which is also connected with innovation increase and consequently, will create better conditions for economic and social development-welfare.

Socio-economic background and aspects of the Greek brain drain

Undoubtedly, the prolonged economic downturn and the rigorous fiscal measures which were taken within the Medium-Term Fiscal Strategy Frameworks in Greece after 2009, have had a major dramatic impact on the Greek economy and society, by deregulating the labour market, increasing dramatically the unemployment rates, especially the youth unemployment rate, and thus having a huge impact on the reconfiguration of the country's social structure. Since the onset of the economic crisis, all the above-mentioned have shaped an unstable and uncertain environment in all sectors and fields of the economic activity and employment in Greece, with main outcomes a) the increase of precarious working conditions and b) the extensive unemployment.

The above-mentioned difficult socio-economic framework especially in the field of employment, was unfortunately an inevitable consequence of the prolonged economic downturn and the strict fiscal measures, (Matsaganis, 2013: 3; OECD, 2014: 1; Papadakis et al., 2017a: 6-8) and has gradually transformed the Greek social fabric, with young people "being at the edge of the labour market transformations including the expansion of precarious forms of employment" (Green 2017, as cited in Papadakis, 2019), as well as the expansion of social inequalities, the shrinkage of the Welfare State and consequently the increase in poverty rates, - closely linked to the sharp increase in the unemployment rates - (Kotroyannos et al., 2015: 269; Matsaganis, 2013: 10-12; Papadakis et al., 2017a: 6-11; Papadakis et al., 2017b: 10-11).

It should also be mentioned that since the early years of the current decade, the transformations in the fields of labour market and employment have shaped (which still continue to exist) a weak and unstable employment framework and working conditions, the key determinants of which are the expansion of precarious work and the destabilization of employment (Karakioulafi et al., 2014: 63-64 & 76-77). Besides, it is no coincidence that in Greece, based on the findings of the Annual Report 2018 of the Labour Market Diagnosis System, "the total number of part-time employees doubled from 2001 to 2017, with a slight increase after the fourth quarter of 2013 and following a downward trend in 2017" (NILHR, 2018: 1).

In this context, young people constitute the population group, which has been mostly affected by the economic crisis in Greece, compared to any other population group. It is worth mentioning that, based on the research findings of the Labour Market Diagnosis System of the National Institute of Labour and Human Resources (NILHR), from 2011 to 2016, the majority of the unemployed in Greece was young people who had never worked in the past. Specifically, while in

2011 there were 215.323 young unemployed people without work experience, in 2013 the number increased in 314.447 young people, namely the year when the economic downturn reached its peak in Greece (NILHR, 2017: 21). Furthermore, the stability in terms of working conditions, especially for young people, remains at worrying levels due to the economic instability and the deregulation of the labour market caused by economic recession in Greece in recent years, especially for young people and other socially vulnerable groups.

Within the above-mentioned context (i.e. high youth unemployment and precarious working conditions) in conjunction with the lack of previous work experience, which constitutes a major inhibitor for the new generation in terms of job seeking (EMRUn/UoC, 2016: 64; Papadakis et al., 2017a: 23-25; Papadakis et al., 2018: 189-191), as well as the weakness and inability of training programs in Greece to function as an active employment policy so far, aiming at enhancing and improving the transition and access of young people to the labour market by acquiring the appropriate skills and competencies (Papadakis et al, 2017a: 25-26; Papadakis et al., 2018: 191-192), it seems that the Greek young people have been trapped in an extremely difficult situation. In other words, in order to survive and/or acquire work experience, they have been forced, especially young people with high educational level and recent graduates from Tertiary Education, either to work in precarious forms of employment, in which, in many cases, there is a skill mismatch or to emigrate to another country, in order to seek for a job or better working conditions (Papadakis et al., 2017a: 15-16 & 34-35). Moreover, tertiary education graduates still have "the highest overqualification in their jobs" (European Commission, 2018: 126). Specifically, "skills mismatches are the highest in the EU. At 43.3% in 2016, the share of tertiary graduates working in jobs that do not require a higher education qualification was higher than elsewhere in the EU (EU average: 26%) (Cedefop, 2018 as cited in European Commission, 2018: 129).

All the above-mentioned have led to a significant increase in the number of Greek brain drainers, as, over the current decade, there has been a major outflow of high-skilled graduates and researchers abroad, due to the lack of jobs and the substandard living conditions as a consequence of the implementation of austerity measures in Greece (European Commission, 2017: 130; Pelliccia, 2013: 6). Although, there is a variety of conceptual approaches with regard to "brain drain", such as "skilled international migration", "intelligence export", "skilled international labour circulation", "international migration of talents", "professional transients", "migration of expertise", "quality migration", "researchers' relocation", "brain absorption", "brains' immigration", "migration of dynamic elements", "leakage of intellect", "best workforce drain", "drain of quality manpower" (Lambrianidis, 2011), in the case of Greece, brain drain is directly

related to the economic crisis, which "brought to the fore an immigration form which in the past existed to a lesser extent, i.e. that of people with high qualifications" (Theodoropoulos et al., 2014: 230). Additionally, brain drain can be associated and linked with the function of human capital, which constitutes an investment for the people as well as for their country (Kelo & Wächter, 2004).

It is worth mentioning though, that the reasons of migration seem to differ between highly skilled people who emigrated during the pre-crisis period and those who emigrated after 2010. This difference highlights the fact that in the crisis years, emigration became more of a necessity rather than a career choice for many highly skilled emigrants. Several of the pre-crisis migrants had left for studies and decided to stay abroad for a few years to gain some working experience and then to return to Greece as brain gainers (Labrianidis & Pratsianakis, 2014). However, in the case of Greece, the global social and financial crisis that has also affected the country since 2009 and has led to the implementation of austerity measures, had an adverse impact on the development of various sectors, leading many young people to emigration. In Greece, the general unemployment rate reached 27.5% in 2013 and remains high in 2017 (21.5%) while youth unemployment (until 25 years old) reached 58.3% in 2013 and currently remains at the highest levels in the Eurozone, despite a significant decline (43.6% in 2017), versus 9.6% and 25.7% in 2009, respectively (Eurostat, 2019a). There has been an increase in poverty and in labour insecurity in Greece, as the country's GDP has fallen by 27.8% from 2009 to 2017 (Eurostat, 2019b). Between 2008 and 2011, the recruitment of new employees has decreased by 26.6% (from 1,143,920 to 839,015) (Karantinos, 2012), while the majority of the new employment vacancies where of a precarious character during the crisis years. As Green stresses, young people constitute "the age group most affected (by the crisis) as unemployment has risen dramatically and wages have fallen" (Green, 2017: 7).

Existing data reveal that most brain drainers hold a university degree and their main specializations are engineering, economics, IT, medicine and mathematics, while their ages were equally distributed between the age groups 20-30 years old and 31-45 years old (Gropas & Triantafyllidou, 2013). Moreover, most Greek graduates who have emigrated indicate that they are receiving higher wages than in Greece (Theodoropoulos et al., 2014), where they were also dissatisfied from work prospects (Gropas & Triantafyllidou, 2013). Furthermore, they identify some reasons that "pushed" them to emigrate, including corruption, lack of employment opportunities in positions of responsibility offered to younger professionals based on skills, low salaries, standards of living decline, political instability, economic strain and lack of openness to diversity (Chatziprodromidou, 2017; Gropas & Triantafyllidou, 2013; Triantafyllidou et al. 2013).

Thus, brain drain has led a large number of Greek young graduates to emigrate to other countries in order to find better employment and living conditions, as long as in Greece the working and living conditions seem to become unfavorable for them. The issue that arises ten years after the beginning of the crisis, is how to attract young people who have left Greece to return to the country, namely to turn brain drain into brain gain. Attracting young scientists from abroad will create, slowly but steadily, both the prerequisites for countering low birthrate and new conditions for social and economic development. The social and human capital that has flowed should now be transformed into an opportunity to enhance growth, as long as knowledge and experience from abroad can be useful in fostering innovation, excellence and new good practices.

In addition to the category of braindrainers and the policies to be implemented to facilitate their return and integration into the labor market, it is necessary to focus also on another category of young people who are not braindrainers yet but may potentially become. These are recent graduates who are looking for work and are on the brink of transition from education to employment. The risk of their immigration to other countries is visible even now, ten years after the outbreak of the crisis.

The third category of young people that face the danger of brain drain is the "brain-lost" young people. This category includes young highly educated people who have failed to find employment related to the subject of their studies and are forced to work in low-skilled jobs which do not allow them to practice their skills and are usually of a precarious character.

The activation of the welfare state and the role of brain gain in the Greek peculiar case

It is true that integration into the labor market is a fundamental objective for the welfare state. The Greek case, as well as the rest of the South European countries to a lesser extent, faced a sharp decline in both employment opportunities and formal employment during the crisis. High levels of underemployment, namely the expansion of atypical and non-typical forms, leads to inclusion in forms of employment that do not offer opportunities for prosperity to the young employees and in some cases, neither guarantee even adequate living standards.

It should be mentioned though that the Greek case was for years a system in which social benefits' and transfers' distribution followed the fragmented structure of the labour market, including strong protections for the core sector (mainly public employees and employees of large enterprises), but not for the peripheral (private

sector's employees in medium and small enterprises) and the underground sector (mainly undeclared-black employment), and in order not to experience negative electoral and political effects, governments supported an often particuralistic but rather weak subsidization for the marginal employees (Ferrera, 2010). During the crisis, the austerity measures and the weak and passive welfare state were not able to create new and sustainable opportunities for the young people. Specifically, there was a retrenchment of employment rights which increased the gap between insiders and outsiders of the labor market (increasing labor dualism) by removing the social protection from a large part of those previously included in the insiders. At the same time, the policy of internal devaluation that has been applied in the Greek case, has increased the precarious employment, namely the poor workers who encounter difficulties in surviving (Eurostat, 2019c). Consequently, young people are even more plagued by these effects and are led either to brain drain or to vulnerability and social exclusion, as evidenced by recent surveys (Kotroyannos et al 2015).

After all these years of crisis and economic strain, the main objective for the post-crisis period is to foster the conditions for increasing social welfare by activating the welfare state's employment policies and transform the brain drain and brain loss into brain gain, which will directly enhance economic development and welfare to the society. In particular, investing in social and human capital is a broader strategy that includes measures for the lifelong development of human resources while maintaining an economically viable social protection system. The method for achieving these goals is to re-structure the welfare state in order to replace passive measures with beneficial productive investments in the skills and competences of the present and future workforce (Bengtsson et al., 2017; Kvist, 2015; Streeck & Mertens, 2013), as well as to give incentives to the labor market forces in order to create the conditions for viable inclusion of the young and skilled people, without simultaneously de-structuring the social welfare framework of the welfare state that guarantees the release from immediate social risks (Heidenreich & Aurich-Beerheide, 2014). This will only be achieved by focusing on the problems of young people in terms of capabilities exploitation, thus forming the conditions to gain both the "lost brains" as well as the "drained brains".

Therefore, the active welfare state should focus on a financially responsible social policy that is focused on both preventive interventions and a certain degree of selectivity, in the sense of a more rational definition of the social policy and more stringent criteria for the provision of social services to specific beneficiaries. The uncontrolled universality of social policy leads to exactly the opposite effect in the midst of fiscal derailment.

The preventive function of the state has to focus on the issue of employment, namely the treatment of unemployment, by focusing on the knowledge society and investing in education, training, inventiveness, new technologies and innovation. The direction of labor market integration, inventiveness and innovation must define the educational process from infancy to the phases of vocational training and university education, based on needs assessment procedures. At the same time, there is a need for a new compatibility between family and profession, the compatibility of a chosen profession with age, an active employment policy centered on the acquisition of skills, provision of public care and welfare.

Consequently, the active welfare state must negotiate conditions for the effective competition for private sector enterprises and respond to the establishment of an effective, proportionate and equitable tax policy, as well as the need for public investment in infrastructure and software. On the other hand, the state can also play an active role in the economic process by creating a framework of incentives and sanctions that will regulate the conditions of competition and future market trends. Examples could be the promotion of new, innovative technologies in all fields of production, particularly in the field of the environment, in the field of energy efficiency as well as in the expansion of quality services, notably in health and welfare, social economy and production innovation in the agricultural sector. Thus, active welfare state policy means an open position in favor of the real economy, namely entrepreneurship and innovation, which will consequently lead to employment level increase, to the decrease of brain loss as well as to a gradual return of high skilled young people.

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The role of universities in Sustainable Development Goals: The Erasmus program focus

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Abstract

Education, research, innovation and climate change factors are unequivocally apprehended in a number of Sustainable Development Goals (SDG's) where universities enjoy a firsthand-role in addressing these. Universities clench to a nonpartisan position and they help high in the society. This nature directly demands them to educate the public and private sectors on the importance of implementing the SDGs. Universities, under their thorough research credentials and exertions, have a vital role in the provision of necessary and reliable knowledge, evidence-based, answers and coinages to support achieving SDG goals. The SDGs provide a platform for the educational institutions to give back to the community by exhibiting their desire, their walking-the-talk tactics and meaningful opportunities to develop their own countries. This anchors the need of this paper in examining the role of universities in achieving the SDG's through research, leadership, and innovation. The paper also examines the barriers towards implementation of SDG's; budgetary, political and resource constraints, globalization and trade-off of goods and services, lack of positive interlinkages, timescale factor and special scale. The study has a keen interest on the works already done by the European Commission through the Erasmus program (2009-2013) and Erasmus+ programs (higher education students, stuff mobility programs, and Jean Monnet initiatives). The study also cover how these programs have contributed to collaborations and partnerships with even the third world countries on matters of education, training, innovation, youth empowerment and research i.e. Konstantinos and Marilena initiatives. All the results identified points that 82 % completion rates which translates to 74% success in achieving SDGs. The paper concludes by urging that ;change-makers require the knowledge, skills, values, and attitudes that empower them to contribute to sustainable development. Higher education, therefore, is crucial for the achievement of sustainable development.

Key words: Sustainable development, Mobility program**,** Higher Education**,** Third world, European Union.

Introduction

The Sustainable Development Goals (SDGs) were developed following the United Nations Conference on Sustainable Development (UNCSD) in 2012 ('Rio+20') and build on the Millennium Development Goals (MDG's) adopted in September 2000 as part of the United

Nations Millennium Declaration (UNMD). The SDGs provide a more holistic and integrated approach to development than the MDG's, thus continuing the legacy of the Brundtland Commission (UN, 1987) and the Rio Declaration on Environment and Development (UN, 1992). They are designed to be universal and therefore apply to all countries: poor, middle-income and the rich alike, and to all segments of society. Although each focuses on a different topic area, the SDG's; indivisibly and collectively support a development agenda balancing the economic, social and environmental dimensions of sustainability.

The SDGs continue the work of the MDGs, which drove global action to address the basic needs of the world's poorest countries from 2000 to 2015. However, the SDGs differ from the MDGs in several significant ways that make them far more influential and consequential. The SDG's cover a broader range of challenges than the MDGs, most of which are relevant and applicable to all countries or vulnerable groups within countries. They emphasize the linkages between the social, economic and environmental dimensions of sustainable development, as well as between the goals themselves and therefore the need to address the goals in context of one another; and not separately or sequentially (Nilsson, 2016). They include targets devoted to mobilizing the means required to implement the SDGs, such as partnerships, financing and enabling policies. They recognize that addressing the challenges of the SDGs is everybody's responsibility and explicitly call on business, civil society, and the tertiary and academic sectors among others to collaborate on the achievement of the SDGs (Guba, 1990).

The main aim of the SDG's is to promote human dignity and prosperity while safeguarding the earth's vital biophysical processes and ecosystem services. While not legally binding, the SDG's do provide a globally endorsed normative framework for development. Governments and other stakeholders must establish national and regional plans for their implementation. They emphasize that ending poverty and inequality must go hand-in-hand with strategies that support sustainable economic growth, peace and justice; address fundamental social needs, including education, health, social protection, and job opportunities; and do all this while also tackling climate change and enhancing environmental protection (Weitz ,N et al., 2014).

The European Union has committed to work towards these goals both within Europe and with its partners abroad. However, recent political changes in Europe and elsewhere put this hope at risk. While the scientific community has emphasized the need for a systematic approach to sustainable development (Stafford et al., 2012), policymakers now face the challenge of implementing the SDG's simultaneously with the aim of achieving progress across the economic, social and environmental dimensions worldwide. To increase the likelihood of success for these 17 SDGs, higher education institutions worldwide must teach and train today's students tomorrow's decision-makers – to think both critically and ethically, to learn to cope with ethical dilemmas and

apply systems-thinking approaches to serious and complex societal problems (Maragos 2018).

It is with regard that this paper examines the role of universities in achieving the SDGs through research, leadership, and innovation to curb the negative implications that would arise if the SDGs were not achieved. This paper reviews the works done by universities with a keen interest on catalyst initiatives from Erasmus+ program. The paper utilizes the reviews on these projects from journals, conference proceedings and thesis reports.

This paper starts by analyzing the SDGs into four categories by giving different schools of thoughts while providing some of the barriers for their implementation. This is followed by identifying the role of universities in boosting the SDG's and their impacts to the universities and also their contributions to the implementation of the SDGs .The Erasmus+ program and its initiatives in the move to support the universities in implementation of the SDGs follows suit. The paper finally concludes with sustainability strategy "whole-institution approach", meaning all parts of the university community, including external stakeholders, should be involved in the efforts.

Figure 1.0 : Sustainable Development Goals

The Sustainable Development Goals

The World Economic Forum issues impressive annual reports on the major 'Global Risks' facing mankind. To counteract these risks as well as the present mounting disaffection and disruption across the world, partly due to short-term and silo thinking by elites; the SDG's are advocated (Stapleton, 2015), as shown on figure 1.0 above. This paper summarizes the SDG's into four schools of thoughts. They include: the well-being goals, economic goals, environmental goals and justice and partnership goals as indicated in figure 2.0.

Well-being Goals *(1,2,3,4,5,6,10 and 11)*	Quality Education : (1) Access to quality education is vital in the job market. Higher Education (HE) provides :social mobility ,empowers people (critical thinking and skills in rapidly changing job market Konstantinos, 2018) (2) (OECD,2013) statistics .People with HE degree are less likely to be unemployed and earn 54% more than holders of upper secondary school education i.e.(Education protects against poverty) .HE graduates are less likely to suffer from depression ;an important factor of health and well-being ,Konstantinos, (2018) (3) University Hospitals. They play a key role in public healthcare systems. They train medical professionals, provide care to millions of patients and conduct research; helps find innovative solutions to cure and prevent diseases and they act as major employers making considerable economic contributions to their region.
Economic Goals *(8 , 9 and 12)*	Thoughts (1) Changing labor market. Caused by globalization, digitization and automation Bhowmik (2017). Hence calling for market and labor retaining and upskilling. (2) (ICSU, 2016) .In Europe, 40% of the youths have a HE degree, which will gradually change due to changing market dimensions. (3) Sustainable development and international links. The concept of Sustainable Development urges that we need to change the way we produce and consume. (4) Universities collaborate with companies, other learning institutions and stakeholders in supporting business incubators. International links are key to nourishing local innovations and achieve sustainable growth.
Environmental Goal (7,13,14 and 15)	**Thoughts** Research (1) Universities conduct research to identify the relationship between nature and people. E.g the indispensable developments in climate change and global warming as well as their impacts. (2) Indisciplinarity factor: Highlight the interactions of SDGs and mutual reinforcements.
Justice and Partnership Goals (16 and 17)	**Thoughts** (1) Universities form autonomous partnerships with the governments (local and national) ,civil society and companies with common interest in a bid to implement some of the SDGs ,Selim,S.A, (.2017) (2) Universities facilitate people-to-people contact and are important actors in soft diplomacy. Thousands of mobile students cross borders to gain knowledge about new cultures and bring understanding about their own countries to their hosts (Waibel, 2017). (3) Researchers cooperate around the globe, building networks and developing the knowhow needed to sustain innovation worldwide.

Source : Author's creation

Figure 2.0 : Categorization of the SDG's

Barriers towards implementation of SDGs

Given budgetary, political and resource constraints, as well as specific needs and policy agendas, countries are likely to prioritise certain goals over others. Because of the positive and negative interactions between goals and targets, this prioritisation could lead to negative developments for 'nonprioritised' goals and targets (Kruger, 2017). An example is the potential prioritization of SDG 2, whose progress might well lead to adverse impacts for several of the SDG 15 targets (on terrestrial ecosystems), for example by converting rainforest to agriculture. Even if countries continue under business-as-usual conditions for agricultural production, terrestrial ecosystems could deteriorate below current levels within a short timeframe (Waibel, 2017).

Moreover, due to globalisation and increasing trade of goods and services, many policies and other interventions have implications that are transboundary in nature, such that pursuing objectives in one region can affect other countries or regions' pursuit of their objectives. For example, there could be increased deforestation in some countries because of enforced logging bans in other, often neighboring, countries, or there could be changes in national trading policies that affect the availability of goods and services in other countries. Similarly pursuing a policy for biofuels in one region can drive up prices of food crops elsewhere thus foster hunger for the poorest; yet, sustainable development of biofuels could also encourage investment and market developments that improve overall food security (Osseweijer et al., 2015; Kline et al., 2016).

However, interactions between SDGS currently have a weak conceptual and scientific underpinning, and there is a clear need for approaches and tools that can support analysis of the nature and strengths of these interactions, and the extent to which they constrain or enable policy and action. Indeed, there is a need to develop guidance and tools that can help policymakers, investors and other actors to identify and manage the benefits and risks of achieving the various goals and targets. In particular, it is important to deploy a more nuanced view of interactions, and to move the discourse beyond the simple notion of trade-offs and synergies. For example, Weitz et al. (2014) and Coopman et al. (2016) applied an approach for interlinkages with three categories, supporting, enabling and relying (with sub-categories). International agencies have also published increasingly advanced approaches to identifying and evaluating interactions (e.g. UNESCO, 2016; UN, 2016).

Thinking carefully about SDG interactions and more specifically about the range of different types of interaction is important because they may have very different implications in terms of implementation action. The nature and dynamics of the inter-actions need to be better understood before policy can be formulated, including the setting of context-specific (such as National or local) targets and indicators (UNESCO,2017). Such analyses should be conducted with a view to providing a useable knowledge base for both policy-level decision support and the design of implementation strategies.

In short, there is a lack of information on this topic. For this reason, ICSU (2016) and Nilsson et al. (2016) have developed a tool, or framework, whereby interactions between SDGS and targets are classified on a seven-point ordinal scale, indicating the nature of the interaction with other targets, and the extent to which the relationship is positive or negative.

The role of universities in SDGs

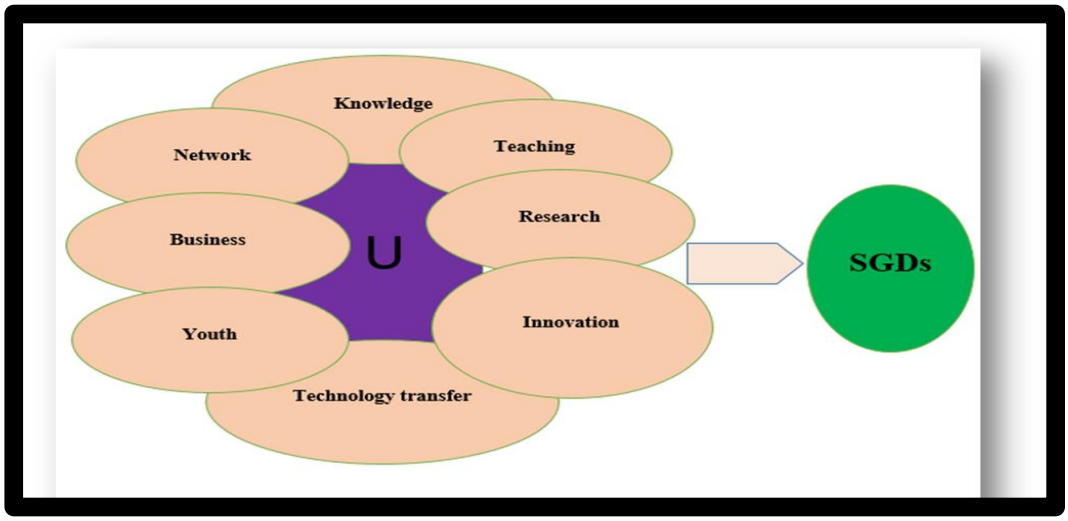
Vocational training centers and research sectors are highly recognized in few SDG's. However, the universities' boost is needed to achieve all of the SDGs (Bhowmik, 2017).

At a glance, the SDGs transverse a wide range of specific sectors namely: agriculture, health, gender equality, water and sanitation ,energy, industry and innovation, infrastructure, etc., and under each area, higher education institutions make a huge contribution (figure 3.0), whether in teaching, research, community engagement or advisory services.

The unique functions and expertise of universities are very vital for overcoming the interconnected social, economic, and environmental challenges which are covered by the SDGs agenda Bhowmik (2017). Arguably the SDGs will not be achieved without these sectors. Selim et al. 2017 identify the key roles of universities under four main categories as:

- Universities can address challenges of SDGs by improvising new innovations, solutions and knowledge to curb the negative implications.
- Universities can formulate and evaluate result-based policies and establish monitoring mechanisms on progress.
- Since SDGs' accomplishment require a 'wholeness-orientation', universities are in a better position to provide professional and personal skills, capabilities to create future leaders, decision makers, innovators, entrepreneurs and citizens with knowledge and motivation to contribute.
- Universities hold a position of neutral and trusted stakeholders within the society. They also have a key role in education the public and other sectors on the SDGs and in advocating for the importance of the SDGs.

Figure 3.0 : Role Universities in SDGs Implementation



Source : Selim et al., 2017

Bhowmik, J. et al., 2017 resolve that the engagement of the universities towards achievement of SDGs is broadly on the merits of: research, education, operations & governance and external leadership as indicated in (figure 4.0). Their work looks deeply on each contribution and recommends steps towards accomplishing them.

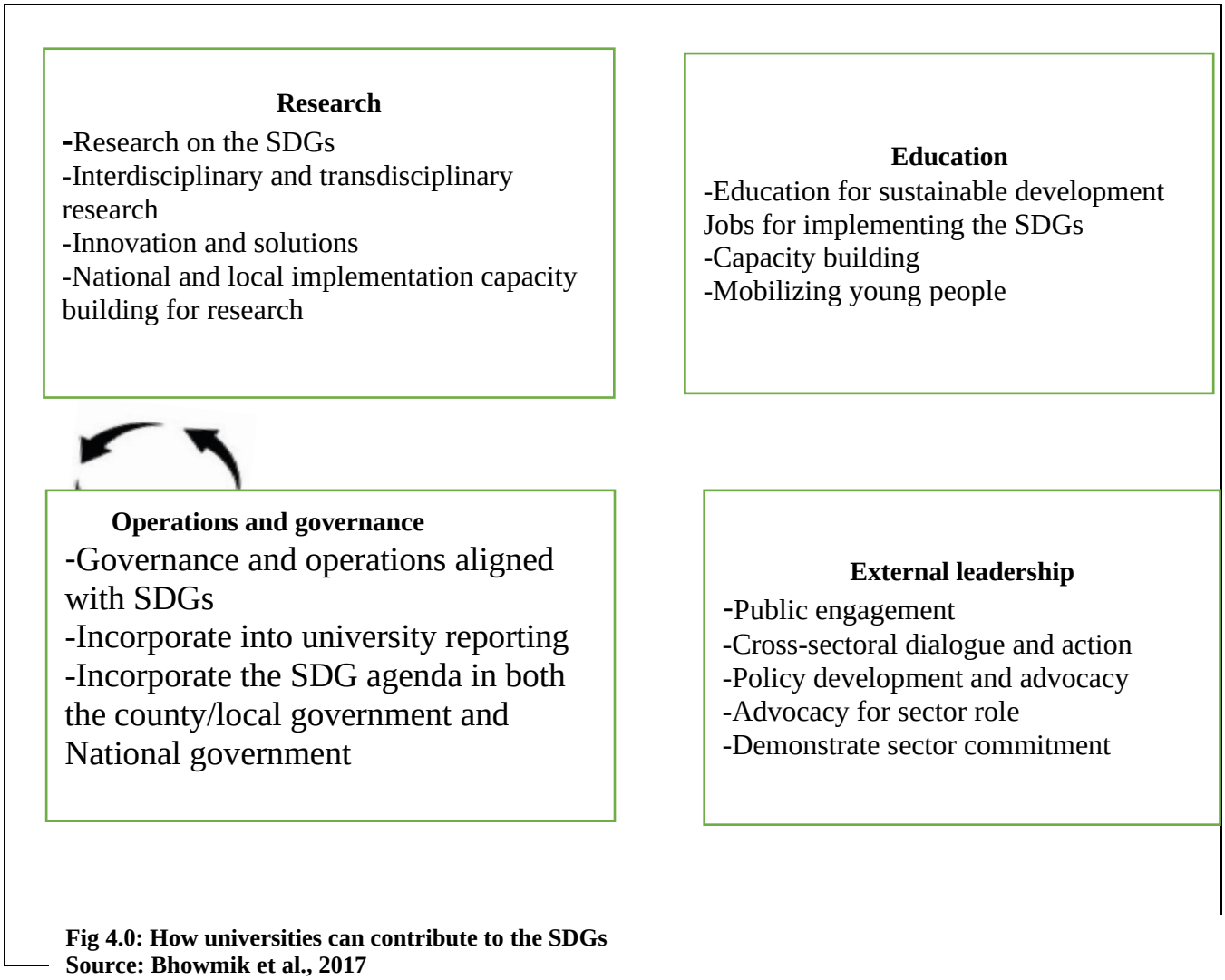


Fig 4.0: How universities can contribute to the SDGs
Source: Bhowmik et al., 2017

Learning and teaching

Education is one of the cornerstones of the SDGs. Relevant and quality education leads to sustainable development, which is beneficial to individuals, community and countries. As such, universities through their extensive learning and teaching activities (undergraduate and graduate teaching, professional training, executive and adult education, online learning, co-curriculum activities and student clubs and societies) have a critical role to play in SDGs achievement (UNESCO 2017).

To contribute to the SDGs through education, universities can:

- Incorporate the SDGs agenda and Education for Sustainable Development (ESD) principles into all undergraduate and graduate courses and into graduate research training.
- Offer executive education and capacity building courses for external stakeholders on SDGs and the knowledge needs to address them.
- Structure courses around real-world collaborative projects for chance, where students will have an opportunity to adapt easily in the business world.
- Promote both students and community volunteering activities that address the SDGs.
- Form strong links with the business and industry to monitor employer trends and skills requirements.
- Develop exchange relationships with universities of developing countries and those that address training programs to address SDGs.

Research

To overcome some of the issues in the SDGs, we will require transforming the manner in which we interact with our planet (IRP, 2015). Universities through their detailed and extensive research capabilities and activities, have a critical role in providing the necessary knowledge, evidence-base, solutions, and innovations to underpin and support this task (SDSN, 2015). The universities can contribute to research through:

- Support the full spectrum of research approaches needed to address the SDGs including the interdisciplinary and transdisciplinary research.
- Advocate for national support and coordination of research on SDGs.
- Support capacity building for developing countries to undertake the use of research on SDGs.
- Encourage and support researchers to engage in global research community efforts to support SGDs (such as international assessments and syntheses of the current state of knowledge.
- Map how universities' research and research strengths align with the SDGs and identify key researchers.
- Arrange innovation challenges to address SDGs for researchers across the university and external stakeholders.

Organizational governance, culture and operations of the university

On its report the UN Sustainable Development Solutions Network (SDSN, 2017), elaborates that universities form the largest entities in the society with a wide and distinct social, cultural and environmental backgrounds hence, a significant influence on most of the SDGs. These impacts directly to implementation of SDGs and by acting responsibly, universities make can make significant support in SDG achievements.

Various researchers have identified various ways in which universities can contribute SDGs though organizational governance as follows:

- Align university governance structures and operational policies with the aim of attaining SDGs.
- Map how high level university strategies, policies ,plans and reporting indicators align with the SDGs and identify which organizational units are relevant to specific SDG targets.6

External Leadership

The success in attaining the SDGs will majorly depend on collaborations and partnerships of all actors (Crow, 2019). By leveraging their unique attributes within the community, universities (both individually and collectively) can help to lead, guide and support the local, national and international responses towards SDGs. In support of this idea, Coopman et al., 2016 assert that despite the idea of 'wholeness and collectiveness in achieving the SDGs, most countries and the public had little knowledge of the SDGs and little opportunities to actively participate in implementation.

Universities can actively become the key drivers to include the mass generation in the SDG agenda by increasing participation through disseminating knowledge (ICSU, 2016).The ICSU report showcases that universities devoted to knowledge creation and teaching for the benefit of the society and also traditionally occupied a critical state that makes them particularly suited to provide leadership on SDG implementation. Therefore, universities can achieve these through:

- Strengthen public awareness and participation in addressing the SDGs.
- Establish and facilitate a cross-sectoral dialogue and action plan on SDGs implementation.
- Be on the frontline in policy development and advocacy for sustainable development.
- Demonstrate the commitment and importance of universities in the SDGs implementation.

Impacts of SDGs to Universities

The SDGs provide a unique platform to higher education institutions to demonstrate their willingness and capability of playing an active and meaningful role in the development of their respective countries and in contribution towards sustainable development (Crow,2019). In line with Erasmus+ (2014-2020, 2021-2027), offers also an opportunity for collaboration and partnerships (Europe-third world, Europe-Europe and Europe-industrialized countries).

Moreover, the importance of sustainable development is recognized in a number of goals, particularly SDG4,which calls for ' inclusive and equitable quality education and lifelong learning opportunities for all'. Many targets within this goal are directly relevant to

universities, such as for all learners 'to acquire the knowledge and skills needed to promote sustainable development' (Crow, 2019).

The SDGs are global framework with strong buy-in and adoption among governments, business, civil society, funders, other universities and the community (Huq, 2017). Universities can draw a range of benefits from this broad support by engaging the SDGs. Huq profoundly outlines the benefits as follows:

- Universities are rampantly re-designing their curriculum progressively to become both more responsive towards societal needs. This makes them a role model in the society in case of solving global challenges.
- The greatest strength of the SDG agenda is working together on shared interests. This opportunity allow as the universities to form new collaborations and partnerships with governments, related industries and the community in both research and education.
- The SDGs communicates to both the youth and the elderly people as global citizens who want to make meaningful contributions to society and environment. Recently, many organizations have integrated the SDG agenda in their development strategies and also create demand for graduates who are willing to implement the SDG agenda.
- The SDGs enlighten a new and integrated focus to communicate and display to external stakeholders (governments, funders and the community about the input of the universities to global and local wellbeing and therefore demonstrate their impact and relevance.

Erasmus+ mobility schemes

One of the most successful and famous educational mobility programmes in European Union (EU) is Erasmus+, founded in 1987 Stapleton, (2015). The aim was to *promote "dialogue and understanding between people and cultures through mobility and academic cooperation"* (EACEA, 2014). Erasmus+ is one of the EU's educational exchange schemes, which contribute to international understanding, stability and sustainable development promoting lifelong learning opportunities. Students are funded to spend a period between three and twelve months in another university of an EU country, which is a member of an inter-institutional network (Brooks et al., 2011).

The Erasmus+ Programme builds on the achievements of more than 25 years of European programmes in the fields of education, training and youth, covering both an intra-European as well as an international cooperation dimension. Erasmus+ is the result of the integration of the following European programmes implemented by the Commission during the period 2007-2013: The Lifelong Learning Programme, The Youth in Action Programme, The Erasmus Mundus Programme, Tempus, Alfa, Edulink and programmes of cooperation with industrialized countries in the field of higher education.

It was therefore crucial that the Programme was to be associated with a strong brand name that is widely recognized. For this reason, all the Actions and activities supported under the Programme are communicated primarily by using the "Erasmus+" brand name. However, to help participants and beneficiaries of former programmes to find their way into Erasmus+, for the purpose of communication and dissemination, the following names are used for those Actions targeting a specific sector, in addition to the common "Erasmus+" brand name, as follows:

- "Erasmus+: Comenius", in relation to the activities of the Programme exclusively related to the field of school education;
- "Erasmus+: Erasmus", in relation to the activities of the Programme exclusively related to the field of higher education and targeting Programme Countries;
- "Erasmus+: Erasmus Mundus", in relation to the Erasmus Mundus Joint Masters Degrees;
- "Erasmus+: Leonardo da Vinci", in relation to the activities of the Programme exclusively related to the field of vocational education and training;
- "Erasmus+: Grundtvig", in relation to the activities of the Programme exclusively related to the field of adult learning;
- "Erasmus+: Youth in Action", in relation to the activities of the Programme exclusively related to the field of youth non-formal and informal learning;
- "Erasmus+: Jean Monnet", in relation to the activities of the Programme exclusively associated with the field of European Union studies;
- "Erasmus+: Sports", in relation to the activities of the Programme exclusively related to the field of sport.

Erasmus program, according to Kruger (2017) and Smith (2013), provides a response to the challenges of globalisation faced by European higher education today, in particular the need to adapt education systems to the demands of the knowledge society, to enhance the attractiveness and visibility of European higher education worldwide and to stimulate the process of convergence of degree structures across Europe. In addition, it provides an important vehicle for the promotion or intercultural dialogue between the European Union and the rest of the world.

Figure 5.0 : Erasmus+ Program Initiatives and activities

Erasmus+ Program Initiatives	Projects and activities
1) Individual Mobility	Key Action 1 Individual learning mobility -Erasmus Mundus Joint Master Degree (EMJMD) -Higher Education students and staff -VET learners and staff -Adult Education staff - Young people and youth workers Key Action 2 Cooperation for innovation and exchange of good practices -Partnership in the field of education ,training and youth -Capacity building in the field of H.E and youth. -Alliances : Knowledge and skills Key Action 3 Policy innovation initiatives -Support European policy tools -Youth dialogue projects -Support for policy reforms -Stakeholder dialogue, policy program promotion. -Transparency and recognition of skills - Cooperation with international organizations with high Analytical capacity e.g OECD.
2) Jean Monnet Activities	European Education (Chairs, Modules and center of excellence) -Policy debate with academic world -Support to association -Provide operating grants to designated institutions to Organize studies and conferences.
3) Sports	-Small cooperative partnerships -NGO European sport events

The Erasmus+ Programme aims at promoting equity and inclusion by facilitating the access to participants with disadvantaged backgrounds and fewer opportunities compared to their peers whenever disadvantage limits or prevents participation in transnational activities for reasons such as:

- disability (i.e. participants with special needs): people with mental (intellectual, cognitive, learning), physical, sensory or other disabilities;
- educational difficulties: young people with learning difficulties; early school-leavers; low qualified adults; young people with poor school performance;
- economic obstacles: people with a low standard of living, low income, dependence on social welfare system or homeless; young people in long-term unemployment or poverty; people in debt or with financial problems;
- cultural differences: immigrants or refugees or descendants from immigrant or refugee families; people belonging to a national or ethnic minority; people with linguistic adaptation and cultural inclusion difficulties;
- health problems: people with chronic health problems, severe illnesses or psychiatric conditions;
- social obstacles: people facing discrimination because of gender, age, ethnicity, religion, sexual orientation, disability, etc.; people with limited social skills or anti-

social or risky behaviours; people in a precarious situation; (ex-)offenders, (ex)drug or alcohol abusers; young and/or single parents; orphans;

- geographical obstacles: people from remote or rural areas; people living in small islands or in peripheral regions.

Erasmus+ Program Initiatives and Activities

- Individual learning Mobility

Action 1 provides:

- Support for high-quality joint masters courses (Action 1 A) and doctoral programmes (Action 1 B) offered by a consortium of European and possibly third-country higher education institutions. Other types of organisations concerned by the content and outcomes of the joint programme can participate in the consortium.
- Scholarships/fellowships for the third-country and European students/doctoral candidates respectively to follow these Erasmus Mundus joint master's courses and doctoral programmes.
- Short-term scholarships for third-country and European academics to carry out research or teaching assignments as part of the joint masters programmes.

This Action fosters cooperation between higher education institutions and academic staff in Europe and third countries with a view to creating poles of excellence and providing highly trained human resources. Joint programmes must involve mobility between the institutions of the consortium and lead to the award of recognised joint, double or multiple degrees to successful students / doctoral candidates. The indicative budget breakdown and number of outputs foreseen for the different activities covered by Action 1 in the period 2009-2013 is on (Figure 6.0).

Action 2: Erasmus+ Partnerships

Erasmus Mundus Partnerships aim at promoting institutional cooperation and mobility activities between Europe and third-country Higher Education Institutions (HEIs). This Action anchors on the previous EU programme External Cooperation Window (2006-2008) with a wider geographical coverage, a larger scope and differentiated objectives.

Action 2 covers two strands:

- EMA2 - STRAND1: Partnerships with countries covered by the ENPI, DCI, EDF, IPA and ICI (ICI +) instruments6 (former External Cooperation Window);
- EMA2 - STRAND2: Partnerships with countries and territories covered by the Industrialized Countries Instrument (ICI) 7.

Action 2 provides:

- Support for the establishment of cooperation partnerships between European HEIs and HEIs from targeted third countries/territories with the objective of organizing and implementing structured individual mobility arrangements between the European and the third-country/territories partners.

- Scholarships of various lengths - depending on the priorities defined for the third countries/territories concerned, the level of studies or the particular arrangements agreed within the partnership – for and third-country/territory individuals (students, scholars, researchers, professionals).

In the call to promote Erasmus+ mobility and partnerships with the third world H.E institutions, Marilena and Konstantinos (Co-founders of WeAfriHug and YouthHub Initiatives) have been visiting African countries to seal MOU's deals in the Erasmus+ mobility scheme.

The MOU's include:

- ✓ In Kenya – Kenyatta University and Machakos university (MOU with university of West Attica and University of Piraeus)
- ✓ In Uganda- Kyambogo university, Kampala International University,Besitema University (MOU with University of West Attica)
- ✓ In Tanzania – University of Dar es Salam
- ✓ In Ghana – University of Ghana, Tamale Technical University and University of Cape coast and,
- ✓ Nigeria – University of Jos

Figure 6.0 :The indicative budget breakdown and number of foreseen activities (2009-2013)

	Expected number of outputs by 2013	Estimated total budget (in million €)
Joint Programmes		
Erasmus Mundus Masters Courses (EMMCs)	150	19
Erasmus Mundus Doctorate Programmes (EMJDs)	35	6
Total Joint Programme	***185***	***25***
Individual scholarships / fellowships		
Category A scholarships for Masters students[3]	5.300	245
Category B scholarships for Masters students	3.400	63
Category A fellowships for doctoral candidates	440	35
Category B fellowships for doctoral candidates	330	30
Scholarships for third-country scholars in EMMCs	1.900	28
Scholarships for European scholars in EMMCs	1.900	28
Total scholarships / fellowships	***13.270***	***429***
Total indicative budget		***454***

Action 3: Promotion Projects

Action 3 provides support to transnational initiatives, studies, projects, events and other activities aimed at enhancing the attractiveness, profile, image and visibility of, and accessibility to, European higher education in the world. Action 3 activities relate to the international dimension of all aspects of higher education, such as promotion, accessibility, quality assurance, credit recognition, recognition of European qualifications abroad and mutual recognition of qualifications with third countries, curriculum development, mobility, quality of services, etc.

Activities may include the promotion of the Erasmus Mundus Programme and its outputs implemented by mixed networks of European and third-country organisations active in the field of higher education. Action 3 activities may take various forms (conferences, seminars, workshops, studies, analyses, pilot projects, prizes, international networks, production of material for publication, development of information, communication and technology tools) and may take place anywhere in the world.

Action 3 activities seeks to establish links between higher education and research and higher education and the private sector in European and third countries, and exploit potential synergies whenever possible. The Action 3 budget for the entire duration of the Programme amounts to € 16 million and should lead to the funding of around 50 projects.

- Jean Monnet Initiative

Jean Monnet Projects support innovation, cross-fertilization and the spread of European Union content.

- "Innovation" projects explore new angles and different methodologies to make EU subjects more attractive and adapted to various populations
- "Cross-fertilization" projects promote discussion and reflection on EU issues and enhance knowledge about the Union and its processes
- "Spread content" projects concern information and dissemination activities

Smith (2013) argues that exchange programs are on an accelerated basis and the pool of participating students should expand to incorporate developing countries; exchange students, teachers and school administrators will gain knowledge and experience that not only will decrease ethnocentrism, but also may contribute to rising academic standards and accomplishments in both the developed and the developing world. Moreover, studying abroad also benefits to enhance international skills, facilitating former students to be competitive in the international job market and also contributes to the motivation of such students to work abroad later in life (González, 2011).

In the end, Erasmus+ Programs and initiatives tend to boost the universities in their endeavors to implement all the SDGs through Research, youth empowerment, teaching, governance and partnerships all around the world. The relationship created is a

combination of various stakeholders within the society who work together to attain a common goal as shown in figure 7.0.

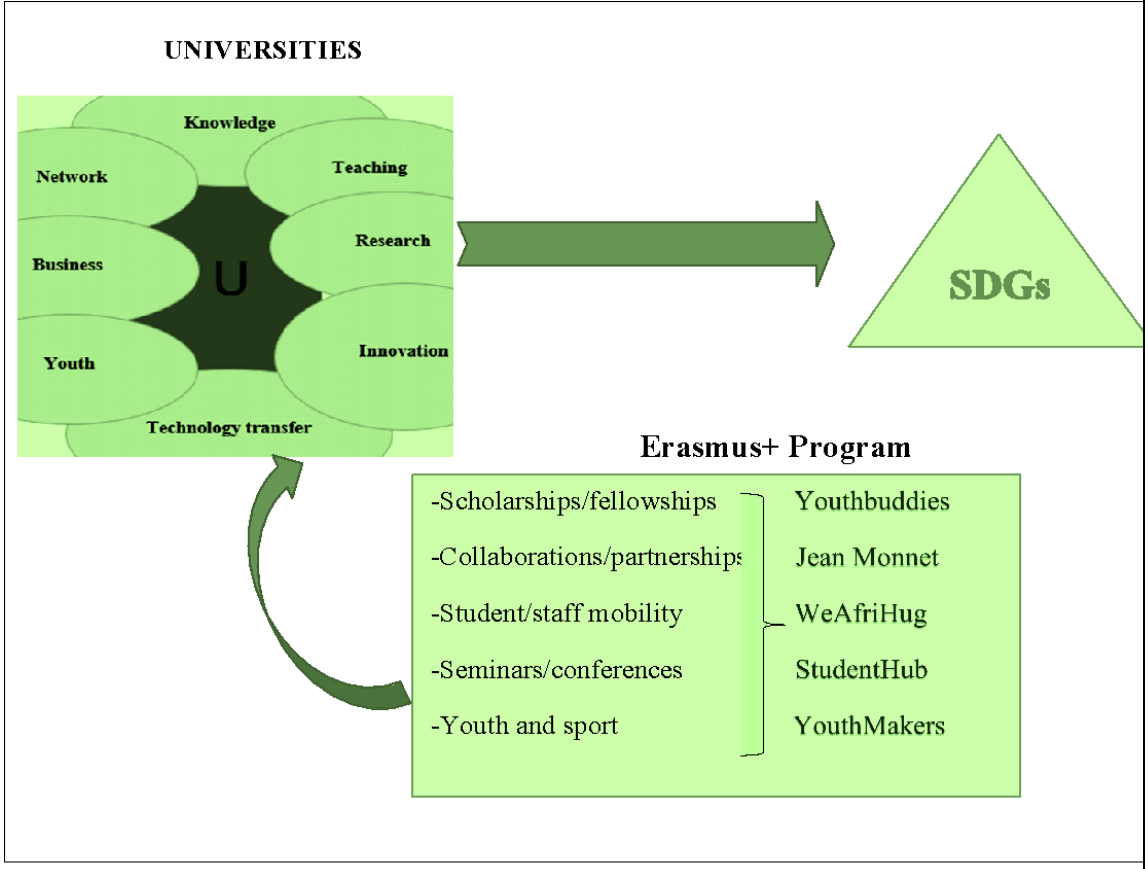


Figure 7.0 : Relationship between Erasmus+ Program and Universities to implement SDG's

Conclusion

The United Nations' Transforming Our World: The 2030 Agenda for Sustainable Development is one of the most ambitious and important global agreements in recent history. To create a more sustainable world and to engage with sustainability-related issues as described in the SDGs, individuals must become sustainability change-makers. They require the knowledge, skills, values and attitudes that empower them to contribute to sustainable development. Education, therefore, is crucial for the achievement of sustainable development.

However, not all kinds of education support sustainable development. Education that promotes economic growth only may lead to an increase in unsustainable consumption patterns. The well-established approach of ESD empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a

just society for present and future generations. All educational institutions must consider it their responsibility to deal intensively with sustainable development issues, to foster the development of sustainability competencies and to develop the specific learning outcomes related to all SDGs. Therefore, it is vital not only to include SDG-related contents in the curricula, but also to use action-oriented transformative pedagogy.

The above short review provides general tools and guidance of achieving SDGs for the universities that can be customized to different contexts and needs. There is no 'right' way for a university to engage with the SDGs. How universities choose to act will depend on their size, context, research or educational strengths, funding availability, values, priorities and the needs of the communities that they serve. This review outlines general concepts, steps to help tailor an approach.

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An Innovative Method for promoting the Business Opportunities Recognition Skills in undergraduate university students

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Abstract

This paper presents the results of the implementation and evaluation of an innovative educational method for the promotion of entrepreneurship skills in undergraduate students in non-business higher education institutions. The basic innovation of the method is that it emphasizes on the cultivation of analytical and critical thinking skills in recognizing business opportunities (De Tienne, 2008; Hayton et al., 2011). The recognition of business opportunities involves three distinct processes: i) the identification of market needs, ii) the matching of these needs and available resources and iii) activities related to the development of the business idea (competition, financial data, etc.) (Hansenet, 2011; Fayolle, 2013).

Keywords

Entrepreneurship, recognition of business opportunities, analytical thinking skills, critical thinking skills, undergraduate students

Discussion

The main reason for proposing this new method derives from the fact that some studies such as Fregetto (2005), Ghulam et al. (2017), Osterwalder & Pigneur (2010), Adedeji, & Rahman,(2018) have stated that the business plan method of teaching entrepreneurship is quite ineffective for two main reasons:

• business ideas proposed by students do not have much innovation,

• business ideas are not essential business opportunities because students are not well aware of market conditions.

Thus, according to the proposed hands-on method, students are given a business plan of an imaginary startup in the form of an investors' slides deck and are asked to create teams to play the role of analysts and rely on pre-existing theoretical knowledge to investigate whether it is a business opportunity.

The main goal of the evaluation study which was performed, intended to measure two complex variables:

- learning effectiveness, i.e. if it helps students develop entrepreneurship skills and competences such as:

- interaction (teamwork, communication, negotiation, persuasiveness, assumption of responsibilities);
- practical application of knowledge (business plan analysis);
- business thinking (recognition of opportunities, decision making)
- critical ability (reflection, critical thinking, evaluation);
- creativity (originality, flexibility, flexibility - imagination).

- students' learning experience

Using a mixed evaluation method, data from various sources had been collected, namely:

- rubric for students' self-assessment of their final deliverable;
- questionnaire about the value of the teaching method, the quality of the resources and the level of learning experience;
- From the teacher's remarks.

In brief, the average score of the students; deliverables given by the teacher was 72.89%. Also, students gave very good comments about the proposed method claiming that it increased their interest in this course subject and that the coursework was pleasant and creative. At the full paper, we are going to present the evaluation findings in detail.

Higher education Institutes as places of implementing Sustainable Development Goals

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Abstract

During the process of formulating the UN Sustainable Development Goals (SDG's), academics have contributed to discussions and consultations at international level. The new global development agenda, gives a lifelong learning for all perspective to education, with the stand-alone goal SDG4. The 2030 Agenda has introduced higher education directly with a specified target the (4.3) opposed to Millennium Development Goals where education focused on the access to primary education while universities were mentioned indirectly.

Since the implementation of the 2030 agenda, universities all over the world started to undertake sustainability initiatives. The present paper investigates the ways that Higher education Institutes can be places of implementing Sustainable Development Goals. Starting with greening the campus and minimizing its environmental footprint, continuing with integrating sustainability issues in the curricula and announcing new master courses, to creating networks and promoting research, a university can practice Sustainable Development Goals.

Establishing partnerships within the university and developing synergies with stakeholders such as local governments, the private sector and the civil society are important to the way to sustainability, as well. Moreover, initiatives from students should be supported and students should be motivated to be more involved in the drafting of the sustainability plan of the university. Each university should seek the exchange of good practices with champion universities and peer learning should be promoted.

The paper concludes that a university could be considered as a "living laboratory", by practicing sustainability in the daily life of its community, from students to teachers and staff (UNESCO-GEMR, 2017).

Keywords
Sustainable development, global agenda, lifelong learning, education, universities

Structural Funds' interventions to support young researchers in Greece, during the Programming Period 2014-2020. Presentation and evaluation of the relevant policies.

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During the Programming Period 2014-2020, the amount of EU Structural Funds' resources oriented towards policies aiming to support young researchers in Greece reached a record high. This came as a result of the importance given by the Greek Government during the period from 2015 to 2019 in developing interventions aiming to support young researchers and the subsequent redesign of the Operational Programs of the European Social Fund (ESF) that occured in early 2015. The purpose of the presentation is to review the above interventions, their underpinning logic and also to critically present the results of the evaluation studies as well as to formulate some proposals to further enhance the effectiveness of the Structural Funds' interventions."

Key words: Greece**,** Operational Programs, young researchers, European Social Fund

Enriching University Curricula with digital motion-based touchless game making activities for promoting algorithmic skills

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Abstract

Recently, higher education institutes have shown interest in promoting computational thinking (CT) in students from computing and non-computing disciplines (Román-González et al, 2017). According to Wing (2006), "Computational thinking (CT) is a problem-solving process that includes a number of characteristics, such as logically ordering and analyzing data and creating solutions using a series of ordered steps (or algorithms), and dispositions, such as the ability to confidently deal with complexity and open-ended problems." Acquiring CT skills, however, becomes challenging for novice learners including those who attend non-computing majors because they are not accustomed to computational mindsets and analytical mental models.

Thus, we introduce a computer science course that helps undergraduate students enhance their CT skills through hands-on game making activities. Students are getting a deep understanding of the game development life cycle, i.e. ideation, design, development of game prototype and its assessment. While students are doing these hands-on activities, the role of instructor is to facilitate, guide and not to give a lecture. We use Scratch, which is a very easy to use tool to start coding, developed by Massachusetts Institute of Technology (MIT) (Resnick et al., 2009).

Thus, students collaboratively get engaged into a series of systematic design and rapid development activities of motion-based touchless games, i.e. using the Microsoft Kinect games. Researchers have documented that students show high interest and motivation in interacting with such type of games which can be played with hand and body gestures (Hsu 2011; Bekesi and Lanyi 2016).

This course has been offered since 2017. There has been a high level of enthusiasm and engagement among the students who managed to systematically create motion-based touchless games with great playability. In this paper we will present in detail the course evaluation findings based on the analysis of data gathered using a multifaceted framework for assessing the degree of students' acquisition skills in an authentic and ongoing manner.

Key words: postgraduate studies, HEIs, Business cooperation, Greece

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