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# Perceived Employability of Highly Skilled Migrant Women in STEM: Insights from Labor Market Intermediaries' Professionals

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**Abstract:** While global economies are in a tremendous need for talented workers that could fill vacancies in Science, Technology, Engineering, and Mathematics (STEM) fields, available evidence shows that highly skilled migrants with a background in these fields are not protected from brain waste and deskilling. In this paper, we add to the previous literature on the employability of highly skilled migrant women from the specific—and under-investigated—perspective of labor market intermediaries. We specifically investigate what the barriers and resources are for employability of highly skilled migrant women in STEM, as perceived by labor market intermediaries' professionals; and what the training needs are that labor market intermediaries' professionals perceive to effectively work with this target group. We use unique explorative survey data collected in 2018 in five countries (Greece, Hungary, Italy, Sweden, United Kingdom) from professionals working in diverse labor market intermediary organizations. We find that these professionals perceive the employability of migrant women in STEM as rather low, and strongly determined by migrant women's psychological capital. Professionals in Southern Europe perceive structural barriers as more important than those in other countries. Professionals display training needs related to ad-hoc mentoring and networking competences for this specific target group. We discuss theoretical and practical implications.

**Keywords:** highly skilled migration; highly skilled migrants; international migrants; labor market intermediaries; women; gender and Europe



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## 1. Introduction

Over the last decades, numerous Western countries have adopted policies to attract highly skilled foreign professionals, in an effort to improve their innovation environments and competitiveness in the global economy. According to the [OECD \(2014\)](#), migrants represent 22% of entries into growing occupations in the United States and 15% in Europe, particularly in Science, Technology, Engineering, and Mathematics (STEM) and healthcare sectors. This global "race for talent" ([Frank et al. 2004](#)), however, presents critical issues that make many countries unable to fully leverage on the skills of talented foreign human capital (e.g., [Beckhusen et al. 2013](#); [Tesfai 2017](#)). The result is that substantial numbers of highly skilled migrants face "brain waste", deskilling, and adverse outcomes on the labor market<sup>1</sup>. The threat of brain waste is particularly salient for migrant women: According to [Eurostat \(2011\)](#), more than 30% of foreign-born tertiary-educated women in their working age in Europe are overqualified.

Gender, together with other individual-level characteristics such as age, ethnicity, or nationality, has an impact on the evaluation of immigrant women's skills, labor market

<sup>1</sup> Brain waste refers to the underutilization of migrants' human capital in the destination country ([Beckhusen et al. 2013](#); [Mollard and Umar 2012](#)). Deskilling is defined as a situation in which migrant workers occupy jobs not commensurate with their qualifications and experience ([Mollard and Umar 2012](#)). In this paper, we use the term "brain waste" and "de-skilling" interchangeably.

access and outcomes, or positioning in society (e.g., [Rodriguez and Scurry 2019](#)). This is especially important in STEM sectors, which are characterized by strong gender imbalances both at the education and at the professional level in many Western countries ([World Economic Forum 2019](#)). In this paper, we therefore explore the employability of migrant women with a background in STEM from the specific—and under-investigated—perspective of labor market intermediaries that deal with this target.

Extant literature has provided evidence about the barriers that may hinder employability and success on the labor market for highly skilled migrants. The most common obstacles are the lack of portability of migrants' human capital (e.g., [Friedberg 2000](#)), the discrepancy between migrants' skills and local needs (e.g., [Chiswick and Miller 2009](#)), the difficulty to access information and support (e.g., [Riaño 2011](#)), specific labor policies and practices, stereotypes, and prejudices ([Al Ariss 2010](#)), the discrimination against certain groups ([Zschirnt and Ruedin 2016](#)), the juridical status of migrants in the receiving country (e.g., [Lowell and Avato 2014](#)), or the entry channels (e.g., [Sandoz 2020](#)).

To date, however, the role of labor market intermediaries in influencing highly skilled migrants' employability and career outcomes remains under-investigated ([McCollum and Findlay 2018](#); [van den Broek et al. 2015](#)). This is a relevant gap because caseworkers in labor market intermediaries have a key role in the practices of job intermediation for migrants, for example by assessing and validating their competences and skills, and thus construing migrants' employability (e.g., [Diedrich and Styhre 2013](#); [Kusterer and Bernhard-Oettel 2020](#)).

The present contribution is therefore set to explore two research questions. First, what are the perceived barriers and resources for employability of highly skilled migrant women according to labor market intermediaries' professionals? Second, what are the training needs of labor market intermediaries' professionals to effectively work with migrant women with a STEM background? We studied these two research questions using a unique sample of 97 professionals working for diverse labor market intermediary organizations across five European countries.

This work contributes to the literature on the employability, and thus the labor market outcomes, of highly skilled migrants (e.g., [Crowley-Henry et al. 2018](#); [Green et al. 2013](#); [Shirmohammadi et al. 2018](#)) in two ways. First, we take the perspective of labor market intermediaries, by providing evidence about the perceptions of individual professionals about the barriers and resources that determine the employability of highly skilled migrant women. This differentiates from previous studies mostly investigating employability perceptions by migrant women or employers (for a review, [Green et al. 2013](#)), aligning to studies investigating how local practices influence migrants' integration in labor markets (e.g., [Diedrich 2017](#); [Kusterer and Bernhard-Oettel 2020](#)). Second, we highlight the contextual factors that matter for the employability of a specific group of migrants, i.e., highly skilled migrant women in STEM, which have been scantily considered by previous literature ([Grigoleit-Richter 2017](#); [Jungwirth 2011](#); [Raghuram 2008](#)).

This paper is relevant from a policy perspective because highly skilled migration flows have increasingly become feminized over the last decades ([Özden et al. 2011](#)). By focusing on the points of view of labor market intermediaries' professionals, this paper aligns to calls for more in-depth consideration about how the social and work construction of relationships and power relations matter for female highly skilled immigrants (e.g., [Diedrich 2017](#); [Kusterer and Bernhard-Oettel 2020](#)), providing insights on areas of action to alleviate this problem.

## 2. Literature Review

### 2.1. Employability of Highly Skilled Migrant Women

The construct of employability has a long history in the literature, where different scholars have provided several definitions of employability. One widely accepted definition, provided by [Hillage and Pollard \(1998, p. 24\)](#), identified employability as “the ability to realize potential through sustainable employment”, which can be achieved through three

stages: (a) The entry into the labor market, (b) the maintenance of own employment, and (c) the enactment of changes towards a new employment.

Several scholars have suggested that employability is built upon (potential) employees' perceptions, thus introducing the concept of perceived employability (e.g., [Berntson 2008](#); [De Cuyper and De Witte 2010](#)). From an employee's perspective, perceived employability is important because it is perception, rather than reality, which triggers cognition, behavior, and psychological functioning ([Vanhercke et al. 2015](#)). In many of these definitions, employability entails taking into account job prospects in a future-oriented perspective (e.g., [Forrier and Sels 2003](#)) and the individual ability to proactively cope with demands of future job markets (e.g., [Rothwell and Arnold 2007](#)). Employees' perceived employability is therefore seen as a guarantee of job security in a changing professional environment ([Berntson 2008](#); [De Cuyper and De Witte 2010](#)).

The construct of employability is characterized by two key dimensions: An internal dimension related to, for example, individual attitudes, job-related knowledge and skills, and mastery of job search ([Fugate et al. 2004](#); [Hillage and Pollard 1998](#); [Kluytmans and Ott 1999](#); [Silla et al. 2005](#)); an external dimension related to, for example, the local market labor and the demand for particular subject areas ([Berntson et al. 2006](#); [Kirschenbaum and Mano-Negrin 1999](#); [Lane and Rajan 2000](#); [Rajan 1997](#)).

With respect to the internal dimension, some studies (e.g., [Chiesa et al. 2018](#); [De Cuyper et al. 2008](#)) have shown that the employees' perception of employability and their actual employability (e.g., [Ngoma and Ntale 2016](#)) is associated with a set of psychological qualities such as "psychological capital", which is characterized by self-efficacy, optimism, hope, and resilience ([Luthans et al. 2007](#)). In addition, a growing body of literature suggests that employability and future job prospects are positively affected both by hard and soft skills (e.g., [Golinkoff and Hirsh-Pasek 2016](#)). While those hard/technical skills achieved through formal education ([Carter et al. 2018](#)) are essential to perform the mechanical aspects of the job ([Chell and Athayde 2011](#); [Silva 2009](#)), an important role for effectiveness in the workplace is played by soft/transversal skills. These are defined as intangible personal qualities, which are not related to a particular task, academic discipline, or area of knowledge ([European Union Commission 2011](#); [UNESCO 2013](#)). At least six areas of soft skills have been recognized: Communication skills, interpersonal skills, leadership skills, organizational skills, self-motivation skills, and creativity skills ([Gallivan et al. 2004](#)).

If employability, and its perceptions, can be influenced by both internal and external factors, the same can be said with respect to the barriers that can hinder employability. Barriers are defined by [Swanson and Woitke \(1997\)](#) as "events or conditions, either within the person or in his or her environment, that make career progress difficult" (p. 434). In the case of highly skilled migrant women, examples of barriers located at the individual level are represented by low levels of language competence ([Föbker and Imani 2017](#)), problems in managing work-life balance, lack of social integration and networking ([Grigoleit-Richter 2017](#); [Pio 2005](#)), age, education, levels of experience in the labor market, and migration-related aspirations ([Bloch 2002](#)). Barriers located in the environment regard, for instance, the cultural aspects of job seeking, and employers' attitudes (e.g., [Bloch 2002](#)). These barriers might be objective, depending on the institutional environment of the host country, but different migrants will have different perceptions of these barriers ([Bolzani et al. 2020](#)). As underlined by [Dean and Wilson \(2009\)](#), the lack of positive outcomes in job seeking processes could be perceived as more problematic and difficult for highly skilled immigrants, because of the higher investment of time and effort with the aim of further develop and progress their careers.

From our reading of available literature, there are many studies focusing on the perceived employability and the related perceived barriers from a highly skilled immigrant perspective, while studies approaching other labor market subjects' perceptions of highly skilled immigrants' employability are scarcer. In this paper, we therefore aim at filling this gap, by specifically analyzing the perceptions of employability of STEM highly skilled migrant women from a labor intermediaries' perspective.

## 2.2. Employability: The Key Role of Labor Market Intermediaries

Labor market intermediaries are «entities that stand between the individual worker and the organization that needs work done» (Bonet et al. 2013, p. 343). They include a wide array of actors, such as professional associations, unions initiatives and guilds, public unemployment agencies, professional employer organizations, outplacement services, temporary help services, online job boards, social media sites, or executive place and search firms.

Labor market intermediaries are important in our economy because they are increasingly intermediating or taking over the functions of human resource management of companies (staffing, retention, development, adjustment, and change management), thus changing «the bilateral, employee–employer relationship into a three-way “triangular” relationship» (Bonet et al. 2013, p. 342). The review by Bonet et al. (2013) have identified three typologies of labor market intermediaries. First, information providers, who take over corporate recruiting activities, by aggregating, packaging, and sometimes selling information about individuals to organizations and about vacancies to individuals. These intermediaries facilitate the moves by those with previous experience in other organizations, also across geographic areas (e.g., Stevenson 2009; Bagues and Labini 2009) thus potentially contributing to a better match between job seekers and hiring organizations (e.g., Freeman 2002), but also creating important biases to the matches (e.g., excluding those with a profile on social media sites, influencing job ad format and content; Marchal et al. 2007). Second, matchmakers, who assume the functions of recruiting, selecting, and promoting qualified candidates that they identify through accessing different pools of candidates. These organizations thus supply and package important information to employers and screen candidates (Bonet et al. 2013). Through their intermediating role, however, they might favor the access to employment for certain groups (e.g., males, white, middle-income, white-collar socio-economic background; Dreher et al. 2011), applying for instance “anticipatory gender sorting” (Fernandez-Mateo and King 2011). They may also select candidates from elite schools, or with international work experience, and lack of career interruptions (e.g., Clerkin 2005); or rank-order employers based on conservative rankings of companies (e.g., Fortune or Business Week magazines) (Khurana 2002). Finally, labor market intermediaries may have the role of administrators, thus directly hiring workers and supplying them to a client organization, towards which workers have obligations to perform according to defined duties and roles (Cappelli and Keller 2013). These intermediaries carry out several activities, such as staffing, development, retention, adjustment, and change management. Some authors have found that temporary help jobs can facilitate the move to new jobs, especially for highly skilled individuals (e.g., Garcia-Perez and Muñoz-Bullon 2005), but not to direct-hire employment (e.g., Amuedo-Dorantes et al. 2008).

In the field of migration, labor market intermediaries play the important role of “agents of human development” (Agunias 2009, p. 2) and influence the availability of decent and safe work opportunities (van den Broek et al. 2015). In this regard, while the practices followed by caseworkers and professionals in labor market intermediary organizations have received some attention (e.g., Diedrich and Styhre 2013; Diedrich 2017), to the best of our knowledge there is a gap in the scholarly understanding of “agents of human development” training needs to best assist highly skilled migrant workers. This is especially the case for professionals’ training needs related to intercultural competencies and job seeking-related competencies. First, the literature on migration highlighted the processes of adjustment and acculturation (Kadkhoda 2002) that occur when people who have developed their own cultural identity enter into a different culture (Berry 1997). In this regard, the intercultural competencies related to an intercultural educator are relevant because referring to situations that “are seen as so complex that they can be dealt with only through the convergence and combination of different viewpoints . . . intercultural education is more proactive and action oriented than multicultural education, and rather than focusing on specific problems . . . [intercultural education] recognizes that a genuine understanding of cultural differences and similarities is necessary in order to build a

foundation for working collaboratively with others” (Cushner 1998, p. 4). Furthermore, Salinaro (2020) highlights relational skills as the essence of the educational work and the crucial point where it is possible to redefine the objectives of the paths of migrants’ inclusion. Second, professionals support migrants to face different stages related to researching job opportunities, submitting applications, participating in interviews, negotiating with potential employers, etc. (Pajic et al. 2018). In line with this, the competence framework for career guidance practitioners elaborated by CEDEFOP (2009) identify three sections: (a) Foundation competencies (e.g., transversal competencies, values, and the ethical approach underlying all professional guidance actions); (b) client-interaction competencies (e.g., skills to manage activities directly involving users, enable access to information, build users’ capability for career management such as coaching techniques, and mentoring and role models); (c) supporting competences (e.g., skills to support role management and service development, such as identify a range of networks relevant to work role, develop knowledge of research methods).

### 3. Empirical Methodology

#### 3.1. Data Collection

The present contribution is the result of an online survey delivered between May and July 2018 to professionals working for labor market intermediary organizations in five European countries (Greece, Hungary, Italy, Sweden, United Kingdom), within the framework of a larger European project<sup>2</sup>.

The survey was the second of a two-steps quanti-qualitative, exploratory research. During the first step, the researchers carried out in-depth, semi-structured interviews and focus groups<sup>3</sup> targeting migrant women with a STEM background<sup>4</sup> (n = 57) and professionals working with this highly specific category of beneficiaries (i.e., educators, trainers, social workers, recruiters, job counsellors, career advisors) (n = 25), with the goal of reconstructing the perceived barriers and resources affecting the inclusion of highly qualified migrant women in the labor market of the receiving countries. In this stage of the research, the sample was constructed through snowball and purposeful sampling, aiming at maximizing differences across participants. Seventy-eight percent of the professionals reached in this phase were working for organizations operating in the domains that were identified as strategic in relation to the labor market inclusion of highly skilled migrant women: Welfare system<sup>5</sup> (40%); training and education system<sup>6</sup> (28%); migrant-based associations (20%); labor system<sup>7</sup> (12%).

In the second research step, we carried out an online survey, specifically targeting professionals that could intercept highly qualified migrant women. The aim was to investigate the respondents’ perceptions of relevant factors fostering the employability of highly skilled migrant women with a STEM background (including barriers and resources), and the professionals’ training needs to effectively foster the employability of migrant women with a STEM background. As described below, the measures used in the survey were

<sup>2</sup> The name of the project is anonymized at this stage of the review process. The project was aimed at designing and testing training kits to foster the employability of highly skilled migrant women with a STEM background.

<sup>3</sup> In migration studies, qualitative research methods have long been acknowledged as tools enabling a deeper understanding of migrants’ agency in the design of their migratory project, as well as in the decision-making processes performed in the receiving country (e.g., Mountz et al. 2002).

<sup>4</sup> Considering that the ethnic background can be a factor of discrimination in the labour market, the definition of migrant women used in the research includes: Foreign born women, asylum seekers, refugees, and women with a migratory background who may or may not have the citizenship of the receiving country (e.g., women whose parents were migrants).

<sup>5</sup> Public and private institutions engaged in providing assistance to vulnerable adults, especially migrants (e.g., social assistance programs; charity foundations).

<sup>6</sup> Public and private institutions engaged in training/education of adults and professionals (e.g., training centres; evening schools; professional training centre; VET organisations and associations).

<sup>7</sup> Public institutions (e.g., agencies and centres for employment; public authorities involved in management of labour/employment issues; social cooperatives) and private sector institutions (private recruitment firms and intermediaries; trade and labour unions; Chamber of Commerce; business associations; microfinance institutions).

developed drawing on the existing literature on the topic and on the preliminary findings emerging from the qualitative research phase. The survey was based on a self-administered structured questionnaire, which was administered via Qualtrics in each of the five national languages, after applying translation and back-translation of the questions from the English version. Given the unique nature of the respondents, the data collection was carried out through a snowball sampling technique.

### 3.2. Measurement

To measure employability, we adapted the perceived employability subscale developed by Rothwell et al. (2008) for the target of our respondents. The scale is based on 6 items, presented on a range from 1 (totally disagree) to 7 (totally agree), with 4 as the medium point (nor agree neither disagree). Example of items are the following: "There is generally a strong demand in the job market for migrant women with a STEM background at the present time", "Migrant women with a STEM background can easily find out about opportunities in their chosen area of work", "The skills and abilities migrant women with a STEM background possess are what employers are looking for". Cronbach alpha of this scale was equal to 0.68. We created a factor score for this scale by calculating the simple average of items' raw values.

The perceived barriers to the employability of migrant women with a STEM background were measured through a list of 14 items that we developed based on previous literature and insights from the first phase of the research. In this regard, the list developed from focus groups was consistent with the list of barriers obtained by Bloch (2002) in her research on refugees in the United Kingdom, thus giving us confidence about the validity, completeness, and replicability of our scale. Examples of items are the following: "Unfamiliarity with the host country's system (professions/jobs market, occupational trends, etc.)", "Lack of information on recruiting channels to find job opportunities", "Employers' discrimination". Respondents answered using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with 3 as the medium point (nor agree neither disagree).

To measure the perceived resources available for migrant women in STEM to increase their employability, we created a list of 7 items both drawing on previous literature and the insights gained during the first research step. Professionals were asked to answer by stating the extent to which they agreed that each item represented a resource for migrant women employability. One item was related to the social support from the own migrant community, three items were related to the soft skills, and four items were related to psychological capital dimensions (i.e., self-efficacy, optimism, resilience, and hope. Examples of items are the following: "Support by the migrant community (e.g., national based associations) with good roots in the receiving context", "Skills useful to cope with the difficulties in job search (e.g., problem-solving skills)", "Ability to sustain efforts and bouncing back and even beyond to achieve success, when beset by problems and adversity", "Having confidence to take on and put in the necessary effort to succeed at challenging tasks". Respondents answered using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) with 3 as the medium point (nor agree neither disagree).

In order to measure the training needs of the professionals (potentially) working with migrant women with a STEM background, we created a list of 15 items based on the match between the needs highlighted by labor market intermediaries' professionals during the first phase of the research, and the competence framework for career guidance practitioners elaborated by CEDEFOP (2009). Professionals were asked to rate the extent to which they agreed that they represent a training need for them, and examples of items are: "Methods of job seeking and placement activities for migrant women with a STEM background", "Procedures to recognize the qualification achieved by migrant women with a STEM background in the country of origin for the host country", and "Communication skills to target migrant women with a STEM background", "Coaching skills to target migrant women with a STEM background". Respondents answered using a Likert scale

ranging from 1 (strongly disagree) to 5 (strongly agree), with 3 as the medium point (nor agree neither disagree).

### 3.3. Description of Respondents

In total, 143 professionals participated in the online questionnaire, but only 97 professionals completed the survey. The 46 respondents who did not finish the questionnaire interrupted it just after the first page (authorizing informed consent) or after the first three questions. It can be assumed that these respondents were professionals who perceived themselves as not belonging to the respondent target group.

Participation in the survey by labor market intermediaries' professionals across the five European countries was heterogeneous: 32% of participants lived in Greece, 27.8% in Italy, 16.5% in Hungary, 16.5% in Sweden, and only 7.2% in the United Kingdom (Table 1 for a summary). Given the exploratory nature of the survey and our sampling based on snowballing, we relied on partners in each country to help in the data collection process. Each partner sent out three recalls about the survey to relevant personal and professional networks.

**Table 1.** Summary of recorded and completed questionnaires per country.

Country	Recorded		Completed	
	N	%	N	%
Italy	43	30.1%	27	27.8%
Greece	33	23.1%	31	32.0%
Hungary	25	17.4%	16	16.5%
Sweden	23	16.1%	16	16.5%
United Kingdom	19	13.3%	7	7.2%
Total	143	100.0%	97	100.0%

The respondents worked were quite homogeneously distributed across migrant-based associations (19%), training system (28%), labor system (27%), and welfare system organizations (26%). Around 56% of the respondents were male, on average 43 years old (standard deviation [s.d.] 10.74, min 24, max 63) when they participated in the survey.

Given the intersectionality that characterize highly skilled migrant women in STEM (e.g., women, migrant, STEM professionals), we asked to the professionals to specify the extent of their experience to assist any of the following categories in labor market intermediation services: (1) Women with a STEM background; (2) migrant women; (3) migrant women with a STEM background. Respondents were heterogeneous with respect to their knowledge of the target group: 20% reported to work "often" with women in STEM (12% never); 26% of respondents worked every day with migrant women (14% never). Around 12% of respondents worked with migrant women in STEM every day, 14% often, and 54% sometimes. Overall, we conclude that nearly 80% of our respondents had direct knowledge of employability-related barriers and resources for highly skilled migrant women in STEM.

## 4. Results

The results from our survey showed that, across the five considered countries, labor market intermediaries' professionals perceived highly skilled migrant women in STEM as having low employability prospects. In fact, the average scores recorded for the scale of perceived employability were below or very close to the mid-point of the scale across the five countries (mean = 3.57; s.d. 0.96; scale ranging 1–7). The results for each country are reported in Table 2.

**Table 2.** Perceived employability of migrant women with a STEM background in surveyed countries.

Country	N	Mean	Standard Deviation	Min	Max
Italy	24	3.38	0.97	1.67	5.50
Greece	30	3.38	1.10	1.33	6.83
Hungary	15	3.68	0.64	2.67	4.83
Sweden	12	4.01	0.70	2.83	5.33
United Kingdom	7	4.02	1.08	2.33	5.83
Total	88	3.57	0.96	1.33	6.83

Note: Descriptive statistics have to be assessed against a scale ranging from 1 (totally disagree) to 7 (totally agree).

Professionals in Italy and Greece report the same level of perceived employability (mean = 3.38), which is the lowest perceived employability across participating countries. These results are interesting because the two countries are characterized by being an “access gate” for migrants, and especially asylum seekers, to Europe. On the opposite side, employability scores are slightly higher for professionals in Sweden (mean = 4.01) and the United Kingdom (mean = 4.02), which are the countries with longer immigration histories in our sample. Hungarian professionals showed intermediate levels of perceived employability (mean = 3.68) with respect to other countries.

Based on these findings, we have built three levels of perceived employability for Southern Europe (i.e., Italy and Greece, mean = 3.38), Eastern Europe (i.e., Hungary, mean = 3.68), and Northern Europe (i.e., United Kingdom and Sweden, mean = 4.02). We use these categories to analyze and present further data from respondents.

#### 4.1. Access to the STEM Labor Markets: Barriers and Resources for Migrant Women

Considering the items in our survey related to perceived barriers for the employability of highly skilled migrant women with a STEM background (Table 3), the data revealed that the least important perceived barrier across the five countries was “No demand for skills related to STEM” (mean = 2.77, s.d. = 1.20). We interpret this finding as showing that professionals perceive a relatively high demand for STEM competences on the labor market for migrant women with a STEM profile. At the opposite side of their answers, “Poor mastery of the spoken language in the host country” was perceived as the most important barrier by respondents (mean = 4.17; s.d. = 0.99).

To further analyze any difference across groups of countries included in our study, we conducted a one-way between- subjects ANOVA (using robust Brown-Forsythe specification) to compare the perception of barriers for professionals in the three groups of countries. Significant statistical differences between mean levels of perceived barriers were found in the items “Age” ( $F = 3.34; p < 0.05$ ), “Qualification achieved in country of origin not recognized in host country” ( $F = 4.48; p < 0.05$ ), “Discriminations by employers” ( $F = 4.56; p < 0.05$ ), “Lack of childcare” ( $F = 15.23; p < 0.01$ ), “Lack of networks supporting job searching” ( $F = 3.70; p < 0.05$ ), and “Lack of networks supporting work-life balance” ( $F = 4.07; p < 0.05$ ). In general, professionals in Southern European countries display the highest level of perceived barriers with regard to what we might define as structural or environmental barriers (e.g., lack of recognition of home-country qualification; discrimination by employers; lack of childcare and of networks supporting work-life balance; lack of networks supporting job search) (see Table 3).

Considering the perceived resources for employability of migrant women in STEM (Table 4), the least important perceived resource across the five countries is “Support by the migrant community” (mean = 3.81; s.d. = 1.09), while the most important resource is “Ability to sustain efforts and bouncing back and even beyond to achieve success, when beset by problems and adversity” (i.e., resilience) (mean = 4.18; s.d. = 0.87).



**Table 3.** Perceived barriers to the employability of migrant women with a Science, Technology, Engineering, and Mathematics (STEM) background: Descriptive statistics.

	Southern Europe	Eastern Europe	Northern Europe	Overall
	Mean (s.d.)	Mean (s.d.)	Mean (s.d.)	Mean (s.d.)
Age	3.00 (1.30)	2.19 (1.11)	3.23 (1.45)	2.91 (1.33)
Poor mastery of the spoken language in the host country	4.05 (1.05)	4.06 (1.12)	4.57 (0.51)	4.17 (0.99)
Lack of host country work experience	3.93 (1.02)	3.80 (0.94)	3.52 (1.24)	3.81 (1.07)
Bureaucracy and long time to obtain migration status and work permit	4.12 (1.09)	3.63 (0.89)	4.27 (0.94)	4.07 (1.04)
Qualification achieved in country of origin not recognized in host country	4.37 (0.82)	3.50 (1.27)	3.82 (1.14)	4.09 (1.03)
Unfamiliarity with the host country's system (professions/jobs market, occupational trends, etc.)	4.07 (0.90)	3.81 (0.83)	3.77 (0.97)	3.96 (0.91)
Lack of information about methods of job seeking and placement activities	4.02 (0.88)	3.56 (0.89)	3.70 (1.02)	3.86 (0.93)
Lack of information on recruiting channels to find job opportunities	4.00 (0.98)	3.31 (1.14)	3.82 (0.96)	3.84 (1.02)
Employers' discrimination	3.98 (0.92)	3.25 (1.18)	3.35 (1.03)	3.71 (1.04)
Lack of work opportunities in the STEM sectors	3.38 (1.27)	2.94 (1.18)	2.68 (1.25)	3.14 (1.28)
No demand for skills related to STEM	2.96 (1.25)	2.63 (0.96)	2.39 (1.20)	2.77 (1.20)
Lack of childcare	3.84 (0.96)	2.88 (1.15)	2.33 (1.20)	3.34 (1.22)
Lack of networks supporting job searching	3.93 (0.93)	3.25 (0.86)	3.70 (0.88)	3.76 (0.93)
Lack of networks supporting work-life balance	4.02 (0.80)	3.44 (1.09)	3.45 (0.86)	3.79 (0.90)

Note: Descriptive statistics have to be assessed against the following scale: 1 (strongly disagree), 2 (disagree), 3 (nor agree neither disagree), 4 (agree), to 5 (strongly agree).

**Table 4.** Perceived resources for the employability of migrant women with a STEM background: Descriptive statistics.

	Southern Europe	Eastern Europe	Northern Europe	Overall
	Mean (s.d.)	Mean (s.d.)	Mean (s.d.)	Mean (s.d.)
Support by the migrant community	3.85 (1.02)	4.00 (1.25)	3.57 (1.17)	3.81 (1.09)
Skills useful to analyze and diagnose the own situation in job search process	4.19 (0.83)	3.73 (1.03)	3.90 (0.83)	4.10 (0.88)
Skills useful to manage relationships in a workplace situation or in the job searching process	4.19 (0.79)	4.00 (1.07)	3.95 (0.97)	4.10 (0.88)
Skills useful to cope with the difficulties in job search	4.13 (0.91)	3.73 (1.10)	4.19 (0.60)	4.08 (0.89)
Having confidence to take on and put in the necessary effort to succeed at challenging tasks (self-efficacy)	4.04 (0.99)	3.80 (1.01)	4.52 (0.68)	4.11 (0.95)
Making a positive attribution about succeeding now and in the future (optimism)	3.81 (0.93)	3.87 (1.06)	40.57 (0.68)	4.00 (0.95)
Ability to sustain efforts and bouncing back and even beyond to achieve success, when beset by problems and adversity (resilience)	4.22 (0.72)	4.00 (1.13)	4.19 (1.03)	4.18 (0.87)
Perseverance towards goals and, when necessary, redirecting paths towards goals in order to succeed (hope)	4.09 (0.81)	3.93 (0.96)	4.14 (1.01)	4.08 (0.88)

Note: Descriptive statistics have to be assessed against the following scale: 1 (strongly disagree), 2 (disagree), 3 (nor agree neither disagree), 4 (agree), to 5 (strongly agree).

While mean values seem to converge across countries, a one-way between-subjects ANOVA (using the robust Brown–Forsythe specification) was conducted to compare the perception of resources between the three groups of countries. Significant statistical differences between the means of perceived resources importance were found in “Self-efficacy” ( $F = 3.32; p < 0.05$ ) and “Optimism” ( $F = 5.49; p < 0.01$ ), with United Kingdom showing higher means.

#### *4.2. Training Needs of the Professionals of Labor Market Intermediaries*

We analyzed the results regarding the items of the scale that we developed to measure the training needs of professionals of labor market intermediaries potentially working with migrant women with a STEM background. As shown in Table 5, the least important training need perceived by labor market intermediaries’ professionals across the five countries was related to the “Procedures to obtain migration status and work permit in the host country for migrant women with a STEM background” (mean = 3.31; s.d. = 1.36), whereas the most important training need was about “Creating networks supporting work-life balance for migrant women with a STEM background” (mean = 4.00; s.d. = 0.96).

A one-way between-subjects ANOVA (using the robust Brown–Forsythe specification) was conducted to compare the perception of training needs among professionals in the three different groups of countries. While the values seem to converge across groups of countries, significant statistical differences between mean levels in perceived training needs are observable only in “Procedures to obtain migration status and work permit in the host country for migrant women with a STEM background” ( $F = 5.80; p < 0.01$ ), with professionals from Northern countries displaying greater training needs in this area. Overall, these results show that there are similar training needs across respondents in different countries.

**Table 5.** Perceived training needs to support the employability of migrant women with a STEM background: Descriptive statistics.

	Southern Europe	Eastern Europe	Northern Europe	Overall
	Mean (s.d.)	Mean (s.d.)	Mean (s.d.)	Mean (s.d.)
Procedures to obtain migration status and work permit in the host country for migrant women with a STEM background	3.02 (1.46)	3.67 (0.89)	4.00 (1.00)	3.31 (1.36)
Procedures to recognize the qualification achieved by migrant women with a STEM background in the country of origin for the host country	3.86 (1.07)	3.67 (0.99)	3.87 (1.13)	3.83 (1.06)
Other administrative and bureaucratic issues related to migrant women with a STEM background in the host country	3.80 (1.07)	3.42 (1.00)	3.80 (1.01)	3.74 (1.04)
Host country's labor system (professions/jobs market, occupational trends, etc.) for migrant women with a STEM background	3.84 (1.00)	3.67 (1.07)	3.60 (1.18)	3.77 (1.04)
Home country's labor system and educational system for migrant women with a STEM background	3.96 (0.83)	3.58 (1.00)	3.87 (1.19)	3.88 (0.93)
Methods of job seeking and placement activities for migrant women with a STEM background	3.82 (1.08)	3.67 (1.16)	3.80 (1.01)	3.79 (1.07)
Recruiting channels to find job opportunities for migrant women with a STEM background	4.04 (1.03)	3.50 (1.31)	3.80 (1.08)	3.91 (1.09)
Creating networks supporting job searching for migrant women with a STEM background	4.10 (1.04)	3.58 (1.31)	3.67 (1.05)	3.94 (1.09)
Creating networks supporting work-life balance for migrant women with a STEM background	4.06 (0.91)	3.67 (1.16)	4.07 (0.96)	4.00 (0.96)
Guidance skills to target migrant women with a STEM background	3.94 (1.08)	3.75 (1.29)	4.13 (0.93)	3.95 (1.06)
Communication skills to target migrant women with a STEM background	3.68 (1.19)	3.67 (1.37)	3.73 (1.10)	3.69 (1.18)
Stress and burnout management skills to target migrant women with a STEM background	3.60 (0.99)	3.67 (1.30)	3.93 (1.03)	3.68 (1.04)
Leadership skills to target migrant women with a STEM background	3.42 (1.26)	3.58 (1.31)	3.40 (1.18)	3.44 (1.24)
Coaching skills to target migrant women with a STEM background	3.84 (0.96)	3.75 (1.36)	3.87 (0.99)	3.83 (1.02)
Mentoring skills to target migrant women with a STEM background	3.84 (1.02)	3.67 (1.37)	4.00 (1.07)	3.84 (1.08)

Note: Descriptive statistics have to be assessed against the following scale: 1 (strongly disagree), 2 (disagree), 3 (nor agree neither disagree), 4 (agree), to 5 (strongly agree).

## 5. Discussion and Conclusions

The study of highly skilled international migration is relevant nowadays, in light of its impacts on innovation and knowledge diffusion around the globe (Lissoni 2018; OECD 2014). The individual, organizational, and environment dynamics that contribute to shape employment outcomes and social integration for foreign workers have been a topic of increasing attention for management scholars (e.g., Al Ariss and Crowley-Henry 2013). Our work aligns to the stream of studies on the labor market outcomes of highly skilled migrants (e.g., Crowley-Henry et al. 2018; Green et al. 2013; Shirmohammadi et al. 2018), by specifically studying the employability of highly skilled migrant women with a STEM background. This is a relevant target group, that represents 10–30% of highly skilled migrants in several European countries (e.g., European Migration Network 2007; Jungwirth 2011; Kofman 2014; Raghuram 2008).

Drawing on empirical research carried out in 2018 in five countries (Greece, Hungary, Italy, Sweden, United Kingdom), the present contribution explores the employability of migrant women with a background in STEM from the specific—and under-investigated—perspective of labor market intermediaries that deal with this target. In fact, recent works have called for further research about the role of labor market intermediaries on the employability and career outcomes of highly skilled migrants (e.g., McCollum and Findlay 2018; van den Broek et al. 2015). Therefore, our work theoretically contributes to the literature on the employability, and thus the labor market outcomes, of highly skilled migrants (e.g., Crowley-Henry et al. 2018; Green et al. 2013; Shirmohammadi et al. 2018) by investigating employability perceptions from the perspective of labor market intermediaries and highlighting the contextual factors that matter for the employability of a specific group of migrants, i.e., highly skilled migrant women in STEM (Grigoleit-Richter 2017; Jungwirth 2011; Raghuram 2008).

Studying the employability of migrant women with a STEM background entails taking into account two intersectional issues. First, the gendered relationships that take place on labor markets, both traditionally (e.g., Wilson 2019), and within specific industries and organizational contexts, such as in male-dominated sectors (e.g., Catalyst 2020; Grigoleit-Richter 2017; Raghuram 2008). Second, the lived experiences of highly skilled migrants in a host country, where numerous barriers impede them to easily transfer their cultural and human capital across borders (Dumont and Monso 2007), due to imperfect information in the labor market or domestic institutions and norms, technological and educational gaps between country of origin and of destination, lack of technical language proficiency, professional labor regulations, work culture and practices, stereotypes, and prejudices (e.g., Al Ariss 2010; Chiswick and Miller 2009; Friedberg 2000).

Adding to this evidence, our study shows the barriers and resources that limit or enhance the employability of migrant women in STEM through the lenses of the professionals (potentially) working with this target group to support them into labor market positioning. We show that these professionals, across different European countries, perceived highly skilled migrant women in STEM as having rather low employability prospects. These are important results because the way these labor market intermediaries construe and frame migrant women's employability can influence their subsequent employment and career outcomes (e.g., Diedrich 2017).

Our study shows that, for labor market intermediaries' professionals across Italy, Greece, United Kingdom, Sweden, and Hungary, perceived barriers to qualified employment of migrant women in STEM are mostly related to technical language proficiency, rather than the lack of qualified job vacancies for specialists in STEM. However, these perceptions have also some context-dependent qualifications. For instance, structural or environmental barriers (e.g., lack of recognition of home-country qualification; discrimination by employers; lack of childcare and of networks supporting work–life balance; lack of networks supporting job search) are more important for Southern European countries. Therefore, this suggests that institutional arrangements that favor the transferability of educational credentials, reduce discrimination towards migrants, and support women in

searching jobs and maintaining them through adequate family support services are key elements that can contribute to enhancing employability for this target group.

In our study, professionals of intermediary labor organizations assigned a very important role to the psychological capital and individual resources held by migrant women (e.g., self-efficacy and resilience). It would be interesting for future studies to further investigate these perceptions in a larger sample or in other countries, critically questioning whether they might contribute to the construction of the “ideal” or “good” migrant worker (MacKenzie and Forde 2009), or align to neo-liberal, mechanistic visions about highly skilled migrants’ achievements on the host countries’ labor market (e.g., Grigoleit-Richter 2017; Kusterer and Bernhard-Oettel 2020).

Lastly, our paper adds relevant insight to the literature by highlighting the perceived training needs that professionals working for labor market intermediaries feel as pressing to effectively deal with migrant women in STEM. This is relevant to inform practical and actionable actions, such as training programs dedicated to labor market intermediaries that could make them more effective in serving the needs of highly skilled migrant women, especially in STEM, and therefore reduce the risk of brain waste, contributing to avoid a “triple loss” to highly skilled migrants, to the destination country’s labor market, and to the country of origin (Portes 2009).

We acknowledge that our study presents several limitations linked to its explorative nature, for instance with regard to the creation of ad-hoc measures, the sampling approach, and the use of descriptive or comparative statistics. Given the lack of studies on the specific topic covered by our study, we hope that future studies could build on our work to replicate the findings, for example using a wider sample and focusing on different countries.

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