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# ““The contribution of MOOCs to upskilling the labour force”

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## Abstract

- Purpose

The article investigates whether participation to Massive Open Online Courses (MOOCs) may lead to labour market returns and through which mechanisms such relative advantage may take place. Indeed, despite high figures of registered users, empirical studies on occupational returns is limited and MOOCs may represent a viable, cost-efficient example of lifelong learning practice to respond to the demand of better skilled workforce for the 4th Industrial Revolution.

- Design/methodology/approach

The empirical strategy is based on qualitative empirical material constituted by a set of 21 qualitative semi-structured interviews conducted in 2019 among learners who registered in MOOCs provided by European higher education institutions.

- Findings

Interviews return a situation in which MOOCs are beneficial for work: learners appreciate the new knowledge and skills they can access, with time flexibility and low entry cost. However, MOOCs positive contribution is not at everyone's reach: self-selection issues tend to further advantage individuals with high levels of education and individual resources. Moreover, MOOCs can increase the risk of a shift of responsibility for training to the employees and qualify as a lower tier type of qualification, reinforcing social closure mechanisms based on educational credentials.

- Originality

The article contributes to the empirical analysis of MOOCs economic returns empirically, by providing original qualitative material. Second, it contributes theoretically by bridging literature on economic and occupational returns to education on one side and literature on digital technologies in education on the other, providing new insights on potentials and limits of MOOCs as a new form of lifelong learning.

**Keywords:** MOOCs, adult education, skills, labour market returns

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## **“The contribution of MOOCs to upskilling the labour force”**

### **1. Introduction**

A general claim about the Fourth Industrial Revolution is that more and better skills are needed at all levels of the labour force (OECD, 2019). The majority of scholars agree that upgrading workers' qualifications with both technical and adaptive skills is a key policy area (Neufeind *et al.*, 2018). However, much less attention is paid to the needs and the strategies that these workers implement to cope with the skill demand associated with such a transformation of labour.

Indeed, processes of digitalization enable individuals to take advantage of new flexible, low-cost and hybrid forms of education and training. Typical examples in this regard are Massive Open Online Courses (MOOCs): university-level courses on a specific subject, delivered online via digital platforms, potentially accessible to all individuals with an internet connection (even without prior qualification), and at no cost (most basic versions of the courses are available free-of-charge).

While issues of inequalities of opportunity in access to MOOCs have attracted increasing scholarly attention (Reich and RUIPÉREZ-VALIENTE, 2019), to our knowledge the downstream side of the returns to enrollment in MOOCs has received less attention (Zhu *et al.*, 2020). Indeed, MOOCs seem to represent a practical extension of professional development and continuing education, although little is known about who can benefit the most and the magnitude of such benefit.

To contribute to filling this gap, the paper investigates the contribution made by MOOCs to skills formation and career opportunities by developing both job-related skills and general, socio-emotional skills.

By combining the sociological literature on the links between education and labour market outcomes, on the one hand, with empirical research on digital innovation in education and training, on the other, this study highlights the extent to which workers may build their own patterns of training and whether the returns to MOOCs can be ascribed to specific strategies to increase competitiveness for job opportunities. Using qualitative semi-structured interviews the article investigates what types of skills are improved through MOOC participation and how learners (both employed or temporarily out of work) make strategic use of the skills acquired in the labour market.

### **2. The association between education and economic outcomes**

A large body of literature has investigated the link between formal education and economic-occupational returns, and its underlying mechanisms.

Although at the entry stage to education, opportunities are still unequally distributed – to different extents in different countries (Shavit *et al.*, 2007) – at the exit stage from education there is consensus among scholars on the positive returns associated with education. In particular, the advantages of higher education are almost entirely undisputed. Education is associated with better economic and labour market outcomes: college graduates have lower unemployment rates, are employed in better jobs, and earn more than non-college graduates (Gebel and Heineck, 2019; Hout, 2012).

This rich body of literature also identifies the mechanisms through which the positive association between education and occupational outcomes unfolds. The best-known approaches in this regard maintain that the link between education and labour market success is driven by: a) human capital and productive skills; b) signaling and screening; and c) social closure mechanisms (for a review see Gebel and Heineck 2019; Bills, Di Stasio, and Gërkhani 2017). This literature has concentrated on the demand side of labour, seeking to explain the various mechanisms that employers implement in the selection of candidates. However, these same mechanisms are also identified as explaining the returns on adult education and in general on lifelong learning (Blossfeld *et al.*, 2014). This article is an attempt to extend the explanatory power of this perspective to the supply side of labour, seeking to understand the strategies that workers in the labour market adopt when they decide to use new and digitally mediated forms of education and lifelong learning such as MOOCs. Indeed, although MOOCs are delivered by elite higher education institutions in structured lecture forms, their modular structure, and their flexibility of entry and exit challenge the distinction between education and lifelong learning.

In this framework, the underlying assumption is that individuals in the labour market, whether already employed or in transition between jobs or life stages, are to some extent aware of the mechanisms that employers implement in their hiring decisions. Workers are aware of the different levels of prestige of educational institutions, as well as of employers' preferences, so that it is reasonable to argue that they may anticipate (consciously or unconsciously) some of these mechanisms when deciding to enroll on a MOOC. Moreover, given the novel nature of MOOCs, this study offers an opportunity to explore –although only indirectly- employers' standpoint when dealing with new forms of skill certification acquired outside formal schooling. As noted by Bills and colleagues (2017, 303), “these emerging signifiers of competence challenge the monopoly of credentials held by formal educational institutions and provide employers with a vast swath of hiring options and strategies”.

### *2.1. Human capital and productive skills*

The underlying assumption of the human capital theory (Becker, 1964) is that higher levels of education are associated with higher worker productivity, which competitive markets will reward

with higher wages. On this view, the social and economic relationships established in advanced economic systems become increasingly complex, and consequently require the labour force to have ever-higher levels of skills in order to cope with jobs and processes that are increasingly complex and interrelated (Ballarino and Checchi, 2006).

Becker also distinguished between general and specific skills (Gebel and Heineck, 2019). The former are acquired in the family and in the education system, and they comprise a broad array of skills, both cognitive and non-cognitive, as well as socio-emotional. The latter are specific to the task, job or occupation in which the individual is involved and are generally acquired later in the educational path through vocational training or on-the-job training.

In this respect, workers may choose to attend a MOOC to enlarge their set of general and/or specific skills, ultimately increasing their productivity at work. The diversity of topics and learning approaches that characterizes MOOCs makes them suited to learners seeking to acquire both general and specific skills. Some MOOCs can be very focused and restricted to specific tasks (e.g. accounting, specific software packages, etc...); others (e.g. concerning personal growth) may contribute to improving socio-emotional skills like self-esteem, attribution and locus of control. Finally, the use of MOOCs may help to improve other general skills related to the ability to use digital tools and distance communication tools that may traverse different jobs and businesses.

## *2.2. Signaling and screening*

According to the theories of signaling (Spence, 1973) and screening (Arrow, 1973; Thurow, 1975), the labour market is affected by information problems: both employers and job-seekers have to deal with asymmetric information which ultimately creates uncertainty about the choice of the best candidate for a job (and about the best job for a candidate). In this regard, a convenient strategy is to derive an individual's productivity from certain signals; and educational attainment is an efficient signal because the cost of acquiring education is lower for individuals who already have high productivity.

Consequently, MOOCs may be chosen by learners as a way to show prospective employers their ability to learn autonomously and outside traditional schooling, their ability to take the initiative and use self-directed learning strategies, as well as their pro-active attitude to addressing skill gaps and keeping themselves 'job-ready' (Brown and Souto-Otero, 2020).

## *2.3. Social closure mechanisms*

Critical approaches in the field of sociology have pointed out that the positive association between education and economic returns may be based on mechanisms of social closure. According to Collins

(1979), (higher) educational qualifications act as ‘visas’ for entry to prestigious and economically rewarding positions. By demanding formal qualifications, hegemonic social groups or elites impose social and legal barriers that regulate the demand for labour and determine access to occupations, in particular to privileged positions. Educational qualifications thus become ‘credentials’ and act as legitimized thresholds that exclude (or include) individuals from prestigious and rewarding occupations.

In this framework, MOOCs as non-formal, short courses provided for free, without recognized credentials but nonetheless delivered by elite institutions, raise interesting challenges for the study of returns to education and hiring decisions. On the one hand, MOOCs have lower levels of prestige compared to formal credentials. On the other hand, however, learners may be attracted by the brand of prestigious universities organizing the courses and may try to spend strategically the course certificate in the labour market, potentially weakening social closure mechanisms based on formal educational credentials.

### **3. Returns to MOOCs**

MOOCs are a relatively recent phenomenon, and the returns to MOOCs are still limited. However, several empirical studies have started to provide insights into the uses of MOOCs and the advantages that learners may gain. Both quantitative and qualitative empirical investigations identify returns associated with specific and general skills.

A first quantitative study of users registered on Coursera’s MOOCs (Zhenghao *et al.*, 2015) investigated career and educational benefits. Whilst acknowledging the limits of MOOCs (e.g. low completion rates, overrepresentation of educated learners from developed countries), the study also indicated that the majority of those who completed the course were satisfied and benefitted from some forms of returns. The larger part of reported benefits were associated with general and soft skills (e.g. enhancing skills, improve candidacy for future jobs), but about one third of respondents also reported having experienced explicit returns on the labour market (e.g. a new job or starting a new business). The qualitative study by Sablina and colleagues (2018) used a retrospective approach that considered the perception of learners about the impact of MOOCs on their overall life experience. The study highlighted that the divide between job-specific (in their terminology ‘tangible’) and general (‘intangible’) skills is blurred and instead ordered along a continuum. Job-specific returns are represented by the acquisition of new knowledge and competences, remaining competitive in the labour market, or accessing cheap forms of tutoring and experimentation in diverse disciplines. Returns on general and soft skills concern the accumulation of social capital and subjective wellbeing

associated with improved confidence, sense of fulfillment and perseverance that ultimately strengthen the individual's self-perception.

Few studies have investigated employers' perceptions of MOOCs. An early work by Radford and colleagues (2014) showed that awareness about MOOCs among employers and human resources professionals in the USA was very low (about 30% of the sample knew what MOOCs were and 7% had already used MOOCs for corporate training), although that was the very early period of the MOOC phenomenon.

An investigation by *The Financial Times* on UK-based businesses and professional organizations (Thompson, 2016) highlighted that MOOCs were not well known among employers. However, the reputation of the providers and the internal consistency of MOOC portfolios were key elements for the recognition and valorization of MOOCs on the labour market. Recent studies involving business representatives in 11 European countries (Pitt *et al.*, 2017) and in France (Dussarps, 2018) suggest that certificates provided by MOOC platforms, when included in CVs, are mostly regarded by employers as indirect signs of the personality of the applicant, of his/her motivation, autonomy and self-discipline, rather than communicating actual skills learned and the ability to employ them on the job.

#### **4. Research design**

This article contributes to extending these results further by linking the two streams of literature presented in the previous sections. The main aim is to investigate whether the skills acquired by attending a MOOC can be interpreted using the same framework of returns to education, and whether the strategies employed by learners can be connected to the human capital theory, to the signaling and screening theories, and to credential theory. Building on these theories, the empirical section investigates three approaches that learners may leverage and their relative relevance: a) attending MOOCs as means to improve their skills, specific or general; b) using MOOCs to signal proactive attitude, autonomy and ability; c) leveraging the prestige of the institution delivering MOOCs to bypass a lack of formal education.

##### *4.1. Data*

This study is based on qualitative empirical material consisting of 21 semi-structured interviews with learners enrolled on MOOCs provided by European HE institutions through various digital platforms (Coursera, MiriadaX or other institutional platforms). Interviewees were recruited by using the 'MOOCKnowledge' database collecting survey data on learners enrolled on a series of MOOCs who

voluntarily agreed to participate in the project (about 80 courses). The authors selected 5 courses from which to recruit interviewees according to the heterogeneity of field of study and population (e.g. excluding teacher-training courses) and on a relatively large sample of pre-course and post-course survey data (Table 1). With the exception of the language course, all the other MOOCs are taught in Spanish, a factor influencing the geographical distribution of learners. In total, 1,370 emails were sent to learners who agreed to participate in future follow-up surveys, and 58 replies were received in three days (4.2% response rate). The total number of interviews (21) assured gender balance in the sample and the focus on only highly-educated individuals, in order to have a homogenous sample with which to test the mechanisms behind returns to labour market participation illustrated in Section 2.

Prior to the interview, learners received via email an information sheet about the project's objectives and the interview protocol. At the moment of the interview, conducted remotely on Skype or by telephone, learners provided oral consent to the recording and transcription of the interview. Demographic and socio-economic characteristics of the sample are summarized in Table 2

(table 1 about here)

(table 2 about here)

#### 4.2 Method

The semi-structured interview outline investigated the standpoint of learners (Corbetta, 2014) with respect to the overall experience with MOOCs, rather than being limited to the single course for which the interviewee's name was drawn. This made it possible to include MOOCs that the interviewee had completed and those not completed. The themes investigated in the interview outline were: motivations for enrolling, difficulties, drop-out or success factors, tangible and intangible returns. All interviews were recorded with the interviewee's consent and transcribed for research purposes. The analysis of qualitative material was case-based. It considered the overall experience of the subjects interviewed, and it was aimed at identifying the interviewee's own perspective on the experience of enrolling on and attending MOOCs. Interviews were coded and analyzed using *a priori* categories devised by the research group on the basis of the theoretical literature presented in Sections 2 and 3. Based on this literature, the research group compiled a codebook comprising 16 themes that was used to code the interview transcriptions.

Moreover, for each interview the authors drew up a synopsis highlighting the most relevant findings and quotations for each theme.

## **5. Findings**

As said, interviewees were asked to talk about their overall experience of MOOCs, not only that related to the single course from which they had been recruited. All interviewees declared that they had enrolled on several MOOCs and in various subjects besides the one from which they had been recruited. Indeed, all the learners defined themselves as passionate about learning and had a proactive attitude toward it. On average, interviewees were enrolled on about 5-6 courses dealing with very different disciplines and topics. The great majority of interviewees combined courses oriented to the acquisition of technical and specific skills with courses oriented to the acquisition of soft skills or transversal skills.

Consequently, the key motivating factor in the decision to enroll on a MOOCs is often not univocal, as the interviewees tended to talk about a generic interest and report multiple reasons. Very often they would start their MOOCs experience because they needed to address a specific lack of knowledge; but then, once familiar with the system, they kept discovering new topics and new courses and added up multiple motivations. Typical among our interviewees was a stepwise and cumulative process of enrollment in which the interviewee started by enrolling on one course, then became familiar with the system and enrolled on many other additional and different courses.

Because the focus of this article is on labour market returns from the MOOC experience, the findings are organized according to the three mechanisms illustrated in the theoretical section.

### *5.1. Human Capital theory*

The interviewees acknowledged an increase in their actual skills: they declared that they had learned new things, and that they possessed more skills which they could apply on the job so that they became more productive. The range of skills acquired by the interviewees tended to be either very specific to a particular job task or transversal skills related to the domain of soft skills.

The first category of MOOCs comprised very specific skills, such as how to use a software program (e.g. Excel, PowerPoint) or supplementary courses on particular subjects (e.g. environmental law; intellectual property rights, waste management, etc.). The second category included courses on public speaking, coaching, learning how to learn, etc.... In any case, the interviewees acknowledged that the MOOCs enhanced their knowledge on specific aspects, as Asunción well summarized:

*“the French course was obviously just reading and communicating in French to be prepared to come here to France. The one on solar energy gave me the basic knowledge to... I was doing an internship on solar panels, so it helped me understand what was going on inside the solar panel. And the one on ‘Learning how to learn’ really helped me, well, to think about different ways of teaching, because I was teaching at that time, and also how to learn myself when I went to class and took notes on how to study”*

(Asunción, 27 years old, university degree, France)

Therefore, it is true that interviewees could acquire new knowledge, but this knowledge was only complementary to the formal (and generally higher) education that they had already received. None of the interviewees ever mentioned the idea of using MOOCs as a potential substitute for formal education; they always referred to them as providing support, as additional tools or tutorial with which to refresh previous knowledge, to increase chances of passing an examination, or to prepare for a job interview.

Some interviewees with weak working paths also used MOOCs as means to support themselves during a transition period, mainly to start their own businesses as consultants. For example, José, with a master degree in architecture, was juggling several temporary jobs with periods of unemployment. He used MOOCs to acquire the knowledge needed to start a side job as a consultant to flank other temporary jobs. So he used MOOCs, not to show certificates to prospective employers, but to open up new possibilities using the skills learned on the course.

Marcos, a 50-year-old man of immigrant background, explicitly mentioned the direct link with employment when talking about what drove him to enroll on MOOCs. He was seeking to escape from a negative cycle of low pay and low-quality jobs and used MOOCs in an attempt to find his way out of the situation. Marcos identified his problem (lack of skills and education) and found the solution in self-employment. Accordingly, he was trying to acquire the skills he needed through free MOOCs (e.g. in the field of business):

*“At that time, I was asking myself: ‘what are the conditions or what are the skills necessary for you to have money?’ Money is the reason for living [laughing]. But I didn’t want to have money only to have money to buy nothing. I wanted to have money for independence [with emphasis] (...) So I started to understand the skills that you really need to manage and to control the money process”*

(Marcos, 50 years old, high school, Portugal)

## 5.2 Signaling theory

MOOCs are also used as ‘soft’ credentials demonstrating the learner’s ability, motivation and willingness to learn. Some interviewees explicitly stated that they used MOOCs as means to signal themselves, their ability to stay up-to-date and to be competitive in the internal labour market. Most of the interviewees downloaded the free certificate of completion and added it to their CVs, but only for courses to some extent related to their job.

*“Yes, I think it can help positively because... well, it shows interest ... in expanding knowledge and improving personal and professional skills”*

(Laura, 35 years old, PhD student, Spain)

A critical point in this respect is the acknowledgement of certificates by employers. Interviewees were not able to say whether the certificates were valued by employers, and they were generally skeptical about their value. Despite not having direct access to employers’ opinions, the interviewees reported that in some cases the use of such resources was welcome and employers seemed to appreciate and incentivize the pro-active behavior of their employees.

In the words of Isabel, the completion of many MOOCs gave her tangible returns in the form of greater chances of job promotion. Despite acknowledging that MOOCs are not at the same level as other professional qualifications, the fact that she had done many courses and recently (i.e. quantity and timing are important factors in her view) made her a competitive candidate for upcoming job profiles. Isabel used the certificates to increase her competitiveness in the internal labour market by signaling her soft skills and ambition, although the extent to which the human resources office took MOOCs into consideration was not clear:

*“whenever I can, I download all the certificates and I present them to the human resources of my company. Then, these give me points, these titles give me points, so... all that training that I have, as complementary training, that I have looked for myself and that I have ... (...) and I pass it on to human resources so that they can realize that I'm investing in training, although I'm already in a job (...)”*

(Isabel, 53 years old, university degree, Spain)

A similar story was told by Ada, an experienced lawyer working in the public judicial system with a permanent contract. She used MOOC certificate as a way to ‘impress’ her clients, and also succeeded in having these forms of training recognized for professional advancement (although it is not clear to

what extent, as in the case of Isabel). Ada was so proud of her accomplishments that she had printed, framed and hung on her office walls the MOOCs certificates obtained:

*“we have, you know, a rule that every five years we must undergo the evaluation procedure . And I always include my MOOCs in my CV.”*

*“Ah, some certificates are in my office, on the wall in frames. When people come here, they say: “Oh, what a certificate. Where did you receive it?” And that’s very nice for people and it’s... it’s, you know, a chance to start the conversation. (...)”*

(Ada, 53 years old, university degree, Lithuania)

Pepe, a “heavy learner” who had attended between 40 and 50 MOOCs, was more explicit in saying that his main motivation for enrolling was to try to exit a situation of unemployment, to keep himself updated, and to signal ability and motivation to prospective employers:

*“when I did these MOOCs I was in a period of unemployment. For this reason I searched for more education, and MOOCs, I think, are great opportunities to acquire another kind of education, not necessarily with the university method and sometime... like, these MOOCs were about very good topics to study about?”*

*“when I searched for a job requiring a specific qualification, I searched for a MOOC providing that kind of knowledge, I [attended] the MOOC, so I could put the certification on the application form”*

(Pepe, 42 years old, university degree, Spain)

However, in this respect the use of MOOCs is ambivalent, because it can create new areas of potential discrimination. Indeed, employers may shift the responsibility for and the burden of training to the employees, who train themselves at their own expense and outside working hours. Of course, MOOCs do not imply high monetary costs of entry; nonetheless, they require time, effort and good individual resources. They thus raise challenges in terms of work-life reconciliation, as well as representing a high-risk investment for learners who do not have a good endowment of organizational and motivational resources. Second, employers may use MOOCs as an additional screening device (besides the ones currently in use, such as educational attainment) to further select the most motivated individuals. This ambiguity emerges in the words of Manuel and Asunción when reporting the reactions of their boss:

*“Interviewer: Have you told him that this knowledge came from MOOCs?”*

*MA: I said to him “I took a course online” and he said to me: “ah, it’s okay, if you can have some others it’s better!”*

(Manuel, 26, university degree, Mexico)

*“I told him [the employer] that I had found this course online and that I was doing it and he was just like... I showed him like the syllabus and he said it looked really good, and he told me ‘You should do it’”*

(Asunción, 27, university degree, France)

### *5.3 MOOCs as credentials*

A key issue in this regard is the lack of acknowledgement by certified bodies of the statement of accomplishments issued by MOOC platforms. Indeed, MOOC certificates (issued after certain assignments or courses have been completed) are not equivalent to any university credit or formally recognized educational or training credential. This clearly excludes them from competing with formal educational qualifications issued by higher education institutions. Moreover, in European countries educational qualifications are protected by the legal value attached to higher education degrees, which can only be issued by universities or higher education institutions authorized by the Ministry of Education, in the context of the harmonized European Higher Education Area. Hence, some interviewees were very clear in assigning MOOCs to a level lower than that of formal education.

Despite being aware of the lower status of MOOC certificates and of their lack of recognition, most of interviewees downloaded the free certificates issued at the end of the course, put them on their CVs, or linked them to their LinkedIn profile, although they distinguished between job-related and non-job related courses. Priority was given to professional or work-oriented courses showing a specific and particular skill linked to their current or prospective job. Instead, certificates associated with MOOCs taken for enjoyment or personal interest were usually not included or not even downloaded from the platform.

The willingness to pay for such certificates was another critical issue. The great majority of the interviewees were skeptical and said that they would not be willing to pay for a certificate which was not recognized by employers. Although the cost was usually limited (around 50 euros or dollars), the value itself of the certificate – as perceived by learners on the basis of the corresponding value attributed by employers and the general usability of the certificate on the job – made their willingness

to pay quite limited. Moreover, the lack of actual verification of learners' identities by the platforms further undermined the value of the certificate:

*“It’s true that watching a video can mean learning, but in general there are a lot of people who “pumba pumba” [note: onomatopoeic word indicating skipping or browsing videos one after the other], just browse videos and get a certificate”*

(Julio, 33 years old, university degree, Spain)

*“MiriadaX gives you two certificates, only a participation certificate if you complete the course, and then, if you pay you have a more official certificate. But the problem with the more official certificate is that they don’t... it’s not a real official certificate. If you read the small print, it states: “the university cannot be sure that the student to whom we have given the certificate is really the student that attended the course” and paying 20, 30, 40 euros for a certificate that is not the real, official one, I think is not useful.”*

(Pepe, 42 years old, university degree, Spain)

A couple of interviewees had sought to bypass this issue by providing on their CVs information about the type of skills learnt, without further specification, as a device to catch the attention of the employer, but they did not mention where and how they had acquired such skills. This is because they feared that MOOCs may be considered at a lower level and devalue their effort, compared to other types of training. Thus MOOCs were seen as a temporary solution, a second-best option, complementary and subordinated to formal education. Indeed, when Pepe was able to find a job in a big city, he decided to switch to officially accredited courses, with characteristics similar to those of MOOCs (free, online and time flexible) but provided by a regional public agency.

An exception to such lack of recognition of MOOC certificates was reported by a group of learners who tried and succeeded in using the certificate of the language course (delivered on Coursera by a public university) as a real certification to formally demonstrate their knowledge of French at B2 level, as required for enrolment at public higher education institutions (e.g. public universities in France and Belgium).

## **6. Conclusions**

In the context of the Fourth Industrial Revolution, with its demand for a better-skilled labour force, Massive Open Online Courses may represent a viable cost-efficient example of lifelong learning practice, particularly for professionals. Despite the great enthusiasm that surrounded their inception

and the subsequent emphasis on the role of MOOCs as complementary assets for already-educated professionals, to date few studies have explored labour market returns to MOOCs, particularly by using a qualitative approach. The advocates of MOOCs stress the ease of access, the flexibility and the limited cost of such resources. They automatically assume positive effects on the occupational prospects of workers. However, empirical research has not yet clarified the extent to which attendance on a MOOC is perceived as beneficial by learners, how this potential labour market benefit may vary across different learners, and through what mechanism this positive effect may unfold.

The aim of this article has been to fill this gap by investigating whether participation in MOOCs may have brought labour market returns to learners and through what mechanisms. For this purpose, it has used original qualitative material.

As regards the learning of new skills, the empirical material analyzed illustrated that MOOC returns may be connected to the human capital theory: as MOOC advocates postulated, MOOC learners effectively learn new skills that can improve their productivity at work. However, this mechanism seems to work among those who already have a high level of education, a good ability to use technology, and the capacity to identify the skills that they lack. In this sense, an individual's own capacity to identify his/her strengths and weaknesses plays a crucial role. Therefore, it is true that learners can acquire new knowledge and that MOOCs may effectively enhance the skills of the individual, but this knowledge is only complementary to the formal (and generally higher) education that interviewees had already acquired. The key concern emerging in this regard was self-selection: these learners already had high levels of education and had good individual resources in terms of motivation, organizational resources and learning-oriented, pro-active attitudes. All these individual characteristics enabled them able to identify the skill gaps in their educational and professional paths and to find handy solutions to cope with them.

Moreover, the empirical material analyzed highlights that MOOCs may generate positive returns in occupational terms insofar as they serve to signal the worker's goodwill and motivation, consistently with the signaling and screening theory. Sometimes learners decide to enroll on these courses in order to impress their employers; but the perception of employers is still ambiguous and vague. The use of MOOCs in this respect is thus ambivalent, because it is true that MOOCs signal the goodwill and proactivity of the worker but such certificates may devalue and discredit his/her commitment because they have not been issued by recognized accredited institutions. This finding connects to the concept of social closure mechanisms: the experience of MOOC learners highlights the critical issue of lack of recognition of MOOC certificates by employers and other institutions. With the exception of some students who have succeeded in having language courses recognized for university enrollment (but

not for credits), MOOCs explicitly qualify as a lower-tier type of lifelong learning, even lower than accredited adult learning courses. This mechanism tends to reproduce – rather than bypassing as postulated by MOOCs advocates – social closure mechanisms based on educational credentials.

Finally, this situation may give rise to new areas of potential discrimination. Consistently with the growing individualization of the responsibility for training (Lodigiani, 2020), MOOCs may contribute to a shift of responsibility for and the burden of training from the employer to the employees, who train themselves at their own expense and outside working hours. Certainly, MOOCs do not imply high monetary costs of entry; nevertheless, they require time, effort and good individual resources. The consequences for the work-life balance of attending a MOOC may be an additional cost and discrimination against female workers, who often experience the double burden of family and work duties. Such factors may also shape MOOCs as high-risk investments for learners who do not have a good endowment of organizational and motivational resources. Second, employers may use MOOCs as an additional screening device (besides those currently in use, such as educational attainment) to further select the most motivated individuals. The attitudes and predispositions of employers in this respect are still an under investigated area of research, yet representing a promising avenue of research which the authors wish will be at the center of future work in this field. In this sense, the financial and practical support of employers may contribute to a more positive perception of alternative credentials by all individuals.

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## Tables

Table 1 List of MOOCs selected from MOOCKnowledge database

Field of the MOOC	Platform	Language	Institution	year	Nr. interviewees
Business	MiriadaX	SP	Online Private University	2014	0
Business	MiriadaX	SP	Private University	2014	3
Personal development	MiriadaX	SP	Private University	2014	5
Language course	Coursera	FR	Public University	2017	12
Business	MiriadaX	SP	Online Private University	2017	0
Business	own platform	SP	Private University	2017	1

Table 2 Sample characteristics

sex	female	11
	male	10
age	mean	41
	min	25
	max	66
education	upper secondary	2
	Bachelor	7
	Master/PhD	12
occupation at time interview	university student/PHD	3
	employed	14
	(incl. self-employed)	
	unemployed	3
occupation at time of course	retired	1
	unemployed	8
	employed	8
	(incl. self-employed)	
parent's highest education	not available	5
	primary school	2
	lower secondary	3
	upper secondary	4
geographical area	university degree	12
	EU28	15
	Europe	17
	non-EU	4