CAPÍTULO 19. OPEN LEARNING ON THE NETWORK: MOOCS AS INNOVATION IN EDUCATION

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1. INTRODUCTION

Currently, the new information and communication technologies (ICTs) have offered great advances for people's daily lives. In the educational field, these benefits have also been increasingly reflected, thanks to the appearance of e-learning (Pérez-Escoda, Castro-Zubizarreta, & Fandos-Igado, 2016). E-learning uses new technologies to improve the teaching-learning process, making it possible to access knowledge from a digital device, Smartphone, tablet or computer.

The development of ICTs has led to an improvement in learning needs today, among others, thanks to the appearance of MOOCs (Massive Open Online Course). MOOCs can be considered as an innovative online training experience, assuming a revolution for education. In fact, they have had a significant influence on university educational practice in recent years (Valverde-Berrocoso, 2014) and distance learning. A MOOCs is an online educational environment that allows a large number of students to follow online courses in any field from anywhere (Conache, 2016). Its approximate duration is usually between four and ten weeks, of which one or two are normally reserved for students to prepare some material for later evaluation. The aim of MOOC platforms is to improve teaching and learning through the creation of a new virtual space for educational interactionThe use of these educational platforms intensified as a result of COVID-19, spreading their use throughout the world at a dizzying pace (Yang & Lee, 2021). In fact, thanks to the existence of MOOCs, a large number of students from all over the world were able to continue advancing in their university studies since this educational methodology allowed students to study from anywhere in the world.

According to Wu and Chen (2017), MOOC platforms can be quite interesting for students.

Students tend to spend an average of between two and six hours per week for the duration of the course , and course content is edited when needed . At the end of the course, graduating students can earn a certification (Baturay, 2015). The didactic materials necessary for its development are progressively used during the duration of the course. Such materials are accessible to students even when the MOOC is over. As for the number of students enrolled, it can be tens of thousands, although those who complete the course are considerably less (Haggard, 2013).

MOOCs have been the object of analysis by researchers, thanks to the increase in different educational offers and the ever-increasing demands for learning by society (Palacios Hidalgo, Huertas Abril, & Gómez Parra, 2020). The use that is being made of this new modality of e-learning within the university world as opposed to traditional methods is noteworthy, with a wide innovative range in topics of a very diverse nature in terms of content and quality, and with great potential to be able to expand knowledge in different branches of science and education (Mackness, Mak, & Trevor Williams, 2010).

MOOCs contribute to learning through different virtual platforms. MOOCs courses today are presented as a new and innovative way for distance learning as well as a new way of acquiring knowledge online.

However, despite their growing importance and the important effort that universities have made to introduce MOOCs, there are still barriers to their full development and the current use of MOOCs needs to be improved (Gamage, Staubitz, & Whiting, 2021; Khlaif, Ghanim, Obaid, Salha, & Affouneh, 2021; Mohan et al., 2020). Furthermore, the focus of previous research on MOOCs has been varied and it needs to be analysed the effect that the main MOOC platforms could have in teaching. Therefore, the main objective of this study is to analyze the main MOOC platforms and how these platforms contribute to online learning.

Regarding the recognition of MOOCs in the professional world, there is an open debate about the academic value of MOOCs. More and more recruiters and HR consultants rely on the added value of a MOOC on the resume (Menkoué, 2015). According to Luján-Mora (2013) MOOCs can be a great opportunity for the Human Resources and Training departments of many companies mainly due to two reasons:

- On the one hand, for recruiting and "headhunting". MOOCs are a new means of knowledge transfer that can be used as a new source of recruitment and a real success for the Human Resources function as a whole and for recruiters in particular. These MOOCs give access to a pool of talent that companies could not previously find through traditional recruitment processes, thus becoming a true database of profiles that constitutes a very important source for recruitment (Lynda et al., 2017).

In other words, some MOOC course platforms give companies the possibility of accessing their databases in order to locate students who have stood out and who fit the profiles they are looking for (Young, 2012).

On the other hand, the greatest demand for these courses comes from people who already have a higher degree; that is to say, there is a great demand by people who need to retrain their knowledge or work. Therefore, MOOCs are a great opportunity for continuous training. For this reason, including your participation in a MOOC on curriculum vitae is a true added value that will attest to your motivation, your knowledge and your desire to learn (Balon, 2014). This, for example, would give recruiters reviewing your CV an idea of how involved you are in completing a project and denote some form of respect for your commitments. Although MOOCs are not considered academic degrees, they add value to the resume.

Despite these advantages, there are both defenders and detractors of MOOcs. Goglio & Bertolini, (2021) point out that some defenders indicate that MOOCs may be connected to human capital theory: MOOC students effectively learn new skills that can improve their productivity at work, and detractors, based on studies of European countries (Dussarps & Clément, 2018; Pitt el al., 2017) suggest that the certificates provided by MOOC platforms, when included in the curriculum vitae, are not really considered as real learned skills and ability. to employ them at work, but are mostly understood by recruiters as indirect signs of the applicant's personality, motivation, autonomy and self-discipline.

Regarding to the most popular platforms, it is highlighted Coursera, EdX, Udemy and LinkedIn.

2. METHODOLOGY

In order to carry out this study, we focused on analysing the user reviews of the apps that make up the sample used by the main MOOCS platforms. These have been chosen due to their high number of downloads. Udemy, edX, Coursera and LinkedIn Learning are the selected apps.

The information of the applications in Google Play are extracted. This app store was chosen because Google (Android) leads in app downloads, although Apple (IOS) has better earnings (Möller, Diewald, Roalter, Michahelles, & Kranz, 2012).

Revision collection was conducted in January 2022 using rvest, an open source software package, R, (R Core Team, 2018) to facilitate downloading and then manipulation of HTML and XML. It allows web scraping, which automates the collection process. In this way, using web scraping techniques, the score metrics, downloads, reviews (more than 23,000 in total) and the release date

were automatically obtained. From these data, it allowed us to know the perception and use of these platforms.

The basic flow of web scraping that we followed was first to analyse the structure of the web page, second to analyse the HTML content, third to obtain the URL, fourth to obtain the source of the page, fifth to select data and finally to process the data.

A mixed analysis was applied, where quantitative and qualitative data were addressed. The quantitative data were the metrics related to the score metrics, downloads and the release date, which were studied through statistical analysis to understand the behaviour of users. Qualitative data such as review content was analysed using text mining to identify the frequency of each word to see what users think the most. To obtain the most frequent words that appear in the reviews provided by users, the R "tm" library was used (Feinerer, Hornik & Meyer, 2017).

The tm package is a text mining framework that provides some powerful features that help in the text processing steps. The main structure for managing documents in tm is a corpus, which represents a collection of text documents. For the inspection and transformation of a corpus, we use various functions, such as stopword removal, whitespace removal, etc.

In addition, the words obtained will be analysed according to the three categories of feelings (positive, neutral and negative).

3. RESULTS

In the first place, a summary is presented in Table 1, where it collects the four MOOCS apps studied. It indicates both the rating and the number of reviews, the approximate number of downloads and the release date. In addition, the number of participants has been calculated in relation to the months that the app has been active.

Table 1. Summary information of MOOCS apps

MOOC	edX	Coursera	Udemy	LinkedIn
Valoration	4,70	4,00	4,60	4,70
Reviews	93.154	130.340	3.451.800	68.662
Downloads	5.000.000	10.000.000	10.000.000	5.000.000
Release date	01/12/2014	01/03/2014	01/01/2014	01/09/2016
Participation	*58.139,53*	*105.263,16*	*103.092,78*	*76.923,08*

Souce: Own elaboration

The best rated app is both edX and Linkedin with a rating of 4.7 out of 5. However, the rest are also highly rated. The one that has received the most reviews by far is the Udemy app. As for the number of maximum downloads, they are over 10,000,000 for Coursera and Udemy. 2014 was the year where most of these apps were released. Of all these apps, Coursera is the one that has achieved the greatest participation, closely followed by Udemy.

Table 2 presents the evolution of the use of the MOOCS apps by the number of reviews. The temporal space is studied from the launch date of this type of apps to the present, from 2014 to 2021. The variation of each year is also indicated.

Table 2. Evolution of reviews

Years	Reviews	Variation
2014	821	-
2015	1062	29,35%
2016	1268	19,40%
2017	2104	65,93%
2018	2897	37,69%
2019	4642	60,23%
2020	6069	30,74%
2021	4353	-28,27%

Source: Own elaboration

Since the launch of these apps, their use has been growing. Every year the number of reviews has increased. It was in 2021, when there was a decrease of 28.27%. The greatest increases in use occurred in 2017 and 2019. During 2020, the year of the pandemic, where restrictions prevented access to classrooms in person, the use of MOOCS increased, but there has not been a disrespectful rise as it could expect.

Despite the differences summarized in Table 1, among the apps, users write very similar reviews in each of them, as shown in Figure 1. It shows the correlation of words in the reviews of each app.

Figure 1: Correlation word of MOOCS apps reviews
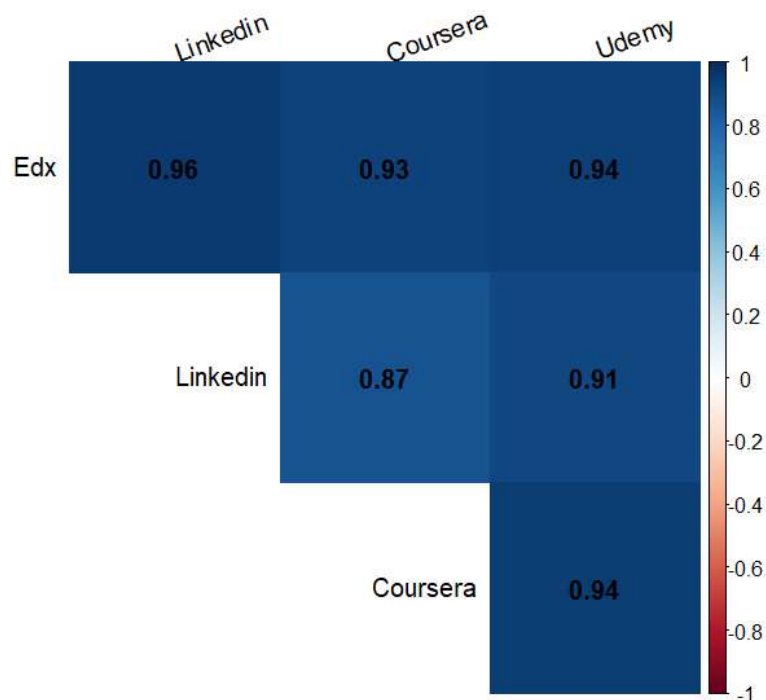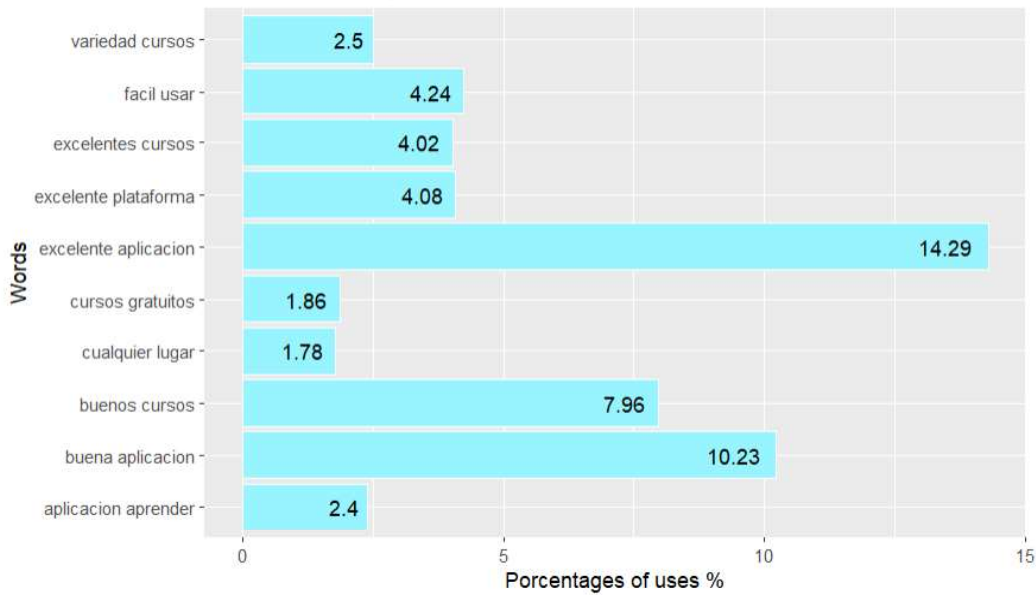

Source: Own elaboration

It shows us as apps that users share a more similar opinion is in the edX app and LinkedIn. In contrast, users of LinkedIn and Coursera are the ones who write more different reviews, but still consider themselves quite similar. And it is that in general the opinion of the users is very consensual in all the apps.

In this way, all the apps are studied together in order to understand the perception of the users. To better understand it, the positive, neutral and negative reviews will be studied separately through a word frequency analysis. The word frequency will be graphically represented in Spanish, since it is the original language of the reviews. However, in this analysis the results obtained will be translated into English.

Figure 2 collects the ten most frequent words of positive reviews. It does not indicate how "excellent" these types of apps are, in addition to how "good" they are. Their "ease of use" and the excellence of the courses they offer and their high variety are also highlighted. An important aspect that is pointed out in this type of education is being able to do it anywhere and that most of the courses are free.

Regarding the neutral reviews, they are shown in Figure 3. The neutral reviews focus mainly on two aspects. Both in the videos that make up the courses and in the alternative web version of the app. They also point out that there are courses in the Spanish language and that you can pay for this type of training.

Figure 2: Most frequent words in positive reviews

Source: Own elaboration

Figure 3: Most frequent words in neutral reviews
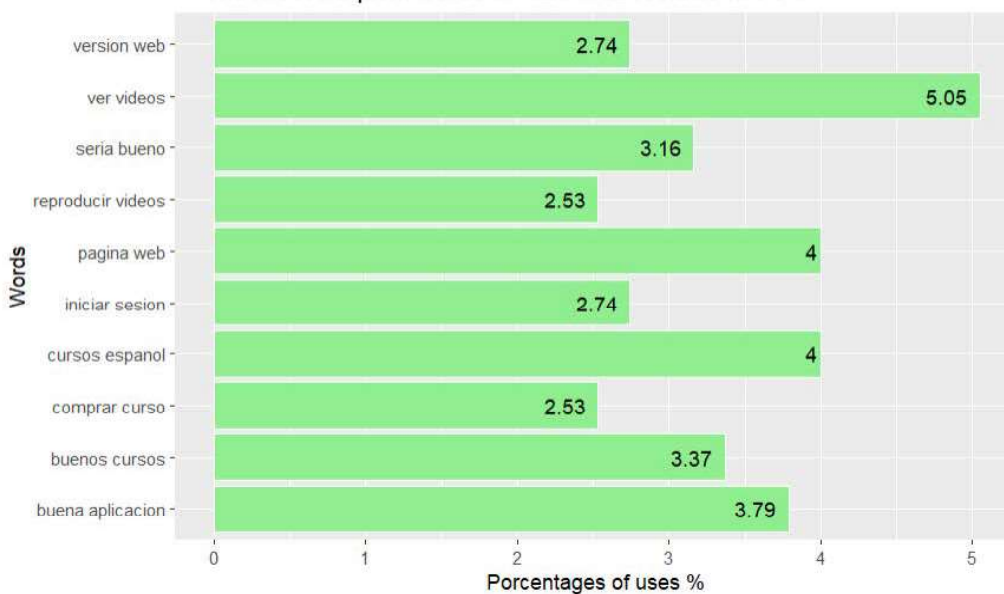
Source: Own elaboration

Finally, figure 4 indicates the ten most frequent words of negative reviews. There are many negative functionalities but with a difference. Mainly it is the login problems that users dislike the most. This follows the inconveniences that arise when buying the courses and when viewing them. The internet connection

has also been pointed out, but this aspect does not concern the app, since it is an external factor that can be due to a problem with the installation of the internet or the compatibility of the mobile device.

Figure 4: Most frequent words in negative reviews
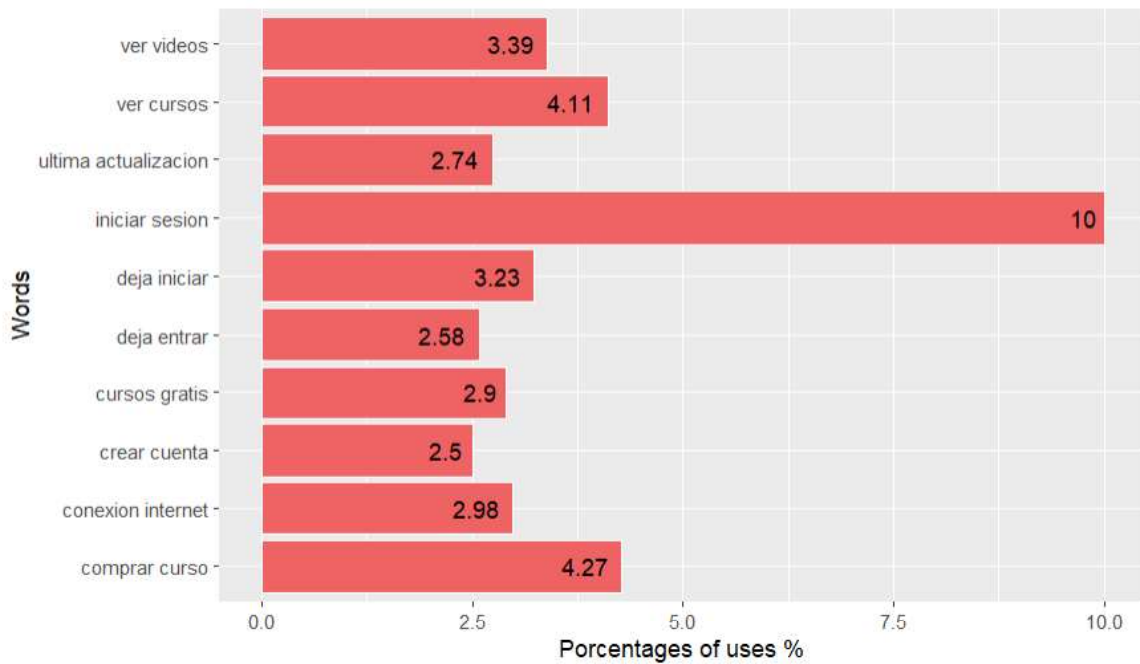
Source: Own elaboration

4. CONCLUSION

The results obtained show the good functioning of these platforms and especially of their courses. The variety of courses, the usefulness and ease of these apps and the possibility of being able to use them on demand when desired are factors that highlight their users, as well as the free nature of this service.

However, there are also negative aspects related to technical problems when logging in, watching videos or buying courses. Also, it is interesting to note that the latest updates bring with them variations that users dislike. A common factor that users tend to highlight in numerous of different kinds.

In conclusion, this new way of learning makes it accessible to anyone who wants to learn new knowledge, since, as indicated in the positive aspects, the variety of courses is one of its most relevant factors. Therefore, MOOCs are useful for any educational field, engineering or other more technical fields related to programming, finance and business etc.

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