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RESEARCH ARTICLE

EXPLORING AND UNDERSTANDING THE SPREAD OF MOOCS IN AN EMERGING ECONOMY : A TEXT MINING ANALYSIS

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Abstract

The Massive Open Online Course, or MOOC is a new method of distance learning especially in the universities, a number of them use this method to contain the different obstacle of leaning in higher education in order to improve the teaching quality among a large number of students. This paper will explore this new method of a distance learning in the word and it's impact on an emergent economy as Morocco. The purpose of this paper is to give a clear picture of the MOOC in the world and in moroccan universities as an emergent economy, by analysing a text mining of the use of MOOC and their classification.

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Introduction:-

The Internet and access to information has become, in our time anevidence that seemed impossible a few decades ago, this component has continued to break through in all economic fields in order to allow it's development, and teaching is a part of it. The contribution of digitization in teaching, education has enabled learning to all, regardless of their geographical location, the teaching that we now call traditional learning, gives way to a new practice as the MOOC, or Massive Open Online Course, since 2008 in the world and in 2013 in morocco .

This new method of learning brings innovation and an improvement in the teaching of Moroccan unversities. This digitization is the most significant technology in the development of education that has marked the 21 century, which has allowed a dynamic among the students who use it, and the engagement of thousands of them. Indeed, the use of distance learning methods has grown exponentially in recent years and is increasingly taking up space to face the obstacles experienced by traditional education in Moroccan universities.

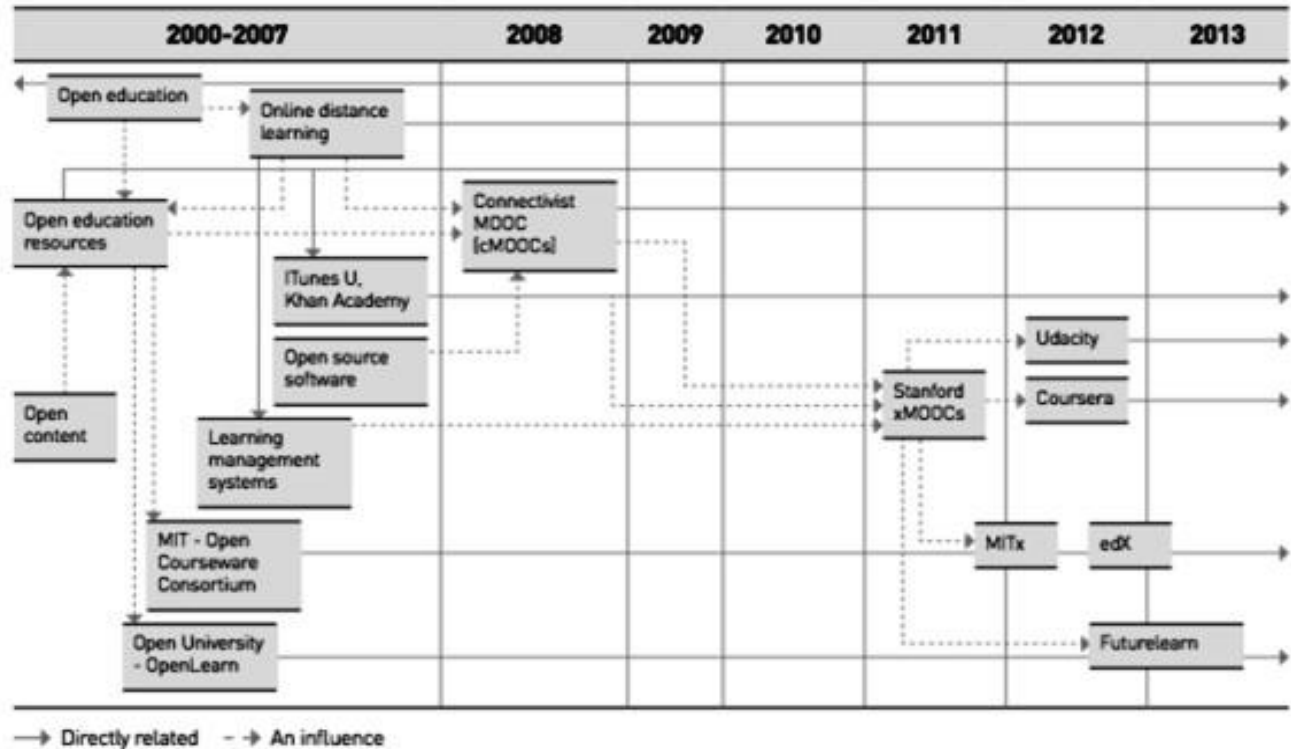
However to what extent can these MOOCs work and what are the motivations to best apply this new teaching method? this article will review the available literature regarding MOOC. We will present some of the most important and used definitions and analyze the bibliometric data, and also analyze the influence of MOOC and thier impact in the emerging economy.

Related Works

Impact of MOOC's

It's important to bring some definition of the MOOCs in order to understand their impact to learning in emerging economy. Especially in the moroccan university. Finding new ways to share information and also to share knowledge is a ancient matter, the multiple exemple by the time make us think that the humans tried a lot of ways so that learning become accessible to all.

The name MOOC have appered in 2008, in a course of Connectivism and connective knowledge by Dave Cormier, the course was given by George Siemens et Stephen Downes at University Prince Edward in Island, Canada. Therefore, their was more different methods before this new technic of distance learning. As in 1948, was by creating a course on radio station, NBC radio, in the same year by creating a special radio frequence at la Sorbonne, France. Then in 1953 by creating program television by Houston University. And since then the universities around the world started to use a lot of approachs to put at the service of the intrested participants a way of distance learning. Here below a time line of the different ways of sharing learning in distance, from 2000 until 2013.



Yuan and Powell (2013) Moocs and Open Education : Implications for Higher Education (CETIS)

We will adopt a comun definition of MOOC, wichis“integration of the connectivity of social networking, the facilitation of an acknowledged expert in a field of study, and a collection of freely accessible online resources”(McAuley et al., 2010). Described also, as free courses, offered to a large number of learners at once, and conducted via video lectures and online assignments and exams (O’Prey, 2013).

We can also add this definition, Mocc are an “online course which can be attended by a large number of participants, has a defined duration (4-10 weeks) and follows certain pedagogy”; for example, in every first week, the learner will spend it understanding the content of the course and the end of each week is usually for submission of assignments or assessments. In addition, learners will need to dedicate 2 to 6 hours/week on average, depending on their interest or skill level, in order to complete the course successfully (Taneja & Goel, 2014).

Massive Open Online Courses (MOOCs) generated an important revolution in online education by presenting web-based courses free to anyone, anywhere with access to an internet connection. In 2012, MOOCs gained substantial attention from media, students, teachers, and industrialists. They are continuing to progress into a more widespread educational technology (Subbian, 2013).

The European Commission defines a MOOC as “an online course open to anyone without restrictions (free of charge and without a limit to attendance), usually structured around a set of learning goals in an area of study, which often runs over a specific period of time (with a beginning and end date) on an online platform which allows interactive possibilities (between peers or between students and instructors) that facilitate the creation of a learning community. As it is the case for any online course, it provides some course materials and (self) assessment tools for independent studying” (European Commission, 2014). MOOCs use advanced technologies (videoconference,

interactive discussions, simulation tools, automatic scoring of exams, ...) that allow them to reach a global audience (Karnouskos, 2017).

Classification of the MOOC

There is two types of an online courses sharing MOOC name, and there is two new terms to deffirenciate them ; cMOoc and xMOoc, (Siemens, 2012).

In 2008 Siemens and Downes developed cMOOCs, which are the first type that focused on knowledge creation and have a different educational philosophy from xMOOCs.

The cMOOC model highlights creation, creativity and social networking learning (Siemens & Baker, 2012), with a focus on knowledge creation and generation (Gaebel, 2013).

The (xMOOCs), e.g. edX, Coursera and Udacity, contain a guided structure of content delivery and traditional interaction of the users. The xMOOCs are the new type of MOOCs that transfer a traditional university learning model into an online learning space. The xMOOC model highlights traditional learning approaches through video presentations, short quizzes and testing with a focus on knowledge duplication (Gaebel, 2013).

In October 2013an interview with Downes, he mentioned that “The xMOOC is centralized and the cMOOC is distributed. xMOOC has a core content that everyone follows, while the cMOOC has a wide ranging network of content which people browse through and sample according to their own interests” (Downes, 2013). On the other hand, cMOOC has a limited curriculum and set of tasks for their students to accomplish, however, structure and outlines of topics are usually present, but the class activities are not pre-set (Saadatmand & Kumpulainen, 2014). xMOOCs have obvious problem for using dated pedagogics based on the transmission of content the (knowledge transmission model) (Larry, 2012).

The MOOC around the world :

Providing a knowledge platform to anyone, anytime and anywhere makes MOOCs a powerful learning technology (Subbian, 2013). The following table shows differences and similarities between some of the most active companies and universities’ MOOCs platforms around the world.

Table 1:-

Platforms	Differences	Similarities
EdX	Governed by Harvard University and MIT	Not for-profit
	Open platform seeks to enable open access to quality education	Established in 2012
	EdX is a combination of MITx and HarvardX courses	Smart phone App
Udacity	Cofounded by a Stanford professor, who started to offer information science courses online	A for-profit company
	Does not have a university partner	Established in 2012
		Smart phone App
Coursera	A social entrepreneurship company, that partner with the top universities in the world	A for-profit company
	It was established by two computer science professors from Stanford University– Daphne Koller and Andrew NG	Established in 2012
		Smart phone App
FutureLearn	Includes four non-university partners: the British Museum, the British Council, the British Library and the National Film and Television School	A company financed and owned by The Open University, UK
	Courses from leading UK Universities and some are outside UK e.g. University of Cape Town	Established in late 2012
Iversity	European-based online education platform. by co-founders Jonas Liepmann and Hannes Klöpffer	Established in October 2013
	Iversity is the only MOOC platform offering courses with ECTS-integration	

Source : MOOCs as a Method of Distance Education in the Arab World –Raniah Samir Adham, Karsten Oster Lundqvist

Mooc in moroccan universities

The higher education in morocco, held a strategical plan on new information systems technology, especially on education sector, by integrating a pedagogical digitalization, in object to improve the learning quality to be more efficiente on universal digitalization learning scale.

In 2013, the university Cadi Ayad, introduced the first Mooc named UCA Mooc in order to bring quality to learning, but for the most part was to resolve the problem of the large number of students participating at university courses.

As well as three other moroccan universities, had add a MOOC program to a number of courses, but also by creating a e-learning center in university of mohammed V, who is reponsible of creating pedagogical content and collaborate withen other universities, in 2014.

Beside in 2019, MARMOOC, digitalization program was lunched, developped and in collaboration with, france and morocco, to develop one plateforme for public and private universities (official site of Erasmus+ and MarMOOCybridelearning project, 2019).

The use of the MOOC was proved efficiente and useful in moroccan higher education system. (e-learning center, mohammed V university).

MOOCs can expand access to education, for those who are interested and extend institutions reach and reputation internationally. The « digital footprint » of learners using the technology is captured in large data sets that can, provide useful insights into online teaching and learning with very large numbers of students at low or minimal cost. For example, edX institutions such as MIT and Harvard use MOOCs to understand “how students learn” but also to « improve innovations in teaching and learning on campus » wich is very attractivecomponement in higher education and it’s innovation.

Text Mining Analysis

To understand the impact of the MOOC in emerging economies the study did text analytics using R package to understand the impact and spread of MOOCs. To achieve this, the study used text mining and visualisation. Here, the data relevant to the study is collected for scopus database to carryout the analysis (Refer Figure 1).

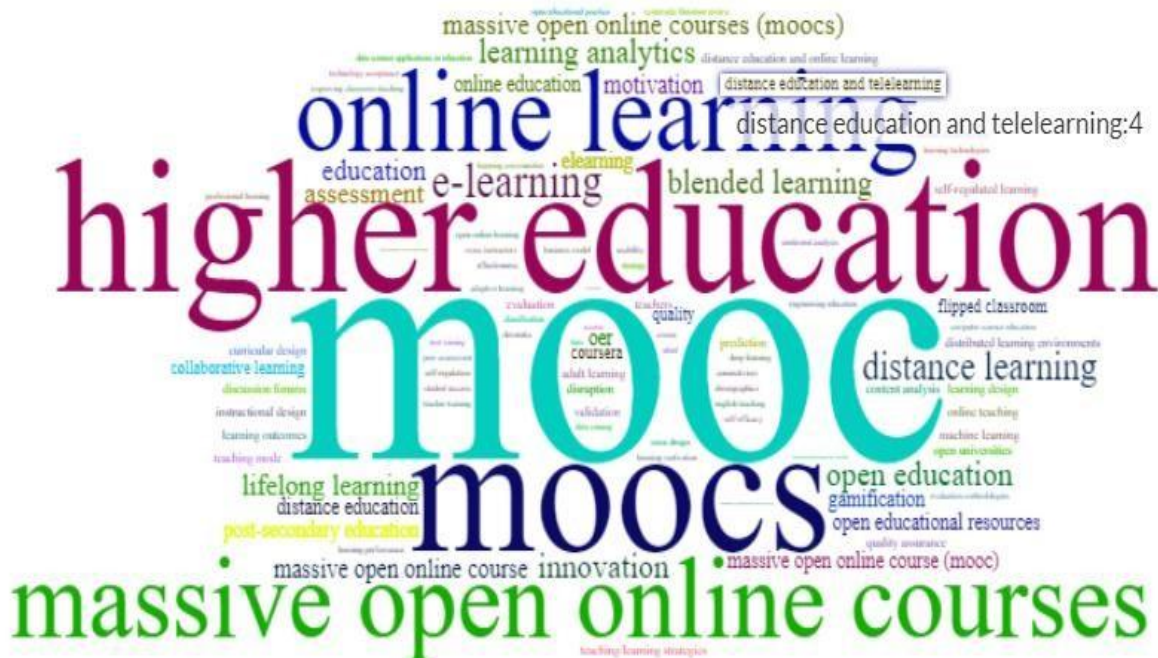


Figure 1:- Word Cloud.

Here, word cloud proves that the MOOCS has a wide spread in different topics. Further, to verify the word cloud and understand the relationship of MOOC with other variables study used treemap as in figure 2.

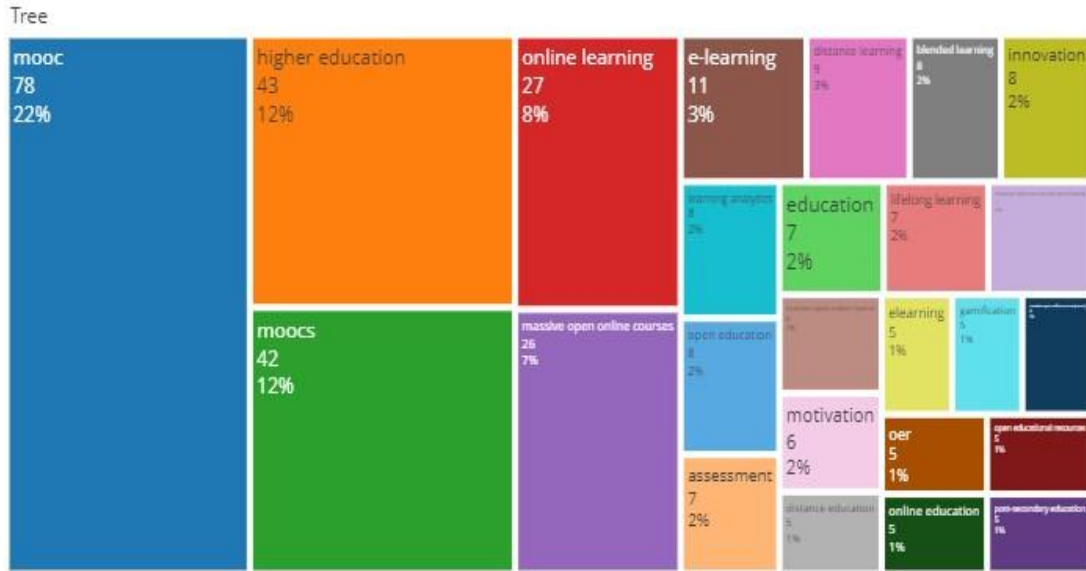


Figure 2:- Treemap for Mooc.

Here it can be seen that the MOOC is linked wide range of concepts in higher education. Moreover, the question raise is the growth of the concept over the period of time. So study has classified the different topics over the time period to understand their as shown in figure 3.

Trend Topics

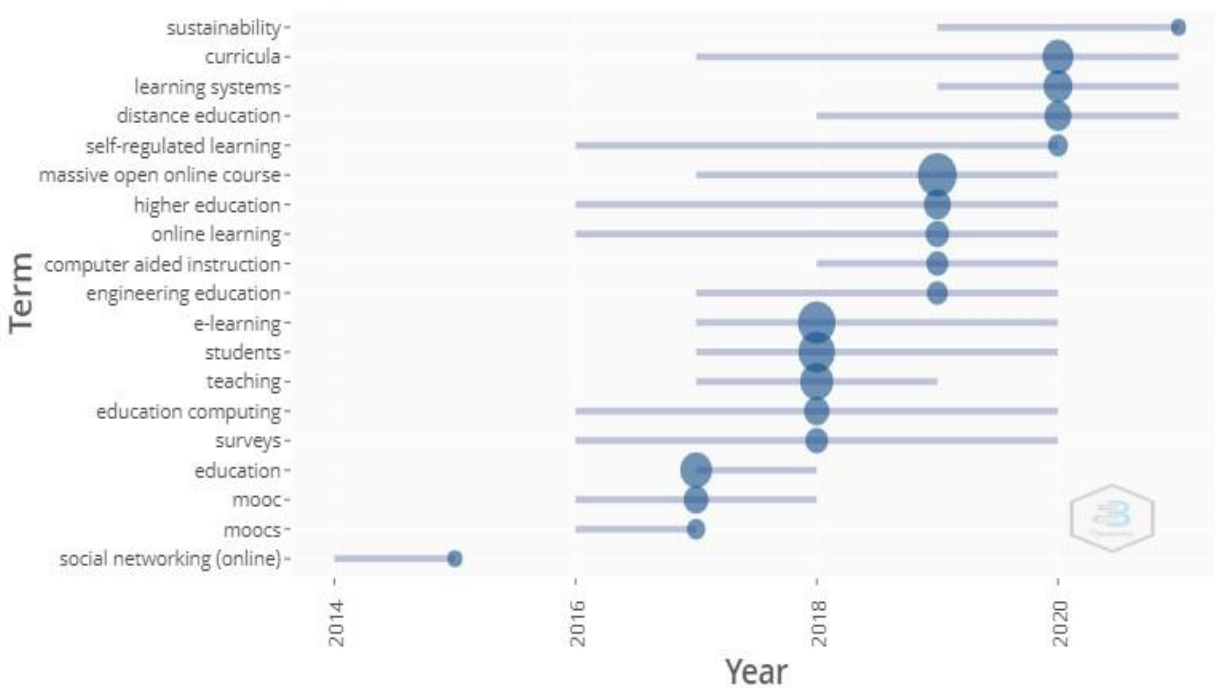
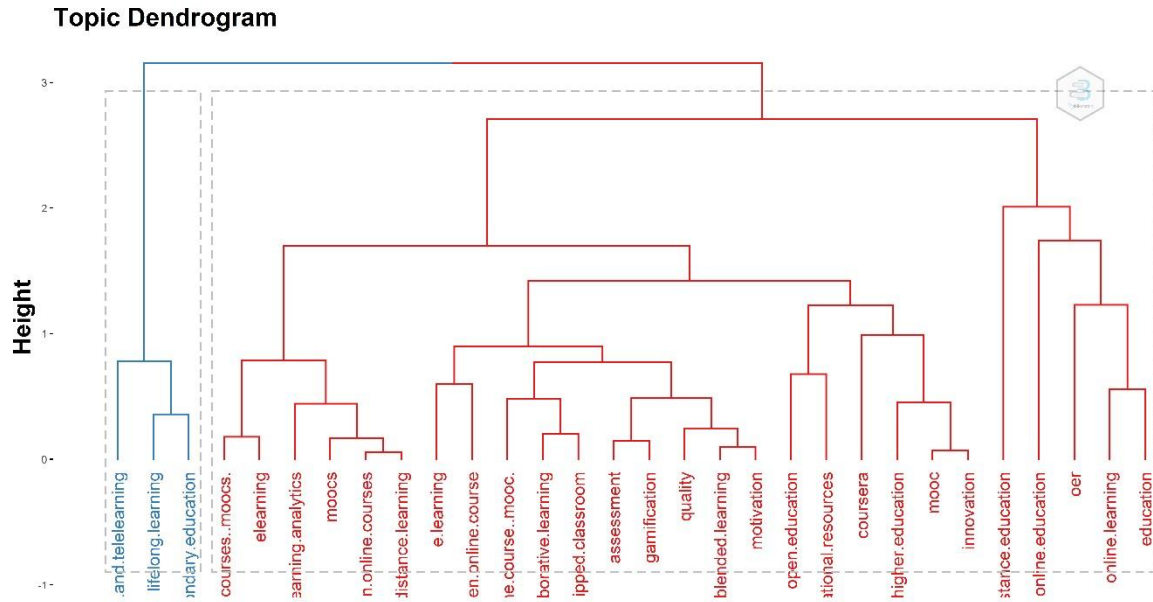


Figure 3:- Topic Trend.

Finally, study used the denogram analysis to understand the spread of different topics in the MOOC and its classification to understand their impact in emerging countries.



From the analysis in it proved that the MOOCs has wide impact in the field of higher education and it has well spread impact in emerging economies.

Results:-

Defenders of the MOOC, see it as a disruptive innovation that will transform higher education (Shirky, 2012). For government, MOOCs help with the budget of higher education constraints and help to lower the cost of degree courses by enabling inexpensive, low-risk experiments in different forms of HE provision (Carey, 2013). Commercial organisations see MOOCs as a way to enter the HE market by providing a MOOC platform and developing partnerships with existing institutions and to explore new delivery models in higher education of an emergent economy.

Moreover, the motivation of its use for learners, is likely a response from a survey at duke university « What motivates the MOOC learner?.The responses shows that student motivations typically fell into one of four categories (Belanger and Thornton, 2013):

1. To support lifelong learning or gain an understanding of the subject matter, with no particular expectations for completion or achievement,
2. completion or achievement,
3. For fun, entertainment, social experience and intellectual stimulation, oConvenience, often in conjunction with barriers to traditional education options, oTo experience or explore online education.

The impact of MOOCs in emerging economies, Moroccan University:

Without a doubt the MOOC could help solving many problems in a motivating maner in higher education (Kendrick &Gashurov, 2013).

EdX, Coursera, and Udacity, has shown in 2013, an importance in growth, and in this same year of introduction of MOOCs in moroccan university, the impact on an economic aspect, but also on educational, social and cultural is a challenging for learners in emerging countries.

In the arab word, MOOCs has a potentiel to be part of a positive influence on the traditional higher education system (Brahimi &Sarirete, 2015). this new perspective in higher education, have made the governements, institutions and commercial organisations, intressed, and a recent value offers for intitutions to be part in MOOCs, is aknowledge as 'education access, experimentation and brand extension" (Epelboin, 2013).

This new method of distance learning can change the traditional way of learning and teaching approaches in higher education. But still, without necessarilyjeoparadize the traditional methodes of teaching. Additionnaly MOOC scan

be useful alternative for the limit places offered by universities especially in the developing world (McAuley et al., 2010).

To do so, the higher education in morocco have provided in a time line, a series of actions to allow the successful use of MOOCs in their teaching programs, here is below a chart who resume the actions took to make MOOCs work and anyother new technologiesystems program works.

Programs	Infrastructures and equipment	Training	Development of educational content digital
GENIE (Generalization of the NIT in education)	Equipment of establishments in theaters and multimedia cases.	Training for the professors and administrative staff	Integrating a pedagogical content to courses
INJAZ	Allow students registered for a national diploma institutions higher education audiences of benefit from the acquisition of computers and high-speed mobile Internet service at preferential subsidized prices.		
LAWHATI	The program will allow students enrolled in institutions higher education a training professional, as well as to the body teacher, to benefit from "2 tablets in 1 "at favorable prices		The provision of educational content integrated into tablets, provided by technological partners Intel and Microsoft.
MARWAN	High speed computer network connecting the universities among themselves and with networks similar.		
E-SUP	Upgrading of infrastructure digital (Strengthening of the academic MARWAN	Reinforcement training in information technology and communication	Establishment of Digital Educational Resources (RPN) and E-learning; Encouragement of activities of technological development and innovation in the field

The different steps taking in order to put at the service of higher education, and in an international context the best practice, so that MOOCs can be useful for participant professors, institutions and to the economy in general.

Conclusion:-

This paper has shown the first steps of MOOC in the world, and it's added value to higher education quality as method of distance learning. The free access to all participants makes it easy and free of charges that traditional leaning can coast. Especially the amount spent on a traditional higher education program in university, and the influence of this method is found important in many aspects, as political, economic but also cultural and social.

It's an ideal way to resolve the issue of the important number of participants in university, but also the fees that can coast for those who have a limit revenue, or for those who must work and attend a course at specific time.

As an emergent economy, the Moroccan higher education have put in first the important of introducing MOOC in their curriculum to improve learning and teaching quality and to satisfy a large audience

And the text mining analysis shows that MOOC are as important as any other innovation in the process of learning digitalization.

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