

MOOCs: searching for a viable business model

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1. ABSTRACT

MOOCs are a new form of online learning different from the well-know distance learning, which exists since many years. The novelty is in the fact that they are opened to a general public and written for people working alone from a distance. All teachers, who have been involved in such projects, agree that the courses must be completely rebuilt. One cannot just accommodate old documents to a new means of distribution of the information. Moreover, MOOCs being accessible all around the world, documents of poor quality, acceptable in the theater and a small class, must be completely redesigned. Thus MOOCs are complex and expensive objects, which, contrary to ordinary courses, require a full team, to be created. The pioneers were enthusiastic teachers and support staff and did not count their efforts and time. But there is a large gap between building and delivering a few MOOCs and systematically transforming a conventional teaching into MOOCs. Being expensive any long-term project, based on MOOCs, cannot be launched without a business model and all MOOCs creators, all MOOCs providers face the same dilemma: how to subsidize a pro-MOOCs politics? We will first recall the environment needed to build a MOOC and explain why most universities cannot define a business model by their own since they do have neither the finances nor the manpower to systematically transform their teaching and massively create MOOCs. Cooperation among universities, donators, special funding and other sources of income are needed. MOOCs providers must also find their own business model, which differs from the possible ones for the creators, and do not have other choice than to work together and find complementary business models. In a last part we will show, through some examples, emerging business models for both the providers and the creators. The future of MOOCs and online learning is closely linked to the consolidation of these business models.

2. MANPOWER NEEDED FOR A MOOC

Building a MOOC has been, in the beginning, the work of teachers, pioneers and volunteers, who did not count their time, who had decided, for various reasons to jump in this new venture. This is why the time to build a MOOC, i.e. its cost has been systematically underestimated.

In a conventional course, the teacher stands alone in front of his/her students. The preparation and writing of the course, therefore, are essentially solitary tasks. A certain part of the preparative work may be done collectively, but ultimately, the teacher alone is in control of what he/she delivers to the students and documents are judged more by their contents than by their form. But building a MOOC is not just assembling a number of already existing documents and notes and quickly shooting some videos. It is much more demanding because all documents will be available worldwide and judged by numerous people. Quality has become an important matter (Butcher and Wilson-Strydom 2012) and online learning has been the first to profit from this momentum. The reputation of the institutions as well as the authors might be at risk if this is not taken into account (Parr 2014). In brief, to become a MOOC, a course must be rebuild from scratch.

A MOOC is a project, which requires the skills of very diverse people, as we will explain later. Like any team project, it requires a project manager to run it. As one may imagine, most teachers are unlikely to be willing to add this to their existing workload. They do not all possess the necessary

skill and must be helped. MOOCs belong to a new manner of working, at all stages, when building the MOOC as well as when delivering its contents to thousands of students. This is quite revolutionary!

2.1. Contents design and pedagogical support

Teachers are the project masters: they define the objectives of the course and its scenario. They define which documents will be used. The costs are very depending on their objectives: writing new documents is more expensive than using open source, scientific documents with formula and graphics need more work than just ordinary writing. The time needed to build the contents of a MOOC may drastically vary according to the disciplines. The use of OER should be encouraged whenever possible but, at the same time, MOOCs authors are often more interested in their own writing than reusing other ones. Teachers must also build quizzes and exercises, whenever required. In most MOOCs they appear in the videos and, according to the individual skills and ease in front of a camera, the time devoted to the shooting and the work needed to edit the videos might be astronomically long! In some cases actors are substituted but this dramatically increases the price of the videos: not only additional staff must be paid but the teachers must completely write the discourse, which may be an additional burden when, often, notes suffice for an oral presentation delivered by the author himself.

In most cases teachers are not expert in online learning and the skills of an instructional designer are required. Except in a few cases, where the teachers have already a good practice of online learning, the participation of an instructional designer is mandatory. The instructional designer must be trained in the use of the Learning Management System (LMS), which will be used to distribute the MOOC. He/she coordinates the work of the support staff with the teachers and the MOOC's distributor. It is a hybrid role, lying in the intermediary zone between teaching and digital engineering.

Some additional workforce is needed to test a MOOC before opening. Otherwise accidents may occur, which may seriously damage the success of the course: misjudgment of the workload per week, errors in exercises and quizzes, technical errors such as missing or wrong links... A MOOC is a one shot story and the short history of MOOCs is already full of small catastrophes! See for instance Barshay (2013). A good advice is to recruit and to pay doctorate or master students. When the MOOC is running, exchanges among the students must often be solicited, which is the role of community managers experts in the field. The same students can be called together with the teachers. As we will see the cost of this additional workload is not very high but it must be taken into account.

2.2. Support staff

The success of a MOOC is very depending on its videos. Not only the contents and the charisma of the presenter are key factors but also the quality of the recording and editing is an essential criterion in the evaluation of a MOOC. A course may contain up to one hour of videos per week, divided in short sequences. It has been shown that the human attention span decreases very greatly (Guo 2013) beyond 9-12 minutes. Thus, the design of the course must be divided in sequences so as to conform to the format of the videos, that the people are used to watch on YouTube.

Recording and editing the videos requires not only trained staff but also the equipment. The editing of an hour requires up to thirty hours or more. This time could be reduced, but to the detriment of the quality. Soliciting the in-house video department is cheaper than outsourcing but in many cases there will not be another choice either because the local skills do not exist or because they are overlooked.

A graphic designer is needed any time a course contains graphics and pictures. Depending on the nature of the textual documents, the work is extremely variable, ranging from simple formatting for an ordinary document to the drawing of graphic diagrams and illustrations. Certain complex illustrations may require more than a day of work, others an hour or less; for the scientific domain, the writing of documents with complicated formulae may be a lengthy process. This depends heavily on the form and quality of the documents delivered by the teachers. The working time needs to be evaluated on a case-by-case basis, and experience shows us that it is extremely variable: the

preparation of documents of the same length may require less than a day of work in some cases, or up to a month in others. However, the expertise of the graphic designer is always crucial.

Implementing the documents in the MOOC platform is often the responsibility of the instructional designer with the help of a web designer. Possibly he/she may have to rework existing documents and the workload may vary.

So, altogether, building a MOOC may require the collaboration of 5 to 10 people. The workload varies according to the field of study and the skills needed to build documents of high quality. This is quite new to most teachers and many may feel uncomfortable, having to lose their freedom and their ideas.

3. BUDGET FOR A 6 WEEKS MOOC

This section is a summary of a study presented in Pomerol, Epelboin & Thoury (2014), chapter 2.

We have first considered a Science course, 8 weeks long, equivalent to one hour in front of the teacher and one hour of applied lecture and the official work time for the teachers as recognized by the university for online distance teaching. Then, in a second time, these estimations have been discussed in a seminar with a number of people who had been responsible for the first 10 MOOCs of the French MOOC platform FUN (2013). All participants agreed that the time had been underestimated and, in agreement with their experience, the results have been corrected and correspond now to a 6-week course. Later we have confronted our results with American colleagues, who have confirmed our estimations.

For this study we consider that the course is being used 3 times with 20% of modification before each rerun.

UPMC is a Research university and we were in charge of supporting e-education in all fields of Science. Thus we have chosen a Science MOOC from our 15 years of practice of distance learning at UPMC-Sorbonne universities and our experience in building websites and recording videos of courses. According to the subject and discipline it must be remembered that, in practice, the estimations may vary from 50% up to 150% of the presented data.

3.1. Staff resources

The workload may be divided in three parts: teachers (table 1), pedagogical support (table 2) and support staff (table 3).

Table 1 is the only part, which cannot be partially or completely outsourced. Data show that it is much higher than for a conventional course. The institution must be able to mobilize the requested resources. This is not only a question of financial budget but mainly depends on the availability of professors in the discipline. Before entering the adventure of the MOOCs an institution must precisely examine the available manpower. Many projects fail before the end due to an overestimation of available free time by the teachers. This is especially important the first year, when building the MOOC. For the subsequent years, the necessary updates represent about 1/3 of the initial time - i.e. 20 hours for the documents, and much less for the preparation of the oral content. Thus it could be wise to plan three years in advance to assemble an adequate team.

Table 1: Teachers working load

Task	Hours			Total	Comments
	Course 1	Course 2	Course 3		
Oral preparation	40	8	8		
Documents writing	90	20	20		
Writing of exercises	40	10	10		Varies with discipline
Recording of video	32	8	8		
Preparation of quizzes and homework	32	6	6		
Preparation of the project	30	5	5		
Total	264	57	57		
Total time				378	Preparation of the MOOC
Animation MOOC	48	48	48		When open
Total MOOC	312	105	105	520	

The pedagogical support is presented in table 2.

Table 2: Workload for the pedagogical support

Task	Hours			Total
	Course 1	Course 2	Course 3	
Instructional designer	40	8	8	
Project manager	60	12	12	
Testers	60	12	12	
Total	160	32	32	
Total for the MOOC				225

Most of the required resources can be outsourced but it must be taken into consideration in the budget (table 4).

Table 3 presents the workload for the support staff. It is of the same importance than for the teachers. These figures may vary considerably according to the discipline: a medicine course with many figures and graphics means much more work for the support staff, as well as for the teachers, to design these illustrations than a law course, which is mainly textual. Moreover, according to the local copyright laws, many figures, which could be projected in an amphitheater, must be completely redesigned for their use on the Web.

The complexity of the videos is also an important factor. For courses where the video is mainly the support of an oral discourse in-camera editing may considerably shorten the editing time. On the other hand when animations are required or when experiments are recorded data are underestimated.

Table 3: workload for the technical support

Task	Hours			Comments
	Course 1	Course 2	Course 3	
Video recording	32	6	6	
Video editing	240	50	50	Can be reduced to the expense of quality
Formatting of texts	10	2	2	Variable according to the initial documents production
Illustrations	35	7	7	Variable depending on the number and complexity of the documents
Integration	15	3	3	
Participation in meetings	10	2	2	
Total	342	70	70	
Total for the MOOC				480

Building a MOOC is much more demanding than preparing a conventional course and require skills, which not always exist in the universities. Subcontracting the work can be costly, thus, before engaging enthusiastically in the MOOC's adventure, institutions must evaluate the resources to be involved and their own capacities. It is a strategic decision, which must involve the highest levels of the university, i.e. the Presidency.

Table 4 presents the financial cost for the salaries, on the basis of 5000 €/month for the teachers, 4000 € for the support staff. At the time of the writing the euro and the dollar have about the same value.

Table 4: Estimated budget for human resources

	Year 1	Year 2	Year 3	Total €
Teachers	15,000	5,200	5,200	
Teaching support staff	6,000	1,200	1,200	
Technical support	10,000	2,000	2,000	
Total	31,000	8,400	8,400	
Total cost (approximate)				48000

This budget corresponds to the salaries but does not take into account the environment needed for the work: housing, training... and ordinary equipment such as personal computers. The practice (Kurt Salmon private conversation) is to multiply this estimation by a factor 1.8 up to 2 depending on the location of the university.

3.2. Logistics for a MOOC

Except for the video, the equipment is quite reasonable: computers and their software, from word and HTML editors up to Adobe Photoshop and Illustrator or equivalent. When animations are required it is more complicated and can be justified, in-house, when used elsewhere in the institution.

The environment for recording the videos may vary considerably, according to the desired quality and sophistication of the videos. The first factor to be taken into consideration is the available skills.

It would be useless to build an expensive studio for video beginners. It rises from a few thousands euros to record an oral speech up to €30,000-50,000 to be able to change the background, to be able to record a writing hand and to multiply the points of view. EPFL (2012), in Lausanne, has written a short memo to guide the newcomers.

The environment needed to distribute the course and make it available to the students will be discussed later together with the business models for the MOOCs providers because we believe that it would be unwise for a single university to be its own provider: running an Information Systems environment 24/7, accessible for tens of thousands users or more without disturbance is not within the reach of most universities.

4. COST EFFICIENCY OF DIFFERENT METHODS OF TEACHING

In the beginning of MOOCs much has been said about the end of the universities since MOOCs would permit a mass education for a much cheaper price. See for instance Frey (2013) or The Economist (2014) but looking at the previous figures one can imagine that the reality is not so simple.

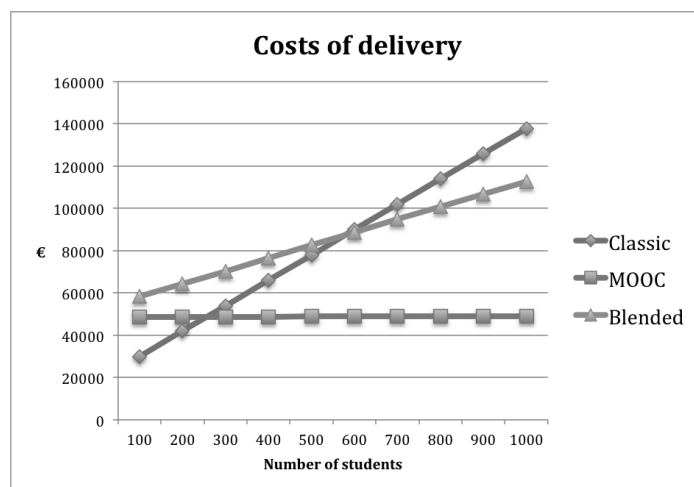
Let us now compare the costs when delivering the same course in a hybrid mode, i.e. a SPOC (Small Private Online Course) with small groups of students in face-to-face classes like it is used at EPFL or in the classical approach, i.e. in a lecture hall. The SPOC needs fewer teachers because plenary lectures in the amphitheater are suppressed and the number of application lectures in small groups is reduced. When delivering the course as a MOOC, community managers only are needed in front of the students. This cost is drowned in the total cost to build the MOOC, especially considering the variability of our estimation between 30 000 € and 100 000 €!

In our calculation, we consider one teacher for 50 students and a meeting every two weeks for the hybrid mode (SPOC). For the classical delivery one hour in the theater per week and one meeting every week in small groups (50 students). Since we did not have a precise estimation for the cost of the buildings, our estimation is based on the lower bound of rental prices. This therefore includes the depreciation of the assets. Thus this curve is not correct when taking into account the huge investment of building new premises. When this investment is not available, such as in many African and Asian countries, SPOCs and MOOCs become the only solution. This will have to be remembered when presenting some business models later.

Results are shown in figure 1.

The cost increases rapidly with the number of students because the salaries of the teachers represent an important part of the expenses.

Distance education and SPOCs are about the same and are represented on the same curve. Distance education requires personal exchanges between the teachers and the students and the workload is



about the same. The only difference is the cost of the buildings.

Figure 1: comparison of the cost of delivery of a conventional course, a SPOC and a MOOC

For the classical delivery, our estimates are based on the official working time of Higher Education teachers in France: 6 hours of work for one hour in front of the students in the lecture hall, 4 hours of work for one hour of applications lecture with small groups of students. Playing with all these variables and different estimations for the cost of the MOOC, gives always curves shown in figure 1.

Below 200 up to 300 students the cheapest means to deliver a course is the classical approach. Blended learning (SPOC) becomes cheaper only for large classes above 500 students. A conventional MOOC, i.e. delivering a course without face-to-face interaction and no personal interaction is never of interest below 300 students. These values vary with the real cost of the MOOC and other variables such as salaries, buildings... which may change from one university to another, but the message is very clear: savings can be made, using MOOCs or SPOCs, only for very large groups of students. For a single university it may only work for the freshmen years.

This leads to two conclusions: increasing the number of students or grouping universities, to share the costs, are the only solutions to save money. These are just the solutions, emerging in some US universities.

5. BUSINESS MODELS: WHY TO INVEST IN A MOOC?

MOOCs can be used in various contexts: initial or life long education or simply for personal development. The list of possible motivations is infinite.

In the classical framework of universities, MOOCs permit to innovate by offering alternative methods of teaching and learning, complementary or substitute of the traditional methods. The MOOC approach is not really new since traditional Learning Management Systems (LMS) already permit this approach. But it has been seldom used. MOOCs add the new Web 2.0 popular social aspects, and are a unique opportunity to generalize initiatives, which, in the past, have had difficulties to go beyond the prototype stage and were kept in a niche. In a globalized world, where it would be necessary to open a university every day to educate the young generation, MOOC are the only realistic substitute to educate large masses of students. This is true in Africa and Asia, but also in a number of other countries.

Before proposing a strategy and its business model, it is necessary to clearly define the goals, prioritize them and estimate the budget required. The following list summarizes possible orientations. The order of presentation has no meaning.

1. *As a support for an educational transformation*

SPOCs might be an important constituent of a change in education, including the first year in university. This is one of the major objectives of the EPFL in Lausanne. Flipped pedagogy through MOOCs aims to make the students involved in their training. This approach is being thought mainly for newcomers, in the first year of bachelor. One of the concerns is to train the students to be autonomous. This approach has some limitation since the campus social life, at least in Western societies, is an important aspect of the culture for young people and it is necessary to offer spaces where they may work together, watch courses videos together and, more generally, mix. In other words it is necessary to create learning spaces and learning centers.

2. *For students who missed an examination*

When a student does not succeed in a module for the first semester, at least in France, he/she has to wait until June to pass again the examination. In the mean time he/she no longer addresses the matter. This is also relevant for students who have been allowed to go into the next year without completely acquiring the previous year.

3. *At the entrance of the University*

Many students engage in Higher Education without having the level and/or without really knowing the discipline they have chosen. Specialized short MOOCs could help them to realize the direction in which they undertake studies, what does it means and also and to assess themselves their skills in order to avoid disappointment.

4. *For life long learning, specialization, improvement of professional skills.*

When addressing people already engaged in their professional life, face-to-face exchange may not be necessary and may be replaced by any exchange tool, from videoconference

(Skype for instance) to simple chat. However, each student must be able to interact with a teacher and establish a personal relationship. This is the only difference with a MOOC, where students remain quite anonymous and requires a different approach called SPOC (Small Private Online Course).

5. *For all international students who cannot access higher education.*

Universities from less developed countries, Africa and Asia first, would appreciate a help from more developed countries. Not all countries speak English and there is a place for other languages. Moreover, the approach to teaching and learning is strongly related to the national culture and a number of countries might be interested in a different approach from the dominant US one. The best approach would certainly be to help these countries to develop their own MOOCs, taking into account their own culture.

Culture dissemination being one of the HE mission, such MOOCs are a good means to fill it.

6. *To share an expertise or learning on any topic with anyone.*

The scientific reputation of excellence of a university must be based on two legs: research and teaching. It is one of the missions of the universities. Moreover, it is a good means to establish and maintain the reputation of the institution.

7. *To attract good students from all around the world at bachelor or master level.*

Students from abroad as well as students who have been following other curriculums would be better prepared to attend a curriculum, especially at higher level, when using MOOCs before arriving.

Universities are constrained by their financial and staff resources. The high expenditure can be recover only for large numbers of students such as newcomers in universities or through an active policy for distance education. In other parts of the world, mainly Africa and Asia, where it should be necessary to build one university everyday, using MOOCs may drastically decrease the capital investment in buildings and teacher training. However, it is not so easy to maintain a link between students and teachers, as the experience of the virtual university in Senegal seems to show it (Caramel 2015). In all other cases building MOOCs is a political decision for which a precise business model must be established. The adequate human and financial resources must accompany it.

6. BUSINESS MODELS FOR MOOCS PROVIDERS

There are two kinds of providers. The most well known, Coursera and EdX (see figure 2), distribute MOOCs build by associates. They act as the editors of a collection of books and partner with universities. Others, such as Udacity, MiriadaX in Spain not only distribute contents but also build their own MOOCs. Business models, for the first category, are based on the distribution of contents. For the second category, the content is also a value. Udacity started in the first category, then its founder, S. Thrun, declared that “there was no money to make with universities” and switched to continuous education, where he sells his services to companies as well as to individuals.

6.1. Coursera

Coursera is the leading MOOC provider. It is an enterprise venture, which has raised its capital from various venture-capital structures involved in innovative areas (Wikipedia 2015) and partners with selected universities that deliver their courses for free. Depending on the contract, Coursera may take a certain percentage of the revenue generated by the re-use of the MOOC by other universities or interested bodies.

Coursera generates revenues through the delivery of different levels of certifications. The basic was just an attestation of success at the end of the course. It was delivered for free but seems to have disappeared since May 2015. Free access, for a number of MOOCs, is now limited to the documents themselves. Answers to quizzes and pair-to-pair control are no more available. The verified track certificate is delivered with a signature track, which allows verifying the identity of the student. Its price varies from a few tens dollars up to one hundred about. Coursera is making more than \$1 Million per month in revenue from verified certificates (Shah 2015). The upper level is specialization. Specializations are made from bouquets of coherent MOOCs and the added cost ranges between \$250 and \$500. In some ways it is blurring the distinction between university grades and free MOOC consumption. In an interview at the Wharton school Koller (2012), one of the two Coursera founders,

claimed, “In five years we will be able to offer most curricula in most disciplines”. In a new interview (Koller 2015) she recognizes that “MOOCs will not put universities out of business” and acknowledged that Coursera is turning more to young adults who want to improve their education.

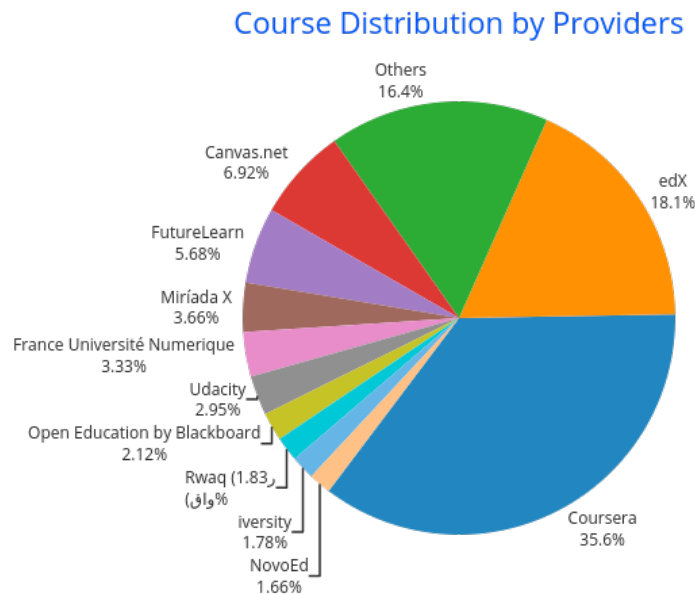


Figure 2: Providers distribution in 2015 (Shah 2016)

Some people doubt that Coursera will be able to make money from certificates only and wonder if it may not turn into an online university later. For the moment D. Koller claims that “*the pressure [is] to bring in revenue because we want to bring revenue back to our university partners so that they can sustain their course development*”.

Coursera business model, based on delivering certificates, is constraint by avoiding competition with its partner universities. Since Coursera is selecting its partners it may restrict itself into competing with the most modest colleges only, offering “the best courses for a modest fee”. Not everybody is convinced that Coursera will be able to generate enough revenue through the delivery of certificates.

6.2. EdX

EdX has a complete different business model. It is a not-for-profit company, a foundation with primary funding from MIT, Harvard and the Bill and Melinda Gates Foundation. More than 50 institutions have joined them. Partners may choose between two models. In the first one, EdX retains most of the revenue made from the course. In the second one it may provide assistance to its partners and act as consultant (Kolowich 2013, Ross 2014).

Access to the EdX platform may be free for universities but EdX retains most of the possible revenue. Partners universities can become members of the foundation and must pay a high fee. EdX encourages another form of partnership through the development of Open EdX, which has been adopted by many consortiums and private companies such as FUN in France, XuetangX in China, Edraak in Jordania... More than 120 installations exist now around the world.

Students may obtain for free an Honor code certificate, simple attestation of participation. They may also obtain verified certificates similar to the Coursera ones for a fee between a few \$tens and \$100. Xseries certificates are equivalent to the Coursera specializations.

A main difference between both business models is that EdX must just sustain itself and does not need any other return to its initial investors. EdX President Arnt Agarwal declares that EdX wants only to be self-sustained. EdX counts on its partners' consortiums, which are running Open Edx. EdX sustainability is linked to the good will of its partners. How long will they be able to provide funds?

6.3. Other US providers

Coursera and EdX are working mainly with universities. Among the other providers it is worth mentioning Udacity and Udemy, which have a very different business model

Udacity started, like Coursera, as a private company and with the same objectives: to complement or to be a substitute to the classical Higher Education approach. Its funder, S. Tron went to the point to work with San Jose University but this initiative was a failure, very few students passing the final grade with success. He concluded that massive open online courses do not work for Higher Education (Waters 2014) and turned quickly towards professional development (Chafkin 2013). Udacity offers its own courses to the public for a small amount of money (some are free) and also develop courses at the demand for companies. It works together with names such as Google, Facebook, and ATT... For \$200 per month students may follow selected bouquets of courses developed with the industry (similar to Coursera specializations) and obtain nanodegrees. It includes a personal coaching and pretends to become an alternative to university grades for people already engaged in their professional life.

Udacity pretends to build its business model by working with the industry to offer intensive courses oriented towards high skill jobs. The company said it officially reached profitability in July 2015 (Mathewson 2015).

Udemy (Udemy 2013) follows a different business model. It acts as an online marketplace where independent instructors can build and sell courses. Udemy is taking a share of the money that students pay to follow the courses. This share depends on who is recruiting the students, the teacher or Udemy. Other vendors use the same business model and the competition may become tough to retain the best teachers (McGuire 2014).

Looking at EdX business model on one hand and Coursera and Udacity on the other one, it seems that Coursera is more and more following Udacity business model finding more potential from partnership with the industry.

Maintaining a list of all startups in the MOOC business is quite a challenge. See for instance Class Central (2015) although it is mainly oriented towards the US market.

6.4. European Providers

Nobody in Europe can claim to be the European provider. A few countries have established national providers, most of the others rely on local or private initiatives of limited extends.

Futurelearn (2013), in UK, is a charity from the Open University; Futurelearn wants to bring the best of UK universities worldwide. More recently it has invited foreign universities to join but publishes courses in English only. Futurelearn develops its own software with a different insight towards the pedagogy, encouraging interactions among the students. Access is free but a statement of participation (a simple unverified certificate) costs 29£. A statement of Attainment (verified certification) costs 119£. Futurelearn does not look for other resources. Its total dependency from The Open University is its weakness: the charity recently announced that it was in deficit of £ 17M, due to the declining number of students registering for its distance learning.

France Université Numérique (FUN 2013) is a national initiative launched by the Ministry of Higher Education in France in June 2013, it made the choice of Open EdX as soon as available. It is now a consortium of most French universities. FUN delivers unverified certificates. Very soon its members will offer ECTS (European Credit Transfer System) through classic examinations or distance control like EdX and Coursera. Members of the consortium pay a fee from €5,000 for two MOOCs per year up to €20,000 per year for an unlimited number of MOOCs, 5 SPOCs per year and the possibility to use the platform to deliver their courses their courses for online continuous education. A recent report (France Stratégie 2016) mentions that it must find additional resources through various means, selling courses for continuous education to the industry or to other universities.

Iversity (2015) in Germany, plays a double role as a classical MOOC provider in Germany and, at the same time, develops its own line of courses. Iversity's business model is also to act as a broker of ECTS for European students. Although European universities have standardized their curricula, it is not easy today for an European student to include external ECTS in the curriculum of the university where he/she is registered. Iversity believes it can act as an intermediary.

MiriadaX, in Spain, is less known. However, according to figure 2, it is the second provider in Europe. It is a Spanish-speaking platform with contributors from 45 universities from Spain and South America with support from Telefonica, Banco Santander. Very few is known about its business model. It seems to be oriented mainly toward education in South America.

These are the most well known European providers working with universities. Each of them is mainly working in its own country, although they are willing to expand their influence.

EADTU (European Association of Distance Education) is trying to assemble information about existing MOOCs and to act as a hub through a European initiative OpenupEd (OpenupEd 2013). It is only a relay of information.

A number of private start-ups are going into the business of MOOCs. Their business model is mainly oriented towards continuous education and with some sectors of the Higher Education able to provide a technical education of direct interest for the companies. They sell their courses to individual and to the industry. Openclassrooms, in France, is a good example: for 20€/month any individual may have access to their documents, for 90\$ people may follow a given course and for the duration of the course have a weekly distance class exchange with a tutor. For 300€ it becomes a personal tutoring.

A number of providers build their business models around freemium: free or cheap access to basic documents and different levels of fees according to personal or group training.

7. Business models for universities

Various conferences in Europe show that the interest for MOOCs in Europe does not yet reach the peak of the hype curve, showing a large difference of the strategy between the European HE institutions and the US ones. This is clearly explained in the Porto (2014) declaration in favor of open and online education. But, to our knowledge, very few business models seem to appear in Europe when the path is already paved in the US. In other parts of the world (Middle East and Asia) the situation is unclear.

7.1. Business models for US education

The fees, in the US institutions, have reached an unacceptable level and the result is that the total student debt is greater than the housing one, of the order of \$1200 Billions! Between 2002 and 2012 the mean debt per student has doubled (Wikipedia 2016), so that more and more young people are asking themselves about the value of HE study above the Bachelor level. At the same time there is a demand for more colleges seats at a reasonable price. To decrease the cost of education by the means of MOOCs it is necessary to assemble large cohorts of students, as seen in figure 1. Coursera and EdX are playing this role.

Arizona State University, one of the largest US Universities, has established, in partnership with EdX, the Global Freshman Academy (Hill 2015), an online program to offer to freshmen the first year of university, for a lower price. Students must acquire 8 credits among 12 courses, each for \$200, but they will pay only in case of success. The only non-reimbursable fee is for the verified certificates, which will cost \$45. This means that a year of study will cost less than \$6000 and that most of the money *will be paid in case of success only*. The number of students is unlimited. ASU is paying for the courses development and EdX for the platform. Knowing the number of students, who leave the university without anything, the smart idea with this project is to pay in case of success only. ASU and EdX believe they will attract enough students to recover the investment.

Another example (Straumsheim 2015) is the online MBA program from Urbana Champaign University; it is built in partnership with Coursera. This eMBA will be made of specializations. The contents, made of 18 courses, will be available for free as MOOCs. Students, who pursue the eMBA, will follow the same courses with the addition of all the university facilities and mentoring from a distance for

\$1000 each. They must also pay \$79 for each verified certificate. The total cost of the degree will be about \$20000. A great idea is that they can take (and pay) the courses individually and postpone their decision until the end, thus paying by fractions, if they go to the end of the program. Once again, this model allows students not to pay before knowing their chances of success. Coursera recovers some funds through the verified certificates; the University expects to bring enough students in its existing MBA to cover its expense.

MIT has a different approach, considering using the same courses internally as SPOCs and a selection of them externally as MOOCs. The smart idea is that the additional expense is very limited when using internal resources outside. Since Open EdX is their LMS, the additional cost to transform an internal course into a MOOC is just exporting the course to EdX and paying for the animation of the course. They also plan to use MOOCs as an admission test. Newer is a pilot program for a micro-master degree, which can be obtained online through selected MOOCs and verified certificates. Successful students may then apply for a second semester on campus to complete their degree.

These examples show an ongoing direction, in the US, to mix online and on campus courses, to decrease the fees addressing the courses to a larger number of students. At the same time, in a world where universities are competing to recruit the best students, MOOCs are a good means to attract and test good students. Some universities, for instance, offer grants to the students, who succeed in their own MOOCs.

More generally, in the US, MOOCs are now merging in the online offer. Some may be opened to the general public and, at the same time, being used internally with a full mentoring.

7.2. Business models for European universities

A very important difference, between Europe and the US, is that (with the exception of UK except Scotland), most universities are under State regulations and that the level of fees is rather limited. Thus the interest in MOOCs is seldom to decrease the cost of the fees. Reasons to build a MOOC are more relevant to the categories presented in section 5. No one university believes it may recover the expense needed to develop MOOCs except for the few, which may be sold for continuous education. This is why business models are mostly based on the possibility of obtaining grants from national and European agencies.

EPFL in Lausanne (Switzerland) is one a few HE institutions with a clear business model. Pioneer for the MOOCs in Europe, working with Coursera and EdX, EPFL has first offered MOOCs as an efficient communication medium and has been very successful in this. It now offers full curricula, delivering ECTS for €30, a full cursus being made of 8 to 12 ECTS. Examinations are of the classic form in partners' centers (EPFL 2014). This hybrid education is oriented mostly towards French speaking Africa, where EPFL expects to find a relay of development.

Other initiatives, where institutions deliver ECTS, slowly emerge all around Europe, but, as already mentioned, these ECTS are not, for the moment, transferable between institutions and thus cannot be part of a diploma and are of very limited value. This may change when MOOCs will be used intensively in the universities as part of their distance learning activity but nothing, comparable to the US, is yet visible. EPFL is an exception.

So, to conclude, no clear business model is yet emerging in European universities.

7.3. Business models in Asia and Africa

Education is certainly one of the main objectives, in any country, for a better future. This requires huge capital investments; it is not only a question of finances. Most countries in Africa and Asia do not possess the number of required teachers and their training will take years. They do not have the capacity, in capital investment and in human resources, to build classical universities. A special form of MOOCs, if adapted to the local environment and local culture, is the only solution. Teaching through MOOCs will lower the number of required teachers and the capital investments to teach a huge number of students. For the moment most of the initiatives are coming from the Northern countries and the main providers. Most do not yet have any business model and are supported by the enthusiasm of local universities, who do a fantastic job with very modest means. Edraak (2013) is a political one for Arabic speaking countries. Oyo and Kalema (2014) have explained the state of

online courses in Africa and why this continent is far from thinking about business models. See also eLearning Africa news 2015.

In Asia, MOOCs have mainly be the playground of the main US providers except for the Chinese state agency XuetangX already mentioned. Singapore, Hong Kong universities obviously have the capacity to build and distribute their own MOOCs but it is too early to speak of business models.

8. CONCLUSION: WHERE DO WE STAND?

MOOCs business models are not yet established. The future may be quite different in US and in Europe. In US, where the fees are sky-rocketing some Higher Education institutions, at the college level, might be in danger and be challenged by distance education through MOOCs. However, the universities, offering master and doctorate levels, seem confident about their future. MOOCs have been a push to develop online courses both for distance and for on-campus studies. MOOCs are a by-product of this movement and will continue to grow. In Europe the changes are slower and a number of universities still believe in the interest of “open” MOOCs. However, this generous idea is challenged by the limitation of resources. MOOCs are moving traditional teaching out of a false equilibrium and we may expect that online education will be fully recognized in traditional education. Nevertheless funding will be a limitation in most institutions. In Asia and Africa the movement is only starting. India is becoming an active player after China. MOOCs are the only solution to respond to the education challenge when one should build one university every day. But it is still to come.

Continuous education will be revolutionized. Successful companies appear already both in US and Europe. It is the area where the business models are clearer and all companies and institutions, involved today in this area, will be challenged soon.

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