
INNOVATIVE AND SUSTAINABLE BUSINESS MODELS IN DIGITAL HIGHER EDUCATION: A COMPARATIVE ANALYSIS OF GLOBAL REACH MOOCs PLATFORMS

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Abstract

By offering worldwide access to high quality content, MOOCs (Massive Open Online Courses) are becoming notable alternatives to the traditional on-campus higher education. As large and complex online and offline systems, requiring sophisticated architecture, these platforms, like Coursera, edX, Udemy, Udacity, FutureLearn etc. are combining advanced hardware and software tools with human-centered practices and processes. They also have the capacity to gather and analyze huge amounts of information, providing a holistic view of all and each of their enrolled learners, of their learning behaviors etc. By using reliable data, by coordinating multidisciplinary high skilled teams, the business models behind the MOOCs platforms are continuously adapting to the changing digital education environment and their stake-holders expectations.

This paper is an exploratory desk research aiming at investigating and emphasizing the innovative characteristics of the main business models behind the transformative power of MOOCs global phenomenon. By using comparative analysis of relevant secondary data and synthesis, the authors are revealing meaningful and valuable insights, in order to provide a comprehensive view of these business models, that are becoming more and more self-sustained and are setting a new major trend in education. Along with other researches, the paper's content can serve as a benchmark in the complex process of reshaping the way education will take place in the future.

Keywords: business models, innovation, MOOCs, sustainability, education services.

JEL Classification: I23; M10; M13

Introduction

Higher education, along with many other industries, is in the mist of important transformations. New trends are set in the way these education services are delivered, and the emerging entities are providing innovative solutions in that sense, strongly supported by

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the advanced technologies. Among them, the Massive Open Online Courses (MOOCs) are becoming major players on the education market. MOOCs are proposing a more democratized, world wide access to quality education, by offering for free, or at low costs, courses produced by top higher education institutions (HEIs).

MOOC platforms are backed by complex, modern and adaptable business models (BM). They are rapidly evolving towards sustainable ones, including financially, and are generating large scale social and economic benefits for all their stakeholders.

Anchored in depth theoretical and empirical research, this paper's aim is to examine the novelty, similarities and complementarities of the BMs behind the emerging global reach MOOCs, in order to generate a better, more integrative understanding of the mechanisms supporting them. Identifying this new trend's characteristics can be helpful for specialists in the field and for HEIs in reshaping their long term strategies, according to the hyper-changing environment.

1. Business Model Innovation - a must in a dynamic environment

The Business Model (BM) concept became a major topic for researchers and a notable presence in discourses in recent years. If in 2000 (Chesbrough and Rosenbloom, May, 2002), a BM keyword search on Google yielded 107 thousand results, in 2016 their number increased more than 400 times, reaching 41,9 mil. hits.

There is no general agreement on a single definition for the relatively new concept of BM. However, among the most popular ones is that of Teece's stating that a "BM describes the design or architecture of the value creation, delivery and capture mechanisms employed (Teece, 2010, p.179). Using similar terms, in Kaplan's view "a BM describes the rationale of how an organization creates, deliver, and capture value (economic, social and other forms of value)" (Kaplan, 2012). Most attempts to define a BM are gravitating around the same processes and descriptors. West and Bogers (2014), for example consider creating and capturing value as the key goals of a BM. A simpler and more general description is that a BM reflects the logic behind an organization and its business strategy (Johansson et al., 2012). For modern BM design new, faster, more effective instruments, fresh mindsets and new skills are required. There are two major sets of parameters recommended for consideration in the complex process of BM design (Zott & Amit, 2010): design elements (content, structure and governance), describing the system's architecture; and design themes (novelty, lock-in, complementarity and efficiency) relating to sources of value creation. Specialists' proposals, over time, regarding BM design include many different methodologies like CSOFT (Heikkila et al., 2010), STOF (Bowman et al., 2008), VISOR (El Sawy & Pereira, 2012), or CANVAS (Osterwalder & Pigneur, 2010). As one of the most widely used methodologies for BM design, both in theory and practice, the Canvas approach provides high coherence in the field, being a valuable analysis tool too. His strong visual 9 interdependent blocks concept encompasses as well known components: the infrastructure (Key Activities; Key Resources, Partner/s), the offering (Value proposition), the Customers (Segments, Relationships and Channel/s) and finances (Costs and Revenues). This strategic tool is further used for our comparative analysis.

There is also a strong need for BM innovation in order for them to meet the challenges of a constantly shifting environment and to achieve success. There are typically 4 widely accepted levels of business model innovation: *transfer*, consisting of moving an existing BM to a new geographical market, is considered as having the lowest level of innovation; through *translation*, an already successful BM in one market is moved into a different market or vertical; a *reformed* BM is the answer to an existing question in a brand new way; a *radical* BM, incorporates the highest level of innovation, leading to entirely new BM, answering to an entirely new question. On each of the four levels, BM innovation can generate multiple layered transformations, in markets, customer relationships, entire sectors, communities, even society and government. BM innovation's importance is also underlined by an increasing number of peer reviewed scientific articles aiming to identify patterns, characteristics etc. and to provide reliable methodologies in that sense. In the context of fast emerging online businesses, a recent article for example (Zhanga, Lichtensteina, Ganderb, 2015, p.241) proposes three mechanisms to be used in developing digital BM: "engaging both non-paying users and paying customers; organizing customer engagement to allow self-customization; and orchestrating networked value chains, such as platforms or multi-sided business models." Experimentation should be also promoted as part of an innovative BM design process (Wrigley, Straker, 2016). The organizational culture has been shown to have an impact on the organization propensity to innovate its BM (Hock, Clauss, Schulz, 2015): while novelty-oriented culture values and support BM innovation, efficiency-oriented ones do not show positive effects in this direction.

By incorporating the latest innovative technologies the business's architecture is changing dramatically, leading to emerging digital BMs, more sophisticated and effective. Among them, the BMs behind the relatively newly founded MOOCs (Massive Open Online Courses) are setting a major trend in higher education. MOOCs are becoming a sustainable and reliable alternative to the traditional on campus learning.

2. Emerging MOOCs': favorable market conditions

Beside state-of-the-art technology progress, there are other strong factors favoring MOOCs' development on the higher education market, from both the offer's and demand's perspectives. Although higher education institutions (HEIs) are implementing new programs and are internalizing technological advances, their dominant characteristics remain: traditional format ("one-size-fits-all" industrial model), low time flexibility, high costs, mismatched outcomes relative to the work force expectations. The online education component added to their offer, was in general a duplication of on campus courses' content, and priced similarly. On the other hand, there is an increased demand for quality education able to provide on-the-go up-to-date knowledge and support appropriate abilities' and skills' development, according to a hyper dynamic work market's expectations. Learners worldwide are also looking for higher flexibility, modern multi-channeled course format and content, while aware that lifelong learning becomes the norm and shifting careers the new path. They are also interested in lower cost education services. This economic criteria among potential learners is becoming stronger, in the context of constant increasing of higher education costs, for on campus under-graduate and post-graduate programs. In U.S. alone, the cumulated graduates' loan debts became the second highest form of consumer debt after mortgages, exceeding 1 trillion \$. The average loan debt per graduate amounted to 26.6 thousands \$ (2012), with over 7 mil. borrowers in default (Woo, 2013).

The market's characteristics paved the way towards new movements in education. Among them, MOOCs' model of development is as a long lasting solution to the old problems of scale and access to education. They are challenging traditional value chains and are transforming the education industry through a new way of delivering higher education services. Innovation and technological advances are consistent and are mutually reinforcing each other on these online platforms, that have opened a new virtual space for learners all over the world. A MOOC's design enables thousands of participants to take it in the same time. Coursera, edX, Udacity FutureLearn, Udemy are the most prominent competitors on this dynamic market, each using the multi-sided platform as their basic online BM. Praised and contested in the same time, they are evolving towards viable innovative and sustainable formats. Founded by 2 former Stanford professors, Coursera was launched in May 2012 and grew its offer ever since, from 1 to 1826 MOOCs (as of March 2st, 2016), along with its number of partners (>140) and that of enrollments (>18 mil.), 2/3 form outside U.S. As one of the leading MOOCs provider, EdX platform's launch followed shortly after Coursera, as the result of an MIT & Harvard partnership. Beginning of 2016, more than 90 global top partners are involved in offering over 900 MOOCs, to an increasing online community, that has surpassed 7 mil. learners, from all over the world. Launched in September, 2013, the privately owned FuturLearn MOOC platform is the European replica to the U.S. origin ones, offering 24 course categories, developed in a 85 members partnership, including best UK HEIs. Over 3 mill. people joined up to date.

3. Evolving business models behind MOOCs' platforms

The complexity of BMs' design is continuously increasing. MOOCs platforms are grounded and engaged in a new disruptive way of doing education. The BMs backing them, enabled by the latest IT advances, can be included into the group of multi-sided platforms, flexible, adaptable, having mechanisms and solutions that can turn them into sustainable and innovative ones. They are environmentally sustainable because they use mainly intangible assets, with small impact on environment, like most other online businesses. They are also socially sustainable by giving access to education and by changing many people's life and tend to become economically sustainable due to their global market reach and adaptive monetizing strategies. MOOCs BMs are shaped to embody their sustainable dimension into their purpose and processes. They are continuously reengineered to achieve higher efficiency and effectiveness. Our in depth comparative analysis, using the Canvas Model (offer, customers, infrastructure and Finance) as main instrument, led us spotting their defining patterns and attributes.

The BMs backing MOOCs platforms are creating unprecedented unique values and are opening new markets. Phrased in relatively similar terms - worldwide access to high quality education - their *value propositions* are reflecting major qualitative and quantitative aspects, with some differentiations.

In *qualitative terms* these BMs' value propositions are providing high utility for the costumers by offering free and/ or at low cost, global access to a wide range of quality online courses, provided by high ranked HEIs from all over the world, that ca support their professional and personal lives' improvement. Coursera's offer of courses (each spanning 4-12 weeks), for example, grew continuously not only in terms of number, but also in that of number of domains covered (over 40% in Business), variety of traditional and growing

topics and types of approaches, including cross-disciplinary ones. Also, the number of languages the courses are delivered into have raised from one (English, as dominant), to 44, either as course's language (depending on the provider's nationality), or as subtitles. EdX platform, as Coursera's main challenger, has the largest share of its 900 courses portfolio, held by Computer Science subject of study (177). Other major competitors like Udacity, FutureLearn etc. are following a similar pattern. However, fine tuned adjustments are continuously made, with offer diversification as major component. Stated as "Specializations" (16/on Coursera), or "XSeries Programs" (116/ on edX platform), or Collections of courses (on FutureLearn), bundled 3-10 courses, scheduled for up to 8 months (finalized with a capstone project) are offered for those willing to acquire specific abilities in a certain field. EdX even extended its offer with High School courses (64) and Professional Education courses (33). Even though statistics shows an important share of foreign enrollments (2/3) and of adult learners, the interest in credit eligible courses is very high for both young people and those willing to complete their unfinished studies. Therefore, intense efforts are made by the actors on the MOOCs market, in order to increase the courses' value through assessment, certification and recommendation by recognized entities. ACE (American Council on Education), for example, developed the Alternative Credit Project (ACP) since that allow online graduates to transfer credits earned in selected courses, to colleges/ universities to complete a degree or credential. Part of this newly created ecosystem are edX (with 11 credit eligible courses) and smaller competitor platforms like: Ed4Online (13), Pearson, Saylor Academy, Sophia, Straighter Line, along with partnering HEIs, accepting credit transfers, in online, on campus or hybrid programs. EdX has also designed, in partnership with Arizona State University, the credit bearing first-year courses, in the Global Freshman Academy Program. The MITx MicroMaster's Credential is the latest edX's tempting offer, for learners worldwide, to successfully complete a set of first semester's worth required online courses (followed by a proctor exam) and then qualify for the MIT's top ranked, one-year Supply Chain Management master's program, with its second semester on-campus.

Even if fee bearing, the personalised certificates, issued for each MOOC graduate, reflecting the name of the course providing university and instructor, are adding value, that can positively translate into enhanced applications for university admission, a new job or a promotion. From completely free online certificates, raising identity doubts (like Statement of Accomplishment, on Coursera, or Honor Code Certificates, on edX), the offer turned towards verified ones (usually using a webcam and the learner's government-issued photo ID and/or a final in-person proctor exam), available for a fee. Verified Certificate, XSeries Certificate of Achievement on edX, for example, are printable automatically generated documents, after successfully passing each course's, or serie of courses's requirements.

Auditing online courses for free is a component available on each platform mainly for those interested only in enriching their knowledge, without certification. Although contested by many (Online Report Card, 2015), in comparison with the on-campus learning, MOOCs proved to be a highly effective learning channel, able to provide valuable, sometimes unique multi-cultural experiences, especially for those in developing countries. As complex adaptive systems, MOOCs are offering, for thousands of learners, real opportunities for interaction, connectivity and virtual, even physical communities' creation. Their connectivism and constructivism can lead to facilitated value networks (Craig, 2015). One of the positive effects of such large cohorts of online learners is the fact that the average time to answer a student's question is, surprisingly, significantly lower than on the on-

campus version. Interestingly, there is a high probability for a question posted online, even if laid in the night, to get at least an answer from one or more course colleagues, within the same or different time-zone. Even if incorrect at the beginning, the answer will gradually be adjusted by other course participants, until it reaches an adequate form (Koller, 2012). Learning is also enhanced through innovative, free of costs instruments like online peer-grading for example, used on several platforms, as an effective assessment tool with results nearing expert evaluation, within high numbers of participants (Koller, 2012).

From the *quantitative perspective*, MOOCs' BMs provide its consumers, risk free education services and extremely high availability at global level, no matter the time zone of the learner, his/her religion, profession, age, previous education etc. Practically, anyone with an electronic device (computer, smart-phone, or tablet) and an internet connection can easily enroll in a MOOC, and pursue it in his/her own pace. Time flexibility in auditing/ re-auditing courses (including rewinding video-lectures), in any environment, is another important MOOCs' feature. They encompass free and/or relatively affordable prices/ fees for which consumers can access the proposed value. Compared with off-line education services, priced at thousands of dollars, prices per an online course, usually range from 29 \$ to less than 300\$ and within 200 - 600\$ span, for a whole package of courses included in a specialization, or Xseries. Payments for verified certificates (if not course included), are usually under 100\$ and official transcripts for credit bearing certificates are done for 15 to 35 \$ each. Some platforms, like FutureLearn, are charging for invigilated exams (£ 119-149/ Statement of Attainment included), or only for issuing simple certificates (£ 34/Statement of Participation + shipping costs).

The *global mass market is these BMs' target*. Huge numbers of persons, with diverse backgrounds are gathering together around a MOOC, interacting and discussing despite time and geographical differences. This includes people of all ages, interested in prestigious education for diverse reasons, many times very busy and/ or with lower incomes. Cross countries connections and communication are supported through the platforms, offering cultural and social diversity that can't be reached in an on-campus program. Along with physical persons some BMs are aiming legal persons too. Coursera, for example, is targeting companies interested in offering their employees tailored online courses, thus capturing new segments of costumers.

Multi-channels are used on the MOOCs platforms, like social media, blogs, forums, collaborative programs etc., in order to cultivate *long-term relationships* with the their customer segments. Through complex online tools, developed in a proactive approach, virtual community creation is stimulated, and communication in all directions is supported, through dedicated forums, newsletters, course recommendations (once enrolled) etc. Shareable Certificate Links on social media, like the direct upload on personal LinkedIn profile, are used by most platforms to strenghten the relationships with graduates. A recently created such instrument is "Community Mentors" on Coursera, supporting volunteers, willing to assist staff in discussion forums monitoring processes. Also, the Global Translator Community (GTC), formed of volunteers and partner organizations, are working to make course content accessible across linguistic boundaries.

The value proposition delivery, initially done only through the online platforms, is including now mobile free applications, as viable channels to access course content.

The analyzed BMs are based on complex infrastructure. Important resources (online platforms; soft-wares, IT specialists and engineers etc.) are used to build and to support a network of carefully selected partners and to accomplish key activities (IT infrastructure's creation and maintenance, managing current partners & attracting new ones; managing the learning communities, etc.). It is important to note that some platforms are open-source (like edX's, for example), leaving both IT and education specialists to build-in new features, or develop more effective learning tools. Most MOOCs platforms strategies are aiming to attract as partners, high ranked HEIs, world renowned professors/ instructors; developers; translators; distribution partners etc., in order to strengthen their image.

BM are creating important economies of scale. Teaching in a traditional on-campus way a whole online course's cohort (of thousands of learners), would normally take decades, (Koller, 2012). Even though, aiming the global education market, monetizing is a real challenge for MOOCs' BMs. Their monetary outcomes are mainly value-driven, focused on creating high added-value for their customers. Incomes to cover costs (mainly related to business operations, partnership management and the creation and maintenance of the IT infrastructure) rely mainly on human and intangible (knowledge and expertise) resources. Therefore, economic sustainability is supported through a specific mix of sources for each platform, that include: certifications, recruitment services, licensing, customer tailored training programs for companies, sponsorships. The main revenue stream is that of paid services: tuition fees for credit bearing courses, fees for proctor exams, issue of online/ hard copy certificates, transcripts for credits transfer etc. All platforms are charging amounts that are much lower than for on-campus similar courses (that can go up to several thousands of dollars). By switching its course offer strategy from free to paid, Coursera has solved the high drop-out rates issue (usually, under 10% of the total number of enrollments). According to its own gathered data, motivation is higher and the completion rate increases to over 50% among paying participants. Another positive consequence is the major increase of its revenues. The inclusion of the Specialization option also added to the platform's income. Licensing contracts are another revenue stream. Antioch University is the first to license the use of Coursera's content, lowering this way some of its on-campus programs' costs. In such a hybrid/ blended format, its own professors are only tutoring students, that are learning on online licensed courses.

Each of the competing platforms are searching continuously for new innovative ways to increase their incomes and, as a result their financial sustainability.

Conclusions

MOOCs multi-sided platform BMs are transforming the education industry by setting new trends. They generate low environmental impact and a high social impact.

By innovating processes and services these BMs are engaging new stakeholders and are bringing more socially conscious education. Their high flexibility allow people around the world to shape their learning according to the constraints of their life.

Focusing on the main BM components (offer, costumers, infrastructure and finance) the paper is revealing valuable insights regarding innovative and sustainable solutions to articulate and develop complex networked value chains in higher education.

In our opinion, MOOCs dynamic phenomenon can constitute a valuable resource in understanding future education needs and in providing adequate responses. Further research is required to decipher the DNA of such complex BMs in correlation with the market's evolution.

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