UHASSELT

Faculty of Business Economics

Master of Management

Master's thesis

Leaders or laggards in digital education? A Competitive Analysis of the UHasselt Master of Management Program Against MOOCs.

Rafael Moreno del Toro
Thesis presented in fulfillment of the requirements for the degree of Master of Management, specialization Strategy and Innovation Management

SUPERVISOR :

Prof. dr. Stijn KELCHTERMANS

UHASSELT

2020
2021

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Covid-19 Disclaimer

This master thesis was written during the COVID-19 crisis in 2020-2021. This global health crisis might have had an impact on the (writing) process, the research activities and the research results that are at the basis of this thesis.

Preface

This thesis is written as the ending part of my studies at the University of Hasselt. The topic touches online education and it was genuinely interesting to discover and learn more about it, especially at such a familiar scenario as it is the UHasselt. Besides the findings of the thesis, it has also pushed me to believe in the power of innovation in our society and the importance of always keep learning.

Further, I would like to thank to everyone who supported my efforts. First and more important, to God, that never stops showing its grace and providence to me. Moreover, to the biggest support during the years it took me to plan and attend this master program, Nico, who has always been there with a sweet look, patience and more important whom endured a year and a half quarantine with me. The person I am today is only the result of all my parents' efforts and sacrifices through many years of hard work, unconditional support, and love. Moreover, I want to devote my thesis to my sisters, Lupita, Mary and Ceci their love and support has always been a motivation to grow and be a better person. Finally, I want to thank my thesis supervisor, Prof. Dr. Stijn Kelchtermans. His help, quick answers, challenges, and advice felt always as a fresh breath in the overwhelming months of the pandemic.

Summary

The higher education as we know it is in transition, some things are moving rapidly, digitalization, artificial intelligence and that means that the higher education industry (HEi) needs to respond rapidly as well (van der Zwaan, 2020). Boosted by the current corona virus crisis the MOOCs seemed to have come back to the spotlight (Rindlisbacher, 2020). The wider interpretation of a MOOC is that they are Massive Open Online Courses, with the goal to offer education using the internet as channel, open to the public and normally free of cost.

Three main stakeholders are considering in the MOOC environment. The first one is the HEi, placed on the most critical position as the MOOCs have the potential to disrupt it and open education to all the public (Young, 2021). The second stake holder would be the students looking to learn and improve their skills and lastly the MOOC platforms serving as channel to deliver said open online courses to the masses.

This thesis is based in the current scenario of the HEi against the MOOC trend at almost ten years after its boom, making emphasis in the main challenges present for the HEi implementing them. Especially considering that very few is said about it from a HEi point of view. Moreover, it also approaches to the competitive position of a Flemish university against the MOOCs being offered by different platforms.

In first place, a literature review explains the path the MOOC has walked since its creation and how it has been adopted and its evolution. Then the main challenges of developing MOOCs are identified but, in this case, considering those challenges encountered by the universities while applying them with a focus on those coming from European institutions. Moreover, the MOOC´s platform landscape is explained, where we can identify the main three players that will be important further in this work. In addition, the nature of the platforms is explained and their role in disrupting the HEi.

To better reflect on the main challenges related to the implementation of MOOCs from a HEi point of view first a list of the most mentioned challenges in the literature is composed. Some of the most relevant challenges explained are for example the external recognition, which affect directly in the capacity of institutions to offer valid and recognized courses and how some members of the HEi had tried to offer solutions to this.

The case of the first MOOC offered by the University of Hasselt was developed to illustrate in a better and closer the motives and challenges to the university. Said case was built firstly with an online investigation about the course, it´s content and the status. In addition, the main two doctors responsible for the course were interviewed to have a more in-depth knowledge of said MOOC.

According to the interviews, the only MOOC offered by the UHasselt was made using a budget created to develop an innovative project for the school. The material and program of the MOOC

was made with high quality, and it was integrated with one of the Master programs offered by the university. The entire project lasted around 2 years and it can be considered that its main goal was to work as a marketing tool to reach new potential students interested in the before mentioned master program and the institution. Said MOOC is currently archived and is not having any rerun planned in the upcoming future. The case revealed that, the biggest challenge for the staff in the HEi was the workload coming from said course and that very few resources were available to deal with a long quantity of students.

To understand the current competitive position of the HEi against MOOC a course analysis was developed between the courses forming the Master of Management program offered by the UHasselt and their potential substitutes counterparts offered by the three biggest MOOC platforms.

To have a clearer image of the industry, first an analysis based on Porter´s five forces was conducted where the industry members offering high education, in this case the HEi and the MOOC are playing. The delimitation of the industry was drawn in what it can be considered a counter intuitive way by placing the MOOCs and its platforms as direct competitors but according to the author this helps to understand better how the MOOCs had been perceived and moreover it explains better the answer of the HEi.

The last part of the analysis required to find the number of MOOCs available for each course forming the Master of Management: Strategy and Innovation Management. A deep search in each of the three main MOOC platforms help revealed the number of courses offered addressing the same topic and after careful consideration a substitute per platform was found. Once a substitute per platform was found, they were going to be evaluated in duration, price, study program and way of teaching, among other attributes. Moreover, the key offers of each platform were also added to this comparison to have a broader perspective on how the competition is happening.

The mentioned results helped us drawn very interesting insights that build on the literature available on MOOCs and the way the HEi institutions are facing them. First, new challenges in developing MOOCs for the universities are drawn. The workload and sustainability need to be address by any university who is planning to implement of keep working with MOOCs in their study programs. Moreover, the need of aligning goals while implementing a MOOC is required, whether it is for marketing purposes or to extend the reach of education to those who does not have access, having a clear goal seems fundamental for decision makers.

Attention needs to be drawn to the fact that the MOOCs found as substitutes for the higher education offered by the universities are clearly targeting other markets now. Backed up by the reputations of the universities developing said MOOCs they are offering a lighter, cheaper, and more flexible way to teach, especially to those already in the working market. The MOOC platforms are offering rewards that are easy to acquire and share by those interested in them and this might bring confusion not only for the industry hiring said students but also to the people designing study programs and their home institutions.

The HEi pushed by the digitalization following the corona virus can seize the moment and capitalize from its best asset, the reputation that they already have, to answer back to the MOOC platforms and continue to embrace said trend but with better results and more focused efforts. This may lead a path in which they can preempt the MOOC platforms as disruptive technology and help universities into their transformation into a more updated and technological higher education industry.

Key words: MOOC – Online Education – Innovation – Competitive Analysis

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1. Introduction.

Since early 2020, the coronavirus pandemic has affected our world in many ways, with a wide range of affects going from the economical to the environmental. Concretely in the high education sector among many other consequences, it has pushed universities to shift into remote learning almost overnight (Deloitte, 2021). Outside the campuses, people in general showed an increased interest in online education and this is bringing MOOCs back into the spotlight (Rindlisbacher, 2020). In a wide interpretation of a MOOC (Massive Open Online Course), its goal is to offer educational material using the internet as a channel, open to the public and normally free of cost. Although many business models have emerged adding costs, for example by issuing certificates of completion. The concept of MOOC has been around since 2008 when the first MOOC was offered although the term itself came later in 2014 (Peters & Seruga, 2016).

It is important to identify and introduce the relevant stakeholders in the MOOCs environment. The first stakeholder and the one placed in the more critical position is the HEi (High Education Institutions) sector. The potential of MOOCs to open higher education to all the public has challenged the regular way of thinking about how higher education is normally presented (Young, 2021). That is why their acceptance by HEi can be considered as contrasting, especially considering the results derived from a study part of the HOME project created by the European Union between 2014 and 2016. It is stated that around 56% of the universities in Europe were already offering or planning to offer a MOOC and they were expected to become a trend in the high education landscape (Jansen, Schuwer, Teixeira, & Aydin, 2015).

Nevertheless, adapting to such a trend implies a big effort from the Universities. Much of the literature regarding MOOCs is centered on challenges faced by their users and not much from the higher education institutions perspective. In 2021, more than ten years after the beginning of the MOOC trend, very little is said about the real challenges faced by the HEi and the lessons learned until now.

In second place, the students of the MOOCs are also a relevant stakeholder in this ecosystem. Students had been categorized differently: by their age, by their backgrounds or by their geographical location (Baturay, 2015). There is also a big interest to find what are the main motivations for these users to join the available MOOCs.

The third stakeholder are the MOOCs platforms that serve as a channel, helping to make knowledge available to users. MOOCs platforms do not necessarily need to be a third party, they can be owned by the same university (Peters & Seruga, 2016). Nevertheless, the industry leaders such as Coursera and Edx had created a profitable business model offering MOOCs coming not only from the US but also from European institutions and many renowned universities followed their example of offering MOOCs. The potential of MOOC platforms to become a disruptive technology has only increased in the last year and a half, with almost nine thousand courses

offered by the three main platforms (Shah, 2020), their presence might become a strong competitor to universities, representing a real threat in their industry.

Therefore, this thesis will aim to first, better identify the main challenges related to the implementation of MOOCs but built from the HEi perspective, being the most challenged stakeholder in the MOOCs environment. Moreover, the case of the first MOOC of UHasselt will be reviewed to compare and analyze the type of challenges found during its development and the university's current position in open online courses.

In second place, through a competitive analysis this text will aim to present a recent picture of the MOOCs offer, considering the three biggest platforms and put them in contrast with the traditional courses offered by a Master program offered by the UHasselt. This, to understand what the level of the current level of competition is coming from MOOCs and to what extent they should be consider direct competitors or only substitutes for HEi. Having a clear image of the current position and main challenges of HEi towards the execution of MOOCs plus a recent picture of the level of competition might bring meaningful insights for HEi to manage the undeniable and covid fueled online education era.

To reach these two main goals, this thesis is structured as follows, first a literature review that explains the MOOC trend and its present status in our society with a clear focus in the HEi, its challenges and how the MOOC platforms try to become a true disruptive technology. The next step, will build the case of the first MOOC of UHasselt, based on the interviews of the members of the UHasselt that oversaw said course, to unveil the challenges, lessons learned and the status of that MOOC. As last part an exercise including the industry analysis of the HEi and MOOC platforms and a course comparison between one of the entire traditional Master programs from the UHasselt against the MOOC offer.

The results of this exercise show interesting insights that can call the attention not only from the university staff dedicated to creating the content and the future of their study programs but to everyone who is interested in online education.

2. Literature Review.

2.1 What are MOOCs and how have they evolved in recent years?

MOOCs definition.

MOOCs available literature agree that the birth of the concept of MOOC happened in 2008, when Siemens and Downes (Young, 2021) offered the first MOOC. The MOOC´s name is the acronym of its 4 more important characteristics: massive, open, online and course (Peter & Seruga, 2014). A short interpretation of each component is relevant to understand how MOOCs function and its goals. The first component is massive, in most of the interpretations is related to the scalability and that these ambitious courses are designed to support a countless quantity of students (Yuan, 2013). Other authors also suggest a second view of massiveness, the fact that the amount of

information and knowledge shared between participants is very large and thus conceiving this component as a huge amount of people generating and sharing massive amounts of knowledge (Peter & Seruga, 2014).

The second component is Open; this is a prominent feature of MOOCs. It can be related to the open education movement that it is concerned with the increased access, flexibility and greater choice in education and its accessibility (Alraimi, 2015) it can also imply that there are no entrance barriers for students to enter an educational course or that usual prerequisites are nonexistent (Peter and Seruga, 2014). The Online part of MOOCs refers to the essential technological component that allows these courses to be delivered via the internet and allow the openness and massiveness of the MOOCs to exist.

The last component of the MOOCs is Course, and it relates to the structure of the content offered in any given MOOC. Most of them are short video lectures or other type of content with a structure and it can be delivered within a period or self-passed (Peter and Seruga, 2014). Course's content and structure can vary and for example allow discussions among peers, peer-to-peer evaluations or have fixed starting or end dates.

The evolution of MOOCs.

Long time has passed since the first MOOC was delivered and there are mixed opinions about their importance, reach and biggest challenges. 10 years ago, the popularity of these massive courses caused many to declare them as a disruptive technology and a deep trouble for the established HEi (Alraimi et al, 2015).

Like it happens with many new technologies, MOOCs seem to be following different phases of the hype where technologies rise first with big expectations, and then going down quickly to finally recover and reach a more realistic performance (Peter and Seruga, 2014). Others saw MOOCs less revolutionary and more into the line of the evolution of online education; their hype was considered a promotion characteristic that is frequently attributed to other information technologies where the use of catchy words is key to promote new technologies (Watted & Barak, 2018).

Figure 1 shows the growth of MOOCs available during the years according to Class Central. They state that by the end of 2020, the pool of MOOCs available in the most important platforms grew to 16,300 with 2,800 MOOCs added only in 2020 (Shah, 2020).
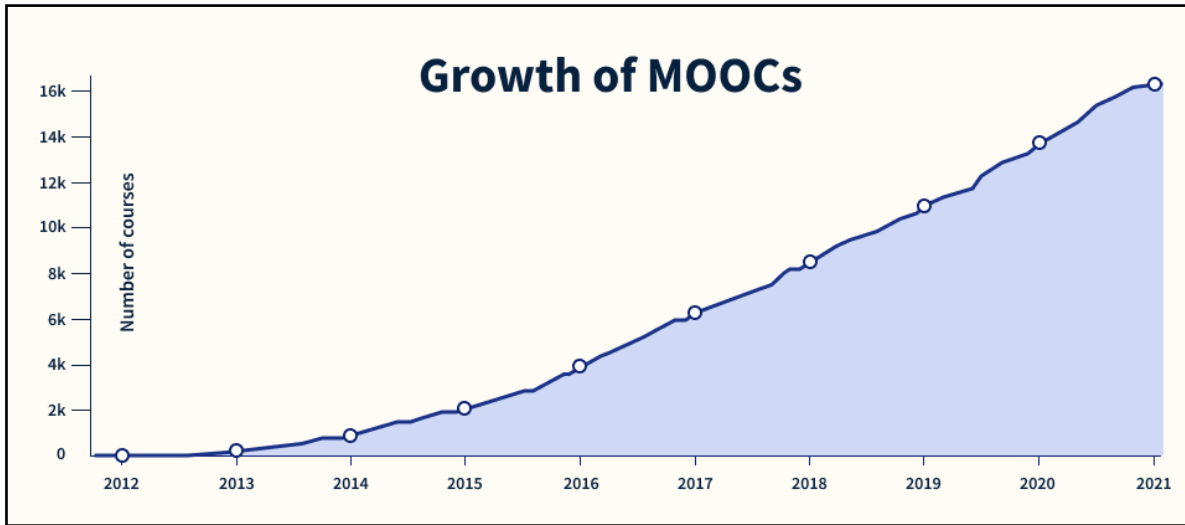
Figure 1 – Growth of MOOCs in number of courses available per year

Literature suggests that MOOCs have also evolved since that first basic class in 2008, cMOOCs (first generation) and xMOOCs (second generation) are considered their first iterations (Young, 2021). A cMOOC is based on the idea of connectivism, and it places the importance in the interaction and discussion between the students and not in the primary source of information (Peter & Seruga, 2016).

The cMOOCs face challenges as students might feel lost due to the limited participation of the instructor or teacher (Loizzo & Ertmer, 2016). In the other hand an xMOOC[1] follow a more traditional pedagogical path, providing the material online and fostering the participation of the students, it is less focused on the interactions between them (Peter & Seruga, 2104). In Figure 2 we can appreciate the difference between cMOOC and xMOOC. In the left figure, the main source of knowledge that is represented by the black square has a secondary role while the connection among students (indicated with the solid lines) are crucial in this model.

For the xMOOC represented by the figure on the right, the most important relation comes from the knowledge source and the interaction has a secondary place. Furthermore, literature also considers the Hybrid MOOCs, as the experimental courses composed with elements of cMOOCs and xMOOCs that cannot be categorized as one of the terms (Bozkurt, Kilgore, & Crosslin, 2018).

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[1] xMOOC, the x is comes from the usual interpretation of the letter x for extended used for examples also by different moocs platform such as Edx or HarvardX etc.).
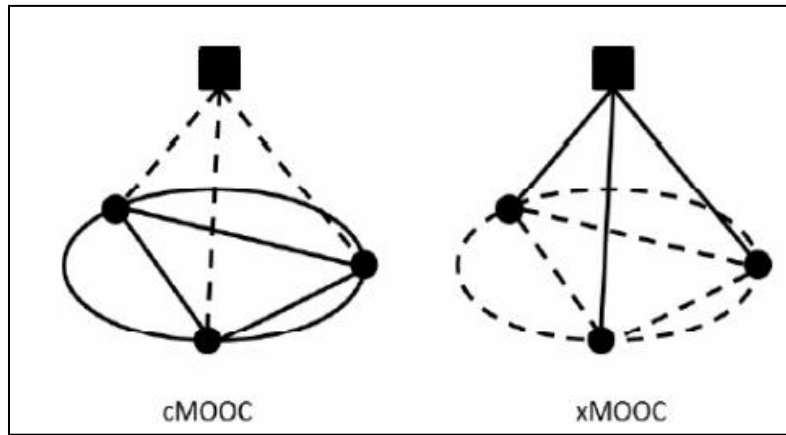
Figure 2 – Characteristics of cMOOC and xMOOC

2.2 Challenges in developing MOOCs.

Motives & Challenges of HEi to offer MOOCs.

It is important to identify the different possible motives for HEi to offer MOOCs; many of these motivations might also explain the expectations or strategies followed by the universities. Reputation boost as an innovative organization, basis for educational R&D, the stimulation of academic debate in addition, adding excitement to learning are some of the more frequent motives identified (Woodgate, Macleod, Scott, & Haywood, 2015). Specifically, the European universities see MOOCs primordially as tools to reach new target groups, to increase the institution's visibility, to offer innovative pedagogy and as a way to give flexible learning opportunities (Jansen et al., 2015).

Moreover, in the case of the University of Helsinki, where they used a MOOC to deliver a course related to information literacy the decision was triggered mainly to enhance the accessibility to said course, improve the quality of teaching, reach more students with less staff, and also give flexible learning opportunities (Kettunen et al, 2019). In addition, in a discussion over said motivations to implement this information literacy MOOC, the author of said article shared with the writer of this thesis that "There was a strong drive to open up to the society and show also outside the University of Helsinki what we teach'', that can be interpreted as the aim to increase the institution's visibility.

In the other hand, regarding to financial objectives such as explore costs reductions or generate income the European and American universities do not consider them as primordial (Jansen et al. 2015) while in other less developed countries such as Pakistan where national resources are considered to be constrained, they see the use of MOOCs in their universities as a way to support their growth without investing more resources (Mukhtar, 2018).

Literature over challenges related to MOOCs is very broad from the point of the students or from the MOOC platforms. Completion rates of these massive courses are generally low and seems to be the most researched topic. These rates are almost insignificant compared to normal online

education. On average, less than one in ten students enrolled MOOC successfully completes the course (Alraimi et al, 2015). The student engagement is also a related problem, the students of said massive courses are very heterogeneous and their motivations vary depending on their backgrounds and motivations (Hew, 2016). Some students may be pursuing a MOOC out of a hobby, to advance in their career, as a general participant or there are university-affiliated students pursuing credits (Watted & Barak, 2018).

Other of the challenges of the MOOCs is that they are reaching other audiences than those that they were originally designed for, they were originally perceived as the tools to open the higher education to the students in the entire world, making it more accessible and attainable especially for low-income populations but in recent studies it was found that the users were usually 26 years old or older (Loizzo & Ertmer, 2016). Additionally, in a survey done in 2013 by one of the leader MOOC platforms almost 80% of enrolled participants were people that already had a bachelor's degree or a master's degree (Baturay, 2015).

Nevertheless, the challenges hidden in the implementation of MOOCs by the HEi have not been researched extensively. In a study of the University of Maryland where they evaluated the implementation of MOOCs a number of said challenges were present (Griffiths, Chingos, Spies, & Mulhern, 2014). First, ownership of the intellectual property was not identified at the beginning and it was unclear if the professor or the university was the owner of the rights. Second, factors related to the integration of technology to the courses implied a lot of effort. Lastly, the article finds teachers highly motivated to develop MOOCs and with a positive attitude, matching with other literature where teachers in HEi are seen less as a roadblock and can be considered more of an ally to impulse MOOCs (Villareal, Cuellar and Garcia, 2019).

Challenges at European universities.

Most of the literature addressing MOOCs response from universities has been centered in a U.S. context and that is not a surprise considering that the beginning of MOOCs and the biggest MOOC platforms originated in the US. One of the most relevant efforts from the European Union was the project HOME. The so-called "Higher Education Online: MOOCs the European way" project aimed to empower the adoption of the open education trend in the continent (HOME, 2014). Furthermore, the project ran from 2014 to 2016 and it derived in different activities and reports that wanted to contribute to strengthen the European cooperation in this matter.

In their paper (Jansen et al., 2015), analyzed the results of a survey realized in European universities as part of HOME that wanted to get a better understanding of why said institutions were or were not interested in MOOCs to then compare it with similar studies in the U.S. The results helped draw a better picture of the MOOCs in the European landscape, showing HE institutions very confident regarding the trend of the MOOCs and their implementation, 56% of

the participant institutions mentioned that they were already offering a MOOC, or they were planning to develop one.

Following said interest, many universities have been trying to ride the tide of MOOCs. Evidence of the effort of some European universities has been addressed in an analysis made in 2016. Said study included only the top 5 universities of the countries that were considered to be the top 5 in tertiary education, where Germany, The Netherlands and the UK were part of this group. At the moment of the analysis, Germany and The Netherlands which are considered to be traditionalist in terms of education, offered 11 and 47 MOOCs respectively, showing a bigger effort from the evaluated 5 Dutch institutions (Peters & Seruga, 2016).

In addition, still under the HOME context an analysis of the perceived opportunities and threats of MOOCs under the European context was also done. Controversially, it seems that the most cited opportunity is as well the most cited threat. The availability of European Credit Transfer and Accumulation System (ECTS) in the European landscape could help MOOCs to be integrated into structured programs and give transparency for the recognition of the student's qualifications (Schuwer et al., 2015). On the other hand as mentioned, the biggest threat cited in this same study is the bridging between formal and informal education. In the long run MOOCs could really represent a problem for the credibility of the universities and it could erode the quality of the higher education, especially if the role of these programs is not carefully established inside the university offerings (Schuwer et al., 2015).

Said controversy matches with additional literature identified in the non-European context, problems are present in the way students are assessed and the validity of completion certificates and student verification (Alraimi, Zo, & Ciganek, 2015), furthermore the lack of certificates is considered a bottleneck, to the adoption of MOOCs and this issue also represent a risk for asymmetric information and generate further problems in the professional job market (Peters & Seruga, 2016). Nevertheless, some institutions have been pushing to offer ECTS in their MOOCs like the case of the German MOOC platform, Iversity that offered exams to award credits (Baturay, 2015) or the case of the University of Hasselt that will be analyzed further in this text, where students could validate their effort done in a MOOC if they decided to participate in a future master program with the university after an oral exam.

Summary of Challenges.

Summarizing the discussion, table 1 shows a list of challenges related to MOOCs whether they were present on its development or implementation phase. This table seeks to summarize those challenges but from the perspective of the University and not from the students of providers.

Table 1 – Summary of challenges while implementing MOOCs from HEi point of view.

Challenge identified while implementing MOOCs	Explanation of identified challenge.
1. Ownership of Intellectual Property	To what extent, the ownership rights of the materials included in the MOOC were a problem for the institution or staff.
2. Integration of Technology	To what extent, the usage of IT tools and infrastructure was a problem for the institution or staff.
3. External Recognition	To what extent, the validity of the MOOC was a problem for the institution or staff.
4 Completion rates (University Perspective)	To what extent, the completion rate of the MOOC was a problem to the institution or staff.
5. Student engagement (University Perspective)	To what extent, the engagement of the student with the MOOC was a problem for the institution or staff.
6. Reaching other target audience (University Perspective)	To what extent, the participation of audiences other than the targets was a problem for the institution or staff.

2.3 *Who offers MOOCs?*

The MOOC platforms landscape.

MOOCs are mostly delivered through platforms; much literature is dedicated to different types of platforms but to the sake of this thesis it is relevant to identify that MOOCs are delivered through external platforms or industry platforms. External platforms can be defined as services, technologies or products that are developed by one or many firms and serve as a common base so other firms can create complementary products or services and benefit from network effects (Gawer & Cusumano, 2014).

When a positive network effect is reached, it generates sizable value for each member of the platform and such effect is recognized as the main characteristic of differentiation and the

competitive advantage for platforms. Therefore, MOOCs platform's business model resides in their capacity to connect the students considered to be the customers in this case with a wide range of courses coming from different universities or entities that would act as the suppliers. The main implication for the user is that they can select a specific MOOC from the entire offer and complete it without being binded to do other courses which is not possible at a university level where students must follow the entire program for a couple of years.

In the last years many of these platforms had been developed either owned by universities or as private startups (Peter & Seruga, 2014) this means that the principal providers of MOOCs are the HEi and private companies. According to the yearly report of Class Central of 2020, which is a specialized search engine of MOOCs identified the platform Coursera as the lead platform when it comes to MOOCs with 76 million learners from which more than 30 million joined the platform in 2020 driven by the Covid-19 effect (Shah, 2020). The next bigger player is edX with 35 million learners while other big MOOC platforms like the Indian Swayam or Future Learn have 16 and 14 million each. In 5th place we find Udacity, the American for profit that until the 2019 report of the same source had 11.5 million registered learners. Both biggest players, Coursera and edX are American owned but the MOOCs they offer are not limited to American universities only. Future Learn is a British platform.

Table 2 MOOC providers view in terms of users and offerings in 2020.

	Learners	Courses	Micro credentials	Degrees
Coursera	76 million	4,600	610	25
edX	35 million	3,100	385	13
Future Learn	14 million	1,160	86	28
Swayam	16 million	1,130	0	0

Coursera claims to deliver world class education and learning experience for anyone and anywhere. Its partnership with more than 200 universities and private companies allows them to offer online courses that are affordable and job relevant (Coursera, 2021). edX was created by Harvard University and MIT, two of the most prestigious institutions of North America. edX´s commitments are to increase the access to high-quality education for everybody and to improve and advance teaching and learning on both campus and online (edX, 2021). Future Learn also promises a

wherever, whenever world class education online. This British platform has almost 100 universities partners offering different types of certificates, credentials, and online degrees in a wide variety of topics (Future Learn, 2021). In 2016, one of Future Learn partners, the University of Leeds, started offering credits to a MOOC offered through this platform for those who would seek a degree at the university in the future (Moules, 2016). A practice that the University of Hasselt wanted to integrate as we will discover in the study case.

MOOCs disrupting the HEi.

With the arrival of the MOOCs the high education industry (HEi) was expected to experience a strong impact. The current vision of higher education pictures it as: time consuming, costly, and difficult to access. Moreover, the constant decrease in budgets financing public education have put universities sustainability in doubt (Peters & Seruga, 2016). In addition, the rise of this technological innovation was directly related to disruption technology theories, and it was expected that it would push universities to explore new business models to deliver online quality programs at low prices to respond to the potential demand from students (Baturay, 2015).

Clayton Christensen is perhaps the biggest reference when it comes to the disruptive Innovation term. He describes this as a process by which a product or in the MOOCs case, a service in its beginning starts with simple applications at the bottom of the market, being typically cheaper than the incumbents and then moves up in the market, to eventually challenge established firms (Christensen Institute, 2019). In this case the HEi have the role of the established firms, enjoying relatively stability and its place in our society, protected by the government, and getting feedback by the industry. This behavior is deeply rooted in the physical world and is relying on firms not hiring students without a university degree or students designing a tailor-made online education program (Woodgate et al., 2015).

In its 2019 article, Chamorro-Premuzic and Frankiewicz explain their reasons to believe why the HEi needs to be disrupted, listing the ever-growing prices of education in the U.S, the reinforcement of inequality instead of meritocracy and the need of both industry and students to get good jobs and not only titles (Frankiewicz, 2019). Some of the characteristics of the disruptive innovations are first they emphasize different products or services attributes, secondly, they start as a small and low margin business and third they will grow to capture a large share of the established market (Charitou & Markides, 2003).

Looking at the principal MOOC platforms we can observe how they emphasize precisely how open and accessible they are in opposition to universities reputation, admission requirements and study costs. Moreover, Christensen tries to clarify those disruptive innovations are not gradual innovations that help make an existing product better but the transformation of an already existing complicated product or service into a more open, accessible one that allows more people to use it (Christensen Institute, 2019).

3. Methods.

Case Study.

The first phase of this research focused on analyzing the status of the MOOC industry, the biggest players, and the role of the HEi and specially listed the more common challenges faced when executing MOOC courses. To build the case of the first MOOC of the UHasselt: "Transport systems and transport policy: An introduction" the information available in the dedicated website of the university was gathered and interviews were conducted. The interviewees were, Dr. Mario Gielen, listed as project leader for the MOOC and to Dr. Muhammad Adnan, listed as Senior Researcher for the Transportation Research Institute IMOB of the UHasselt.

They were chosen since they appear as the instructors responsible for said online course. The questions of the interviews can be found at the Appendix 1. The first interview to Dr. Gielen was performed as an exploratory effort on the MOOC topic and the University of Hasselt at the beginning of this thesis, while the second interview with Dr. Adnan was guided with questions looking to understand and validate the challenges, experiences, and learnings of the project.

Moreover, the possibility to extend the analysis was explored, thanks to the collaboration of Dr. Adnan, 10 emails were sent to different students who attended the last batch of the course. Unfortunately, it is possible that due to the timing between the last group that participated in the MOOC and the date this text was written, no answers were received.

Building the Competitive Analysis.

Porter 5 forces.

To analyze the competitiveness between the UHasselt and the MOOC offer, the first step was to get a broad perspective at the competitive position of HEi and the competition level coming from platforms and to achieve this the use of a strategic tool is required. There are a set of tools in the field of management known as strategic tools, that aim to help people taking managerial decisions to be more informed and prepared about the relevant issues and help them as guides to sail difficulties and complexities to get better business results (Wright, Paroutis, & Blettner, 2013). Said tools are included in many business strategy books. Members of the Academy of Management mention that the most popular ones include: The BCG Matrix, 7S Framework, SWOT Analysis, Porter's Five Forces Model, Strategic Group Maps, Blue Ocean Framework among many others (Wright et al., 2013).

In their 2017 study, Berisha, Enver and Shiroka made a qualitative review on strategic management tools and their usage in different countries. The SWOT analysis resulted as the most used tool in their top 10 of strategic tools. According to the researchers, this result comes from the SWOT's ease of use, lack of previous training required and familiarity. SWOT or strengths, weaknesses, opportunities and threats gives a clear image of the firm's competitive position in the market and plan for the future. The origin of the term is unknown despite being attributed to

Professor Albert Humphrey from Harvard University but there is evidence that it has been around since the 60's (Helms & Nixon, 2010).

Moreover, in Berisha et al's top 10, a special place is also given to Porter's five forces as being the tool that was the most used despite the type of the country analyzed. In its Competitive Strategy book, Michael Porter had its path break after several published articles in the 80's. He is considered one of the founding fathers of strategic management as a distinguished academic member (Stonehouse & Snowdon, 2007). In addition to the five forces framework, the value chain and the generic strategy frameworks are also very recognized in the management field. Said frameworks are still considered as the biggest analytical frameworks of the competitive positioning and are the center of many businesses.

The five forces of Porter seek to assess both the attractiveness of an industry and the competitiveness of a firm within that industry giving an overall potential profitability image for the decision makers. As seen in figure 3 the forces are entry, internal rivalry, substitute and complementary goods, supplier power and buyer power. Internal rivalry refers to the contending for a share of a given market by the firms. Entry or potential entrants picture firms that want to penetrate the market and therefore divide it and heat up internal competition.

The threat of substitutes and complements are products or services that in the case of substitutes, can erode profits by stealing business and intensifying the competition among firms and in the case of complements, they boost the demand for the product in question, enhancing profits. Suppliers and buyers are analyzed somehow together as one is the analogous of the other.

These concepts aim to picture the power that suppliers or buyers have over the firm and who is in a better position to make profits depending on the concentration of each or the availability of resources. Managers assess each force by asking "Is it sufficiently strong to reduce or eliminate industry profits?" (Besanko, Dranove, Shanley, & Schaefer, 2017). It is also important to know this tool limitations, as it pays little attention to external factors that might affect the demand, changes in taste or the role of the government as regulator (Besanko et al., 2017).

Considering such a broad view, the 5 forces framework will be applied, adapting the approach of "five-forces scorecard" for doing industry analysis proposed by the book of "Economics of Strategy" that was part of our formation in the Master of Management. The scorecard template includes specific questions about each force and the answers will show if the given force poses a major threat to profits and it was adapted to fit the analyzed industry.
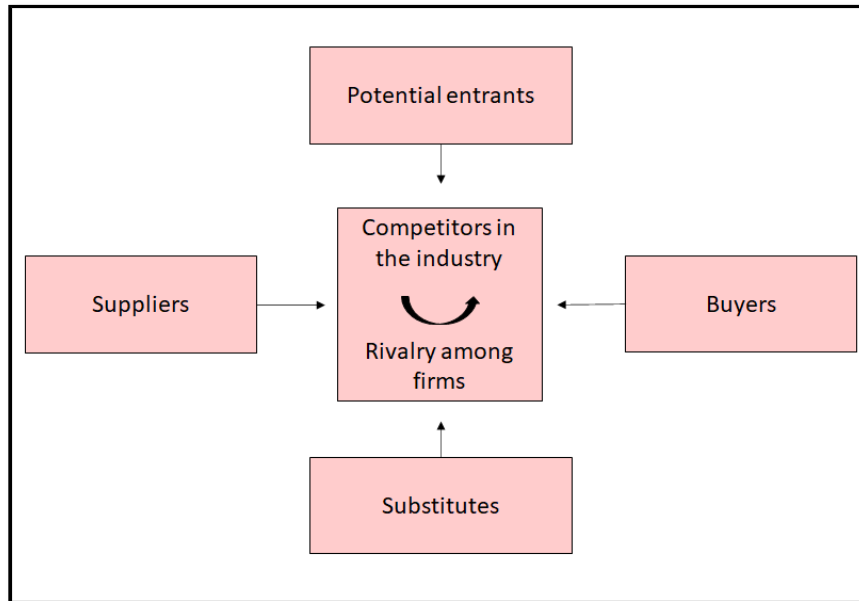
Figure 3 – Porter´s Five Forces

The incumbent: UHasselt and the Master of Management.

The program selected from UHasselt is the Master of Management (MoM), this decision came from considering that the writer of this thesis belongs to the institution and the program. The University of Hasselt has existed under this name since 2005 but its history roots back to 1973 with what was known as The Limburg University Centre. This high education institution hosts around 6,500 students and 1,400 researchers and staff. There are seven faculties, including the Faculty of Economics where the Master of Management is taught and the School of Transportation Sciences relevant to the study case in this thesis.

 UHasselt considers itself as a civic university that aims to be "A place where the Region meets the world and the world meets the Region" (UHasselt, 2021). Its two campuses are in the region of Limburg, part of Flanders. Education in Belgium has not been a federal responsibility since 1989 and the responsibility falls on the three different language communities, the Flemish community, the French speaking community, and the German speaking community.

The MoM is an international master program of 60 ECTS completely taught in English expected to be finished in one academic year that might also require an extra year of a preparation program of 45 ECTS. According to the university, the program is directed to bachelor or master students from any area interested in international management.

Moreover, the MoM offers three different specializations inside the program, this means that, depending on the student's interest they can opt for a set of courses that would deepen their knowledge in either Business Process Management (BMP), Strategy and Innovation Management

(SIM) or International Marketing Strategy (IMS). During the year of the master program the students will attend from 7 to 10 courses plus a master's dissertation (UHasselt, 2021).

Table 3 – Master of Management Program at UHasselt 2020

UHasselt MoM specializations with respective courses		
International Marketing Strategy (IMS)	**Business Process Management (BPM)**	**Strategy and Innovation Management (SIM)**
Business Modelling 3 ECTS	Business Modelling 3 ECTS	Business Modelling 3 ECTS
Business Modelling Applications 3 ECTS	Business Modelling Applications 3 ECTS	Business Modelling Applications 3 ECTS
Leadership and Human Capital 6 ECTS	Leadership and Human Capital 6 ECTS	Leadership and Human Capital 6ECTS
Strategic Marketing 3ECTS	ERP-Systems 6 ECTS	Managing Digital Transformation 6 ECTS
Markstrat Simulation Game 3ECTS	Cost-Benefit Analysis 6 ECTS	Business Strategy 6 ECTS
Marketing Research Methodology 6 ECTS	IT Governance, Risk & Compliance 6 ECTS	Open Innovation in Business and Research 6 ECTS
Business Strategy 6 ECTS	Business Process Modelling 12 ECTS	Change Management 6 ECTS
International Marketing 6 ECTS	Master´s dissertation 18 ECTS	Master´s dissertation 18 ECTS
Strategic Innocations 6 ECTS		
Master´s dissertation 18 ECTS		

From the mentioned courses in table 3, it is evident that students of the three different specializations will only share 3 common courses, and the remaining ones would depend on their specialization. Students willing to enter the program must submit their previous diplomas, have an English certificate, deliver a motive letter, and pass the selection process. The cost of the program varies depending on the country of precedence of each student. For those students who come from the European Economic Area (EEA) the cost is 247.2 euros plus 11.7 euros per ECTS, considering the 60 ECTS the amount is 947.2 euros total. For every other student, a mandatory insurance fee of 40 euros per month should be added to said total amount. For the sake of this thesis each ECTS will be considered with a price of 15.78 euros and the courses that will be subject to the analysis are those belonging to the Strategy and Innovation Management specialization of the MoM.

Competition UHasselt vs MOOC platforms.

For the next part of this competitive analysis, exploratory research was conducted to find out the MOOC platforms available. As suggested by the FAO one can complement their competitive analysis by looking at their competitors' press, having personal at their trade fairs, events, purchasing competitors' products or services to try to reconstruct their strategy. By knowing the competitors' financial means, management resources, their marketing and production capabilities much can be inferred about the future (FAO, 1997). For this case, the author of this thesis searched online for search engine sites for MOOCs, feedback sites, blogs and other sources that offered information about the MOOC offer whether the courses came from European or other HEi.

As we have observed in the previous section, Coursera is the biggest competitor in the MOOC industry followed by edX and Future Learn. The analysis will only consider courses offered through these 3 platforms since said platforms have the highest number of registered students and number of courses offered at the moment, more so this will allow to keep the analysis clear considering four players in total.

Every course of the eight courses forming the study program of UHasselt will be compared individually to the offer online of the 3 selected platforms. The only exception is the Business Modelling and Business Modelling Applications courses that will be considered as only one course of 6 ECTS, since both 3 ECTS courses are taught by the same professor and hold the same topics but one with a practical approach. The search bar of each platform will used as the search engine for finding the available courses and the key words and extra filters can be found in the appendix 3.

Once the complete list of matching courses is available, they will be reviewed individually to scrap those suggestions that do not fit the scope of the course or are a more specialized course on the topic. For example, when analyzing the course "Strategic Innovation", a matching course called "Innovation in the building systems" will be scrapped as it does not fit the scope of the main course. Another example is: if a result called "Strategic Innovation in the Health Industry" will also be scrapped as it is a very specialized type of course that will not be considered a substitute for the course evaluated.

Moreover, when all the potential courses list is available per platform, a main course will be selected to make a closer comparison with the cost, duration, and study program of the UHasselt MoM program. The selection of the course to be analyzed was performed by choosing that with the highest number of reviews or with the highest number of students enrolled, depending on the information available in the platform that offers it. If only one course was available, it would be automatically chosen for the comparison.

4. Results.

4.1 MOOC development and challenges: lessons learned from the first MOOC at Hasselt University.

The University of Hasselt has existed under this name since 2005 but its history roots back to 1973 with what was known as The Limburg University Centre. This high education institution hosts around 6,500 students and 1,400 researchers and staff. There are seven faculties, including the Faculty of Economics where the Master of Management is taught and the School of Transportation Sciences relevant to the study case in this thesis. UHasselt considers itself as a civic university that aims to be "*A place where the Region meets the world and the world meets the Region*" (Hasselt, 2021). Its two campuses are located in the region of Limburg, part of Flanders. Education in Belgium has not been a federal responsibility since 1989 and the responsibility falls on the three different language communities, the Flemish community, the French speaking community, and the German speaking community.

The education system from Flanders had a budget of more than 12 billion euro in 2019. Per number of students enrolled, KU Leuven and Ghent University are the most important universities of the country having amounts up to 8 times more students enrolled than UHasselt. Out of the twelve universities in Belgium, around eight of them are present in high education rankings such as THE, the Shanghai Ranking or the QS ranking. The UHasselt its present in two out of three mentioned rankings, with a place between 351-400 out of more than 1500 universities from the THE ranking and the place 456 out of 1187 in the QS ranking. Said institution was not considered in the 2020 version of the Shanghai ranking. The UHasselt launched its first and only MOOC in 2018, the title was "Transport systems and transport policy: An introduction" and it was developed by the faculty of transportation for their English master program of Transportation Sciences.

The school of transportation sciences of the University of Hasselt was the first faculty of the university to offer a MOOC as part of the Master of Transportation Sciences. The project was led by Dr. Mario Gielen and Dr. Muhammad Adnan and the development of it took from October 2016 to September in 2018. The faculty was aiming to be able to offer the MOOCs before the start of the academic year to help the students gaining basic insights that would be further enlarged once the master would have started. The MOOCs created were: "Transport systems and transport policy: An introduction" and "Transportation Research". The intention was to develop and offer the first MOOC to incorporate the second a year later. A total of 6 ECTS were granted to both courses and the expectation was that they would be considered as a preparation program for incoming students.

The MOOC of Transport systems and transport policy consisted of an overview and 6 different modules and the last run of it went from September 2018 to December 2018. According to the timeline that is still available online, after each module there was a deadline to submit online assignments. The evaluation method consisted of quizzes, individual assignments, and

collaborative assignments to be carried out during the course. Participants would earn badges after completing the modules and they would receive a certificate for completing the MOOC with no curricular value. For the students that would decide to enter the master program, they would be required to additionally pass an oral evaluation of it to earn 3 ECTS once they were enrolled.

The registration process to the MOOCs did not require to show previous certifications or credentials but only creating an account in their third-party platform. The platform used for hosting the MOOC was Blackboard, which is the standard platform to deliver the digital content of the classes in UHasselt.

As stated by the university in their website, they were expecting the MOOCs to help the institute as a marketing tool that could bring to the spot interesting courses to a worldwide audience. Moreover, they could also use the resulting data to evaluate or identify suitable selected students that would have further intentions to join the entire onsite master program.

The project leader, Dr. Mario Gielen, who is also an educational advisor in blended learning was interviewed for this case. He mentions that he was approached to develop this innovative educational project, IPO by its acronym in Dutch. Dr. Gielen mentions that great efforts were put into the MOOC and the enthusiasm from all the participants was noticeable. The quality of the work can be observed, with tailor made videos, lessons and tasks that were carefully designed for the project. He wanted to offer the courses with an emphasis that was mainly on the innovative and interactive component of the concept. Traditional study materials, presentations and videos were given as a 'blended learning' package and supplemented with discussion forums and online assignments.

According to Dr. Gielen, the biggest aim was to set a blueprint of the University of Hasselt which can be considered a small university and put it on the map with this innovative MOOC. The expectation was that based on these firsts attempts of MOOCs other faculties of the same university would follow and a manual to the creation MOOCs was also created to guide the process for future implementers.

Early after the development of the MOOCs, Dr. Gielen continued its career with other projects and the leadership of the project changed. To this date, he is convinced that the investment and efforts made to create such courses were big and the interest coming from the University was very high. He was not aware about the reasons why the MOOC seemed to have stopped or why the second MOOC about Transportation Research was not implemented but the potential and the platform still open.

To extend the understanding of this case, Dr. Muhammad Adnan was also interviewed. Dr. Adnan is a Senior Researcher in the Transportation Research Institute or IMOB its acronym in Dutch. As mentioned before, after the departure of Dr. Gielen from the project Dr. Adnan took over until 2018.

According to Dr. Adnan the main intention was to give students a heads up about the content of the Transportation Master program before they would apply, some kind of preparation program. Also, he added that it can be seen as a way to promote the English master program which at that moment had been recently introduced.

Dr. Adnan confirmed that Dr. Gielen previously prepared the content of the MOOC, but he was not aware whether the professors had any issue regarding the ownership or copyright of the videos or not. He adds that it might not be the case since to his knowledge; professors were not directly involved in the MOOC although they would prepare the content of their field of expertise. He explained that, in the first rounds of the MOOC, the professors would also help review assignments from the participants that were from their area of expertise and Dr. Gielen would have the role of the project manager.

According to Dr. Adnan, each round of the MOOC would reach up to 50 or 60 students. The biggest participation came from Africa, Europe, Asia, and South America while no country in Australia had a participant. North America had only 1 location participating from Canada. No exact information was regarding the percentage of completion. He mentioned that it was very high since most of the people doing the MOOC were prospective students for the Master in Transportations sciences and there was a benefit to their future studies in case, they would finish the MOOC as it would mean that they would have one class less to do once they entered the university. Still the MOOC was not compulsory, and the same class was taught in the school year.

Moreover Dr. Adnan could not recall problems regarding the interaction between staff and the MOOC platform, according to him, the fact that blackboard is a familiar environment, facilitated the navigation of the same. If professors were required to give feedback to any given activity related to the MOOC, they would get them either via email or printed for grading so they didn't need to interact directly with the tool. According to Dr. Adnan the biggest challenge faced was the sustainability of the project, there was no financial incentive to run the MOOC. The MOOC required a considerable amount of work from him and his support Phd students. Having a group of 50 or 60 students enrolled in the MOOC doing an assignment for each of the modules represented a challenge. Adding to this, students would have questions just as regular students do and his team was concerned in giving a real companionship to the people doing the course.

Nevertheless, Dr. Adnan recognized that after each run of the MOOC, the next one would run easier due to the familiarity with the topics and the experience that he and his team had gained from the project. He adds that they had the chance to implement new things like peer-to-peer evaluation or other activities to make it more dynamic. Dr. Adnan mentioned that the MOOC was motivating from an engagement point of view. Students showed to be very honest while following the lessons and the assignments and that their questions and interactions raised genuine interest to him and his team that worked them out until solved.

The last time the MOOC was active was in the semester of September 2018. According to Dr. Adnan, the reason was that the main program of the Master of Transportations Sciences was redesigned, and the mentioned course was taken out of the main program. There are no plans for the development of a new MOOC and he was not aware of that second MOOC that was prepared by Dr. Gielen. To date, the platform to enter the MOOC is still available in the main website of the master program for registration and the students can still review many but not all the videos. In fact, Dr. Adnan still receives emails from interested students in doing the MOOC.

4.2 Additional challenges identified from the UHasselt case.

The study case of the first MOOC of the University of Hasselt validates many assumptions found in the literature review and gives light on the current status of this trend at the University. Considering the information of the literature review the period between 2014 and 2016 was a very active one for the entire MOOC trend in Europe. The HOME project by the European Union and the research made under it happened during these years and they pointed to an overall optimism and excitement regarding the development and adoption of these courses. The financing and development for the MOOC of UHasselt came in 2016, right on time to ride this trend and its possible benefits.

According to the interviewees, the biggest challenge was the workload and the financial sustainability of the MOOC. This finding is meaningful because according to the biggest challenges previously listed it did not figure as a top concern for the development of MOOCs. Moreover, many universities considered that financial reasons were not behind the main motivations of offering MOOCs being more interested in the innovativeness and reach of said online courses.

Another big challenge on our list is the external recognition of MOOCs. The MOOC offered by UHasselt did offer recognition in ECTS for those who would decide to enter and do the complete Master program. If we consider that the faculty responsible saw the MOOC as a type of marketing tool to reach audiences, offering ECTS in advance is a strength that solves the recognition issues for the MOOCs and while gives students the chance to get ahead in their studies or only follow the course, but it adds workload to the responsible team behind the MOOC that are dealing with the workload.

The integration of new technologies and the ownership of property rights did not represent a big challenge for the MOOC of UHasselt. First, the technology used to run the MOOC was in the same third-party platform that the university uses for online tasks, which gave familiarity to the environment. Regarding the development of content and ownership of the material, the entire development and the required recording of videos were made by a professional and the teachers involved in the process were not hesitant to participate. The assumption is that the MOOC was seen as a onetime project or was not perceived as a possible threat for teachers.

Regarding the motivation of students and the completion rate, it was found that they did not represent a negative challenge per se during the MOOC. First, the high interaction and genuine

interest of the students enrolled caused surprise to the staff and extra work caused by complicated questions or repetition of doubts. Second, it was stated that the completion rate was very high which might be evident if we consider that the MOOC was used as a tool to engage with students who had the intention to study in the institution. One last challenge identified in this case is that there is effort required to keep the MOOC updated and relevant to the study program. The updates and modifications of MOOCs are not mentioned in previous texts and considering the needs for updating content, this would require effort and follow up of the staff. For this MOOC, this challenge seems to have contributed to its discontinuity.

Table 4 – Extra challenges identified while implementing MOOCs from HEi point of view.

Challenge identified while implementing MOOCs	Explanation of identified challenge.
7. Workload related to MOOC	To what extent the effort required by the MOOC is sustainable with the available resources.
8. Program content updating requirements	The effort required to keep the MOOC updated for the student.

4.3 A look to the industry status through Porter's five forces.

Through an industry analysis this section aims to present a recent picture of the HEi industry, and the role played by the MOOCs and the three biggest platforms offering them. This gives a broader view of the entire ecosystem that will allow to draw concrete insights combined with the subsequent course analysis.

Defining the industry for the Porter´s five forces analysis presented a challenge. Figure 4 presents the most intuitive way to picture the industry, by placing the HEi at the center as the incumbent, where the rivalry between firms takes place, the potential entrants in this case would be new universities looking to start operations in the country of interest, for example Belgium and placing the MOOCs and its platforms as potential substitutes. The other two forces suppliers and buyers would be the teaching staff and the students, respectively.

The main limitation of this intuitive view is that first, it points the attention to the rivalry between universities and the threat of potential entry to new universities which despite being interesting topics they add very little to the discussion in this thesis. Moreover, said view would place MOOCs only as potential substitutes for the HEi which does not reflect clearly enough that most of the

platforms´ offer goes around HEi courses and try to compete in the same field as universities, as most of said courses are created by HEi.
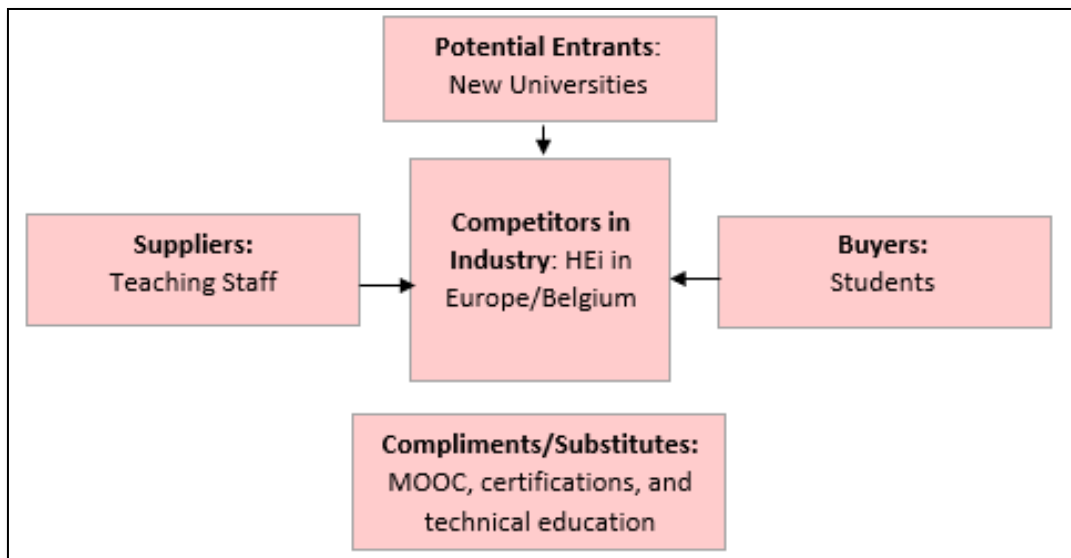

Figure 4 – Intuitive perception of HEi/MOOC industry using the 5 forces of porter.

Therefore, in figure 5 we can observe a proposed perception of the industry that could accommodate better the relationships between the involved parties and capture better the insights in it. First, in the internal rivalry both the HEi and the existing MOOC platforms are considered. Even though not all institutions belonging to the HEi offer MOOCs this will help us highlight the competitive position of the universities who offer them against MOOC platforms. Moreover, we could shrink the scope considering HEi in the Flemish region that are directed to students in the 18-25 age group.

It is important to consider that two out of the three biggest MOOC platforms considered in this study have been active since 2012 (Coursera, 2021), which set the basis for them to be considered as part of the existing competitors. Based on this logic, the force of compliment/substitutes then will only consider certifications offered by private institutions for example Six Sigma or the Project Management Institute (PMI) and technical education for those students who decide to pursue it instead of higher education.

Just as in the intuitive view of the 5 forces of Porter the Power of Buyers and Power of Suppliers are represented by the students and teaching staff, respectively. This rather arbitrary perception of the industry is not the only one available, but it matches with the assumptions of how the MOOCs and the HEi are currently interacting within their industry. It also clarifies that the MOOC platforms are being analyzed both as the current competitors and as the entry threat of new platforms and allows to start the analysis of each force.
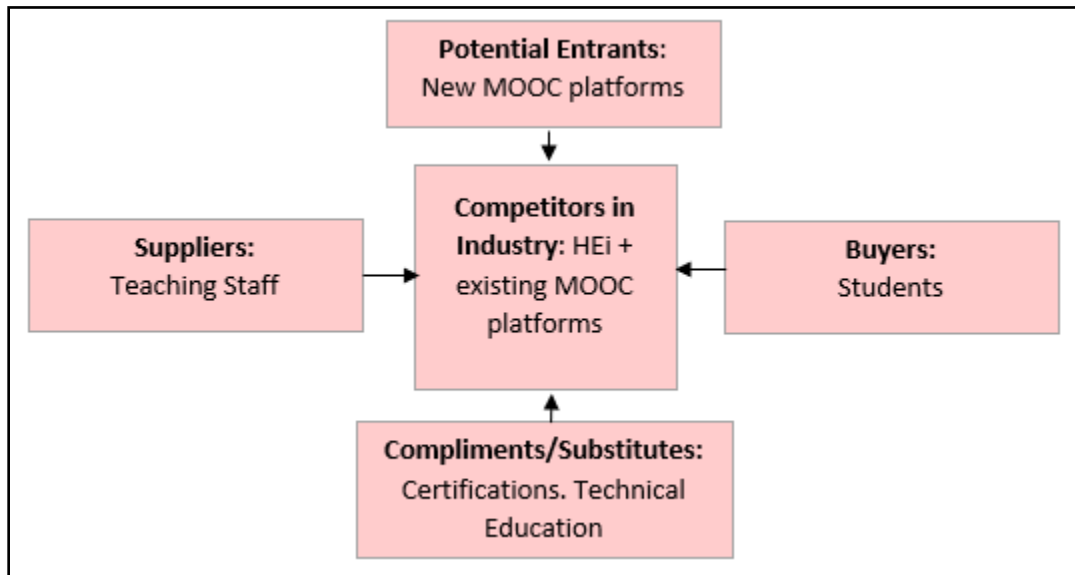
Figure 5 – Proposed perception of HEi/MOOC industry using the 5 forces of porter.

The analysis of the internal rivalry in the industry showed that the degree of "seller" concentration is low. Just in Europe the ETER database consider more than 2,400 HEi are currently active (EuropeanComission, 2021), moreover in aggregating systems such as Class Central, they count from 30 to 58 active MOOC platforms (Gamage, Perera, & Fernando, 2020) while a careful look at a MOOC search engine revealed that there are up to 65 active MOOC platforms (CourseTalk, 2021).

Another key element to assess to what extent there is rivalry among the firms in the industry is to know whether there is a large cost difference between them. The difference of cost is a factor that is cornerstone for the MOOC platforms can be directly related to the "free" characteristic. Nevertheless, in this point we analyzed it from a supply point of view, that means the costs the platforms or universities incur to educate their students.

The cost of developing a MOOC is approximately 250,000 dollars per course in the edX platform (DeJong, 2013) but it is not easy to track the amount of students following said course, moreover edX charge extra 50,000 dollars for each re run of the MOOC. On the other hand, a student cost per year of university is different in all countries, although in Belgium the expected cost per student is 12,000 euro (Lyons, 2021) . It is hard to assess the exact difference between the MOOCs and the cost per course to the HEi, but we can conclude that MOOC platforms are expected to have the lowest cost per student, being an advantage for them.

Table 5 - Extract of Porter Score Card Analysis evaluating Rivalry among existing competitors.

Question regarding factors affecting rivalry among existing competitors	Characterization
Degree of seller concentration?	Low
Significant cost differences among firms	Medium
Excess capacity?	High
Brand loyalty to existing sellers?	Medium
Buyers´ switching costs from one competitor to another?	Low

Moreover, the excess capacity of MOOCs is based on the use technologies, boosted by social media technologies and the virtually ubiquitous access to internet (Peters & Seruga, 2016). HEi have limited spaces in auditoriums and classrooms, although blended learning and online lessons became the norm with the COVID crisis. While evaluating loyalty to incumbents, HEi possess an advantage. Students tend to have a high commitment to their universities, they need to pass admission exams and through hard work to enter the desired HEi, even after graduation students are branded as the alumni of given university when they enter society (Ueda & Nojima, 2012). MOOC discussion on loyalty is not yet documented.

Switching costs among existing MOOC platforms are non-existent, as every student can be registered in each platform with the same email and can follow any course without restrictions. In the case of the HEi it is different, changing universities after admission is costly and time consuming (Ueda & Nojima, 2012). Based on these factors proposed in the score card for internal rivalry, we consider that said force might have a moderate effect in the profitability of the industry. HEi still has a strong reputation and presence in all Europe, with strong loyalty by students and industry that is only challenged by the MOOCs components of massiveness in their excess capacity and openness with their low cost and accessibility.

Considering the factors affecting the threat of entry we observed that the MOOC market shows characteristics rooted in in network effects and economies of scale, that could change the stablished market structures (Peters & Seruga, 2016). Thus, the economies of scale potential of MOOC platforms, giving them the "massive" component of the name, can be considered as a high threat to the incumbent HEi, that count only with limited physical spaces. Moreover, the business model of many universities based in obtaining more resources thanks to student-growth is on risk due to the aging of population and the lack of student inflow from Asian nations (van der Zwaan, 2020).

The incumbent's traditional channel for delivering high education programs are the physical classrooms and campuses were students gather and receive their lectures. As discussed previously MOOC platforms use internet as channel to deliver their content. Despite it seems highly unlikely

that incumbents would allow MOOCs use their resources or installations, they are developing new business models with partner universities to stablish fees, quality control or more to be delivered via the internet (Baturay, 2015).

MOOCs using internet as channel could be considered as a high important factor to consider when deciding the level of threat of entry. Especially as it represents an open access, global and free education but this channel also present concerns. MOOCs face criticism regarding cheating, plagiarism, assessment issues and recognition, moreover the scale and the openness magnify these problems (Yuan, 2013). Based on this argument, this factor is considered with a medium threat as universities still hold the most prestigious, controlled, and accepted channels to deliver high education. Reputation is a subjective reflection of the institution 'quality, influence and trustworthiness (Alraimi, Zo, & Ciganek, 2015) and for such subjective topics it will take some time for MOOCs to develop such characteristics although some steps are already being done such as the alliance of Coursera and the Pearson test centers to provide better certifications (Yuan, 2013).

It was also required to assess the access to know how of the possible entrants. Running a MOOC requires minimal academic support, the pedagogies required to do it are available already for years in other fields such as distance education (Baturay, 2015). Nevertheless, some parts of education, the use of MOOCs might not be enough. For example, in engineering education the MOOCs might deliver theoretical foundations of knowledge like algebra or statistics but it might not be interactive enough to provide collaboration from professors, peers and they might lack of interaction (Gamage et al., 2020). Universities still have an advantage in this matter, and they tend to propose more specialized programs and offering well equipped working rooms and labs.

In the HEi the government protection of incumbent is high. In the UK for example, the funding model of these institutions is seen as the biggest barrier to explore new business models and some efforts are being considered to push HEi to open market economy where they can found their own without government grants (van der Zwaan, 2020). But this is not yet the norm, in 2019, the Belgian government assigned a budget of more than twelve thousand million euro for the high education system of Flanders (Statista, 2021).

The expected retaliation coming from the incumbents was considered to have a medium effect on the threat of entry. Back in 2015, about 56% of universities participating in HOME were already offering a MOOC or had plans to introduce them (Jansen, Schuwer, Teixeira, & Aydin, 2015). Nevertheless, as discovered in the case of the UHasselt MOOC, some of these MOOCs may not have survive after a couple of years. There is a gap of information to document MOOCs´ performance in universities, their success or overall future HEi strategies for the short- or medium-term regarding MOOCs.

Table 6 - Extract of Porter Score Card Analysis evaluating the threat of entry.

Question regarding factors affecting the threat of Entry	Characterization
Significant economies of scale?	High
Entrants' access to distribution channels?	Medium
Entrants' access to know/how?	Medium
Government protection of incumbents?	High
Expected retaliation from incumbents?	Medium

Analyzing the force of substitutes and complements, the perception is overall a low threat to profits coming from these elements and a boost of demand cause by compliments. Firstly, substitutes for the HEi other than the MOOC platforms are not numerous. According to Porter, the substitute performs the same or a similar function by a different means and when this threat is high, industry profitability tend to suffer (Porter, 1985). It can be argued that HEi is an industry on their own and they do not compete with other type of institutions offering only technical or practical abilities, otherwise institutions like colleges or technical schools can be considered potential substitutes. Moreover, is common knowledge that individuals in our society are expected to attend HEi as first choice.

In second place, the complements for HEi play a positive role for the incumbents, due to the fact that the availability of complements usually boost the demand for the industry in question (Besanko, Dranove, Shanley, & Schaefer, 2017). For HEi it is the existence of post graduate courses to complement the professional career. For example, the existence of certifications like the ISOs, the belts of the Six Sigma institute or PMI that required a professional degree to be able to enter. It can be possible that some MOOCs might work as complements for HEi although we have already discussed that a quality of MOOCs is the openness and lack of prerequisites to join a course.

Table 7 - Extract of Porter Score Card Analysis evaluating substitutes or complements.

Question regarding the availability of substitutes or complements	Characterization
Availability of close substitutes?	Low (without considering MOOCs)
Availability of close complements?	High

Buyers in this industry are the students looking for education and buyers are characterized to want lower prices and better services. It is assumed that students are individuals with free choice to select and attend any HEi if desired, although it is true that universities no longer have the full support from society (van der Zwaan, 2020) and they might start looking for other options.

Students joining the HEi are mostly 18-year-old individuals looking for a bachelor's degree and a master program. In the case of the MOOCs, the profile of their students are dominated in more than 70% by individuals already holding a bachelor or master degree (Baturay, 2015). The accessibility and ease of use of MOOCs can convince many students to hire the services but in the current education system MOOCs are still weak in comparison to certified university courses.

This point of considering the type of buyers is an important insight. The needs of 18-year-old students and the needs of professionals pursuing education are very different. MOOC platforms tend to have a clear focus on buyers coming from the business world, offering courses to transform their career or bridge skills gap (FutureLearn, 2021). If HEi are aware of this insight, they might form their competitive strategy in a better way and decide if the efforts of offering MOOC themselves are well directed.

Looking at the availability of substitutes for the buyers in the HEi, we have previously analyzed that it is limited and other than MOOCs or technical education there are not many other options. Moreover, we must consider the risk of backward integration from the students. The trend of the personalization of education is growing fast, especially in the US (van der Zwaan, 2020) thus this can be a potential risk of integration coming by the students. Our assumption is that if the validity of MOOCs increases users might integrate and decide on their own education path, dropping the binding programs proposed by the HEi.

The relationship specific investments look at the costs of ongoing or long standing relationships but they are very diverse and difficult to quantify (Dobos, 2013). We could consider that HEi make investments in their physical facilities such as sport facilities, technological laboratories or even partnerships with industry to attract students. Although said investments do not guarantee a commitment from students. MOOC platforms can also invest in generating relationships with the industry, an example of this can be the partnership with PwC to launch five courses part of an specialization program (Maurya, 2016) in other to be more appealing for potential students but it is not a guarantee for relationship.

Overall, the threat of buyers is still perceived having medium to low effect in the profits of the industry. The incumbent position of HEi is still quite strong, despite the possible specific investments of existing universities or MOOC platforms. Nevertheless, taking a passive position about it can pose the risk of being disrupted, specially from the mentioned trend of personalized education path.

Table 8 - Extract of Porter Score Card Analysis evaluating the power of buyers.

Question regarding factors affecting or reflecting power of buyers	Characterization
Can buyers find substitutes for industry´s product?	Low
Do buyers pose credible threat of backward integration?	Medium
Do firms in industry make market relationship specific?	Low

For this industry, the suppliers would be teachers or content creators. To assess the effect of the power of teachers in the HEi industry we can considered first the availability of teachers. Taking Belgium as reference, teachers as profession are not included in the shortage list of professions in 2021 (VDAB, 2021) thus the pool to substitute them should be high. Moreover, teachers do not usually act as a firm but more as employees or a resource for the universities, although they can unionize to negotiate pay, benefits and working conditions through collective bargaining (Matsudaira & Patterson, 2017). Considering these factors, the power of suppliers to erode profits from the industry is considered as low.

Table 9 - Extract of Porter Score Card Analysis evaluating the power of suppliers.

Question regarding factors affecting or reflecting power of suppliers	Characterization
Few substitutes for suppliers´ input?	Low
Do suppliers pose credible threat of forward integration into the product market?	Low

We summarize the discussion in table 10 where we can appreciate that the HEi is facing moderate to low threats to their profitability coming from the five forces analyzed. As the incumbents and important part in our society, all the barriers to entry and government protection have helped HEi to maintain its place. Based on this analysis, we perceive that the arrival of MOOC platforms is starting to erode some of the benefits in a low scale, this matches with Christensen description of a disruptive technology that is placed at the bottom of the market serving in a cheaper way.

Focusing on the buyers' force, we understand that MOOCs are now serving non consumers of HEi. This means that MOOCs are currently looking to deliver their services mostly to those in the professional market. This might be understood as a positive sign for HEi as their buyers are not being directly addressed by the platform, but it needs to be highly monitored by HEi since it is another characteristic of disruptive technologies, focusing first in attracting non consumer to then offer their services/products to the incumbents' market.

Table 10 – Summary of Porter´s Five Forces Analysis

Name of the force	Leve of threat to profits
Internal Rivalry	MODERATE
Entry	MODERATE
Substitutes/Complements	MODERATE / LOW
Buyer Power	MODERATE
Supplier Power	LOW

4.4 Course comparison between the Master of Management and the available MOOC platforms.

The purpose of this part of the analysis was to make a comparison between the courses offered by one of the most popular English master programs of the University of Hasselt against the courses offered as MOOC in the three most important platforms previously discussed. The Master of Management with specialization program of Strategy and Innovation Management was selected for the analysis.

Table 11. Extract Competitive Analysis – Main view Tab.

Company Profile	UHasselt	Coursera	Edx	Future Learn
Firm Profile	Belgian Higher Education Institution	MOOC Platform (Leader)	MOOC Platform	MOOC Platform
Key Competitive Advantage	Recognized and reliable certifications - Standarized	Easy access, online education - broad catalogue from famous HEi	Easy access, online education	Easy access, online education
Target Market	Bachelor or Master Students	Students / Professionals	Professionals	Professionals
Number of Students	6500 students	76 million	35 million (500,000 active users daily)	14 million
Value Proposition	Affordable, subsidized, quality and the experience of traditional education for students	Platform offering courses and certificates from the best HEi to learners	Non Profit offering MOOCs through their open source platform to learners	Easy access platform offering short courses to help building skills

Looking at the table 11 illustrating the company profile section, it is observed that the considered number of students at the University of Hasselt compared to the student registered in platforms is very low. Important to add that registered students in platforms is not the same as active users. Although the number or active users is not available in the MOOC platforms websites, except in edX where a number of students in the platform per day is shown, approximately 500,000 daily users (edX, 2021). This comparison illustrates that MOOCs platforms do enjoy economies of scales, even if they are compared to biggest universities in Belgium like the KU Leuven or the University of Ghent, with more than forty thousand students registered (THE, 2020).

Moreover, after evaluating the different target markets, it is observed that MOOC platforms are directing their offer to professionals while the efforts of UHasselt are mostly directed younger students. This finding validates the assumptions made in the industry analysis and might set the

basis for further MOOC efforts from the UHasselt. The value proposition of most of the MOOC platforms is based on the courses itself, building skills or their partnerships with the most important universities, while UHasselt as part of the HEi offers the experience of traditional education.

While building the search for the different courses, we could appreciate that the platform of Coursera, considered the leader platform in MOOCs, was showing the superior number of courses found for every search. Showing up to 1200 results, from which the biggest majority needed to be scrapped as they were poorly related to the search or not related at all. Table 12 shows the number of results found for the course business strategy, Coursera gave 1243 possible matches from which 1234 were scrapped as they had no relation to the Business Strategy course offered by the UHasselt, for example the courses "Research Kitchen" or "How to write a resume". This might be explained by the fact that Coursera has the biggest number of available courses to offer although it can also be explained in how the search function is configured on the website. The Future Learn platform was the platform showing the least number of results per search, displaying a more curated offer of courses, considering it has three times less courses offered than Coursera.

The platform of edX failed on three occasions to find a substitute course in this analysis, that was the case for the course of "Business Modelling", "Change Management" and the "Open Innovation" course. Moreover, in the same platform, possible courses were found that counted in the search results but at the moment of the analysis they appeared as archived for example the "Leading Change in Times of Disruption" and the "Managing People from a Global Perspective".

Table 12. Extract Competitive Analysis – Log search per course Tab.

Business Strategy		
Coursera	edX	Future Learn
Total results	Total results	Total results
1243	119	11
Number of courses matching	Number of courses matching	Number of courses matching
9	4	3

The institutions offering the different MOOCs vary from origin but are predominantly from universities located in the U.S or in the UK. This might not come as a surprise considering that the origin of Coursera and edX is in the U.S and the Future Learn offer is backed up by the HEi of UK. Yet the institutions from The Netherlands, Denmark and Australia are also present. Moreover, in table 13 we can observe that the courses that had more substitutes results are "Strategic Innovation" with thirteen possible courses offered in total by the three MOOC platforms and "Leadership and Human Capital" with twelve possible MOOCs available in the three platforms. The course with less substitutes available in the MOOC platforms was "Open Innovation and Business Research" as only three courses were found.

Table 13. 2nd Extract Competitive Analysis – Log search per course Tab.

Strategic Innovation		
Search words: "Strategic Innovation"		
Total course substitutes available: 13		
Filters used: english language, course		
Coursera	**edX**	**Future Learn**
Total results	Total results	Total results
217	98	6
Number of courses matching	Number of courses matching	Number of courses matching
8	3	2

Open Innovation in Business and Research		
Search words: "Open Innovation"		
Total course substitutes available: 3		
Filters used: english language, course		
Coursera	**edX**	**Future Learn**
Total results	Total results	Total results
195	33	3
Number of courses matching	Number of courses matching	Number of courses matching
2	0	1

Looking at prices per course, the University of Hasselt has a fixed price of 94.68 euros per every 6 ECTS as determined previously in the methods part and most of their courses offered consider 6 ECTS. The selected courses analyzed from Coursera were all free of charge with the possibility of getting a certificate from Coursera for 40 euros. Except the "Leading transformations: Manage change" where the certificate´s price was 66 euro.

It is important to note that the certifications will be created by Coursera and not by the institution offering as other platforms do. EdX offers its courses for free with individual prices determined per course. The prices are much higher compared to all the MOOC platforms and the UHasselt. For example, the course "Becoming an Effective Leader" asks 82 euros for a certificate while the course "Digital Transformation in Business" offered by the university of Maryland asked for 331 euros for the certificate, this course is the most expensive one found in this analysis. edX does offer a certificate coming from the institution that imparted the course.

Table 14. 3rd Extract Competitive Analysis – Summary Costs Tab.

Course name	Cost per course per institution			
	UHasselt	Coursera	edX	Future Learn
Business Modeling /Applications	€ 94.68	€ 40.00	N/A	€ 64.00
Leadership & Human Capital	€ 94.68	€ 40.00	€ 82.00	€ 64.00
Managing Digital Transformation	€ 94.68	€ 40.00	€ 331.00	€ -
Business Strategy	€ 94.68	€ 40.00	€ 165.00	€ 64.00
OIBR	€ 94.68	€ 40.00	N/A	€ -
Change Management	€ 94.68	€ 66.00	N/A	€ -
Strategic Innovation	€ 94.68	€ 40.00	€ 206.00	€ 64.00
Total cost of program	€ 662.76	€ 306.00	€ 784.00	€ 256.00

The courses from the Future Learn platform were also free and in most but not all cases gave the possibility to get a certificate after it. Those that offered the chance to get the certificate had the fixed price of 64 euros. Table 14 Summarizes the cost per course when we consider all the paid version of the MOOCs. Under this criterion, the total cost of the seven coursers analyzed for each participant if a certificate would be required for each are: UHasselt 662.76 euros for the seven courses, Coursera 306 euros for the seven courses, edX charges 784 for the available four courses and Future Learn 256 euros for the seven courses considering 3 of them do not offer the paid option.

The prices per course of Coursera showed to be the cheapest ones. Their courses tend to be up to 50% cheaper than the price per course from the UHasselt. It is important to remark that, the UHasselt has extra cost components such as the 18 ECTS worth 284 euros assigned to the Master´s dissertation and all the books that are required through the year.

Considering the expected duration of each course, significant differences were found between the traditional position of UHasselt, and the MOOCs platforms offer. The duration of each course of six ECTS is expected to be 168 hours if we consider each ECT to be worth twenty-eight hours of study with a total of 1176 hours required to finish the seven courses. This position can be considered as the traditional approach in HEi education, where the hours are spread through the semester on which the course is taken. In the case of Coursera, the courses are expected to be completed in a period of eleven to eighteen hours depending on the course as it can be appreciated in table 15.

Table 15. 4th Extract Competitive Analysis – Summary Duration Tab.

Course name	Hours required per course			
	UHasselt	Coursera	edX	Future Learn
Business Modeling /Applications	168	12	N/A	6
Leadership & Human Capital	168	15	100	6
Managing Digital Transformation	168	14	63	6
Business Strategy	168	11	24	6
OIBR	168	16	N/A	12
Change Management	168	18	N/A	9
Strategic Innovation	168	11	80	6
Total hours required	1176	97	267	51

In addition, for the analyzed courses coming from edX the shortest one has an expected duration of twenty-four hours while the largest one could take up to one hundred hours, the approach to their courses are considerably longer than the coursers offered by Coursera and Future Learn but they are almost 4 times faster than in the UHasselt. Future Learn offers the shortest courses of all the players. The analyzed courses can last from six hours, with the longest one "Harnessing Open Innovation in Business" lasting only twelve hours.

The information of the duration of the courses analyzed come from official sources of each firm. It is common that for all the courses coming from the UHasselt the number of hours is not strictly necessary or monitored.

Courses are recognized in different ways depending on the firm. The UHasselt will grant a 6 ECTS to the student who had successfully passed each course. This recognition is relevant for the HEi as it indicates a unit or measure of workload that is take in consideration for a final title which is the ultimate certificate from the HEi. This implies that achieving courses individually might not have an external value until the entire HEi program is completed. In the other hand, MOOC platforms in its paid version allow a certificate for each course completed. Coursera offers one certificate per course finished, backed up by the platform and that is "shareable" meaning that it can be added to students´ CV or LinkedIn profile. edX also offer a certification per course that is backed up not by the platform but by the institution that delivers the MOOC. They also highlight the "shareable" benefit of such certificate on student's CV or LinkedIn and adding special characteristics such as the signature of the instructor. Future learn offers a digital certificate of achievement that can be either printed or shared online.

It was difficult to set a comparison point between the study programs proposed by UHasselt and the MOOC platforms. It was required to look at each matching course individually to see the differences and similitudes. The results for "Business Modelling" courses have similar topics although no MOOC platform offers the practice live sessions that the UHasselt does.

The courses of "Strategic Innovation" and "Open Innovation and Business Research" showed some similar components in the study program among the courses found. In the case of the "Strategic Innovation" course of UHasselt, share topics such as "Idea Management", "Portfolio Management" or "Innovation Strategies". In the "Open Innovation and Business Research" program, common topics are "Innovation Networks" and "Closed vs Open Innovation". Overall, it is easy to perceive that the study programs of the University of Hasselt are larger and with a wider variety of topics.

Regarding the course "Leadership and Human Capital", every course would add lessons related to leadership and its components, but no specific path can be perceived. This might be caused by the type or course and its subjectivity. This insight might be also applied to the "Change Management" course where every course proposes a different path to face changes.

The most distinct study program was the Business Strategy course. The topics shown in said course doubled and in the edX, tripled the topics taught by the MOOC platforms. For the subject of "Managing Digital Transformation" the study program of UHasselt could not be retrieved due to administrative problems and the fact that it was not offered in the year 2020-2021 despite being part of the official program.

This analysis revealed that the level of substitution of the Master of Management program compared to the courses available in the MOOC platforms. We could observe that for each course offered by the UHasselt, there were at least 3 other MOOCs offered in the three platforms considered with the most offered course being Business Strategy with 16 similar courses available in the platforms. This mean that students could indeed pursue a similar program as the one proposed by UHasselt but completely free if they choose it.

The courses with a lowest level of competition are "Open Innovation and Business Research", "Change Management" and "Managing Digital Transformations". All three courses are specific to the Strategy and Innovation specialization. This insight might be relevant for the HEi, especially for those members developing study programs, as it can be a source of a competitive advantage in front of MOOC platforms.

Regarding prices, the cost per course of UHasselt was not the highest. The MOOC platform edX had the most expensive MOOCs considering the paid version. Despite they did not offer three out of the seven courses analyzed the total cost of four MOOCs offered by edX was more than 100 euro more expensive than the cost of the UHasselt. Nevertheless, both Coursera and Future Learn offer all their MOOCs at a price cheaper than a 6 ECTS course in UHasselt. An average 6 ECTS in UHasselt costs around 95 euro while Coursera offer theirs usually at 40 euro per MOOC and Future Learn at 64 euro per MOOC. Despite the difference of prices, the total price per the entire course at UHasselt does not seem prohibitive, especially considering the base income in Belgium.

5. Conclusions

Global change caused by major drivers are reshaping the world and no institutions will remain immune (Parker, 2020). Higher education institutions have been in the spotlight since the arrival of the MOOCs in the early 2010´s. Said technology platforms have been considered a disrupting technology in the HEi industry and the response of the incumbents has been reviewed in this thesis.

During the development of this thesis, we could identify that MOOCs, despite of being assumed as a direct competitor of HEi back when they were created, are mostly serving other markets, especially to customers already in the labor world looking to improve their careers. Better said, they are serving non-consumers of HEi, this was also validated in our industry analysis. Serving non consumers is a characteristic of disruptive technologies, and as such we could assume that the MOOCs might still be in this stage of their development as a disruptive technology.

This can bring many insights to the directors of the UHasselt and other universities regarding how to manage this trend and its latent risk of disrupting the HEi. The first insight we can relate directly to the challenges present in the developing of MOOCs in Universities and the first MOOC of UHasselt. The universities need to rethink if offering MOOCs can offer them a sustainable way to educate their communities. Moreover, it is important to have a clear image of whom the target market is to overcome challenges such as the sustainability of the MOOC or the need for the content update.

The archived MOOC offered by UHasselt could be assumed to target young potential students, looking to join the HEi and the main goal of the MOOC as stated by the organizers was more of a marketing goal than an effort to embrace the MOOC trend. The main implication is that despite of the UHasselt's MOOC offer of ECTS or certification, the target market could obtain the same benefit later in their education path without any extra cost, with the only real benefit of offering a little more flexibility to their student schedule and no benefits could be accrued by the university.

It is contrasting that the biggest challenges attributed to the discontinuation of the MOOC in UHasselt are related to the workload and sustainability, especially as literature suggests that HEi did not see it as a relevant challenge in previous studies. Dr. Gielen mentioned that the institution did not show big signs of support other than the budget assigned to the project in the first place while Dr. Adnan confirmed that without the financial support it is not possible to assign resources and deal with the amount of work. HEi will need to determine the position they will give to MOOCs, the level of commitment and the desired target market if they want to continue offering these types of courses.

According to Christensen, the next step of a disrupting technology after addressing non consumers and offer low prices is to move up in the market to eventually challenge the incumbents. Our course analysis between the Master of Management and the MOOCs available in the biggest

platforms shows a recent image as to what extent said MOOCs can be considered a close substitute and challenge the HEi.

According to our analysis, compared to the UHasselt two out of three platforms do offer cheaper prices than the HEi, even if we consider the paid version of the MOOCs only without counting the free option. With the cheapest option being Coursera, that tend to offer their courses at half the price a typical course in the MoM from UHasselt. This threat might be more significant for HEi located in the U.S that tend to ask very high fees but in a European context, where the government keeps funding strongly the HEi a cost reduction over an already affordable education might not have the same effect to disrupt the HEi.

Moreover, the comparison of factors such as the time of the course and the study program show that there are more differences besides the price. The expected duration of the evaluated MOOCs was in some cases 28 times shorter than a regular MoM course. This might seem appealing to potential students as it allows flexibility to realize other activities and low effort required but might also back up concerns over the validity of the MOOCs. The study programs varied from the MoM and the MOOCs analyzed, MoM study programs show a wider selection of topics and a clear structure while MOOCs tend to offer less topics per course. Important to mention that many courses from the MoM include workshops or interaction with companies that is not offered by the MOOCs.

In fact, HEi could consider said design of study program as one of its key characteristics to keep attracting consumers and defending themselves from the MOOCs. This can also be seen in the fact that for those courses related to the specialization of the MoM the least MOOC substitutes could be found as more specialized knowledge was required.

A relevant finding on this comparison was the recognition of each course. Recognition has been addressed in our research as the main challenge for the thrive of MOOCs but not only that, it has been also a challenge for universities that wanted to embrace the MOOC trend and in our course analysis we could see that it plays an important selling point for the MOOC platforms. MOOC platforms offer a shareable individual certificate, backed up by the platform itself or by a university for each course done with the intention of giving students an asset to be potentially used in the labor market. While the HEi grants only an amount of ECTS to students with no apparent value or shareable certificate until the end of the entire MoM, when they grant a diploma backed up by the reputation of the institution.

After our comparison, we could argue that MOOC platforms are indeed offering one or more substitute courses for each of the courses inside the MoM of UHasselt but in a lighter way. MOOC platforms are delivering courses that are cheaper, shorter, with a lower study workload and with a flexible schedule and capitalizing from the reputation of the partner University offering them. MOOCs might not be a real substitute as HEi education is more serious and structured but potential students might get confused and consider MOOCs as a close substitute of a formal HEi program.

The MOOC trend could still be interesting for UHasselt and the HEi in general. If universities understand that people in their work career are looking at MOOC platforms to continue their education, they could use their already existing assets to capture this part of the market. After all, respected and recognized universities are already migrating many activities online pushed by the covid-19 while MOOC platforms still need a lot of time to create or enjoy the benefits of a good reputation.

6. Limitations and suggestions for future research.

The preparation of this thesis had as base the University of Hasselt and the programs offered by the institution, therefore, the results might be biased to the circumstances of the University. The assumptions of the university posture towards the MOOCs are drawn considering the inputs obtained by the interviews and might not reflect the posture of UHasselt towards the MOOC trend, it is possible that higher profiles inside the university have other posture or plans regarding the MOOCs.

The framework utilized to assess the industry was arbitrary selected from one of the textbooks used in the MoM from UHasselt and it was adapted to try to reflect the industry analyzed. Moreover, the search words used to perform the course evaluation were tested to try to include the most results possible from all the platforms, but it is possible that improvements can be found.

The MOOC trend is here to stay and through this thesis we observe it from the HEi perspective and look at the biggest challenges to implement them and the level of threat from existing platforms. To further build an idea on the current state of MOOCs, a review of the status of the MOOCs in other universities in the Belgium and Europe might show further challenges and could discover if those programs are still running or if they ran the same luck as the MOOC from UHasselt. This in light that the project HOME does not appear to have a second edition planned to illustrate the status of the MOOCs from a European perspective.

It can be relevant to conduct studies focused on young students that are about to enter the HEi to understand their awareness of the MOOCs and their platforms, to understand to what extent young students are considering them as a serious option for the next studies and obtain a better idea of the level of substitution that MOOCs pose at this stage. Moreover, based on the number of courses and students registered in 2020 caused by COVID and the courses added to the platforms it is not clear if said courses are coming from the HEi or from other private institutions or individuals.

This study focused on the MOOCs offered by many institutions through the main three MOOC platforms, but it can be enlarged by considering other respected platforms offering online massive courses. Additional efforts might be conducted to discover more information about the quality of content or teaching within the HEi program and the online program compared to same course in Belgian universities. Moreover, as the COVID crisis is sorted, a longitudinal study might be performed to evaluate if there is any growth or decrease trend of the MOOCs offered by the HEi.

7.References.

Alraimi, K. M., Zo, H., & Ciganek, A. P. (2015). Understanding the MOOCs continuance: The role of openness and reputation. *Computers and education, 80*, 28-38. doi:10.1016/j.compedu.2014.08.006

Baturay, M. H. (2015). An Overview of the World of MOOCs. *Procedia, social and behavioral sciences, 174*, 427-433. doi:10.1016/j.sbspro.2015.01.685

Besanko, D., Dranove, D., Shanley, M., & Schaefer, S. (2017). *Economics of strategy* (Seventh ed.). Hoboken, N.J: Wiley Custom.

Bordoloi, R., Das, P., & Das, K. (2020). Lifelong learning opportunities through MOOCs in India. *Asian Association of Open Universities Journal, 15*(1), 83-95. doi:10.1108/AAOUJ-09-2019-0042

Bozkurt, A., Kilgore, W., & Crosslin, M. (2018). Bot-teachers in hybrid massive open online courses (MOOCs): A post-humanist experience. *Australasian journal of educational technology, 34*(3). doi:10.14742/ajet.3273

Charitou, C. D., & Markides, C. C. (2003). Responses to disruptive strategic innovation. *MIT Sloan management review, 44*(2), 55-63A.

Christensen Institute. (2019). Disruptive Innovation. Retrieved October 2019, from Christensen Institute: https://www.christenseninstitute.org/disruptive-innovations/

Coursera. (2021). About. Retrieved from https://www.coursera.org/

CourseTalk. (2021). Providers. Retrieved from https://www.coursetalk.com/providers#global-footer

Deloitte. (2021). *2020 Global Impact Report*. Retrieved from https://www2.deloitte.com/global/en/pages/about-deloitte/articles/global-report-home.html

DeJong, R. (2013). What do MOOCs cost? Retrieved from https://economics21.org/html/what-do-moocs-cost-574.html

Dobos, G. (2013). *Relation-specific investments in business relationships – scale development and validation.* Corvinus University, Budapest, Hungary.

edX. (2021). About. Retrieved from https://www.edx.org/

EPM. (2021). How to Write a Competitive Analysis. Retrieved from https://expertprogrammanagement.com/2017/01/competitive-analysis-template/

EuropeanComission. (2021). European Tertiary Education Register. Retrieved from https://ec.europa.eu/education/european-tertiary-education-register_en

FAO. (1997). *Global Agricultural Marketing Management*. Retrieved from Rome:

Frankiewicz, T. C.-P. B. (2019). 6 Reasons Why Higher Education Needs to Be Disrupted. *Harvard Business Review*.

FutureLearn. (2021). Home. https://www.futurelearn.com/

Gamage, D., Perera, I., & Fernando, S. (2020). MOOCs Lack Interactivity and Collaborativeness: Evaluating MOOC Platforms. *International Journal of Engineering Pedagogy, 10*(2), 94-111. doi:10.3991/ijep.v10i2.11886

Gawer, A., & Cusumano, M. A. (2014). Industry Platforms and Ecosystem Innovation. *The Journal of product innovation management, 31*(3), 417-433. doi:10.1111/jpim.12105

Griffiths, R. J., Chingos, M. M., Spies, R., & Mulhern, C. (2014). Adopting MOOCs on Campus: A Collaborative Effort to Test MOOCs on Campuses of the University System of Maryland. *Online learning (Newburyport, Mass.), 19*(2). doi:10.24059/olj.v19i2.523

Hasselt, U. o. (2021). About us. Retrieved from https://www.uhasselt.be/

Helms, M. M., & Nixon, J. (2010). Exploring SWOT analysis - where are we now?: A review of academic research from the last decade. *Journal of strategy and management, 3*(3), 215. doi:10.1108/17554251011064837

Hew, K. F. (2016). Promoting engagement in online courses: What strategies can we learn from three highly rated MOOCS. *British journal of educational technology, 47*(2), 320-341. doi:10.1111/bjet.12235

HOME. (2014). HOME. *Higher education Online: MOOCs the European Way.* Retrieved from https://home.eadtu.eu/

Jansen, D., Schuwer, R., Teixeira, A., & Aydin, C. H. (2015). Comparing MOOC Adoption Strategies in Europe: Results from the HOME Project Survey. *International review of research in open and distance learning, 16*(6), 116-136. doi:10.19173/irrodl.v16i6.2154

Kettunen, T., Weimer, K., Vainikka, V., & Helminen, P. (2019). Information Seeking MOOCs at the University of Helsinki: Interactive and Integrated. *Nordic Journal of Information Literacy in Higher Education , 11*(1), 52-60.

Loizzo, J., & Ertmer, P. A. (2016). MOOCocracy: the learning culture of massive open online courses. *Educational technology research and development, 64*(6), 1013-1032. doi:10.1007/s11423-016-9444-7

Lyons, H. (2021). Foreign students will have one year to find work in Belgium. *The Brussels Times*.

Marcinkiewicz-Wilk, A., & Jurczyk-Romanowska, E. (2018). Development and implementation of ideas of lifelong learning in Europe at the dawn of the 21st century. *Journal of education, culture and society, 9*(1), 39-49. doi:10.15503/jecs20181.39.49

Matsudaira, J. D., & Patterson, R. W. (2017). Teachers' unions and school performance: Evidence from California charter schools. *Economics of education review, 61*, 35-50. doi:10.1016/j.econedurev.2017.09.005

Maurya, R. K. (2016). Coursera partners with PwC to launch Specialization on 'Data Analysis and Presentation Skills'. *PC Quest*.

Moules, J. (2016, 26 May, 2016). FutureLearn to enable study on Moocs to count towards a degree. *The Financial Times*. Retrieved from https://www.ft.com/content/c80a4ec0-225a-11e6-9d4d-c11776a5124d

Mukhtar, D. M. (2018). Pakistani universities and MOOCs. *Nation (Lahore, Pakistan) U6 - ctx_ver=Z39.88-2004&ctx_enc=info%3Aofi%2Fenc%3AUTF*

Narushima, M., Liu, J., & Diestelkamp, N. (2018). Lifelong learning in active ageing discourse: its conserving effect on wellbeing, health and vulnerability. *Ageing and society, 38*(4), 651-675. doi:10.1017/S0144686X16001136

Parker, S. (2020). The future of higher education in a disruptive world. *KPMG International.* Retrieved from https://assets.kpmg/content/dam/kpmg/xx/pdf/2020/10/future-of-higher-education.pdf

Peters, G., & Seruga, J. (2016). A supply sided analysis of leading MOOC platforms and universities. *Knowledge management & e-learning, 8*(1), 158-181. doi:10.34105/j.kmel.2016.08.011

Porter, M. E. (1985). *Competitive advantage: creating and sustaining superior performance*. New York: Free Press.

Rindlisbacher. (2020). The 100 Most Popular Courses During the Pandemic. Retrieved from https://www.classcentral.com/report/coronavirus-most-popular-courses/

Santandreu Calonge, D., Aman Shah, M., Riggs, K., & Connor, M. (2019). MOOCs and upskilling in Australia: A qualitative literature study. *Cogent education, 6*(1). doi:10.1080/2331186X.2019.1687392

Shah, D. (2020). By The Numbers: MOOCs in 2020. Retrieved from https://www.classcentral.com/report/mooc-stats-2020/

Schuwer, R., Gil-Jaurena, I., Aydin, C. H., Costello, E., Dalsgaard, C., Brown, M., . . . Teixeira, A. (2015). Opportunities and Threats of the MOOC Movement for Higher Education: The European Perspective. *International review of research in open and distance learning, 16*(6), 20-38. doi:10.19173/irrodl.v16i6.2153

Statista. (2021). Annual Flemish education budget in Belgium from 2010 to 2019 (in thousand euros). In. statista.com.

Stonehouse, G., & Snowdon, B. (2007). Competitive Advantage Revisited: Michael Porter on Strategy and Competitiveness. *Journal of management inquiry, 16*(3), 256-273. doi:10.1177/1056492607306333

THE. (2020). *World University Rankings 2021*. Retrieved from https://www.timeshighereducation.com/world-university-rankings/2021/world-ranking#!/page/0/length/25/locations/BE/sort_by/rank/sort_order/asc/cols/stats

Ueda, Y., & Nojima, M. (2012). Effect of Student Attitudes on University Loyalty and University Cooperation: An Empirical Study in Japan. *International journal of management, 29*(1), 133.

van der Zwaan, B. (2020). The Landscape of Higher Education. In (pp. 32). University of Utrecht: Nederlands-Vlaamse Accreditatieorganisatie.

Villarreal, Jorge & Cuéllar Rojas, Oscar & García Arango, David & Henao, Cesar & Gallego Quiceno, Dany & Echeverri, Camilo. (2019). Actitud digital en docentes universitarios y factores

emergentes: un estudio de caso en el contexto colombiano hacia la implementación de cursos tipo MOOC. 10.23919/CISTI.2019.8760898.

VDAB. (2021). *Knelpuntberoepen in Vlaanderen 2021*. Retrieved from https://www.vdab.be/sites/web/files/doc/trends/Knelpuntberoepen%202021.pdf

Watted, A., & Barak, M. (2018). Motivating factors of MOOC completers: Comparing between university-affiliated students and general participants. *The Internet and higher education, 37*, 11-20. doi:10.1016/j.iheduc.2017.12.001

Woodgate, A., Macleod, H., Scott, A.-M., & Haywood, J. (2015). Differences in online study behaviour between sub-populations of MOOC learners. *Educación XX1, 18*(2), 147. doi:10.5944/educxx1.13461

Wright, R., Paroutis, S., & Blettner, D. P. (2013). How useful are the strategic tools we teach in business schools? *Journal of management studies, 50*(1), 92-125. doi:10.1111/j.1467-6486.2012.01082.x

Young, P. A. (2021). The ever evolving MOOC. *Educational technology research and development*. doi:10.1007/s11423-021-09959-6

Yuan, P. (2013). *MOOCs and Open Education: Implications for Higher Education*. Retrieved from United Kingdom: http://publications.cetis.ac.uk/2013/667

Appendix 1: Interviews.

1ˢᵗ Interview guide.

Interview guide for Dr. Mario Gielen conducted as exploratory study while developing this thesis and to build the study case.

1. Presentation.

2. Introductory Questions.

What is yours name?

What is your current role?

Are currently working from home?

3. MOOC related questions.

Who came up with the idea of MOOC for the course 'Transport Systems & Transport Policy'?

What would you say it was the source of inspiration for doing this project?

Did you have to reach someone in the university or have anyone approached to you before to implement this project?

Could you explain who financed this project?

When did you started working with this MOOC?

How did you manage the request of developing the MOOC?

Was it a faculty initiative or a UHasselt initiative?

Do you still work in the project?

Have you participated in another initiative related to MOOCs with UHasselt or other institution?.

Did you receive any support to expose your work further?

Would you like to share your most important finding while doing the MOOC?

2nd Interview guide.

Interview guide for Dr. Muhammad Adnan, conducted to build the case of UHasselt´s first MOOC.

1. Presentation.

2. Introductory questions.

What is your current position in UHasselt?

Since when do you work for UHasselt?

3. MOOC motives.

Regarding the MOOC of transportation science, what is or was your role?

At what point you took part of the project?

How involved was the university in the transportation science MOOC?

Do you know the motives to create it?

Do you know who was the target audience of the MOOC?

Would you consider the MOOCs reached the expected target audience?

Was the MOOC expected to have financial benefits?

4. MOOC implementation & challenges.

Did you take part of the development of the MOOC?

Do you know if there was any impediment to create the content of the MOOC?

Do you know who has the ownership of the MOOC property rights?

Do you know the reason of why the MOOC was hosted on the Blackboard platform instead of other platforms?

Could you tell me more about the engagement of students while the MOOC was on going?

Do you think the student engagement had an effect on the staff?

Could you tell me more about the completion rate of the MOOC?

Do you think the completion rate had an effect on the staff?

What was the level of promotion of the MOOC inside/outside the organization?

How did you decide to assign 3 ECTS to it?

Which percentage of students pursued the certification of the 3 ECTS?

Did you perceive any opposition from other professors regarding the validity of the MOOC?

Were there any challenges related to the usage of the Blackboard platform for the MOOC?

How was your workload?

How many people were working behind the MOOC?

Do you know if the staff faced IT related problems with the MOOC?

What would you consider it was the most difficult part?

5. MOOC reach.

How many students participated?

Do you know what the completion rate was?

What would you consider it was the benefit of the MOOC?

Do you know if there is another MOOC on the same topic?

6. MOOC legacy.

Is the MOOC still open?

If not: Who gave the order to shut it down?

How long did it run?

Why was it shut down?

Does the faculty have plans to create a new MOOC?

Regarding the 2nd MOOC that was prepared, could you tell me more about it?

What is your experience of using a MOOC?

Would you work again in a MOOC project?

What was the part you like the most working in this project?

What was the part you like the most working in this project?

Do you know about other MOOCs being offered?

7. Closing part.

Appendix 2: Competitive Analysis – Course Comparison Main View.

		UHasselt	Coursera	Edx	Future Learn
Company Profile	Firm Profile	Belgian Higher Education Institution	MOOC Platform (Leader)	MOOC Platform	MOOC Platform
	Key Competitive Advantage	Recognized and reliable certifications - Standarized face to face education	Easy access, online education - broad catalogue from famous HEi	Easy access, online education	Easy access, online education
	Target Market	Bachelor or Master Students	Students / Professionals	Students / Professionals	Professionals
	Number of Students	5500 students	76 million	35 million (500,000 active users daily)	14 million
	Value Proposition	Affordable, subsidized, quality and traditional education for students	Platform offering courses and certificates from the best HEi to learners	Non Profit offering MOOCs through their open source platform to learners	Easy access platform offering short courses to help building skills
COURSE: Business Modeling	Amount of courses available on same topic	1	7	0	2
	Name of selected course for analysis	Business Modelling & Applications	Business Model Canvas: A Tool for Entrepreneurs and Innovators (Project-Centered Course)	N/A	Business Model Thinking
	Institution imparting selected MOOC	UHasselt	University System of Georgia	N/A	Coventry University
	Price per given course	94.68 euros	Free (Possibility of Certificate 40 euros)	N/A	Free (Possibility of certificate 64 euros)
	Distribution Channel	On campus	Internet - Online	N/A	Internet - Online
	Duration	168 hours	12 hours	N/A	6 hours
	Recognition	6 ECTS - No validity as individual course	Coursera Shareable Digital Certificate	N/A	Future Learn Digital Certificate of Achievement
	Teaching Method	Lectures, company immersion	Self paced videos	N/A	Self paced videos
				Content	
	Topic 1	BMC Building Blocks	Introduction to Business Model Innovation	N/A	Business model thinking
	Topic 2	5-2-2 rule	The 3 components of a Business Model	N/A	Creating Value
	Topic 3	Typical BM	Directions for the value proposition	N/A	Business Strategy
	Topic 4	Value proposition Canvas	Directions for the value architecture	N/A	Business success responsibility
	Topic 5	External Environment Analysis	Apply the odissey 3.14 approach	N/A	
	Topic 6	Practice Sessions		N/A	
	Topic 7	Project Component		N/A	

Course Comparison Main View - Continuation.

COURSE: Leadership & Human Capital	Amount of courses available on same topic	1	12	1	2
	Name of selected course for analysis	Leadership & Human Capital	Foundations of Everyday Leadership	Becoming an Effective Leader	What is Leadership?
	Institution imparting selected MOOC	UHasselt	University of Illinois	The University of Queensland	Deakin University
	Price per given course	94.68 euros	Free (Possibility of Certificate 40 euros)	Free (Possibility of Certificate 82 euros)	Free (Possibility of certificate 64 euros)
	Distribution Channel	On campus	Internet - Online	Internet - Online	Internet - Online
	Duration	168 hours	15 hours	100 hours	6 hours
	Recognition	6 ECTS - No validity as individual course	Coursera Shareable Digital Certificate	Institution´s Shareable Certificate	Future Learn Digital Certificate of Achievement
	Teaching Method	Lectures, workshops	Self paced videos	Self paced videos	Self paced videos
	Content				
	Topic 1	Introduction to leadership	Course Orientation	What is Leadership?	Why leadership is different to management
	Topic 2	Personal Leadership	Head and Heart of Everyday Leadership	Leadership Styles	What effective leadership is
	Topic 3	From strategy to implementation	Individual Decision Making	Power and Leadership	What types of power are needed to be a leader
	Topic 4	Corporate Strategy & Corporate Culture	Group Decision Making	Emotional Intelligence	How you can influence other people at work
	Topic 5	Leadership and Motivation	Managing Motivation	Believing in something	How individual differences shape the way people see leadership
	Topic 6	Growh Mindset		Honesty, Integrity and Ethics	
	Topic 7	Motivation vs Control		Know thyself	
	Topic 8			Knowledge, Wisdom and Intelligence	
	Topic 9			Diversity in Leadership	
	Topic 10			The role of the stewward	
COURSE: Managing Digital Transformation	Amount of courses available on same topic	1	4	2	1
	Name of selected course for analysis	Managing Digital Transformation	Digital Transformation	Digital Transformation in Business	Introduction to Digital Transformation
	Institution imparting selected MOOC	UHasselt	BCG & University of Virginia	University System of Maryland	Coventry University
	Price per given course	94.68 euros	Free (Possibility of Certificate 40 euros)	Free (Possibility of Certificate 331 euros)	Free (Possibility of certificate not mentioned)
	Distribution Channel	On campus	Internet - Online	Internet - Online	Internet - Online
	Duration	168 hours	14 hours	63 hours	6 hours
	Recognition	6 ECTS - No validity as individual course	Coursera Shareable Digital Certificate	Institution´s Shareable Certificate	Certification not mentioned at the moment
	Teaching Method	Lectures	Self paced videos	Self paced videos	Self paced videos
	Content				
	Topic 1	(Information unavailable)	How technology changes business	How digital technologies are transforming organizations	Digital business: meaning
	Topic 2		The mechanics of disruption	Interplay between organizational strategu and technology	Drivers of digital technology adoption
	Topic 3		Digital trends past and future	Considerations in making strategic investments	History and scope of e commerce
	Topic 4		Your path to digital transformation	Key issues in implementing systems	Different classifications of e commerce
	Topic 5			How to address IT governance	Global context of digital business
	Topic 6			N/A	Contemporary issues
	Topic 7			N/A	Digital vs Traditional Business

Course Comparison Main View - Continuation.

COURSE: Business Strategy					
Amount of courses available on same topic	1	9	4	3
Name of selected course for analysis	Business Strategy	Strategic Management	Business Strategy from Wharton: Competitive Advantage	Macro Environmental Analysis and Business Strategy: An Introduction
Institution imparting selected MOOC	UHasselt	Copenhagen Business School	University of Pennsylvania	Coventry University
Price per given course	94.68 euros	Free (Possibility of Certificate 40 euros)	Free (Possibility of Certificate 165 euros)	Free (Possibility of certificate 64 euros)
Distribution Channel	On campus	Internet - Online	Internet - Online	Internet - Online
Duration	168 hours	11 hours	24 hours	6 hours
Recognition	6 ECTS - No validity as individual course	Coursera Shareable Digital Certificate	Institution´s Shareable Certificate	Future Learn Digital Certificate of Achievement
Teaching Method	Lectures, workshops, videos	Self paced videos + Project	Self paced videos	Self paced videos
Content				
Topic 1	Introduction	A 21st Century Approach to Business Strategy	Analyze your firm's internal fit	Definition of strategy
Topic 2	Strategic Decision Making	What is strategy? And why do we care about it?	Analyze your firm's external fit	Benefits and costs of globalisation
Topic 3	Industry Analysis	The Evolution of Strategy…Past Progress, Past Mistakes	Maintaining your firm's dynamic fit	Drivers of globalisation
Topic 4	Competition	Changing World, Changing Strategies	Creating new strategies and initiatives	Macro environment analysis using PESTL framework
Topic 5	Competitive Position	Capstone Project Intro -- Strategy in a 21st Century Creative Company		
Topic 6	Dynamic Capabilities			
Topic 7	Braking with competition			
Topic 8	Entry			
Topic 9	Vertical Integration			
Topic 10	Horizontal Integration			
Topic 11	Implementation			

Course Comparison Main View – Continuation.

COURSE: Open Innovation in Business and Research	Amount of courses available on same topic	1	2	0	1
	Name of selected course for analysis	Open Innovation in Business and Research	Innovation & Entrepreneurship - From Basics to Open Innovation	N/A	Harnessing Open Innovation in Business
	Institution imparting selected MOOC	UHasselt	EIT Digital	N/A	Durham University
	Price per given course	94.68 euros	Free (Possibility of Certificate 40 euros)	N/A	Free (Possibility of certificate not mentioned)
	Distribution Channel	On campus	Internet - Online	N/A	Internet - Online
	Duration	168 hours	16 hours	N/A	12 hours
	Recognition	6 ECTS - No validity as individual course	Coursera Shareable Digital Certificate	N/A	Certification not mentioned at the moment
	Teaching Method	Lectures, workgroup	100% online	N/A	Self paced videos
	Content				
	Topic 1	The shift from closed to open innovation	Course Introduction	N/A	Introduction to open innovation
	Topic 2	Open business models	What is innovation and entrepreneurship?	N/A	What is open innovation?
	Topic 3	Generating revenues from technology markets	Teaching entrepreneurship	N/A	Innovation across the supply chain
	Topic 4	User Innovation	Analyzing markets	N/A	Preparing yourself for openness
	Topic 5	Innovation Networks	Engage with customers	N/A	Creating the right conditions
	Topic 6	Understanding and managing ecosystems	Closed vs Open innovation	N/A	Working with the external network
	Topic 7	Platform owners and their complementors	The changing landscape	N/A	Open innovation in practice
	Topic 8		Open innovation at work	N/A	Applying open innovation - research and examples
	Topic 9		Course completion	N/A	Applying open innovation to your own context
COURSE: Change Management	Amount of courses available on same topic	1	2	N/A	1
	Name of selected course for analysis	Change Management	Leading transformations: Manage change	N/A	Leading and Managing People-Centred Change
	Institution imparting selected MOOC	UHasselt	Macquarie University	N/A	Durham University
	Price per given course	94.68 euros	Free (Possibility of Certificate 66 euros)	N/A	Free (Possibility of certificate not mentioned)
	Distribution Channel	On campus	Internet - Online	N/A	Internet - Online
	Duration	168 hours	18 hours	N/A	9 hours
	Recognition	6 ECTS - No validity as individual course	Coursera Shareable Digital Certificate	N/A	Certification not mentioned at the moment
	Teaching Method	Lectures, workgroup	100% online	N/A	Self paced videos
	Content				
	Topic 1	Introduction	The change problem	N/A	Preparing for change
	Topic 2	Experiencing AI and informed reflection	Icebergs & death valleys	N/A	Enablers of change
	Topic 3	Strenghts-based management	Maps & Orientation	N/A	Engaging people in change
	Topic 4	Positive Psycology and Social Constructivism	Masks & performance	N/A	During change
	Topic 5	Appreciative Inquiry: Reframing	Mirror & reflections	N/A	Sustaining change
	Topic 6	Appreciative Inquiry: Generative Questions	Mindful & mobilising	N/A	
	Topic 7	Appreciative Inquiry: Creating and AI guide		N/A	
	Topic 8	Appreciative Inquiry: Design and Destiny		N/A	
	Topic 9	Working Session 1		N/A	
	Topic 10	Working Session 2		N/A	
				N/A	

Course Comparison Main View – Continuation

COURSE: Strategic Innovation	Amount of courses available on same topic	1	8	3	2
	Name of selected course for analysis	Strategic Innovation	Innovation Management	Innovation: From Plan to Product	Leading Strategic Innovation: How to Lead with Purpose
	Institution imparting selected MOOC	UHasselt	Erasmus University Rotterdam	The University of Queensland	Coventry University
	Price per given course	94.68 euros	Free (Possibility of Certificate 40 euros)	Free (Possibility of Certificate 206 euros)	Free (Possibility of certificate 64 euros)
	Distribution Channel	On campus	Internet - Online	Internet - Online	Internet - Online
	Duration	168 hours	11 hours	80 hours	6 hours
	Recognition	6 ECTS - No validity as individual course	Coursera Shareable Digital Certificate	Institution´s Shareable Certificate	Future Learn Digital Certificate of Achievement
	Teaching Method	Lectures, company immersion	100% online	Self paced videos	Self paced videos
	Content				
	Topic 1	Back Bay Battery Simulation	Introduction	Why do innovations fail?	Personal experience of change
	Topic 2	Foundations and Sustained vs Disruptive Innovations	The adoption of Innovations	Business models and innovation	Leadership and strategic purpose
	Topic 3	Idea Generation	The fuzzy front end creativity	Value chains and Industry Networks	Strategic thinking
	Topic 4	Idea Conversion	The fuzzy front end Idea Management	Designing and testing innovation options	Strategic drift
	Topic 5	Sensing & Ambidexterity	Strategy Innovation Strategy	Managing for now and the future	Organisational Change
	Topic 6	Corporate Venturing	Strategy Portfolio Management	Introduction to valuing innovation	The playing to win model
	Topic 7	Technology Licensing	Execution - Implementing Innovation	Managing Implementation Projects	
	Topic 8	Innovation Strategies	Execution - Teams and Networks	Structured Problem Solving for Planning	
	Topic 9	Intellectual Property Management		Business Plans	
	Topic 10	Intellectual Property Management 2		Managing uncertainty and risk innovation	
	Topic 11	Portfolio Management			

Appendix 3: Competitive Analysis – Log Search Per Course

Business Modelling		
Search words: "business modelling"		
Total course substitutes available: 9		
Filters used: english language, course		
Coursera	edX	Future Learn
Total results	Total results	Total results
611	29	91
Number of courses matching	Number of courses matching	Number of courses matching
7	0	2
List of courses found	List of courses found	List of courses found
Business Model Canvas: A Tool for Entrepreneurs and Innovators (Project-Centered Course)	/	Business Model Thinking
Business Model Innovation	/	UX Design Fundamentals: Management and the Business Model Canvas for UX
Business Model Innovation for Sustainable Landscape Restoration	/	/
Innovating with the Business Model Canvas	/	/
Business Model Canvas	/	/
How to Use the Business Model Canvas for Strategic Analysis	/	/
Business Strategy: Business Model Canvas Analysis with Miro	/	/

Leadership and Human Capital

Search words: "Leadership"

Total course substitutes available: 12

Filters used: english language, course

Coursera	edX	Future Learn
Total results	Total results	Total results
1100	2	133
Number of courses matching	Number of courses matching	Number of courses matching
12	1	2
List of courses found	List of courses found	List of courses found
International Leadership and Organizational Behavior	Becoming an Effective Leader	Business Management and Leadership
Managing Social and Human Capital		Leadership Theory: The Basics
Leading Organizations		Leaders: Their Role and Impact on Business
Strategic Leadership and Management Capstone		What is Leadership?
Leadership and organizational behavior		International Leadership: The Evolution of Management
Leadership and Influence		Leading People and Teams Capstone
Leadership, Motivation and Organizational Control		International Leadership: Managing Culture as Leaders
Leadership and Disruption		The Evolution of Management and Leadership Theory
Leadership and Emotional Intelligence		
Fundamentals of Leadership, with Goldman Sachs 10,000 Women		
Foundations of Everyday Leadership		
Leadership in 21st Century Organizations		

Competitive Analysis – Log Search Per Course – Continuation

Managing Digital Transformation

Search words: "Digital Transformation"

Total course substitutes available: 7

Filters used: english language, course

Coursera	edX	Future Learn
Total results	Total results	Total results
83	39	6
Number of courses matching	Number of courses matching	Number of courses matching
4	2	1
List of courses found	List of courses found	List of courses found
Impact from Digital Transformation: Full course	Digital Transformation in Business	Introduction to Digital Transformation
Digital Transformations	Digital Transformation Strategy	/
Practices of Digital Transformation	/	/

Open Innovation in Business and Research

Search words: "Open Innovation"

Total course substitutes available: 3

Filters used: english language, course

Coursera	edX	Future Learn
Total results	Total results	Total results
195	33	3
Number of courses matching	Number of courses matching	Number of courses matching
2	0	1
List of courses found	List of courses found	List of courses found
Innovation & Entrepreneurship - From Basics to Open Innovation	/	Harnessing Open Innovation in Business
Startups in open innovation	/	

Change Management

Search words: "Change Management"

Total course substitutes available: 5

Filters used: english language, course

Coursera	edX	Future Learn
Total results	Total results	Total results
567	119	3
Number of courses matching	Number of courses matching	Number of courses matching
2	2	1
List of courses found	List of courses found	List of courses found
Leading transformations: Manage change	Leading Change in Times of Disruption	Leading and Managing People-Centred Change
Removing Barriers to Change	Managing People from a Global Perspective	/
/	/	/
/	/	/

Strategic Innovation

Search words: "Strategic Innovation"

Total course substitutes available: 13

Filters used: english language, course

Coursera	edX	Future Learn
Total results	Total results	Total results
217	98	6
Number of courses matching	Number of courses matching	Number of courses matching
8	3	2
List of courses found	List of courses found	List of courses found
Innovation Management	Innovation: From Plan to Product	Leading Strategic Innovation: How to Lead with Purpose
A Scientific Approach to Innovation Management	Design Leadership and Innovation	Innovation Management: Winning in the Age of Disruption
Strategic Innovation: Managing Innovation Initiatives	Creating and Sustaining an Innovation Culture	
Strategic Innovation: Building and Sustaining Innovative Organizations		
Innovation Through Design: Think, Make, Break, Repeat		
Organizational innovation and creativity		
Innovation for Entrepreneurs: From Idea to Marketplace		
Developing Innovative Ideas for New Companies: The First Step in Entrepreneurship		

Competitive Analysis – Log Search Per Course – Continuation

<table>
<tr><td colspan="3" align="center">## Business Strategy</td></tr>
<tr><td colspan="3" align="center">Search words: "Business Strategy"</td></tr>
<tr><td colspan="3" align="center">Total course substitutes available: 11</td></tr>
<tr><td colspan="3" align="center">Filters used: english language, course</td></tr>
</table>

Coursera	edX	Future Learn
Total results	Total results	Total results
1243	119	11
Number of courses matching	Number of courses matching	Number of courses matching
4	4	3
List of courses found	List of courses found	List of courses found
Business Strategy in Practice (Project-centered Course)	Business Strategy from Wharton: Competitive Advantage	Business Strategy: The Art of Looking into the Future
Advanced Business Strategy	Global Business Strategy	Macro Environmental Analysis and Business Strategy: An Introduction
Foundations of Business Strategy	Strategic Management: From Intuition to Insight	An Introduction to Macro Environmental Analysis and Business Strategy
Business Strategy	Strategic Management: From Insight to Decision	
Strategic Management		
Corporate Strategy		
Strategy Formulation		
Corporate Strategy		
Competitive Strategy		

Appendix 4: Competitive Analysis – Rankings per course

	Courses marked in gray were selected for the analysis			
Business Modelling				
Platform	Course Name	Ranking	Reviews	Enrolled Students
Coursera	Business Model Canvas: A Tool for Entrepreneurs and Innovators (Project-Centered Course)	4.6	151	
Coursera	Business Model Innovation	4.7	122	
Coursera	Business Model Innovation for Sustainable Landscape Restoration	4.5	7	
Coursera	Innovating with the Business Model Canvas	4.6	64	
Coursera	Business Model Canvas	4.5	6	
Coursera	How to Use the Business Model Canvas for Strategic Analysis	0	0	
Coursera	Business Strategy: Business Model Canvas Analysis with Miro	4.6	11	
Future Learn	Business Model Thinking	4.5	31	
Future Learn	UX Design Fundamentals: Management and the Business Model Canvas for UX Design	0	0	

Open Innovation in Business and Research				
Platform	Course Name	Ranking	Reviews	Enrolled Students
Coursera	Innovation & Entrepreneurship - From Basics to Open Innovation	4.5	60	
Coursera	Startups in open innovation	3.2	1	
Future Learn	Harnessing Open Innovation in Business			8176

Competitive Analysis – Rankings per course – Continuation

Leadership and Human Capital

Platform	Course Name	Ranking	Reviews	Enrolled Students
Coursera	International Leadership and Organizational Behavior	4.8	566	
Coursera	Managing Social and Human Capital	4.5	370	
Coursera	Leading Organizations	4.7	66	
Coursera	Strategic Leadership and Management Capstone	4.7	42	
Coursera	Leadership and organizational behavior	0	0	
Coursera	Leadership and Influence	4.6	39	
Coursera	Leadership, Motivation and Organizational Control	4.9	9	
Coursera	Leadership and Disruption	0	0	
Coursera	Leadership and Emotional Intelligence	4.8	1171	
Coursera	Fundamentals of Leadership, with Goldman Sachs 10,000 Women	4.7	61	
Coursera	Foundations of Everyday Leadership	4.8	1191	
Coursera	Leadership in 21st Century Organizations	4.7	288	
edX	Becoming an Effective Leader			65828
Future Learn	Business Management and Leadership	0	0	
Future Learn	Leadership Theory: The Basics	4.9	19	
Future Learn	Leaders: Their Role and Impact on Business	4.7	10	
Future Learn	What is Leadership?	4.7	363	
Future Learn	International Leadership: The Evolution of Management	0	0	
Future Learn	Leading People and Teams Capstone	0	0	
Future Learn	International Leadership: Managing Culture as Leaders	0	0	
Future Learn	The Evolution of Management and Leadership Theory	0	0	

Competitive Analysis – Rankings per course – Continuation

Managing Digital Transformation

Platform	Course Name	Ranking	Reviews	Enrolled Students
Coursera	Impact from Digital Transformation: Full course	4.6	27	
Coursera	Digital Transformations	4.7	663	
Coursera	Practices of Digital Transformation	0	0	
Coursera	Digital Transformation	4.8	4551	
edX	Digital Transformation in Business			13785
edX	Digital Transformation Strategy			0
Future Learn	Introduction to Digital Transformation	3.7	7	

Business Strategy

Platform	Course Name	Ranking	Reviews	Enrolled Students
Coursera	Business Strategy in Practice (Project-centered Course)	4.6	45	
Coursera	Advanced Business Strategy	4.8	171	
Coursera	Foundations of Business Strategy	4.8	530	
Coursera	Business Strategy	4.8	371	
Coursera	Strategic Management	4.7	840	
Coursera	Corporate Strategy	4.7	169	
Coursera	Strategy Formulation	4.5	255	
Coursera	Corporate Strategy	4.8	198	
Coursera	Competitive Strategy	4.8	665	
edX	Business Strategy from Wharton: Competitive Advantage			37517
edX	Global Business Strategy			8856
edX	Strategic Management: From Intuition to Insight			8018
edX	Strategic Management: From Insight to Decision			7881
Future Learn	Business Strategy: The Art of Looking into the Future			1517
Future Learn	Macro Environmental Analysis and Business Strategy: An Introduction			1609
Future Learn	An Introduction to Macro Environmental Analysis and Business Strategy		0	0

Competitive Analysis – Rankings per course – Continuation

Change Management

Platform	Course Name	Ranking	Reviews	Enrolled Students
Coursera	Leading transformations: Manage change	4.7	699	
Coursera	Removing Barriers to Change	4.9	108	
edX	Leading Change in Times of Disruption			archived
edX	Managing People from a Global Perspective			archived
Future Learn	Leading and Managing People-Centred Change			

Strategic Innovation

Platform	Course Name	Ranking	Reviews	Enrolled Students
Coursera	Innovation Management	4.7	388	
Coursera	A Scientific Approach to Innovation Management	4.6	16	
Coursera	Strategic Innovation: Managing Innovation Initiatives	4.7	104	
Coursera	Strategic Innovation: Building and Sustaining Innovative Organizations	4.8	203	
Coursera	Innovation Through Design: Think, Make, Break, Repeat	4.8	203	
Coursera	Organizational innovation and creativity	0	0	
Coursera	Innovation for Entrepreneurs: From Idea to Marketplace	4.6	99	
Coursera	Developing Innovative Ideas for New Companies: The First Step in Entrepreneurship	4.7	232	
edX	Innovation: From Plan to Product			13848
edX	Design Leadership and Innovation			0
edX	Creating and Sustaining an Innovation Culture			5080
Future Learn	Leading Strategic Innovation: How to Lead with Purpose	4.8	148	20196
Future Learn	Innovation Management: Winning in the Age of Disruption	4.9	17	13060

Appendix 5: Competitive Analysis – Summary of Costs and Summary of Course Duration.

Course name		Cost per course per institution						
	UHasselt	Coursera	Coursera Free	edX	edX Free	Future Learn	Future Learn Free
Business Modeling /Applications	€ 94.68	€ 40.00	Free	N/A	N/A	€ 64.00	Free
Leadership & Human Capital	€ 94.68	€ 40.00	Free	€ 82.00	Free	€ 64.00	Free
Managing Digital Transformation	€ 94.68	€ 40.00	Free	€ 331.00	Free	€ -	Free
Business Strategy	€ 94.68	€ 40.00	Free	€ 165.00	Free	€ 64.00	Free
Open Innovation in Business and Research	€ 94.68	€ 40.00	Free	N/A	N/A	€ -	Free
Change Management	€ 94.68	€ 66.00	Free	N/A	N/A	€ -	Free
Strategic Innovation	€ 94.68	€ 40.00	Free	€ 206.00	Free	€ 64.00	Free
Total cost of program	€ 662.76	€ 306.00		€ 784.00		€ 256.00	

Duration displayed in number of hours per course				
		Hours required per course		
Course name	UHasselt	Coursera	edX	Future Learn
Business Modeling /Applications	168	12	N/A	6
Leadership & Human Capital	168	15	100	6
Managing Digital Transformation	168	14	63	6
Business Strategy	168	11	24	6
OIBR	168	16	N/A	12
Change Management	168	18	N/A	9
Strategic Innovation	168	11	80	6
Total hours required	1176	97	267	51

Appendix 6 Competitive Analysis – Porter 5 Forces Analysis.

Industry		
For our analysis we will consider each of the 3 platforms as competitors or entrants, while the Uhasselt being part of the HEi in general are the incumbents. Despite not all HEi offer MOOCs this will help us highlight the competitive possition of the Universities against MOOC platforms.		
Overal summary		
FORCE		**THREAT of PROFITS**
Internal Rivalry		Moderate
Entry		Moderate
Substitutes/Complements		Moderate/Low
Buyer Power		Moderate
Supplier power		Low

Competitive Analysis – Porter 5 Forces Analysis – Continuation.

Factor Affecting Rivalry among Existing Competitors

Existing competitors in the MOOC industry are characterized for being platforms with a huge backup from prestigious universities, industries and in some cases with government funding. Most of said platforms have around 10 years in the market and are consider new compared to the existance of the HEi. Other minor competitors are those platforms that offer the infrastructure to host MOOCs acting as a thirdparty.

Question	Explanation	Characterization
Degree of seller concentration?	HEi in Europe is conformed by more than 2400 institutions. 65 platforms offering MOOCs were identified.	Low
Significant cost differences among firms	Developing a course for a MOOC cost 250,000 euro on the edX platform while the cost per having a student in the university per year is 12,000 euro.	Medium
Excess capacity?	The technology component allowing massive participation allow competitors to have excess capacity against HEi	High
Brand loyalty to existing sellers?	No evidence of loyalty component in MOOC platforms was found in the literature. Still for Hei the loyalty of students last even after graduation	Low
Buyers' switching costs from one competitor to another?	No switching costs present in MOOC platforms. Switching costs between HEi can be costly and time consuming	Low

Competitive Analysis – Porter 5 Forces Analysis – Continuation.

Factor Affecting the Threat of Entry

MOOC platforms are business rooted in IT tools. The infrastructure and know-how highly differ to the ones of the HEi. IT technologies offer the benefit of scale economies but HEi are well protected not only by the governments but also in the validity and recognition of their services. Thus access to IT tools and content creation can be considered easier than having access to the HEi system.

		Characterization
Significant economies of scale?	Technologic component allow for economies of scale in MOOC platforms. It is harder to achieve for HEi	High
Entrants´access to distribution channels?	Internet is the main distribution channel and there are no specific barriers. Barriers for oficial education programs are high for MOOC platforms	Medium
Entrants´access to know/how?	Know how required is IT plus academia members designing the programs and content. MOOCs lacks of practice sessions or lab activities.	Medium
Government protection of incumbents?	Government is directly protecting HEi and they actively fund them and their ecosystem	High
Expected retaliation from incumbents?	HEi are generally concerned with the spread of knowledge and education of a country. HEi are currently offering MOOC courses too	Medium

Competitive Analysis – Porter 5 Forces Analysis – Continuation.

Factor Affecting or Reflecting pressure from Substitute Products and Support from Complements		
Considering the offer of high education courses, the amount of recognized substitutes is low, especially for the low availability of services that can be backed up by credible institutions. Nevertheless for other specialization courses that can also act as complements, there is a fair amount of substitutes in specialized organizations giving trainings and certifications.		
		Characterization
Availability of close substitutes?	HEi has currently few substitutes other than MOOCs. Other level of technical education are available for people persuing other eduction goals	Low (Without considering MOOCs)
Availability of close complements?	Certification programs for professional such as ISO9000, Project Management Institute, Lean six sigma, Especialization courses. It is possible also that MOOCs can be considered as complements	High

Factor Affecting or Reflecting Power of Input Suppliers		
Suppliers in this case, would provide services to the platforms and universities looking for a profit. For this industry that would be knowledge. Teachers or content creators usually dont act as a firm but more as employees or a resource for the firms.		
		Characterization
Few substitutes for suppliers´input?	The accreditations to become a teacher vary depending on the country. Shortage of teachers is not yet a problem	Low
Do suppliers pose credible threat of forward integration into the product market?	Teachers can unionize to demand more benefits but such unions do not look to create a competitor	Low

Competitive Analysis – Porter 5 Forces Analysis – Continuation.

Factor Affecting or Reflecting Power of Buyers

Buyers in this industry are the students looking for education. They want lower prices and better services in this case. The accesibility and ease of use of MOOCs can convince many students to hire the services but in the current education system MOOCs are still weak in comparison to certified university courses. Still if the validity of MOOCs increases users might integrate and decide on their own education path.

		Characterization
Can buyers find substitutes for industry´s product?	HEi has currently few substitutes other than MOOCs. Especially certified and accepted	Low
Do buyers pose credible threat of backward integration?	Students as buyers might backward integrate if the possibility to create their own education path increases.	Medium
Do firms in industry make market relationship specific investments to support transactions with specific buyers?	Both HEi and MOOC make relationship specific investments to be more appealing for private industry and improve their reputation among potential students	Low