First steps towards identifying the ''business model of the future'' for Higher Educational Institutions.

Rethinking University teaching: a paradigm shift?

Master's Thesis
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Management Summary

In today's technology-driven economy, our personal, social, cultural and professional lives are affected by a computer networking revolution. A new age has started in which knowledge creation is impacted by networking technologies. This has an enormous effect on the role of HEIs and their current traditional transmission model of teaching. The time has come that educational institutions must embrace these emerging technologies, which on its turn will affect the current teaching methodology. In the literature we find evidence that the online learning concept brings along pro's (flexibility in time and place, greater accessibility, increased student participation) and con's (lack of instruction, decreased learning effectiveness) and will also significantly change the current operating field of HEIs. We also found additional support that online learning allows participants to easily get access to information online, enables them to conduct lessons from their situated locations and to combine education with work and personal life. Biggest barriers to online learning are faculty resistance, lack of training in teaching and failures towards developing appropriate methods for costing online learning. The availability of technology, cost perspective and maintenance determines to which degree synchronous or asynchronous activities are carried out in the learning process. Implementation of blended learning (online learning) seems to be the best of both worlds. These changes will affect the HEIs ecosystem and business model. Main aim of this paper was to investigate how the business model of the 'University of the Future'' would look like. By analyzing the value network of the current ecosystem, we established roles and activities which show us a blueprint for exploiting educational services. To gain a good overview of which changes are likely to occur in the landscape, we conducted 15 interviews with actors of the value network and asked them several related questions to the research subject. Approximately 81,8% of the respondents are not completely satisfied with the current educational system in which class-room based teaching is still the dominant teaching approach. They prefer a more flexible approach by which they can enter their course of preference at any time. Statements of our participants correspond with the pro's which we addressed in our theoretical framework. A large amount of our participants are ready to make the change (72.2%) and the overall preference goes out to a learning style which replaces the focus to instructor-led trainings sessions, conferences and debates during class while also retrieving the general information via an online platform. These findings show comparisons with a flipped classroom setting, in which traditional lectures will be completed outside the classroom walls (onine) and the classroom itselfs is transforming into a more dynamic environment in which the instructor fulfills the position of ''coach''; providing

immediate feedback, raise discussions and discussing practical applications. The ''new'' business model affects 7 building blocks of the Canvas in particularly based on our results, which indicates that the University of Twente must re-think their current educational strategy. Biggest barrier - which we also analyzed during our study- are the costs involved with implementing an e-Learning strategy. The business model we developed for the ''University of the Future'' has a mediating effect between the technology of online learning and end users. It shows the ''University of the Future'' how they can capture and deliver value to their students. Our model shows the overall architecture of what the University of Twente might be doing in the future and with whom they can build relationships with. Future research must be performed in order to assess whether the costs weighs up against the benefits it brings along. Based on our study we can conclude that the actors within the value network are ready to ''make the change''. Also the fact that our research shows that the concept of online learning is high on the agenda of our national government, must give the University of the Future enough reason to believe that online learning technologies will take over in a few years from now.

Preface

This master's thesis was performed internally at the University of Twente in Enschede. This thesis is the last phase towards my master's degree in Business Administration at the University of Twente. During my bachelor study International Business Administration at the University of Twente, I learned a lot about conducting scientific research, performing assignments and the English program gave me knowledge of business strategies useful for a successful career in a relatively complex and a more-than-ever demanding economy. After receiving my bachelor's degree, I chose for this master to broaden my knowledge on how to help various organizations to improve their business problems and to come up with solutions for them. The variety of courses offered by this master program helped me how to work on challenging solutions by combining the theory with practical applications. After completing courses in the field of strategy & marketing and organization, innovation & entrepreneurship, accounting & finance and change management and HRM, I worked on this project in the final phase of my study.

Looking back, I can conclude that I've gained a lot of new knowledge in the field of Business Administration during the last couple of months and that I worked on this project with great passion. I want to use this opportunity to thank my supervisor Michel Ehrenhard for introducing this research project to me. The research topic really appealed to me and I'm very thankful that he has helped me during the whole project by giving me guidance and constructive feedback.

Finally, I also want to thank my family and friends who have helped me during my study and trough this final phase. Their help and support made it a lot easier to successfully complete this thesis.

Malou Oude Luttikhuis
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1.0 Introduction

Changing role of HEI's

The current technology-driven world gives rise to a new sort of digital age in which our personal, professional, social and cultural lives are affected by a computer networking revolution. In our everyday lives, we make use of email, smart phones, social networks and other digital devices, to communicate to each other and we can conclude that these new technologies kind of re-shaped our way of functioning within the community (Anderson, 2008). Moreover, as aspiring or current member of the education profession - teachers, instructors, professors, trainers- the globalized world we live, work and educate in has been particularly impacted by networking technologies. This 21st century- also known as the 'Knowledge Age' refers to the current time, whereby knowledge creation has social plus economic value (Harasim, 2012). Today's youth are thus raised in a culture where the World Wide Web is inevitable and it's viewed as integral to socializing and work. Till date, the educational field does not completely reflect the characteristics of this new age.

However, the role of Higher Educational Institutions (HEIs) in this digital age has drastically changed. Most of the HEIs all around the globe feel the pressure to expand the access to higher education. Besides, our knowledge society demands even more graduates, and a great part of these graduates increasingly return to study as lifelong learning takes place in both work and leisure time. It's believed that HEIs on itself play an unique role in our society, namely these institutions *'enables the society to sustain a relatively independent insight and is sympathetically aware of itself and its world'*. (Laurillard, 1993). This over-embracing mission of HEIs, distinguishes from other competitors in the knowledge industry and the for-profit realm. However, it is believed that the teaching methods within these HEIs does not measure up to its role (Laurillard, 1993; Harasim, 2012; Ariwa and Rui, 2005; Uden and Damiani, 2007). Where the people in their daily lives have embraced new technologies for social interaction, the educational institutions have not taken into consideration new technological possibilities to transform the teaching methods. Despite the fact that there is a certain interest from HEIs to adopt these new technologies, little attempt has been made to consider or examine new learning paradigms. Instead of transforming the whole educational pedagogy - by introducing new technologies into the teaching approach- a common tendency can be identified to partly integrate these technologies into the traditional class-room based teaching model (Dondi and Delrio, 2006). These new learning technologies can no longer be ignored and thus the time is

near that professional teachers and academics face the difficult challenge from new learning technologies, as they have to renovate the learning process beyond the current, dominant traditional transmission model (Laurillard and Andrew, 2006).

There is thus a pressing need for HEI's to finally meet the demands of the knowledge society and thus must take full advantage of the technological possibilities presented to us, which can move teaching and learning into a whole new era (Laurillard, 2008). The speed of technological and socio-economic change, learning strategies and trajectories are becoming similarly volatile (Redecker et al., 2011). According to many scholars, the knowledge generation process have transformed substantially over the last two decades, simultaneously given rise to new working methods and communication patterns, but also to new learning theories and approaches.

1.1 Problem Analysis

Turbulent operating field of HEI's

No generation is more at ease with online, collaborative technologies than today's young people - the digital natives- who are raised and grew up in a digitalized world. Prior generations came to classes with their pen and notebooks, but today's students use a whole different toolkit, including smart phones, Ipads and other digital devices. Within the last decade, the operating environment of HEI's significantly changed the way in which they operate. Their operating environment is characterized by more uncertainties, a high level of competitiveness and can be called more turbulent than ever before (Clark & Gibb, 2006. p. 58-64). The internet as a transformative technology has a major influence on the changing way we do things nowadays and thus also leaves it's footprints on the current educational institutions. New emerging technologies will affect the current one-dimensional (physical) educational system and eventually swift to an broader, multi-dimensional system where the emphasis is on physical and online concepts (Garrison & Vaughan, 2008). Due to multiple technological innovations, the evolution of teaching methodologies will significantly change the next fifteen years (p. 7). Students will become more engaged in a process whereby they are able to develop and construct their own knowledge.

The implementation of online learning technologies and methods will bring along many advantages like reduction of travel time for off-campus students, flexibility in joining discussions in a bulletin board, ability of students to select their own learning materials that fits with their level of knowledge and match their capabilities, accommodating of various learning styles, scheduling of class work around work, family and other personal obligations. New technologies do also affect other areas of educational institutions. Web 2.0 tools will help to build potential connections with alumni and support career service activities and upcoming digitalized self-service programs will significantly reduce administrative requirements, streamline course registration and enhance academic life (p.8). Most of the HEI participants are positive about these changes, as opposed to the institutions who consider the digitalization of the education as costly and also do not want to transform the current educational environment into a completely e-learning setting due to the lack of adequate trained staff, lecturers and teachers, and the absence of other important resources. Besides, there is also skepsis and fear among teachers and scholars to get replaced by technology and consequently job loss. Teachers are sort of 'obligated' to modify their traditional teaching approach whereby the class-room based teaching approach will partly be replaced by an online teaching style. The advent of digital technological developments the last two and a half decades, transformed the world dramatically and will also continue to do so (Huynh et. al., 2003). Especially technology, drives major changes in individual's professional and personal lives across the world, thereby having a great impact on every facet of our society and is considered as an integral segment of how we interact, work, learn and have access to knowledge and other valuable information. Novel emerging technological learning technologies already begins to have a sort of transformative influence on the provision of HEI's.

Desire for flexible learning technologies: changing eco-system

The landscape of a HEI is evolving at a constant pace, driven by various factors like economic and social essentials calling for a much higher level of skills, there is a strong desire for more flexible learning opportunities (p. 9). Besides, digital learning technologies are becoming universal, which instigates an rising expectation from the society for greater access, improved quality and even more flexible approaches and online opportunities in the provision of HEI's (p.36). The rapid pace of technological developments can be considered as quite striking,

especially of the fact that MOOCs[1] for example have already generated a noteworthy interest and attention (Salmon, 2004). But this is just an tiny wave of innovation within HEIs, which affects the original pedagogy and delivery mode. The remarkably growing propulsion towards (open) educational approaches, key resources plays the advances in technology driven learning have led to the apparition of a plethora of digital platforms and online web portals which allows users to have easy access to educational key resources and materials from HEI's all around the world, allowing them to undertake a vast range of courses online (Brown and Duguid, 2009). So different kinds of (novel) online courses are on the rise, which changes the original concept of HEI's and the provision, thereby challenged to unbundle its core components. HEI's are thus not the sole provider of services; a range of specialist companies are able to provide higher education services like course platforms, examination and certification services, learning support and analytics (Botha et al., 2008). With all this being said, it's obvious that the HEI's landscape will undergo magnificent changes as a result of technological innovations in learning methods and materials. This means that the HEI's business ecosystem enters the last stage of its life cycle and it's obvious that new innovative, technological developments are shaken up the original ecosystem (Peltoniemi & Vuori, 2004). Clearly, HEI's have a choice to renew their selves by maintaining a equilibrium between stability and change through new innovations and by tracking down the new trends in online learning technologies. The academic system will and must change, but HEI's cannot change easily. Multiple traditions, values and infrastructure all create the conditions for a natural inertia. But the organizational system of HEI's will significantly change and need to adapt to the changing environment they find themselves in.

Embracing new online learning methods in practice: TOM-model

The University of Twente started in 2013 with the ''Twents Onderwijs Model'', better known as TOM and was the leading teaching mode for Bachelor students. The integration of the TOM model was a continuing process of trial and error according to skeptics and students. Recently, professor and the Dean of Educational Innovations, Ramses Wessel forecasted a radical change for the University of Twente, thereby stating that the traditional lectures will disappear within five years (UTNieuws, July 2015). Wessel calls himself a 'believer' of the TOM and saw it has a mission to introduce it into the teaching methodology of the University of Twente. He claims that it is grown out to a successful model, but he is aware of the critics from students, professors and others who have participated and played a role in the by the introduction of TOM. Especially the first year many misconceptions aroused which led to a bad functioning of TOM. This education

[1] MOOCs are online courses, which can be easily accessed by multiple participants via the Internet and distinct itself from the traditional class-room based course materials by providing an interactive user forum to support any kind of interactions between students, lecturers, professors and other faculty members.

model now enters a smoother phase, but it is far from perfect functioning (p.24). The introduction of a new model is like a cultural change, whereby the teachers must allow students to take the lead. Student driven learning asks for a different approach on how to handle your students. All the new models show that if the student is placed in the middle, thereby 'discovering' their own ways of learning, knowledge will be better stored into their brains (p.24). Wessel clearly sees other educational innovations that are likely to happen and will serve as the leading model for the University of Twente. Currently, there are plans to build a repository, a database where students can find literature research and movie-clips which are informative and relevant for their study. Novel platforms must replace the current Blackboard system on the long term, so that students are able to work together and share information and documents in an online space. Central in the new ICT-vision is the phenomenon 'flipped classroom', in which lectures will be followed online, at the student's preferable place and time. However, it is important to keep intact the physical meetings, which gives a different dynamic. The total campus experience is thus still important. Wessel believes that in five years from now, the University of Twente will no longer offer the traditional hearing lectures, which will then be followed online. He believes in these new learning developments and states that it fits with the current technological developments the University of Twente is going through. The smartboards for example are build into every classroom, but we use them rarely. It's strange, why not deploying the interactive forms of learning? The University of Twente owes it to itself to deliver real good ICT developments. The Uraad agrees with the new ICT vision of Wessel and claims that MOOCs and flipped classrooms will be the first steps in this digitalizing process. However, the Uraad calls into question whether or not the financial resources are big enough to fully digitalize the educational system. It seems that the University of Twente is ready to make the change and embraces a new ICT vision. However, it's clear that HEI's need a helping hand in how to build a new digitalized model for the University of the Future.

1.2 Research Objective & Research Question

The assertion being made here is that new learning technologies depend for their success upon being embedded properly into the existing learning context. Further investigation into these new learning technologies is inevitable, as it brings along many benefits and drawbacks, but most important of all; these new technologies have the power to radically change the HEI's operating field. However, these new ICT developments have a significant effect on the current business model of future HEI's and universities.

Based on the problem analysis the research objective is as following:

How is the business model of universities impacted by evolving digitalized learning methods?

The main aim of this research is to investigate the major technological developments within the educational system and thereby trying to determine which influence these new sorts of technologies have on HEI's and their current ecosystem. In this research, we try to determine and analyze what the precise impact is of these technological developments within a HEI's operating field. In this research we used the University of Casus as a base line, but the findings and outcomes of this study are useful for/can be subjected to other HEI's as well, while most of the strategies, the overarching system and functions are quite similar. When we use the term ''University of the Future'' in our study, we're thus referring to all HEI's worldwide.

1.3 Scientific Relevance

Learning technologies are an unfamiliar subject and scholars consider it as a complex research area. Few of the current generation of academics have ever learned through technology, so practice develops slowly and theory hardly t all. With this research, the attempt is being made to elaborate on the scarce and comparatively little research that is conducted within this field. Especially the combination with the ecosystem theory is of huge relevance, because research on eco-systems is still in its infancy. It's kind of remarkable that such little is known about how eco-systems function or which roles need to be performed in order to function in the right manner. By connecting the ecosystem theory to new emerging learning technologies, it's possible to bring new insights to the changing role of HEI's and to precisely determine how the higher education landscape will transform. Looking at the literature on platforms, it's still not very clear how these external or industry platforms emerge. The literature has till date not tackled this matter, and researchers simply assume that platforms already exists. This paper tries to dive deeper into the platform literature and especially pays attention to the emergence and ecosystem creation. Within this research, an attempt is being made to clarify the differences in the literature with regard to the different types of platforms and the related strategic concepts.

1.4 Practical Relevance

Overall, organizations are always striving for the best; they are looking for the best ways to achieve success. Research shows that the focus on how to achieve such sustainable success has shifted the last few decades. Earlier, the focus lay on analyzing the external environment to the resource-based view approach (inside out), from managing hyper competition and navigating to 'blue oceans'. However, organizations must be aware that their road to success can be linked to a different life aspect: eco-systems. If companies are aware of their role within the eco-systems they are likely to create an advantage, which allows these organizations to develop new opportunities and to maximize opportunities. This paper gives insights in what eco-systems precisely are and how they operate. All organizations are operating in a ecosystem, but they often do not realize they are. Secondly, the technology-enabled learning innovations and the new emerging paradigms of quality and teaching methods will continue to force HEI's to redefine their value. HEI's feel the pressure to strive towards more efficient learning innovation to design new value propositions for students who are cost-conscious and seek flexibility to learn at their own pace. Perhaps, looking at the whole value network might help these institutions to redefine the value. Besides, innovation is also taking place at a much faster rate at the fringes of the HEI's system than at its core. It is getting accelerated by the energy of entrepreneurs, employers, investors, and most importantly, new types of learners who are open to experiment. The opportunity for HEI's and systems is to embrace these 'outsiders' as an important part of the innovation eco-system. This shift will require the expansion of the eco-system of HEI's innovation through partnership with and the inclusion of new stakeholders. Current business models of educational institutions are considers as too tradition-bound and therefore, this research might be useful for other educational institutions in how a HEI's ecosystem will change and how they can manage the value network in such a way that they will improve their value creating system and eco-system efficiency.

1.5 Outline study

The outline of the master thesis starts with the introduction of the research topic and the outline of the central research question, which concerns the research goal, followed by the construction of a theoretical framework. Here the key concepts concerned online learning technologies and eco-systems and value networks are highlighted. In this section the theories will be introduced and explained, even so the related concepts are defined which are of high importance for this study. The next part is the research design in which the methods for data collection and analysis are presented. After that, the results are presented and will be matched with the gathered literature and this section will be followed by an extensive discussion whereby also the

limitations of the research are addressed. Finally, the thesis will end with a well-argued conclusion, and a part on recommendations and future research. In this section, the research question will be fully answered, the limitations of the study and the implications will be examined and several suggestions for further research will be summed up.

2.0 Theoretical framework

Selection of theories

The implementation of a new online learning methodology lies in the complexity of the involved technology. Within the operating field of HEI's, multiple stakeholders are involved in the delivery of educational services which adds further market complexity. The implementation of innovations such as online learning methods and tools are hampered by users (stakeholders) and technology issues, organizational issues are even poorer understood (Arthur, 2009; Murmann, 2003). Therefore we will study organizational barriers with regard to adopting new learning technologies and propose ways to overcome this barriers by advising Universities of the Future which online learning methods really ''work'' and how to integrate this into their business model. For this purpose, we'll draw on the notion of value networks to analyze the business ecosystem surrounding the ''online learning'' technology platform. We'll start off with the literature on business model innovation while we clearly deal with a new technology in our study, which HEI's on its turn might will try to commercialize in the future. It is of great importance that the logic and competitive strategy of HEI's will be investigated so that HEI's can make the right decisions at the right time. Besides, we'll focus on future learning developments and selected our theories based on current dominance and relevance: we've summed up several dominant models within the digitalization process of HEI's.

We'll kick-off with summing up the future developments in the field of online learning technologies after which we presume with the business model innovation theory and theory on platforms, ecosystems and the value network approach.. These bundle of theories will help us identifying what impact these developments have on the business model for the 'University of the Future'.

2.1. Future learning developments for HEI's

This section describes the developments of the past decades in learning, the newest developments in learning technologies and mentions explicit digital learning materials.

Raising interest for a reformation of the traditional educational system

The concept of online learning is high on the agenda of HEI's and national governments. Universities, in a national and international context, are formulating a more explicit digital educational strategy as an answer to the more recent, rapid developments in the field of ICT. This has to do with the fact that ICT is embedded into every sector of the economy and our social environment and thus in the educational system (Barber et al., 2013). The first decade of the 21st century was marked by the rapid growth in enrollments in online programs, the near ubiquitous adoption of e-Learning by colleges and universities, and lately, the influx of proprietary institutions into the e-Learning market. e-Learning moved distance education into the mainstream of higher education and made it a central focus of a growing number of institutions (Miller et al., 2014). e-Learning refers to the use of an ICT infrastructure to enhance and support the teaching as well as the learning process. It is the incorporation of a variety of learning strategies and technologies and courses are offered entirely online (Clark & Mayer, 2011). e-Learning can be seen as an alternative solution for students who are geographically dispersed (Chen et al., 2004). Interaction can take place in two forms: synchronous or asynchronous. The first form of interaction, synchronous learning, is the teaching form by which the teacher and student interact with each other at the same time when they are dispersed from each other. Within the asynchronous learning process, there is no time and space component, which means that students and teacher can interact and participate in the online educational process at any time they want, irrespective at which they are located (Mortera-Gutierrez, 2005). The availability of technology, cost perspective and maintenance determines to which degree synchronous or asynchronous activities are carried out in the learning process. Some authors are able to explicitly define e-Learning, but again there is no common single definition for this concept, which was the same case for distance learning and online learning. (Chen et al., 2004). Most of the scholars have reached a consensus about the characteristics of e-Learning that covers content which is delivered through the Internet, but also includes audio- and videotaping, broadcasting and podcasting (Nichols, 2003; Ellis, 2004; Benson et al., 2002; Clark, 2002). e-Learning is not only a procedural learning method, but also transforms a student's experience into concrete knowledge through the construction process. Ellis (2004) and Triacca et al. (2004) both believe that the definition of e-Learning consists out of an interactivity dimension to be truly applicable in describing the 'learning experience' and view it as an extended version of online learning. e-Learning has become increasingly important in Higher Educational Institutions (HEI's). The development and implementation of multiple e-Learning tools like the use of e-mail, creation of digital portfolio's and virtual environments caused many changes in these educational institutions with regard to their educational delivery and support processes.

e-Learning offers unprecedented opportunities for innovation in teaching and learning, especially in how institutions are structured and managed. e-Learning has emerged as a disruptive change and one thing is for sure: e-Learning has grown out to an emerging, novel approach to teaching and learning in most higher educational institutions and universities all around the world. Li and Hart (1996) and Lin (2006) stated that e-Learning has grown in popularity with learners as they are able to combine their learning experiences with the advancing Information Technology (IT). New technologies and e-Learning are the driving forces in most educational institutions nowadays. Ariwa and Rui (2005) even state that e-Learning is the protagonist for change in the educational system. Besides, it brings along many benefits and ensures a greater accessibility and flexibility in terms of time and place (Uys, 2003). e-Learning also allows participants to easily get access to information online, it enables students to conduct lessons from their situated location, students are able to combine education with work and personal life and many scholars claim that it lowers the total costs and increases the cost-effectiveness of educational resources (Ariwa and Rui, 2005;Berhanu, 2010; Uwin 2008; Uys, 2003). e-Learning continues to grow at a rapid pace and Allen and Seaman (2010) even report that the enrolments in online courses was 21% higher between 2009 and 2011, compared with an increase of 2% for on-campus enrollments. Besides, 64% of the institutions located in the United States stated that e-Learning is or will be an essential part of the future strategy plus nearly 48% of all the study enrollments in the United States are in online courses (p.6). Ambient Insight Research conducted a research in the United States in 2009 and reported on the development of e-Learning in 2016. Looking at the prior development of e-Learning, it is predicted that a total of 27.35 million students will follow a higher educational program in the United States. Approximately 82% of all the (post-secondary) students will be taken up to five courses online compared with a percentage of 43% in 2009. In 2009 there were 1.24 million students who took all of their classes online against a total of 6.55 million students in 2014. The Ambient Insight Research even claims that this amount will be doubled for 2016 (p.8). Despite this rapid growth in e-Learning, it hasn't been unnoticed that this trend also brings along some systemic barriers and limitations. The biggest barriers to online learning are faculty resistance, lack of training in teaching, lack of a system wide approach and failures towards developing appropriate methods for costing e-Learning (Bates 2004; Bates,2011).

Till now, this emerging trend didn't result in a reformulation of the (digital) education strategy, which partly has to do with the barriers to online learning. It simply doesn't fit within the traditional ''campus education' approach of traditional HEI's. In practice it seems that combining the offline and online aspect, is considered as the most appropriate and acknowledged learning model according to many scholars (Hiltz & Turoff, 2005) and research panels (Conrad, 2002).

According to them, blended learning offers the solution due to the fact that within this system, practioners can rely on the value of the ''physical'' campus and the strength of the face-to-face education (Wende & Collis, 2014).

Future developments

Blended Learning: best of both worlds

Blended learning is narrowly concerned with the 'critical substitution process' whereby hybrid courses are offered to students. On many different universities, professors and other instructors are using a-synchronous systems to stimulate discussions outside and beyond the classroom. Blended learning is described by Hiltz and Turoff (2005) as: *''the type of learning whereby there is no need for the instructor or the student to be concerned with which students attend the face-to-face class an which students participate online. All learning experiences that are available face-to-face are also available in a digital form hat is at least equally effective (p.61)''.* It must be noticed that this definition on blended learning must be seen independently of the learning technology of methodology employed. The focus lays on the end result of 'blending' face-to-face and online learning into a single entity. Popularity of blended learning increased rapidly due to the advantages of the integration of online and offline learning.

Blended learning is seen as the emerging trend in HEI's and is considered as an effective and low-risk strategy which positions universities for the onslaught of technological developments that will be forthcoming in the next few years. Blending learning can either be simple or complex. In its most simple form, blended learning is a learning type whereby classroom face-to-face learning experiences are integrated with online learning experiences. Complexity can be found in the implementation of blended learning together with the various design possibilities. It is important to distinct blended learning forms of learning that also involves online learning opportunities (Garrison and Kanuka, 2004. p.96). What makes blended learning particularly effective is its ability to facilitate a community of inquiry. Community provides the stabilizing, cohesive influence that balances the open communication and limitless access to information on the Internet. Communities also provide the condition for free and open dialogue, critical debate, negotiation and agreement - the hallmark of higher education. Blended learning has the capabilities to facilitate these conditions and adds an important reflective element with multiple forms of communication to meet specific learning requirements. For example, at the beginning of a course, it may be advantageous to have a face-to-face class to meet and build community (p.104). In contrast, discussing a complex issue that requires reflection may be better accomplished through an asynchronous Internet discussion forum. Whether face-to-face or online, communities of inquiry consist of three elements: cognitive, social and teaching presence.

The sense of community and belonging must be on a cognitive and social level if the goal of achieving higher levels of learning is to be sustained. This requires the consideration of the different cognitive and social characteristics of each medium of communication. In this regard, blended learning presents a special challenge, and, thus, highlights the importance of the third key element - teaching presence. Teaching presence manages the environment and focuses and facilitates learning experiences. With the combination of synchronous verbal and asynchronous written communication in the context of a cohesive community of inquiry, blended learning offers a distinct advantage in supporting higher levels of learning through critical discourse and reflective thinking. The range and quality of interactive dialogue that can be facilitated through blended learning is congruent with the widely accepted means of facilitating critical thinking and higher-order learning (Swan, 2001. p. 306-331). The emphasis must shift from assimilating information to constructing meaning and confirming understanding in a community of inquiry. This process is about discourse that challenges accepted beliefs, which is rarely accomplished by students in isolation. At the same time, to be a critical thinking is to take control of one's thought processes and gain a meta-cognitive understanding of these process (learn to learn). A blended learning context can provide the independence and increased control essential to developing critical thinking. Along with the increased control that a blended learning context encourages is a scaffold acceptance of responsibility for constructing meaning and understanding (Young, 2002).

MOOCs

MOOCs are considered as a new online learning phenomenon and the abbreviation stands for Massive Online Open Courses. MOOCs can be integrated within a blended learning program: the specialized course knowledge will be gained via a MOOC, while other different aspects of the MOOC will be further discussed in an offline learning possibility. MOOCs provide students with courses which are free to access. Original premises of MOOCs is to be more opener to education and has two main key features: (1) open access- every student is able to participate in the online course at no expense and (2) scalability- the online courses are designed in such a manner that is supports an indefinite amount of participants. MOOCs are developed to share knowledge freely and so that students are able to study and learn without any economic, demographic and geographical restrictions (Yuan and Powell, 2013). Nowadays, there is a growing interest among HEI's to participate in this 'open' movement. HEI's must make the decision about how to serve the specified mission and how they can respond to the various learning needs of students in a rapidly changing educational landscape (White et al., 2010). Kortemeyer (2013) claims that Open Educational Resources yet not affected the traditional business models or daily teaching practices at most HEI's, but the rapid expansion of MOOCs and other future developments has

triggered the biggest players within HEI's. The University of Twente recently introduced MOOCs into their learning model and thus made use of the opportunity to combine traditional lectures with the facilitated and guided approach to learning. A new (online) landscape slowly changes the established model (p.4).

Flipping the classroom

A second educational blended learning design is the concept of flipping the classroom. It is a way to change up what instructors, professors and students are performing in the classroom as well as outside the classroom (Rotvold and Braathen, 2014). To actually 'flip the classroom', the traditional lectures will be completed outside the classroom walls, and through the use of videos, podcasts, recorded lectures or screen casts, students are learning. The time students are spending in the classroom is solely used for engaging students by solving problems, to participate in a discussion and to collaborate with peers. Thus, this flipped classroom- concept actually provides a more effective usage of both the student's and the teacher's in-class time. It allows for a more personalized, differentiated instruction because instructors have more time to help students when they actually need it (p. 1). With this being said, a flipped classroom may look like what some call as chaos and noisy, but in reality real learning will take place. It actually reverses the traditional, passive way of learning experiences in a lecture-based classroom and is replaced by for example a discussion, problem-solving matters or situations/cases wherein concepts will be applied, also characterized as active learning activities. Berret (2012) and Tucker (2012) state that when applying this model, one must over think the best usage of the face-to-face class time (p.30) plus have to take into account the changing role of the instructor form *'' the present of content to a coach who is developing the talents of her pupils (p.31)''.* Flipping the classroom is different type of learning because the classroom is transforming into a more dynamic, interactive environment where learning takes place and the professor or instructor guides the students as they are applying concepts to a case and engage creatively in the subject matter. The role of the instructor or professor is becoming more integral and requires the instructor to develop skills in observing students, the providing of immediate feedback and reflecting on their practices, connecting with other instructors to continually improve their selves, and tolerating 'controlled' chaos (Strayer, 2007. p. 33). To effectively apply this approach, one must first carefully think about a planning to gain the best results out of this learning approach. Assessing which parts of the classroom you want to flip and then being intentional about when to flip and to make clear what the ultimate advantages and benefits will be for the students is the primary step in a successful 'flipping the classroom' approach. - Goodwin and Miller (2013) also claim that it isn't solely about flipping the classroom, but one needs to keep in mind that the paradigm of teaching changes significantly. So, you are actually

moving away from the traditional model of teachers and imparters of knowledge and shifts towards a more dynamic model whereby the instructor or professor fulfills the position of 'coach', thereby observing the students, indentifying their individual learning needs and guiding the students to higher levels of learning (p.79-80). By introducing the 'flipping the classroom' method into the educational system, many benefits will arise but the degree of benefit depends on the nature of the course and the implementation ''an sich''. Moore, Gilett and Steele (2014) mentioned in their research that the benefits of the flipping-model depends on the choices being made with regard to the planning time and technology. Research performed by Goodwin and Miller (2013) revealed also several benefits of the flipping-model. First of all, it is seen as a scalable method for class delivery with a high efficiency rate. By using the facility more efficiently and using the faculty time in a proper way, lectures will be more productive and even better learning outcomes will be achieved (Berret, 2012; Davies et al., 2013). According to a large sample of students, they think that flipped courses are more challenging and engaging in comparison with viewing homework lectures or power point presentations. Further, there is flexibility in the pacing. Students can choose for themselves how many time they want to spend and need for understanding the material or to complete assignments. The teacher's role is to check whether the student really understands the material and to provide help when needed and to incorporate peer instruction. Because of this, teachers actually have more time for interacting with the students one-on-one which strengthens the relationship between the student and the teacher (Clark, 2013). Additionally, the feedback from the teachers during the class has also a positive influence on the student's learning perception and students have more time to take the role of 'collaborator'; they are willing to help a classmate due to the fact that time is used more efficiently in the flipped classroom (Simba Information, 2011; Berret, 2012; Brunsell & Horejsi, 2013). Fourth, preliminary data suggest that in a flipped classroom, student learning and achievement is likely to increase (Fulton, 2012a; Davies et al., 2013; Stone, 2012). Research was performed among the universities in Michigan and Minnesota and it showed that these students showed twice the rate of gains compared to students who attended traditional lectures (Berret, 2012). Besides, test scores from students in a flipped classroom- setting compared to students in the traditional lecture-setting differ substantially. Students who attended flipped courses scored better than those who didn't attend these courses (p.45). Besides, 84% of the students give the preference to the flipped classroom-setting, because the learning delivery is more challenging and time-efficient (p. 49).

2.2 Business model innovation

What is a business model?

Organizations try to commercialize new ideas and technologies through their established business model. To begin at the beginning - what is the definition of a business model? According to Osterwalder (2005), the business model can be seen as an abstract representation of the ''business'' logic of an organization. The business model has several functions which serves as the underlying basis of this theory; it articulates the value propositions; identifies market segments and specifies the revenue mechanisms; defines the structure of the value chain which is necessary for the creation and distribution of assets which on its turn support the position in the chain; it estimates the cost structure and profit potential; describes the detailed position of the organization within the value network which links suppliers and customers with each other; and it formulates the competitive strategy which the organization adopted to gain competitive advantage over their rivals (Österwalder, 2005). These functions can be divided into nine building blocks which serves as the dominant procedure for the creation and testing of the business model (Österwalder and Pigneur 2010). This so called ''Canvas'', helps one to make the correct decisions for business model development. The Canvas is divided into nine building blocks. This tool makes it relatively easy to understand the mode of operation and how you might can do it differently (Österwalder and Pigneur, 2010).

Business model as a source of innovation

The Canvas is considered as a conceptual instrument that enables an organization to make the right decisions at the right time for business model development. By mapping down a scheme of the building blocks, it enables one to assess how the business in conceived in relation to the added value, defines the customer relationships and clarifies the financial aspect of it (Österwalder et al. 2005). Each of the above mentioned ''blocks'' contains a set of questions that are likely to validate the model and elaborate the model's internal strengths (Österwalder and Pigneur, 2010). Popularity of the business model concept increased steadily, because today's managers are spilt for choice when it comes down to defining their value proposition and the way in which they configure the value network (e.g. choosing their partners, looking for ways to reach the customer). Business models can be considered as a source of innovation and continuous improvement. Where innovation primarily focused on a product or a specific service, nowadays this focus shifted towards the development of business models that are able to leverage the organization's unique core competences (Anthony, 2012). In the literature as well, there is a consensus that a business model - as an innovation source- is the most important vehicle for the transformation and renewal of businesses (Zott et al. 2011). A business model on itself represents a part of innovation commercialisation which is managed separately; however

it is managed in accordance with the value innovation process (George and Bock, 2011). Creation of innovation within a business model can be established in three ways: (1) by introducing a new methodology or by the modification of the internal operations of the organization in place, without changing the essence of the product or service (output). (2) Secondly, a breakthrough enables the organization to be the first mover in a particular market. This form of disruptive innovation may cause minor changes in the business model but the effect of these changes is however big enough to contribute to the renewal of a business. (3) On the other hand, the demand-pull approach asks businesses to reformulate their business model in order to fulfil and meet the customer needs and the business environment (Teece, 2010).

2.3 Business eco-system, value networks & platforms

Ecosystems

The most successful organizations seem to evolve at a rapid pace in an effective manner. However, these innovative organizations are not able to develop their selves in a vacuum and therefore must think about how to attract key resources, network partners, suppliers, and customers to establish collaborative networks. But besides the literature on networks and strategic alliances, the insights from natural eco-system theory of Gould is useful as a starting point for understanding the strategic logic of change (Thomas & Autio, 2014). Natural ecosystems can collapse sometimes if the environment changes in a radical way. Dominant combinations might lose their leadership and novel eco-systems arise with previous plants and animals in it. Looking at current organizations who also face enormous innovative challenges, clear similarities can be identified. According to Moore (1993), a single organization is not a participant within a single industry, but must be viewed as part of a business eco-system in which organizations establish capabilities based on an innovation. Therefore, the business-eco system approach will be further outlined, as an extension of a systematic approach to strategy.

Roots of the eco-system concept

One of the first attempts on analysing and defining the business eco system concept leads us to back to the same person who established the theory of ecology (Moore, 1993). According to this author, the business eco-system concept can be defined on the original analogy of a biological ecosystem. Within this analogy, (economic) entities are well established and considered as significant ‘species’ who are sort of co-evolving in the exact same environment (p.49). Business eco-systems primary task is to attract various types of resources to subsequently transform them into a final product, which is the same process as in a natural system. Moore (1993) defined the business eco-system concept by stating that 'a business eco-system is a community

of companies, who are co-evolving around a 'new' innovation (p.76). A few years later, various scholars tried to extent the definition and the concept itself became more meaningful since then. After analysing the literature on eco-systems, the following definitions are found to extent the original view of Moore (1993):

- Moore (1996): 'it consists out of a variety of business networks and thereby related facets'.
- Gossain & Kandiah, (1998); Peltoniemi & Vuori, (2005): 'a business eco-system is viewed as a variety of interconnected organizations, or as a network (Der Hartigh & Van Asseldonk, 2004).
- Den Hartigh, Tol & Visscher, (2006); Thomas & Autio, (2014): 'it is a coalition of multiple organizations and SMO's, who evolve around a communal technological basis or a platform'.

Eco-systems and how they operate

According to Kastalli and Neely (2013), the path towards success is associated with eco-systems and how they operate. The focus of strategic management literature clearly shifted from identifying and analyzing the external environment and industry to the construction of (internal) capabilities. Organizations are always striving to maximize their value, but before they can obtain this value from the eco-system, they are forced to understand the underlying and fundamental characteristics of eco-systems. So, this means that at forehand it must be clear how eco-systems are formed and how they emerge, what the structure is, its function and what they are made of. With this we mean that eco-systems might be value networks or alliances. The value network concept is closely linked to the eco-system theory and will be further outlined later on. Looking at how eco-systems operate, it seems that an eco-system is considered as a mechanism which can be used to coordinate individal efforts to solve rather complex issues (p. 8). An eco-system is able to provide the opportunity to tackle challenging issues. Eco-systems are actually configurations of various players - private organizations, public institutions, individuals - who are all participating in solving a complex matter. Also the technological developments in the 21st century enables organizations to communicate at an unprecedented level of transparency, which means that it is a lot easier and effective to collaborate with other parties and thus outside and across organizational boundaries (Power & Jerjian, 2001. p. 38). Every innovative player has its role in solving the common problem or challenge. When these organizations are willing to operate through the use of an eco-system, it allows them to tackle challenges and find innovative solutions and exploit new opportunities (Graham, 2014. p. 10). However, it must be noticed that an eco-system not solely emerges when a new opportunity

presents itself or as a reaction upon complex challenges. Eco-systems are likely to emerge when a proper and better solution must be found or when an already existing solution is no longer effective (p. 11). When new challenges occur, eco-systems have the potency to tackle these by reconfiguring and regrouping their selves. Applying these theory to this thesis's context, universities might view their selves as educational institutions who's primary task is to provide students with educational courses and is thus a part of an eco-system of different members, including suppliers, research departments, ICT companies or other players that help to achieve their goal: educating. In the current context, the same universities might see their selves striving to a higher-order objective for example and therefore are forced to start the process of reconfiguring their current eco-system to help all the members to achieve the proposed objective, while at the same time expanding their relationships with partners and stakeholder who might be useful for the eco-system in tackling other sub-objectives.

Life cycle of the business eco-system

Every business eco-system is also believed to have its own life cycle, just as in industries. Taking a closer look at the analogy of biological eco-systems, we'll see that the life cycle development of the business eco-system is originated from this analogy. Just as similar as in a biological eco-system, the business eco-system evolves from a 'random collection of elements towards a tighter structured community' (Moore, 1993, p. 76). Taking this point into consideration, one was able to identify four different stages of eco-system development, namely birth, expansion, leadership and self renewal/death. Every stage embraces a sequence of transformations; detailed key features and key characteristics belonging to that particular stage affects the business eco-system as a whole in its overall development. It must be said that in the real world, the evolutionary stages of the business eco-systems might blur with each other and the managerial challenges a specific stage has to deal with, very often crop up in the next stage. These four stages can be observed in different types of organizations but the co-evolution is a continuing process which constantly remains the same, namely the interplaying between competitive and cooperative business strategies (Dyllick and Hockerts, 2002). The trend of business eco-systems vying for survival and dominance is noticeable in every business environment. However, the current transformations we are going through is not because of the individual companies in an eco-system but can be blamed on the degree of competitiveness among these eco-systems. Managers in these organizations can and must not take no notice of the birth of new eco-systems nor ignore the rivalry among the existing eco-systems. Whether that pushes these eco-systems to invest in the right technology, integration of innovative concepts or signing on your suppliers to broaden an already increscent business, it asks for a clear understanding of the four stages, where business eco-systems are passing through plus how to manage these changes.

Stage 1: Birth

In this first stage one tries to define and predict the future value of the product or service in place. Besides, new participants are recruiting into the eco-system through good cooperation (Moore, 1993). According to Peltoniemi (2004) and Rong, Liu & Shi (2011) it is considered as the level where the 'evolution' takes place and thus new opportunities are popping up and are identified to satisfy and simultaneously create a certain value for the customers.

Stage 2: Expansion

Ultimate goal in this stage is creating value (for new customers). In order to stimulate that, the most important features to take into consideration are creative thinking and innovation. According to Moore (1993), there are two main conditions at this extension stage: one must scale the potential opportunities in the environment and creative value creation must be stimulated. This stage is thus about capturing territory, because there are other eco-systems who also want to have the power of the same territory. Worth mentioning are the managerial challenges that come along with expanding the eco-system. Most important task is about stimulating the market demand or service you have to offer. Maintaining the control of relationships with customers is considers as key activity. Moreover, in this stage it is advisable to build up relationships with suppliers. (p.80)

Stage 3: Leadership

Key in this stage is guaranteeing that the business eco-system remains stable. This stage requires businesses to enable there control function and as a result, most organizations try to be the supreme party seeking to dominate most of the value elements. It's the task to guide the eco-system's investment directions and technical standard, and you must ensure that the eco-system has a trustable community of suppliers.

Stage 4: Self renewal/ Death

According to Peltoniemi & Vuori (2004), at this stage one could expect high threats from new upcoming business eco-systems and the rapidly development of innovation. Moore (1993) on the other hand, made the comparison with an earthquake and stated that this fourth stage can be defined by the huge changes it deals with. These changes can be in the form of governmental settlements or a change in the buying pattern and behaviour of customers (p. 81). The only way to have a successful (future) eco-system is connected to having the ability to gain a long-term progress and the eco-system must be able to renew itself. There are several approaches for the process of self renewal. The most dominant organizations are able to slow down the speed of

growth of new emerging eco-systems. Besides, incorporating new innovative concepts or ideas into their own eco-systems can also lead to self renewal.

Value networks

The study of value networks is not a new phenomenon and was already the topic of interest in different fields. The value network concept builds on the premise that organizations evolve in networks and do not longer have dyadic relationships with each other but are actually embedded in rather complex systems, which consist out of various inter-organizational relationships (Easton, 1992). This value network approach is deputizing the more simplistic, traditional view of Porter, who stated that key resources actually flow in more dyadic relationships from manufacturers to suppliers and ultimately to customers (Porter, 1985). Main criticism on this approach is coming from scholar who claim that he doesn´t fully describe the complex nature of the various relationships in the current business environments (Bovet and Martha, 2000; Normann and Ramirez, 1993; Fitzsimmons, 2001). Clearly, academics and practioners have been busy with re-thinking the ultimate purpose and characterization of the supply chain (Chen and Paulraj, 2004; Larson et al., 2007). Previously, the value chain was the answer on how value was created, but this traditional view is in our current knowledge economy replaced by a new enterprise model, the value network or the so-called value web. (Allee, 2000). Primary task of a value network is about generating value through rather complex dynamic exchanges between one or more organizations, customers, suppliers, strategic partnerships and the society. It's not just about the transaction of goods, services and revenues but networks are likely to engage in more than this; knowledge and intangibles are also considered to be two important currencies in this value network (p.1). These three types of value exchanges are considered as the heart of the value network and receives on its turn support by various mechanisms and mediums that enables the transaction to take place. (p.2) Thus, the value network approach let organizations be part of an extended network of organization that together co-create value (Stabell and Fjeldstad, 1998; Allee, 2000; Ritter, Wilkinson and Johnston, 2004). This approach looks at the activity of an organization in a holistic manner, instead of viewing it in a more fragmented way. As a consequence, the network perspective has shifted the focus of a resource-based view (inside out approach) of the organizations to a different perspective wherein the focus is on examining the resource dependency, transactional costs and relationships in the actor-network. According to many scholars, there are several types of actors in a value network who are likely to affect the firm's ability to produce and ultimately deliver a certain value to the intermediaries, final customer or the end consumers, namely the suppliers, customers, competitors and complementors. Understanding the different kind of actors is just one thing, but having an clear understanding of

the types of relationships between the actors in the value network is needed to map down the value network (Cherbakov et al., 2005; Barua et al., 2004; Basole and DeMillo, 2006; Subramani, 2004; Barlow and Li, 2005). Also, according to Kijl and Nieuwenhuis (2011), analyzing the value network concept allows one to determine the multi-actor services. The value creation on its turn determines the management of business networks that form the business ecosystem (Ehrenhard et al., 2014). As mentioned before, the value network approach is closely linked to the business eco-system concept. In literature, the debate about how products and services are produces and consumed is still ongoing. A service can be differentiated from a product based on four specific characteristics, namely if its nature is intangible, heterogenic, inseparable and perishable. However, the differentiation is fading is a little bit blurred (Levitt,). According to Levitt (2005), products can be seen as the vehicle for the service delivery process. This thinking and the aforementioned theory, leads to the fact that value networks can be modeled as part of an eco-system. Value networks are likely to pop up where products and services are composed of linked components, which leads to interdependencies and much of the value is created outside a firm's boundaries (Tushman, 2004).

Platforms

The concept of platforms is related to innovation management (inside-out and outside-in) and besides deals with technological and market disruption and changes over time (Gawer and Cusumano, 2012). In a large amount of industries, especially in the high-tech businesses, platforms are driven by new developments in the area of information technology (IT). According to Lusch et al. (2010), the service provision platforms arise when the technology develops at a rapid pace and becomes smarter. Scholars and researchers associate this concept with ''network effects'' multiple times. This means that the platform is becoming more valuable to the platform-owner and users when more users are adopting the platform. It's believed that a platform is becoming more valuable when there is a growing access to the network of (potential) users and is associated with an increasing amount of complementary innovations. The distinction can be made between internal (company or product) platforms and external (industry) platforms. It´s important to see the instructiveness of how scholars made up these distinctions and to explain the high-level definitions of internal and external platforms (Gawer and Cusumano, 2002; Gawer, 2009a).

Platform leadership

The platform leaders are seen as the central players in the eco-system but are highly dependent on the innovations and investments of other organizations. According to Gaswer and Cusumano (2008) platform leaders can be characterized as organizations who are successful in establishing their products, services or technologies as an external or industry platform and to rise above

themselves in influencing the trajectory of the business eco-system of which the platform is considered as a core element (p.14). When leadership is performed in a proper way, these organizations are also able to draw architectural advantages from their positions. Excellent platform leaders are striving towards establishing a large set of relationships which have the potential to be mutually beneficial for the eco-system participants and are able to enhance the business model. Many cases have been reviewed in the past couple of decades from which can be concluded that the most successful platform leaders are likely to encourage and constrain innovation. This is caused due to conflicting interests among the leaders or with complementors (Hagiu, 2007., p. 118). Success ties an organization to its existing customers, as well as the technologies, products, services and business models. This dependency can make it difficult for organizations to alter and counter innovations (Greenstein, 2009., p. 244). Even though platform leadership brings along benefits for the central firms in the eco-system, it isn't guaranteed that they will not face the innovator's dilemma. Therefore, platform leaders must first try to focus on evolving their internal capabilities and business strategy. Bringing along an entire eco-system of users and partners is a must to sustain their platform position (p.19).

Linkage between business model (design) innovation, eco-system and value network

Existing business model concepts and frameworks (Osterwalder et al. 2005, Sinfield et al., 2012) are adequate to examine the challenges faced by single existing organizations. However this theory is less suited to analyze the interdependent nature of the growth and overall performance of companies which are evolving in the same innovation ''ecosystem''. As mentioned above, the ecosystem refers to the whole network which comprises a focal organizations, the suppliers, the complementors and the customers. However, there are solely a few tools which are appropriate to analyze an organization's strategy within an ecosystem. By elaborating on the business model Canvas and the value network approach we're able to illustrate all of the organization's interdependencies. If we wouldn't combine these theories, the representation of the ecosystem would be incomplete (Peltoniemi, 2005; Iansiti & Levien, 2004). According to the literature, there are some deeper links between the organization and its players. After having reviewed these theories, the linkage between the business model design, eco system and value network can thus be seen as a dynamic, iterative process as shown in figure 1.

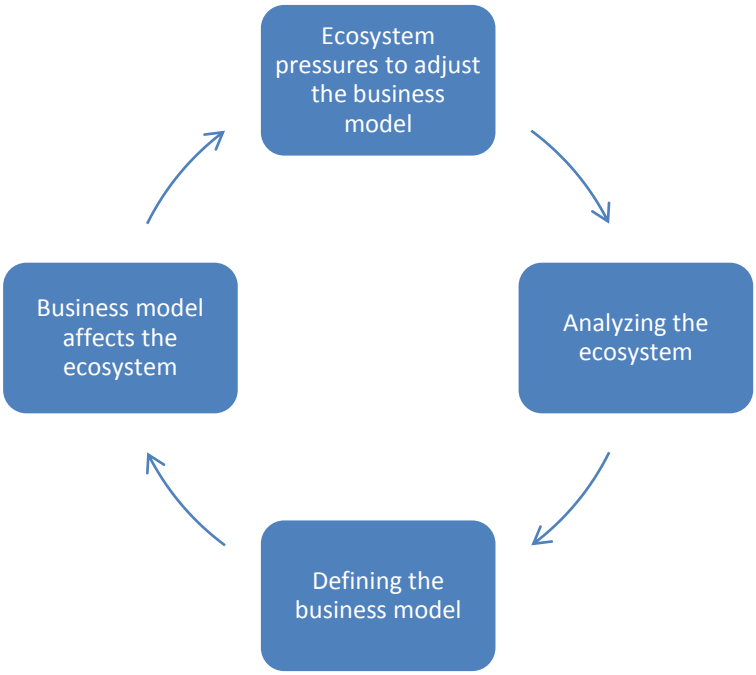

Figure 1: *Iterative life cycle stage of the eco-system.*

This study focuses on stage four of the life cycle of an eco system whereby new innovative concepts (online learning) will lead to self renewal. The eco-system is pushed to invest in the right technology, integration of innovative concepts and signing on suppliers to broaden its business. In the next section, we therefore will focus on which particular learning developments put pressure on the current eco-system and business model.

3.0 Methodology

3.1 Qualitative research: interviews

As discussed in our theoretical framework, the emerging online educational possibilities and model can no longer be ignored and can be seen as the main development within a HEIs environment which puts pressure on its current ecosystem and subsequently our business model. Main aim of this paper is to develop an overview of how this new business model will look like; also called the business model of the future. To determine how the building blocks of the business model are build and which ones will create, deliver and capture the most value, we actually need a business model that is understandable for everyone (Osterwalder & Pigneur, 2010. p.15). But what is the best way to build such a model? First thing to do is investigating the underlying value creating system of the generic business ecosystem. To gather more insights in how the current value network might change - taken into consideration the need and popularity

of online learning possibilities and components- we tried to design a value network after which we tried to develop a business model in our second study. We proposed questions which relates to the online learning concept and the business model innovation literature. The interviews allowed the participants to reflect on the current business model, trends, advantages and disadvantages of online learning concepts and to give their opinion about which dimensions within this network are likely to change in their point of view. It's a form of qualitative research whereby an observational encounter takes place (Ryen, 2002). An encounter can be viewed as the get-together or gathering of two or a larger amount of persons for the purpose of focused integration (Silverman, 2010;95). The respondent's feelings and opinions are considered as empirical data for analysis (p. 133). Also according to Babbie (2007), interviews are considered as the most important form of qualitative research (p.145) and because of the relatively unexplored subject of this study, it seems the most suitable and appropriate technique (Eisenhardt, 1989; Oude Luttikhuis, 2014. p. 5). Goal of a qualitative interview is about seeing the research topic from a different perspective - that of the respondent- and to understand why the respondent comes to this perspective or insight. Therefore, a typical interview has not a fixed structure and is characterized by the preponderance of open questions (King, 2008 p. 14-15). The data gathered from conducting the interviews and the previously conducted literature search must provide the answer to the proposed research question.

3.2 Participant selection

The University of Twente (UT) located in the Netherlands, will be the central point of focus. The UT is a Dutch university, located in Enschede. The UT formally offers students research and degree programmes in different kind of areas like social or behavioural sciences, electrical engineering, geo-information sciences and mathematics and computer science. The UT has a total of five faculties; Behavioural Sciences & Management (BMS), Electrical Engineering, Mathematics and Computer Science (EEMCS/EWI), Engineering Technology (CTW), Science and Technology (TNW) and Geo-information Sciences and Earth Observation (ITC). Every faculty is divided in several departments. The overall curriculum is widespread and most students are making the combination between work in their major course and a set of minors in a total different discipline. We carefully selected a group of participants who are equipped with enough knowledge about the proposed research domain of the study and who are part of the value network. The amount of time and availability of resources was considered as a critical factor in selecting the participants. We have selected a total of 15 participants from the University of Twente, namely professors, lecturers and students. The respondents were all assured with confidentiality and were extensively informed about the purpose of this study and what we ultimately were trying to achieve in the first place. We used a homogeneous sample and due to

the danger of bias in the results, the full names and other details of the participants will remain confidential. Table 1 gives one an impression about the background characteristics of our respondents.

Respondent	Gender	Age	Job title/function UTwente	Country of origin
#1	female	36	Lecturer Change Management	The Netherlands
#2	female	23	Student	Germany
#3	male	42	Prof. Entrepreneurial Finance	The Netherlands
#4	male	35	Lecturer MB department	Germany
#5	male	19	Student	Germany
#6	female	49	HRM department	The Netherlands
#7	male	26	Student	The Netherlands
#8	female	38	Academic Advisor	The Netherlands
#9	female	44	CES department	The Netherlands
#10	male	58	Lecturer MB department	The Netherlands
#11	male	23	Student	The Netherlands
#12	female	23	Student	Germany
#13	female	36	Academic Advisor	The Netherlands
#14	male	31	Marketing & Strategy department	The Netherlands
#15	male	57	BIM lecturer	The Netherlands

Table 1: *Background characteristics respondents*

The average age of our respondents is 36 years. As shown in figure 2 and 3, we specified the dispersion of gender and country of origin of our respondents. With 53%, there are slightly more males than females within our respondents group and almost 73% of the participants are Dutch.

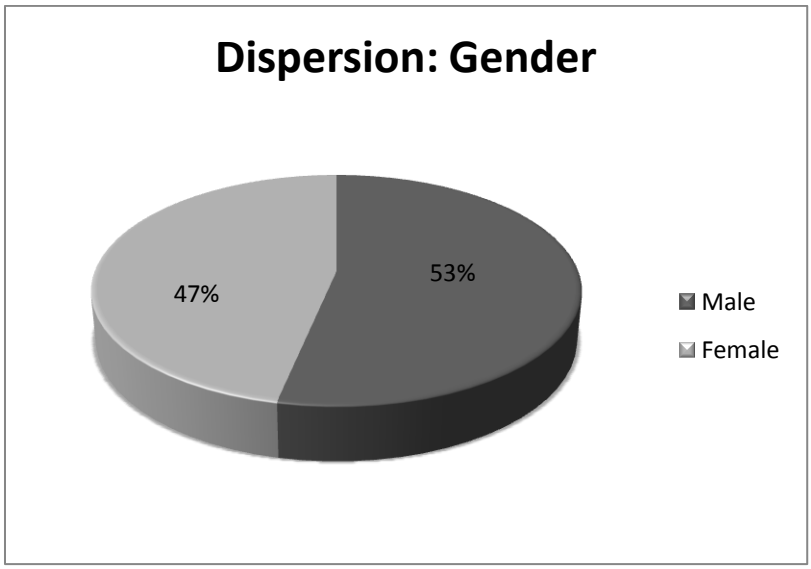

Figure 2: *Dispersion gender*

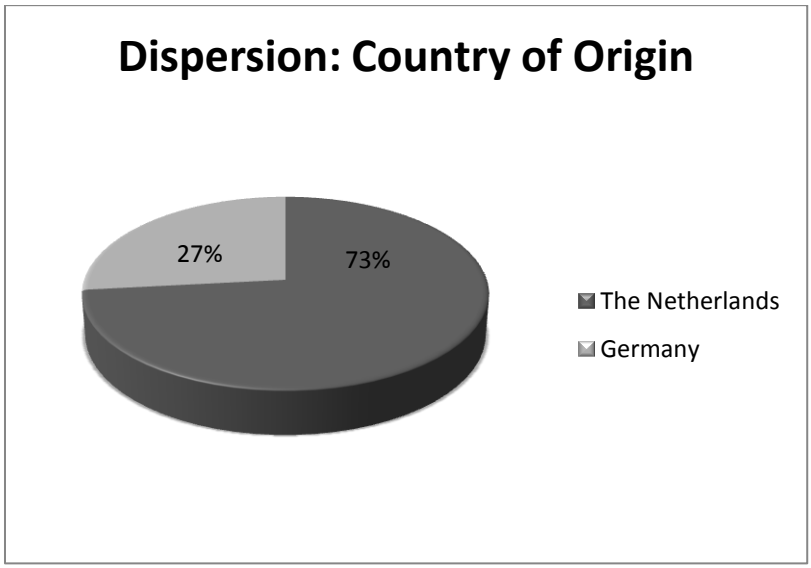

Figure 3: *Dispersion country of origin*

3.3 Data collection and analysis

The interviews were conducted by proposing open-ended questions. The template can be found in appendix 1. First of all, the respondents were asked to give some background information about their function and years of experience at the University of Twente. Thereafter we represented some background information about the concepts within our theoretical framework. The respondents are asked to share their thinking and opinion about the changing nature of the current value network and increasing popularity of eLearning solutions, so that ultimately the business model for the University of the Future can be designed. Respondents are

asked to elaborate and evaluate on the current business model and the subsequent open-ended questions are carefully framed to discover opinions about the subject in our study. We encouraged the participants to express their opinions and thoughts to its full potential, to maximize the chance of covering the most important opinions (Hasson, Keeny and McKemna, 2000. p. 1011). The analysis of the data is a continuous process and does not occur in a vacuum (Erandson et al. 1993;113). This is because of the interaction between the respondent and the research tool. The gathered data will solely be qualitative and thus will be analysed by grouping similar items together. Wherever the participants have used different terms or views what appears to be a single issue, these data will we grouped together to provide a single, universal description. Data will be coded to develop an ideal situation c.q. business model for the University of the Future. In this analysis phase, we have followed a step-by-step process which consists of four elements:

1. Reading the units of data
2. Reading the second units of data
3. Proceeding step 1 and 2, till all the units are categorized
4. Development of labels, category titles and descriptive sentences

Further, the quote-research technique will be applied to illustrate or confirm examples (Ryen, 2002 p. 169). This technique doesn't require particular systematizing. Making use of this technique to describe the interview data is considered as a suitable approach, as long as one combines it with a different analyzing technique (p.170).

3.4 Assessment of trustworthiness

The credibility of this (qualitative) study needs to be tested and demonstrated by the researcher. The degree of research reliability and validity depends on the construction of the instrument (Patton, 2001, p.14). Reliability is a concept often used for testing the quality of quantitative research and is considered as an irrelevant concept in qualitative research (Healy and Perry, 2000; Stenbacka, 2001, p.552), whereas others claim that any qualitative researcher must be concerned with the concepts of validity and reliability while conducting a study and also in analyzing the results. We follow the notion of other qualitative researchers to transform the concept of reliability into the word 'trustworthiness', which lies at the heart of the reliability and validity terms. Reliability and validity are two terms that do not fit with details of qualitative studies. Therefore, we have used a 'different language' to replace these terms. Some applied the more suitable model of trustworthiness in qualitative research and therefore we also elaborate further on terms as credibility, transferability, dependability and conformability to determine how trustworthy our study really is (Kirk & Miller 1986, LeCompte & Goetz 1982, Lincoln & Guba 1984, Denzin 1994). Credibility can be considered as a parallel to internal validity; focus

lays on establishment of a match between construct reality of respondents and the researcher's reality. Transferability can be considered as a parallel to external validity and generalizability. Dependability is concerned with how stable the results are over time. The fourth aspect, conformability, is linked to the degree of objectivity in the study.

3.5 Sample and context

With respect to the aspects credibility and conformability, this study focuses on established theories and novel and dominant literature in the research field. We tried to focus on textual data, collected through the use of interviews and observations. Fifteen participants were interviewed in person or via telephone to deliver a contribution to this study, which contributes to the overall conformability of the study. The external validity or transferability was assessed by the examination of participants who can deliver a contribution to the evolving theories (relevant to this study) (Creswell, 1997, p. 155). To report on dependability, a total of fifteen interviews were conducted with participant with various backgrounds (gender, age, nationality). Finally, we ensured overall trustworthiness by collecting data- through the usage of transcripts and by conducting conversations- which on its turn is documented and categorized (Mays and Pope, 1995; Patton, 2002; Ponterotto, 2005). This study sufficiently meets and satisfies the quality criteria, and therefore we can conclude that the findings will demonstrate a true picture of the phenomenon under study.

4.0 Findings

The results can be divided into two studies. In the first study, we made an attempt to determine the roles, actors and activities of the current value network of the University of Twente based on our desk research. The refinement end extension of the findings of this study will be the input for our second study, in which the conducted interviews must give more insights into future expectations about the dominant learning methodologies and the business model design of the University of Twente. By bundling these two studies together, we'll develop a specification of the ecosystem and thus the strategical business model for ''the University of the Future''.

4.1 Study 1: Eco-system mapping: analyzing the value-network

Taking into account the literature and the growing importance of the online learning aspect, the ecosystem clearly pressures to adjust the current business model. This means that we now enter a stage in which we need to analyze the ecosystem in order to define our new business model (figure 4). Mapping down the ecosystem is considered as a useful visual tool to understand the

interdependencies within an ecosystem. According to the literature the value network approach, can be seen as a specification of the ecosystem (Tushman, 2004).

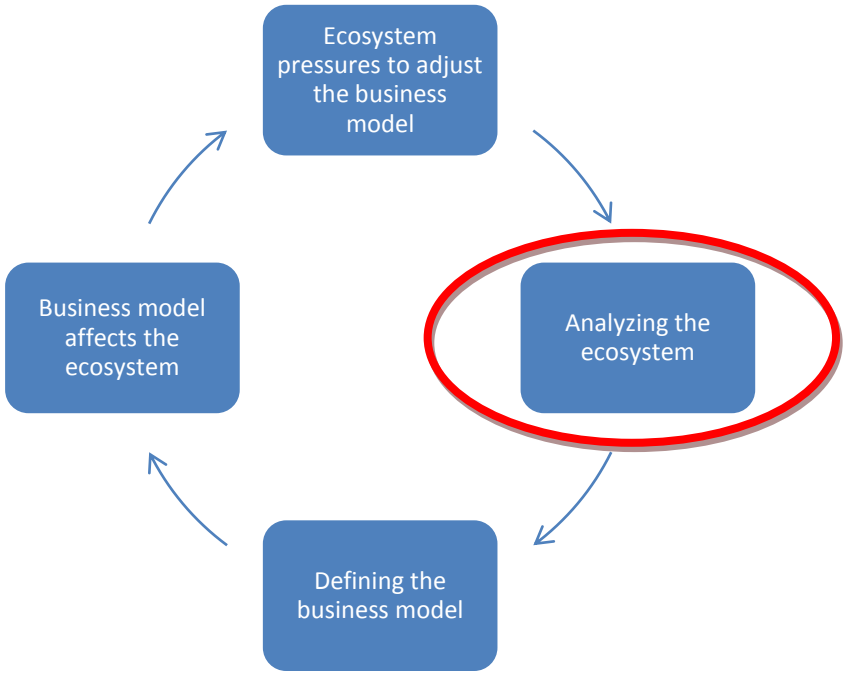

Figure 4: *Representation of phase 2: analyzing the ecosystem*

Based on desk and our literature research, we tried to identify and establish the roles, actors and activities of the current value network of the University of Twente. The value network of the University of Twente is an interconnected network of actors that form a value creating system in which the 'providers', partners and end users work together to co-produce a certain value. The value network approach as proposed by Peppard and Rylander (2006) has been taken into consideration to determine where the value lies in the current network and how this value is created (p.134). By following a step-by step approach, we try to analyze and shape the value network to determine the management of business networks (Kijl and Nieuwenhuis, 2011).

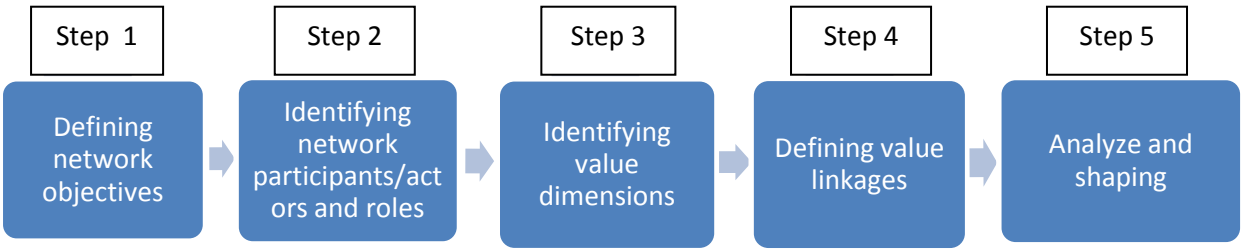

Figure 5: *Step-by-step approach for analyzing the value network*

By following the 5-step approach outlined in figure 5, we determined the underlying value creating system of the University of Twente's business ecosystem. Based on our desk research, personal experience, talking to members of the value network and due to being a member of the ecosystem itself, we were able to create an overview of the key roles, key actors and the activities of players within the network (see table 2).

ROLE	ACTOR	ACTIVITIES
End user	Students	Receiving education and knowledge creation
Education providers	Professors/ Lecturers	Teaching and educational delivery
Policymaking, regulating	Government departments, DUO,	Offering financial support to UT Twente & students (scholarships)
Software supplier	Blackboard	Offers software (platform)
Platform integrator/Service Provider	University of Twente	Integrates technology/ Intermediary between educational demand and supply side.
Intermediaries	Chamber of commerce, business associations, investor groups, regional development agencies	Offers financial support
Educational support	Student Services, BOZ, Centre of Expertise in Learning and Teaching, Osiris, Mobility Online, ICTO	Online possibilities to increase student mobility

Table 2: *Roles, actors and activities of the University of Twente's value network.*

The generic established roles and activities allow us to develop a value network as shown in figure 6. This value network can be regard as a blueprint for exploiting educational services and it identifies the place of supporting organizations/institutions within the business ecosystem.

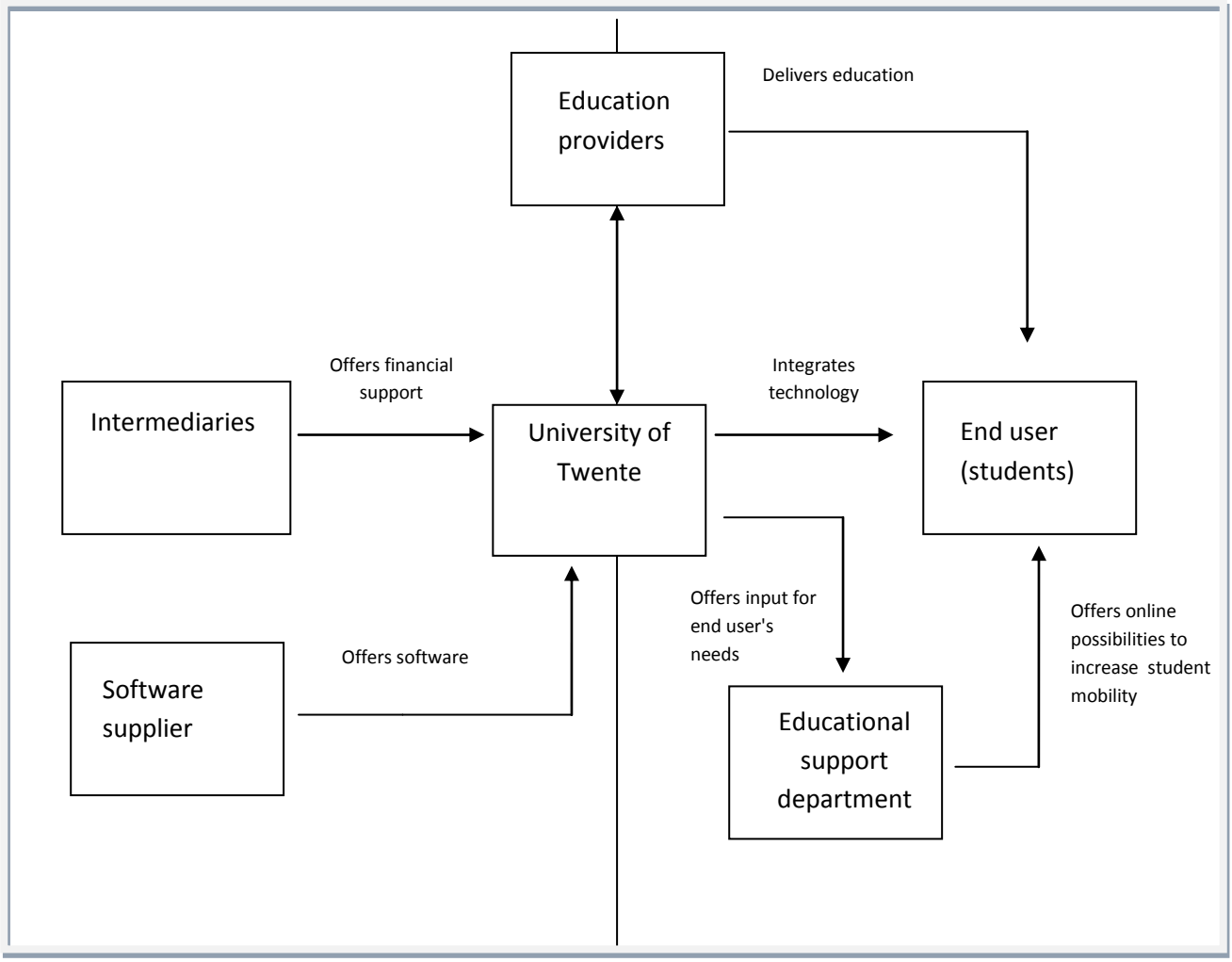

Figure 6: *Value network University of Twente*

4.2 Study 2: Towards a business model Canvas

We conducted interviews - of which the input- helped us to develop an overview of the business ecosystem and the underlying network. This so-called value network Canvas has a multi-actor focus which is in line with platform based service offerings (Cusumano, 2010; Peine, 2008; Solaimani et al., 2013). At the start of every interview, we introduced the Business Model Canvas to the participants, as well as the content of the thesis itself, in which we outline the growing interest in online learning possibilities and how this is likely to influence/ put pressure on the the eco-system and thus on the current business model according to our literature search.

Besides, we asked our participants to review the current Canvas and to re-design the Canvas based on future expectations and developments in the subject of online learning education.

When we asked our participants to describe how they experience the current educational system they are confronted with, we found that most of the participants are relatively satisfied with the current situation but however do think that several things can be improved:

Some quotes of participants which support this statement:

Participant 1: *''I do enjoy my work as a lecturer and to have a good interaction with my audience during lectures. Pro's of lecturing is the fact that the face-to-face interaction between me and my students is guaranteed. I always reserve time during the break and afterwards to answer additional questions or to provide them with another kind of support'';*

Participant 6*:''Quite remarking is the fact that the non-obligatory lectures are attended less en less ';*

Participant 2:*'' I don't feel the need to attend every lecture, while the summarization of the lecture is published on Blackboard. This allows me to work some extra hours at the local restaurant''';*

Participant 3: *''Strength of classroom learning in my opinion is the social and communicative interaction, ability of the student to ask questions, to share opinion, agree or disagree with points of views. I want my students to actively participate in raised discussions. However not everyone is engaged as one another, so you constantly feel the need to challenge yourself to stimulate your students''.*

Participant 5:*'' I wished that they could look at the educational approach and assess to which degree the University of Twente can be more flexible. For example, the duration of the lecturers. I live in Germany and I think that it's a waste of time to drive all the way to Enschede for a lecture of 90 minutes. It's not worth it. I can check the PowerPoint sheets up online as well. Most of the time, another students makes notes, so that will do as well''.*

After categorization of the results, 81,8% of the participants do not fully claim that they are completely satisfied with the current educational system but do think that there are some con's involved with it. There is a small amount of participants who claim that they are content with the way of teaching, study material, and on-campus support and do not sum up any con's when we interviewed them. Important categories which can be considered as pro's of the current system are ''face-to-face contact and support''. Identified con's are ''time aspect'' and ''engagement of students''.

Approximately 77,2% of the participants consider online learning as an important development which must be reflected in the future educational system of the University of Twente''. A small amount of 9% of the participants within this group seems to be a bit skeptical despite their positive thoughts about online learning; this group thinks that the student performance is likely to decrease due to the fact that it is such a multi-dimensional concept (grades, course withdrawal, skill building) . A total of 13.6% (n=3) consider that it will not improve the learning-efficiency; they think that they can even less engage students when technology takes over.

Quite remarking results were retrieved when we asked our participants if they consider online courses to be as effective as offline courses; 14 participants (63.6%) consider that these two types are equally efficient:

Participant 5: *'' I can grab my laptop and follow the course online whenever I want, which is the ultimate solution for me. I can replay the content, start discussions with my co-students. Honestly, when I attend a lecture, I am paying less attention and sometimes I don't even know what we discussed during class''.*

Participant 3: *'' Group contact between the students can be continually maintained, which also increases the depth of analysis of the content. It enables me to reshape the conversation between my students. During my lecture there is often too little time for reflection''.*

Participant 6: *'' (...) there is less sense of anxiety when offering an online course. Group dynamics are comparable I guess; quicker interactions or discussions in a face-to-face context, but more equal participation in an online setting (...)''*

It was very difficult to determine whether or not both settings are of equal effectiveness/efficiency, while most participants summarized pro's and con's in their explanation, despite they initially answered the question with a resounding yes/no. But when we introduced the concept of blended learning, results showed that a large group considers this as a type which brings along many key benefits. Quotes which support this proposition for example are: *''ideal situation'', ''good source of education delivery'', ''improvement of the educational administration and management'' ''contribution to reducing illiteracy''*. We asked our participants how the offline form (class room based teaching) can still be useful and value adding, while the end users also receives instructions via the Internet, also known as blended learning. Nearly 81% foresees a future for this (dominant) type of teaching when replacing the focus to instructor-led training sessions, conferences or by conducting case studies:

Participant 1: *''As a lecturer it enables you to focus more and more on practical examples instead of reviewing the literature during class''*

Participant 15: *''Practical applications prepare our students for their future jobs''.*

Participant 2: *''We can skip the boring, theoretical content during class. Maybe we can then focus on the real stuff in which we apply the online generated knowledge, like field trips or workshops''.*

In the last phase of our interview we showed our participants a business model Canvas of the traditional and current learning methodology of the University of Twente. The participants were asked to review the Canvas and shortly elaborate on the ''future Canvas'' which corresponds with the growing interest and strengths of blended learning.

Based on the outcomes gathered on the previous questions and after have categorized the input retrieved from the last question, there are 7 building blocks which are likely to be affected/change based on our second study.

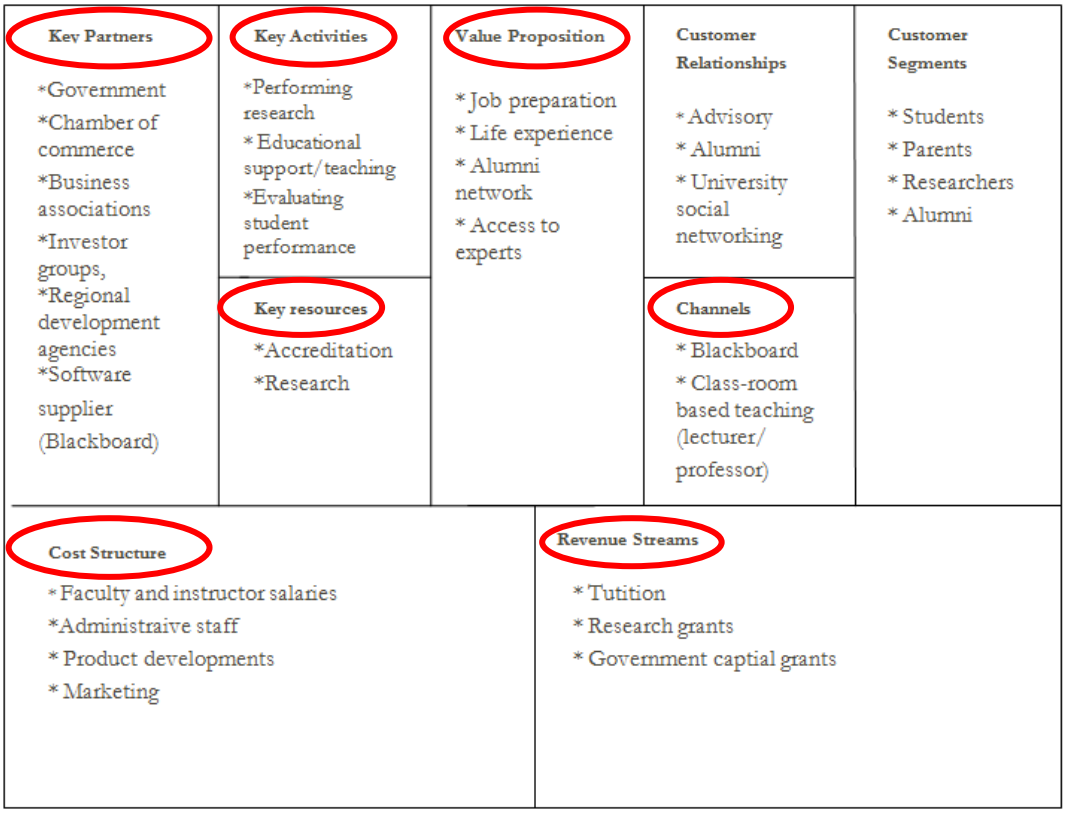

Figure 7: *Representation of current business model Canvas of the University of Twente*

After coding the results, we identified new categories per building block (table 3) which will be reflected within the newly designed business model for the University of the future.

Building block	**Supporting quotes**	**Categorization term**
Value proposition **(1)Participant(s):** 1,2,5,11,12 **(2) Participant(s):** 8,9	(1)''Pro of online learning is that I can attend an online course whenever I want'' (2) Blended learning on itself is value adding and I would immediately sign up for a University which offers such an advanced program''.	*Increased access (no time alignment) *Flexibility in time and place *Multiple learning delivery modes *Widely-recognized credentials
Cost structure **(1) Participant(s):** 3 **(2) Participant(s):** 15 **(3) Participant(s):** 1	(1) ''Totally online, self-paced environment may be too expensive and the reason why there is so much resistance''. (2) ''Combination of virtual collaborative sessions (recorded e-learning events, off-the-shelf WBT) is likely to result in a quicker turn-around time'' (3) ''What would be the long-term return of the new technology? And then I haven't even mentioned the implementation costs of the platform operator''.	* Variable costs * Cost-driven * Expensive technology
Revenue streams **(1) Participant(s):** 3 **(2) Participant(s):** 3 **(3) Participant(s):** 6	(1) Blended learning allows the University to reformulate their strategy with which they can optimize opportunities for third stream activity and revenue''	*Third party funding * Per-user fee

	(2) ''On-line programs on itself can be positioned as a profit center'' (3) Some MOOC's are adding charges for students who wish to have a certification of completion of the course''	
Channels **(1) Participant(s):** 6 **(2) Participant(s):** 6	(1) ''Online platform/community on itself is a new channel in my opinion'' (2) ''By implementing a hybrid form, you reach your students in a virtual setting''.	* Online community * Virtual classrooms
Key partners **(1) Participant(s):** 9 **(2) Participant(s):** 10	(1) '' You need to find partners (internally and externally) for developing the online content'' (2) ''You need to recruit talented people for the implementation of this new educational model; platform providers, content providers and so on''	* Content creators * IT staff * Platform providers
Key resources **Participant(s):** 5 **Participant(s):** 11 **Participant(s):** 15	(1) ''You need portable devices to access learning material'' (2) '' In order to share documents, video's or audio files you have to develop a digital platform (3) ''In the start-up phase you definitely need an online	*Digital contents/instructors

	instructor/interface or guide, while it concerns a novel technology''	
Key activities **(1) Participant(s):** 9 **(2) Participant(s):** 8	(1) ''In general, the educational support is still important but can be provided online'' (2) ''You need good managers to manage the platform''	*Synchronous and asynchronous support * Online instruction *Evaluation eLearning activities

Table 3: *New categories within the building blocks of the University of the Future*

The above mentioned categories can be implemented in the new business model which represents the scenario when the University of Twente integrates a hybrid educational mode into their system:

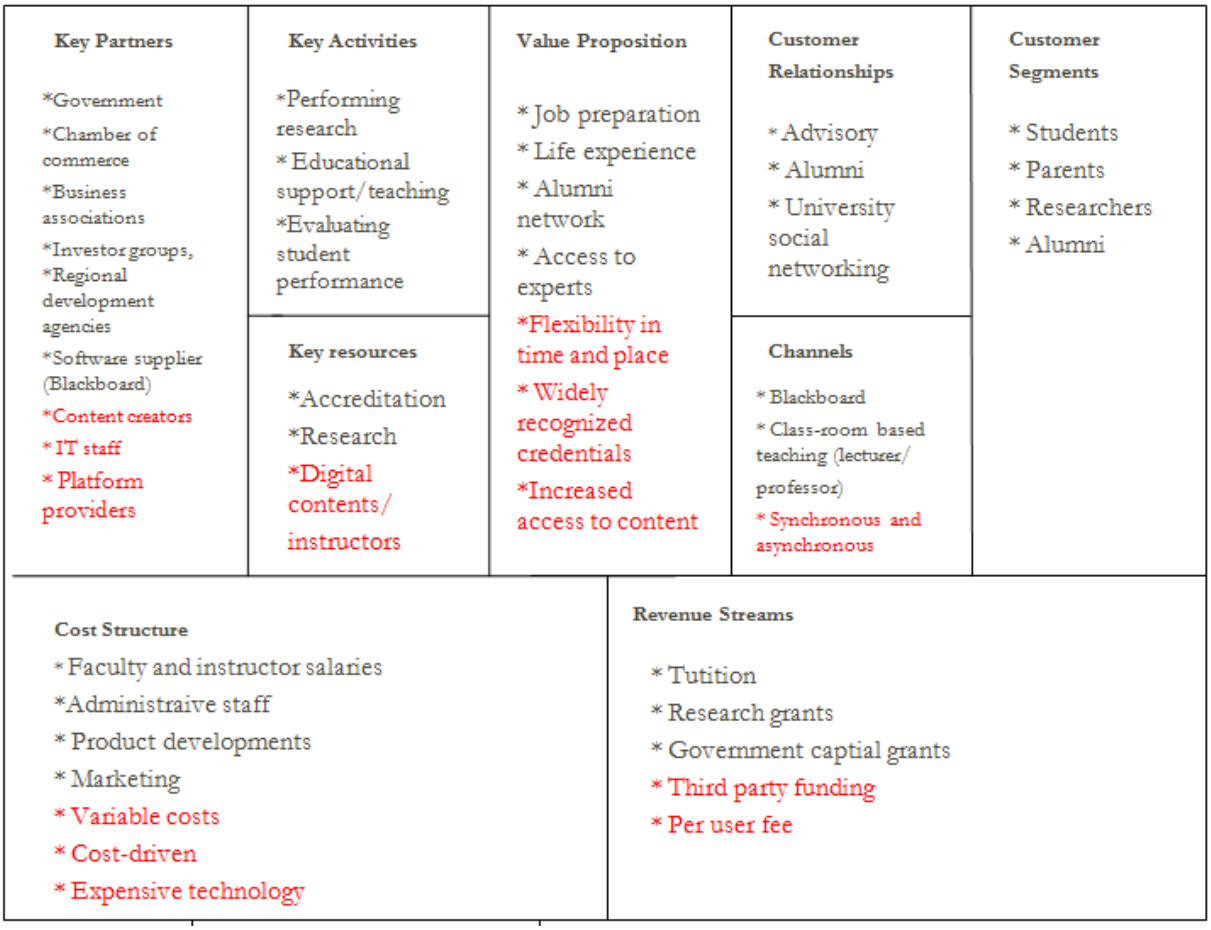

Figure 8: *New business model for the University of the Future.*

The business model we developed here thus has a mediating effect between the technology of online learning or idea and end users. It shows the University of the Future how they can capture and deliver value to their students. Our model shows the overall architecture of what the University of Twente might be doing in the future and with whom they can build relationships with.

5.0 Discussion

5.1 Conclusion

The University of Twente has made a start with the blended learning approach by the introduction of MOOCs into its traditional learning approach (face-to-face). While learning technologies and delivery modes evolve and progress, one thing is for sure: the end user favors blended learning models over single delivery modes. According to the literature and empirical evidence, this will also be the future of HEI's while it brings along many pro's: flexibility in time and place, increased access to content and so on. However, the implementation and integration of new digital technologies and online learning approached into its current educational courses seems to be a challenging task for businesses and institutions (Uden and Damiani, 2007. p. 113). Besides, the cost structure is also likely to increase. The University of Twente and other HEI's find themselves in a situation whereby the growing importance of the online learning aspect pressures to adjust the current business model. By developing a business model, we specified a specification of the ecosystem. Mapping of the business model for the ''University of the Future'' revealed the new core identity and also serves as a crucial roadmap for its future success (Teece, 2007). A large amount of our participants are ready to make the change (72.2%) and the overall preference goes out to a learning style which replaces the focus to instructor-led trainings sessions, conferences and debates during class while also retrieving the general information via an online platform. These findings show comparisons with a flipped classroom setting, in which traditional lectures will be completed outside the classroom walls (onine) and the classroom itselfs is transforming into a more dynamic environment in which the instructor fulfills the position of ''coach''; providing immediate feedback, raise discussions and discussing practical applications. The ''new'' business model affects 7 building blocks of the Canvas in particularly based on our results, which indicates that the University of the Future must re-think their current educational strategy. Biggest barrier - which we also analyzed during our study- are the costs involved with implementing an e-Learning strategy The University of the Future finds itself thus in an eco-system which needs to be reconfigured to cope with new digital learning challenges that have occurred. New ICT-related opportunities presents itself. The University of

Twente can be viewed as an educational institution, whereby the main task is about the provision of educational courses to its students and is thus part of an eco-system. The eco-system involves various members, namely suppliers, the research department, ICT companies that contribute in some way to the achievement of its goal: educating. In the current, described context and by taken into account the digitalizing matter, the University of Twente sees itself striving to a higher-order objective and is thus forced to reconfigure their current eco-system and business model in order to achieve the proposed objective (Graham, 2014. p. 11). The future must not be seen as a fixed point; it is actually ours to create. Across multiple industry sectors and educational institutions, the digital transformation will cause a breakdown of the traditional methodologies, models and relationships. HEI's will be confronted with some significant disruptions and finds the greatest possibilities and opportunities for recombination. Novel education innovations (e-learning), organizations, key resources and relationships will proliferate, which allows us to put the already established and new pieces together in new sequences for the creation of a evolving learning ecosystem (Knowledgeworks, 2015). The process of reconfiguration will directly affect the learning's eco-system's resilience, which helps the University of Twente to withstand (possible) threats and in making use of possibilities.

The new, possible business model is represented in figure 8 and is geared toward total value creation for all parties. The creation of the new business model shows the University of Twente how they can create value and how they must design its pricing strategy or revenue model. It helps them in determining which activities should be performed, how they should be linked and sequenced and who should perform them. Looking at our findings, we can conclude that these digitalization developments brings along many pro's like flexibility in time and place, an increased access to content, and combines synchronous learning with asynchronous modes of delivery. These pro's were found in the literature, but almost two-third of our respondents share the same thoughts. Besides, the University of the Future can financially benefit from this development as well by focusing on other sources of revenue streams like third party funding and click per user fees. However, we must not forget that our variable costs and the technology on itself are two major factors which show the downside.

5.2 Limitations and implications

First limitation we observe is the time frame of this study. The study is performed within a timeframe less than two years. While digitalization is a continuing process within HEI's, some of the data may be outdated or incomplete. Secondly, the value network is demonstrated through performing a single study. When performing a multiple case study, this would have revealed cross-case comparisons which might resulted in an improved external validity of the value

network approach. Besides, the evaluation of the business model Canvas is performed through conducting a semi-structured interview by solely 15 practitioners. This may result in a limited generalizability of the validity of the business model Canvas, since the sample size is not that large. In addition, the analysis of these concepts after interviewing, contains the practioner's reflections towards the application of the business model Canvas. As already mentioned in the theoretical framework, the business model concept is defined by many different authors and there is still no universal agreement on a single definition for this concept. The prerequisite to incorporate the value network into the Canvas is actually based on the preference of the commissioned organization of this thesis. Therefore using the Canvas as a mapping tool to map down the business model can be considered as a limited application. However, the tool is also not beneficial to stimulate creative thinking because we let the respondents think in building blocks. On the contrary, the strength of this tool is the fact that it does structure their thoughts, which helps us building a comprehensive model. Another limitation is the fact that the increasing awareness and interest in applying the online learning component into the educational system rest on the data which has been gathered from a global context. This means that the theoretical support is on one hand a bit biased. Another limitation is the fact that we payed attention to developing an business model overview and did not offer a total solution to a specific HEI in a specific context. There is not one good business model; we just presented a possible roadmap, which can be extended and build in a completely different way if we want to. Another limitation we're facing is the way in which we analyzed our business ecosystem concept; by means of the value network approach. By choosing this approach, it allows you to sum up numerous and endless actor roles. Our findings would have been more reliable if we focused on one specific ecosystem . Additionally, we didn't pay any attention to how the ecosystem evolved over time and didn't include any other overlooked influences which might disturb this evolution, like market attractiveness, a feasible revenue model, implementation costs of technology or any other distortions or barriers which we need to overcome.

Finally, the chosen sample size and the selected participants might affect the results we retrieved. When selecting participants who would be positioned in the Netherlands only, the time and space element of online learning might not be a decisive reason why our respondents are so interested in applying a blended learning technology for instance; this means that the researcher might have could affected the results in selecting participants- located outside the Netherlands- for this study which means that the data is biased.

The outcome of this study also brings along several implications for research and practice. The actors within the value network need to clearly communicate their expectations from the network and they must strive to establish a certain base business model to adapt to changing

environments. Alignment of the business model with the actors involved in the value network is a necessity in order to be able to achieve coherence, consistency and complementarity for the successful performance of the value network. The business model which has been mapped won is a powerful tool for the University of Twente which can be used during developing and evaluating their business opportunities before they prepare their formal business plan. This study thus revealed a large number of opportunities and may contribute to a shortened lead time between an eventual conception and launch of an eLearning environment. Besides, this study can be used as a base line to deconstruct an existing business into its component business models and thereby helps the management board to embrace and exploit a synergy and economies between novel and currently existing opportunities.

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7.0 Appendix

Appendix 1: Interview template

Name Participant:

Age:

Years of experience:

Job title/function:

1. What is your opinion about the current educational system of the University of Twente? Please share your thoughts, elaborate on advantages/disadvantages, challenges.

Answer:

2. Start: (Introduction of online learning concept by interviewer)

Do you think that the implementation of online learning is of strategic importance for the long term development for the UT Twente? Please explain in more detail.

YES/NO, because:

3. The UT Twente already offers online courses and recently introduced MOOC's as part of their educational program. Do you think that these online courses are as effective as offline courses (class-room based teaching)?

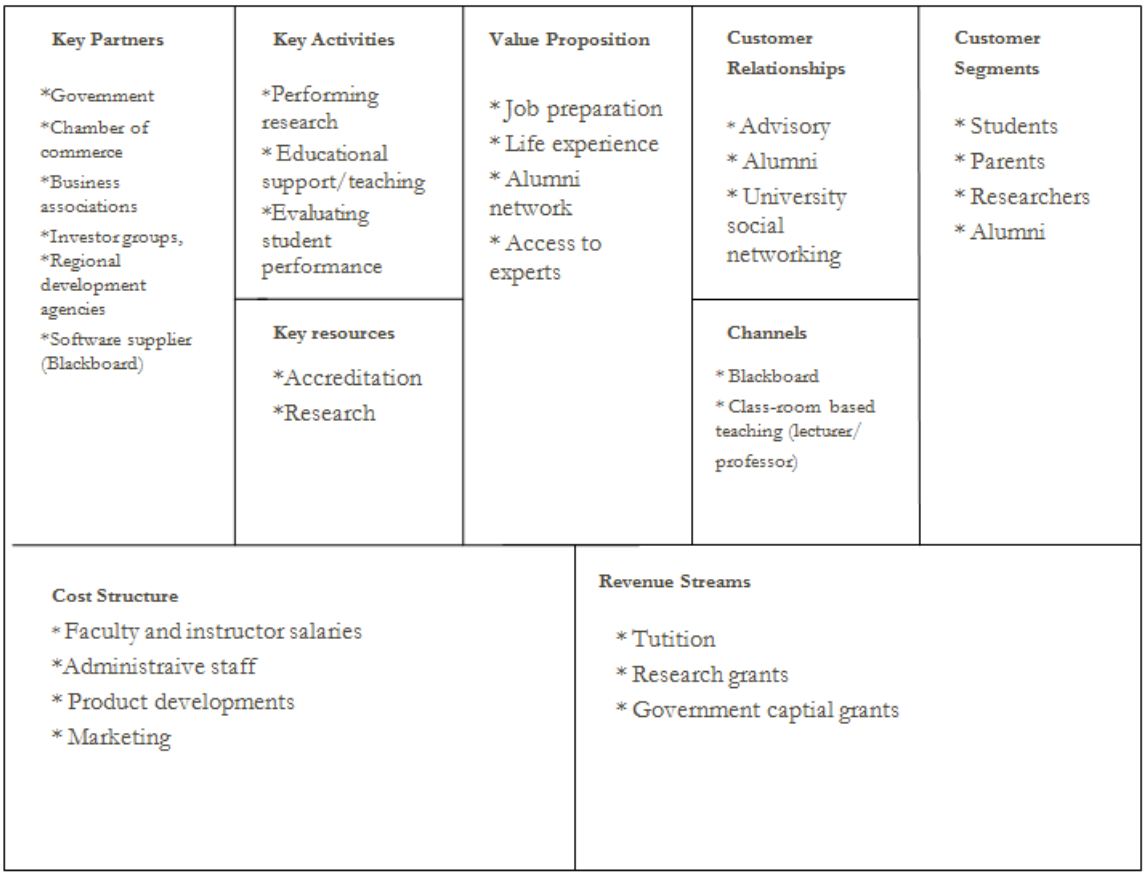
YES/NO, because:

teachers and learning resources. Do you think that this type of education must be implemented as dominant learning method?

YES/NO, because:

5. In the graph below you see the current business model Canvas of the University of Twente. How would you design the Canvas of ''The University of the Future''? Shortly discuss the building blocks of the Canvas in a few sentences:

Additional remarks/discussion:


Key Partners
*Government
*Chamber of commerce
*Business associations
*Investor groups,
*Regional development agencies
*Software supplier (Blackboard)
Key Activities
*Performing research
* Educational support/teaching
*Evaluating student performance
Key resources
*Accreditation
*Research
Value Proposition
* Job preparation
* Life experience
* Alumni network
* Access to experts
Customer Relationships
* Advisory
* Alumni
* University social networking
Channels
* Blackboard
* Class-room based teaching (lecturer/ professor)
Customer Segments
* Students
* Parents
* Researchers
* Alumni
Cost Structure
* Faculty and instructor salaries
*Administraive staff
* Product developments
* Marketing
Revenue Streams
* Tutition
* Research grants
* Government captial grants