



**CATÓLICA  
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**Mobile Campus adoption in Higher Education:  
Factors that influence the adoption of Católica  
Lisbon School of Business and Economics'  
mobile campus among students.**

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## **Abstract**

**Dissertation Title:** “Mobile Campus adoption in Higher Education: Factors that influence the adoption of Católica Lisbon School of Business and Economics’ mobile campus among students”

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A transition from the traditional website platforms to mobile platforms is an opportunity for Católica Lisbon School of Business and Economics to create new values for students on their relationship with professors, staff and the various universities’ facilities, through the offering of improved educational services and organizational tools. Through MyCatolica, the mobile learning mobile system (LMS) of the University, new approaches on the learning processes can be implemented, tightening the distance between universities and students. Despite the advantages, students’ adoption still needs to be further developed.

The current thesis builds its relevance on this gap, through investigating the factors that may influence the adoption of mobile campus by students.

To develop the dissertation, the qualitative research method was undertaken. Ten students were interviewed and results revealed that the website platforms are still perceived essential, and more reliable. Meantime, MyCatolica is not supportive enough and is seen as an informational tool not decisive to the student’s life. Participants have positioned MyCatolica as an application which is not useful and does not allow students to actively interact with the Academic world. Even though, the non-users perceived the benefits of using the LMS, they do not adopt MyCatolica because of its poor relative advantages and low-leveled usefulness.

Additionally, students were submitted to an exploration phase where new features were proposed in order to overcome the adoption barriers and to develop a superior MyCatolica. It was found that features as “Chat”, “Cloud” and “Note” could be helpful on overcoming the adoption barriers.



## **Resumo**

**Título da Dissertação:** “Mobile Campus adoption in Higher Education: Factors that influence the adoption of Católica Lisbon School of Business and Economics’ mobile campus, among students”

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A transição das plataformas web tradicionais para as aplicações móveis é uma importante oportunidade para a Católica Lisbon School of Business and Economics desenvolver novos valores para estudantes, e melhorar o seu relacionamento com professores, staff e entidade académicas, através da oferta melhorada de ferramentas organizacionais. Através da MyCatolica, o Sistema de gestão educativo móvel (LMS), poderão ser implementadas novas abordagens ao processo educativo, estreitando a relação entre os estudantes e a universidade. No entanto é necessário desenvolver a aceitação por partes do alunos para esta ferramenta.

Esta tese torna se relevante pois pretende preencher esta lacuna, através da investigação de factores que possam influenciar a adopção do sistema móvel pelos estudantes.

Através de uma pesquisa qualitativa dez estudantes foram entrevistados. Os resultados revelaram que as ferramentas web tradicionais ainda são encaradas como eficientes e mais fiáveis. Por seu lado, a plataforma móvel ainda é considerada pouco complacente. Mycatolica é visto como uma ferramenta informativa não fundamental para a vida do estudante. Os participantes do estudo descrevem o Mycatolica como uma aplicação pouco útil. Apesar de os não utilizadores terem uma percepção dos eventuais benefícios da utilização do LMS, não adoptaram o MyCatolica devido à sua diminuta utilidade.

Adicionalmente, aos estudantes foram sugeridas novas características de modo a poder contornar os obstáculos à aceitação da aplicação. Novas funcionalidades tais como “Chat”, “Cloud” e “Notas” poderiam ser úteis para ultrapassar as barreiras de utilização uma vez que mostravam maiores benefícios no apoio à vida académica dos estudantes.



**List of Acronyms:**

ACRL - Association of College and Research Libraries

DOI - Diffusion of Innovation model

EBSCO - Elton Bryson Stephens Company

ESCA - E-Serviços ao Cidadão Académico

IDMP - Integrated Digital Mobile Learning Platform

IT - Information Technology

LMS - Learning Mobile System

PC - Personal Computer

QR - Quick Response

SI - Social Influence

TAM - Technology acceptance model

VAM - Value-Based Model





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# Introduction

Companies are increasingly required to enhance their ability to innovate and adapt to changes in the external environment in order to achieve competitive success (Elizabeth & Mary, 2014). To manage this, they need to understand the challenges introduced by the technological innovations and develop new competences to overcome these (Henderson & Clark, 1990; Tushman & Anderson, 1986; Elizabeth & Mary, 2014). Within this context, the advancement of mobile networks' speed and coverage have triggered the adoption of smartphones, tablets and other wireless gadgets, changing the dynamics of business and the way we relate to the world.

In the context of Universities, we have seen these dynamic changes happening, when computers and communication technology were first introduced as a classroom tool. Based on that, it is reasonable to expect, by the increasingly spread of mobile technologies, that the mobile network phenomenon may foster a similar effect on the way education is delivered (Maha & Heba, 2015; Peter, 2011).

## 1.1 Internet and Mobile Devices Growth

In the last decade we witnessed a consistent growth of internet usage, from 0,4% of the population in 1995 to 32,7% in recent years (Internet World Stats, 2012; Cheon et al., 2012). More and more, the use of the Internet is becoming immersed in consumers' life. This is also happening because of the broader daily use of smartphones and all sorts of portable devices, which are altering the way we live and the way we learn (Abdullah & Siraj, 2010; Cheon et al., 2012).

Additionally, smartphones, through their computer-like functionality, internet access and portability, became widespread, reaching a peak after the release of the first iPhone in 2007, by Apple (Daejoong et al., 2014). In fact, after 2007, the growth of its usage was significant as it changed not only interpersonal short communication exchanges, but also the methods of information search and the overall consumer behavior (George, 2015). Hence, mobile devices have undoubtedly become part of everyone's life.

In developed countries, the penetration of mobile devices went over 100% per person with some of them owning more than one device (Hartmut & Viswanath, 2015). Users choose to use them for different reasons such as "traditional" phone calls, visiting websites, checking e-mails, calendar scheduling, writing personal notes, watching videos, maps, games and many other

features. These kinds of features have made the above mentioned devices increasingly popular over the traditional laptops (Nozha, 2014; Truong, 2014).

When it comes to academia, in 2012, ACRL Research Planning and Review Committee shows that, in United States, 55% of undergraduates have smartphones 62% iPods and 21% table devices and, not surprisingly, more than 67% use their devices for academic related issues (Yan & Sarah, 2015). Whereby, Elmore and Stephens (2012) highlight that academic libraries cannot afford to ignore this m-learning trend, mobile devices hold the potential for new ways of learning and innovative interactions between student and academic institutions.

Thus, in the education context, it has experienced a shift from e-learning (learning that is carried through electronic media, commonly on internet) to m-learning (learning through media and social interaction, using own electronic mobile devices). The rapid spread of mobile devices among academia students is a current reality all around the world. For instance, even in developing countries, such as Ghana, there is a high rate of mobile phone among students. And this high rate of adoption has motivated the University of Ghana to launch its Integrated Digital Mobile Learning Platform for Distance Education (IDMP) in order to take full advantage of the mobile devices for educational purposes. Their aim is to provide course materials to aid the educational progress of distance education students (Michael & Ellen, 2014).

1.2

### **The era of Social Media**

The emergence of Social Media introduced great opportunities for all involved. It has brought new benefits for its users, allowing them to participate and give opinions, open themselves to new horizons, collaborate and exchange information, maintain dialogue with other users, to build a community based on similar interests and to interconnect with other websites or resources (Nozha, 2014). The benefits of being part of a social network, benefits both the user and the company. For the user, it has empowered communication, facilitating continuous interaction (Nozha, 2014). For companies it enhances the interconnectivity with consumers, with positive impact on trust (Wu et al. 2010; Hajli, 2014) and social interaction (Hajli, 2014).



## **Mobile applications in the Era of Social Media**

Through the years, alongside with those trends, the technologies featured in mobile phones have become more sophisticated, providing users a big variety of new applications. In fact, Apple store has more than 1 million applications and by May 2013 there had already been registered over 50 billion downloads for the existing applications. This trend predominantly supports the vital importance for organizations to integrate mobile applications into their strategies and services (Hartmut & Viswanath, 2015).

The advantages that help fostering the adoption of mobile technologies are also transferable to higher education, as they can also help on providing new educational values. It is extensively recognized the transformative power of m-learning in higher education to boost teaching and learning. It is acknowledged that mobile technologies are changing the rules of how students relate to academic supporting materials (Michael & Ellen, 2014)

Nevertheless, despite the benefits, the adoption of universities' mobile applications by students still needs further understanding. In order to address that, the current dissertation aims to analyze and explore the factors that help, positively influence and facilitate the student's adoption of a mobile university application.

1.4

### **Problem Statement:**

Following the trend, universities are increasingly implementing the mobile campus as a new educational tool. In Portugal, the three most important business schools have already launched their mobile platforms and are investing on its dissemination among students. Nevertheless, the adoption is still at its early phase, despite that universities' efforts to match the services offered by their website platforms. Previous studies that have analyzed the adoption of Learning Management System (LMS) in universities have recommended to further explore the triggers behind adoption through a more in-depth study which could bring more relevant insights (Han & Han, 2014). Therefore, the aim of the current study is to explore in-depth the influencing factors that may impact students' adoption of mobile campus. For that, the research has focused on the mobile campus at Católica Lisbon School of Business and Economics. MyCatolica was launched at the end of 2013, in partnership with Moofwd. In its initial phase, it was advertised internally to students through flyers. Currently, students are presented to MyCatolica on the Welcome Day.

The current study envisions to understand which are the factors , expectations, values and benefits which can positively impact the adoption from users' perspective. In order to come out with relevant results, the thesis will follow the typical approach of an exploratory research with an in depth interviews. This method of research will allow to directly interact with the users or potential users.

### **Research Objectives**

Research gap: Despite the efforts of universities in communicating their mobile apps, students' adoption is still in its initial phase. Further understanding is needed in order to accelerate the process of adoption. However, studies on this specific topic are very scarce, especially in a European context. The current research intends to fill-in this gap by identifying and exploring the factors that influence the mobile campus adoption.

### **Research questions:**

1.6

RQ1) What are the differences perceived between the traditional education management website system (Moodle, ESCA and Catolica Business School's website) and the mobile campus (MyCatolica)?

RQ2) What are the values and opportunities students expect to obtain by adopting the mobile campus?

RQ3) What are the barriers that currently influence users adoption of Catolica Business School's Mobile Campus?

RQ4) What type of features can help to overcome the barriers of adoption?

# Literature review

## Information Technology in Higher Education

2

2.1 First of all, Information Technology enables more efficient administrative processes that provide better communication and collaboration between the entities. This empowers organizational technology and has strong benefits for higher education. Furthermore, IT can be used as a learning technology and become part of the learning, as well as enable the managing and teaching processes inside the higher education complex systems (Gregory, 2012). Faculties need better organizational technology and better efficiency in their systems. Something that supports processes as enrollment, instructions, certifications and socializations. Plus, an application that can better exploit the IT advantages, increasing the educational productivity.

Administrations in Higher education systems require not just human resources, scheduling and a physical space (like plants and offices), but also academic resources for students and professors to collect their experience. Information technology has allowed them to improve efficiency in administration by eliminating paper-based documentation, improving scheduling access and having a more cost effective human resource. By introducing analytics and big data, the University has the opportunity to better collect, analyze and understand inputs, as well as improve their administration (Gregory, 2012). Thereby, one of the advantages of Information Technology is that enables, by its wider database, students to access information on the go. For instances, mobile learning is a term, implied by O'Malley et al. (2003), which refers to the learning process to happen even when the learners are not in a prearranged location and also improves their study when learners benefit from learning opportunities provided by a mobile technology (Nozha, 2014).

2.2

## Mobile Learning

Some exploratory researches showed how m-learning, if correctly designed, could be a tool to engage students and to teach skills, intellectual and concepts (El-Bishouty et al., 2010; Pursell, 2009). Envisioning to explore that, Universities are already implementing their efforts, by means of two base strategies, namely: expanding the website versions into a mobile version or creating a dedicated application that is available in an application store. There is the example of a large

universities in the United States which manage to provide students with intuitive easy access to online courses where students could complete tasks, read, post on forums, write journals and check grades and assignments. The uncomplicated and immediate accessibility of learning content through websites or apps – which are readily available to be downloaded in application stores - have enhanced the frequency of student's engagement with academic content and thus promoted a higher quality learning (Baiyun, 2013). Examples like these show how valuable could be an appropriate introduction of a mobile learning tool.

### **Defining mobile learning**

Mobile learning has suffered a few changes in terms of what it means. The latest definition proposed by Ally, (2009) and Pollara & Kee Broussard (2011), was “the process of using a mobile device to access and study learning materials and to communicate with fellow students, instructors or institution”. Additionally, Wexler et al. (2007) definition broadens mobile learning to any activity that permits individuals to be more productive when consuming information (Al-Zahrani, 2014).

#### 2.2.2

### **Mobile Learning Characteristics**

A very important characteristic of m-learning noted by Kukulska-Hulme et al. (2009), is that it turns the traditional way of identifying learning as exclusive to university time into an informal, uncomplicated and personalized way of learning. Instead, Naismith et al. (2005) distinguishes five different learning processes associated to incorporating mobile technologies: behaviorist learning, constructivist learning, collaborative learning, situated learning and informal learning.

**Behavioral learning** motivates students by taking advantage of the fast system feedback loop, meaning that it can provide the solutions to the problems that students try to answer, just like a reward. **Constructivist learning** happens when students construct new concepts by combining mobile devices capabilities and prior knowledge. **Situated learning** is when students can use mobile resources to collect information and learn about the environment, on the go. **Collaborative learning** takes advantage of how users can instantly communicate with each other and in doing so new ideas form and grow – the learning done outside of the academia can be collaborative and not

only individual. The **Informal learning** is the learning accomplished outside of the academia environment, thus has the advantage of leveraging any time outside the formal institution and use that learning in the classroom.

Additionally, Kukulska-Hulme et al (2009) brilliantly resumes why m-learning is so transformative, because these learning experiences transcend spatial, temporal and conceptual borders, which dramatically challenge the assumptions of how learning can be accomplished. Besides, Kukulska-Hulme (2007) previously noted that the improvement in access, the potential for a paradigm shift in teaching and learning are what makes m-learning groundbreaking.

### **Mobile Learning Potential**

#### 2.2.3

Various benefits are introduced by the Mobile Learning. Concerning that, Quinn (2011) proposed the four C's which teachers and students could benefit from using mobile systems: content, compute, capture and communicate. Content refers to that what students can read, watch and listen of academic related content; Compute means that the students can directly process calculations in the same device they acquire content; Capture mentions the capacity of mobile devices to collect audio, video and images from the environment and lastly Communicate which implies that students can communicate with other peers and teachers through any form of content (audio, video or images) (Al-Zahrani, 2014).

Once more, the large adoption of portable devices motivated the educational institutions to make a big effort on developing mobile campus, which supports academic, social and administrative issues. University Application increases the power access to contents, activities, media contents and increases the synergy inside of it (Han & Han, 2014). Even if the mobile learning has the possibility to enhance, improve and reinforce education with elastic access, faster communication and additional learning materials, there are other relevant aspects that impact the implementation, such as the readiness of the institution of Higher education to adopt this new technology tool (Al-Mushasha, 2010; Cheon et al., 2012). Most universities offer their mobile campus for free, but usually the services are not customized for students' needs and they merely replicate the functionalities of the website campus (Cheon et al, 2012). In view of that, it is essential to identify which functions and operation are remarkably important for the student, prior to any others, to ensure a quality educational experience for the user. These questions should be

contemplated in the early stages of design, in order to define congruent strategy while building and developing the m-learning application. The design of m-learning mobile plays an important role on increasing their effectiveness as educational material. The design should be planned in order to optimize the learning experience (Al-Zahrani, 2014). Examples of concepts to consider are colors, interface layout and the overall attractiveness of the application, which have a major influence in user's adoption and usage (Kamaruzaman & Zainol, 2012). Screen size should be divided in menu, navigation area and content (Darcey & Conder, 2012); columns, margins and icons (navigation buttons) should be consistently in the same place in every screen so the user is capable of understanding all screens (Kim et al., 2005). Colors should be using sparingly and strategically to complement information, but in moderation, not to confuse the user (Alqahtani, 2015).

### **M-learning Limitations**

#### 2.2.4

Even though there is great potential in m-learning it is not guaranteed the automatic adoption of these technologies, as Dyson et al. (2009) pointed out. There is a difference between a mobile technology being made available and understanding how the adoption of that technology really works. For instance, a teacher should be able to work effectively with these technologies, however Pollara (2011) discovered that more than half of teachers had a lack of interest and of proficiency, when using m-devices. Nevertheless, Kukulska-Hulme (2012) suggests that higher education professionals can adapt to these advancements in technology by assisted training in order to become more knowledgeable. On the other hand, Georgiev et al. (2004) believes that m-learning technologies will become more popular in the long run in spite of their current setbacks.

Nevertheless, it cannot be denied that there are challenges in the adoption of mobile technologies, especially in academia environments (Al-Zahrani, 2014).

#### Factors that may influence the mobile campus adoption

In this dissertation, the innovation is the Learning Mobile System, which is becoming more widespread in the higher education. Then, a service supplier must know what are the factors that may influence students' adoption to contribute for a better decision-making process.

In previous studies, to evaluate the aspects involved in the adoption process of new technologies, different models were used/applied. Hence, some of them were selected to develop this dissertation. An important section of the research is dedicated to the Diffusion of Innovation model (DOI) which is one of first theories that try to explain how a new technology achieves momentum and spreads through a population (Han & Han, 2014; Rogers, 1995). Although, to dig deeper and have more insights, other models such as the Technology Acceptance Model (TAM), Valued based Adoption Model (VAM) and Social Influence Model (SI) were also used.

### **The Diffusion of innovation Model:**

A significant framework in the innovation theory is represented by the diffusion of innovation model (Rogers, 1995), which helps to understand how users adopt the new technologies over time. The five attributes of innovations that influence the decision of adoption are: Relative Advantage, Compatibility, Complexity, Trialability and Observability. In the paragraphs below, the attributes are discussed within the specific context of LMS.

#### **2.3.1.1 The five Attributes of the innovation model**

##### **a) Relative advantage**

Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes (Rogers, 1995). To evaluate this domain, it is necessary to understand if mobile LMS, MyCatolica, was perceived advantageous and if it provides a more effective learning management, as these conditions may influence students on their usage.

##### **b) Compatibility**

Compatibility is how well the innovation matches existing values and models. The degree to which the functionalities of mobile LMS are matched with the existing PC and Web-based LMS affects its adoption (Han and Han, 2014; Rogers, 1995). To check this domain, it is important to find out the extent to which the functionalities of MyCatolica are matched with the existing PC and Web-based LMS and how does it affect the adoption.

##### **c) Complexity**

Complexity is the extent to which the innovation is easy to comprehend and use (Rogers, 1995). In the current study, complexity implies that MyCatolica is perceived as being easy to understand and use.

#### **d) Trialability**

Trialability is the degree to which a potential user can experiment with the innovation without having to commit to use it (Rogers, 1995).

In the current study, it implies to understand up to what point the trialability of MyCatolica is enhancing the probability of the students' adoption.

#### **e) Observability**

Finally, Observability is the extent to which a potential adopter can see the usefulness of the innovation in his/ her situation (Rogers, 1995). For example, if students in Católica Lisbon School of Business and Economics can easily notice other students' use of MyCatolica and comprehend its academic convenience, they would be more influenced in adopting it.

#### **Other attribute:**

##### **2.3.2 a) Resistance**

Resistance is related to the psychological resistance to the adoption of new technology because the innovation forces a change of behavior (Hall & Hord, 2006; Han and Han, 2014) Hence, it will be measured how students of Catolica are affected by the change in their daily behavior when adopting a new technology.

##### **2.3.3**

#### **Technology Acceptance Model (TAM):**

The original TAM model focuses on how the perceptions of usefulness and ease of use affect the adoption of a new technology (Davis, 1989; Davis et al., 1989) and it has also been widely used to investigate innovation adoption in engineering in the past thirty years (Davis, 1989; Davis et al., 1989). Having in mind that in recent years mobiles are a reality of people's lives, the TAM is of great importance, even if few researchers have studied mobile technologies under this model (Baiyun et al., 2013; Michael & Ellen, 2014; Kim, 2014).

Both perceived ease of use and perceived usefulness are essential for users' adoption and are the key perception variables of Davis' (1989) original TAM framework. These components are responsible for how the users perceive the technology to be intuitive and improve their job performance. Additionally, (Venkatesh et al., 2003; Lee, 2008) also believes that these are the key influential factors in the adoption of mobile technologies.

This model suggests how users accept and use technology and describes two attributes that affect their choice:



### **a) Ease of use**

“The degree to which a person believes that using a particular system would be free from effort” (Davis 1989, p.320).

Ease of use refers to a belief of how a technology will influence the individual’s attitude towards adopting it. Studies show that there is a relationship between how an interface design looks and the ease of use of m-learning apps. To develop a purposeful user-friendly design for an application is a big step towards captivating users. Moreover, if the application is too complex to work with, users would easily switch to other application – user’s attention with mobile applications is shorter than with desktop computers (Yan et al., 2012).

According to Abu-al-Aish et al. (2013) and Davis (1989), ease of use can positively affect mobile learning behavior.

Since this domain is similar to the Complexity (DOI), they both will be evaluated jointly in the research guide (Appendix 2). Thus, participants will define their perception of the ease of use of MyCatolica and which attribute will influence more their perception (design, page structure, etc.)

### **b) Perceived usefulness**

"The degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989 p. 320 ).

Perceive usefulness relates to how much a person believes that using a specific system will aid in his, or her, performance. There are several studies that show a strong relation between the perceived usefulness of the user and its learning process. A solid perceived usefulness will propel productivity, performance and overall improve satisfaction – it has been consistently proved that perceived useful impact technology adoption and of overall satisfaction (Hassanein et al., 2010; Maha & Heba,2015).

To assess this domain, it was significant to examine the grade of benefits perceived by the alumna for their specific purpose by using MyCatolica.

### **Valued based Adoption Model (VAM):**

Perceived value is affected by perceived benefits and perceived sacrifices.

This model explains users' adoption from a value perspective attribute. This is an attribute that better complements the TAM model (Kim et al., 2007). It has been taken in consideration because it affects adoption intention and could play an important role in the mobile campus adoption.

#### **a) Perceived value:**

Additionally to the TAM model attributes, "Perceived value is an individual's overall assessment of the utility of a product/service based on the perceptions of what is received and what is given" (Zeithaml, 1988, p.14).

To evaluate how this factor will influence the use of LMS, the study needs to define what values MyCatolica is bringing and if they are the same or superior than the ones that the website campus is providing.

#### **Social Influence (SI):**

2.3.5

It is a model that suggests that social influence (characterized by emotions, opinions and behaviors) can affect the product adoption. The model is composed by the subjective norm which has been defined as "beliefs that certain referents think the person should or should not perform the behavior in question" (Fishbein & Ajzen, 1975, p.16 ) and "the perceived social pressure to perform or not to perform the behavior" (Ajzen, 1991, p.188)

Subjective norm is how the perception that others students are using mobile devices affect the perception of an individual – the likelihood of an individual to adopt mobile devices is affected by how much his fellow students use them (Conner and Armitage, 1998; Armitage and Conner, 2001; (Michael & Ellen, 2014).

This domain is similar to the Observability (DOI) and for this reason they will be evaluate together. Accordingly, if students of Católica Lisbon School of Business and Economics perceived MyCatolica widespread and how it is influencing their adoption.

# Methodology

In order to reach valuable results, the research was based on former studies, which helped to undertake the flow of new technology adoption and primary data collection. The primary data was collected through a qualitative research, which was decisive in order to collect new insights and gain depth in the analysis.

To identify pertinent and related literature and studies in the mobile campus field, different databases were used: Google Scholar and EBSCO were used to search for documents, articles, journals, reports and papers using keywords as innovation, higher education, mobile campus, mobile learning.

Given the research objectives presented, which intended to address the call for more in-depth interviews with users of mobile campus applications (Han and Han, 2014), the current dissertation focused on in depth-interviews with students of Católica Lisbon School of Business and Economics of Lisbon. The in-depth interview method is a qualitative research instrument that is based on individual interviews to explore and discover, through their perspective, specific ideas or scenarios. Thanks to it, it is possible to come out with detailed information about perceptions, feelings and behaviors, providing a complete overview.

The advantages of in-depth interviews are that they enable more detailed information than other data collection (ie. surveys). They also provide a better environment for the study and the participants, a more relaxed atmosphere to collect data and it may make participants feel more comfortable having a live conversation with the interviewer.

Nevertheless, in-depth interviews present some limitations. Responses from the contributors could be tendentious and influenced by biases of several kinds (i.e. by topics that personally affect them). Furthermore, it usually produces less or no quantitative data and as a result, it has less scientific value. An in-depth interview is considered more time-intensive because of the amount of time required to interview, transcribe and analyze the results. The interviewer has to be properly trained and sure to use the appropriate techniques (i.e. Eluding yes or no questions). Conclusively, the results of an in-depth interview are usually hard to generalize due to small sample sizes (Carolyn Boyce, 2006).

The process followed to conduct the in-depth interviews was a general process: “plan, develop instruments, collect data, analyze data and disseminate findings” (Carolyn Boyce, 2006).

### **Sample:**

During the plan phase, as suggested by the literature (Carolyn Boyce, 2006), the information needed (i.e. significant sources of information) and potential participants were identified, contacted and listed.

3.1 Hence, since our intent is to explore the factors influencing the adoption of the Católica Lisbon School of Business and Economics' students, interviews were conducted with its students. Two segments were investigated: Users of mobile campus (MyCatolica) and non-users of mobile campus. In addressing these segments, the dissertation intended to be consistent with the study of Insook Han and Seungyeon Han (2014), which suggested to dig deeper exploring the students' need.

The students were invited to voluntarily take part in the research without any credit or monetary compensation. To run the analysis, five users (students that currently use it) and five non-users (students that are not using it) were interviewed. The respondents varied in age, gender and nationality, then capable to provide and contribute with multiplicity in prospective.

### 3.2 **Data collection**

The research guide is attached in the appendix section (Appendix 1). It was structured following three phases.

In the first phase the participants were asked about their personal information to create a rapport, in the second phase barriers were analyzed and in the third one the exploration of the students' need was undertaken (some functionalities were presented to check how much they would confer and checked for their potential on converting people into usage).

To start collecting the data, it was necessary to recruit the sample. All the possible participants, on the Católica's Facebook page, were contacted privately. It was explained to them that their help was required to achieve some important information that could help to bring new perks to their academic lives. Finally, the sample was analyzed and determined.

Consequently, they were contacted once again to schedule the interview and to inform them that the expected duration of the interviews were ranged from 45 minutes to 60 minutes (having an average of 50 mins). Some of the interviews were planned in the University rooms and some would be held on skype. On the one hand, this allowed the interviewer to be more flexible, facilitating the

scheduling with the respondents and on the other hand, it made the respondents more interested and satisfied.

### Material used in the research

#### Concept board with the description of MyCatolica App:

3.3

MyCatolica is available for free to its students, teachers and academic staff. As many Mobile Campus, it connects the academic community to the university services. It allows its users to manage and consult its content in real time. Accessing to data on registration, schedules, evaluation, capacity of the car parks and other information about the campus activities, such as seminars and events. Its purpose is to enhance the academic life, management of time and communication of the students, professors and the staff.



Figure 1 - MyCatolica Features

3.4

#### Research Guide:

To develop the research guide (Appendix 1) that lists the domains to be explored during the interview, it was essential to research the aspects that facilitate a mobile campus adoption. These aspects were located along the literature review and are stated in the Table of Dimensions (Appendix 2), being used as main theoretical reference for the development of the research guide.



## Results and Analysis

Each interview was recorded and immediately transcribed and summarized. In such way, it was easier to analyze the outcomes. The summarized data were then transcribed once again and reviewed.<sup>4</sup>

Following that, a computer tabulation using Excel was used to analyze the collected data. Considering the exploratory goal of this research, responses were analyzed in search for different patterns and themes among the participants. Thanks to it, it was possible to cluster them in a significant way.

### Sample profile

#### 4.1 Participants' background description:

Students, male and female, from 22 years old to 27 years old attending a Masters or an Undergraduate degree in Católica Lisbon School of Business and Economics. All of them own a smartphone. Only half of them possess MyCatolica.

All of the ten students, which took part in the in-depth interviews, were in possess of a smartphone and all of them were using different kind of applications for distinct purposes/scope (i.e. Social applications, games, news, mobile campus etc.) Half of them were International students and half of them were Portuguese, where 50% were not adopting MyCatolica and the 50% were current users. Besides, 90% of them already tried the Catolica mobile campus and the 10% never tried it before.

The research guide was divided into three parts. The first part of the interview to create a rapport and make the participant feeling comfortable. The second was dedicated to the evaluation of the domains that could influence the adoption of the mobile campus, suggested by the past researches. In this way, it was possible to check and validate the results of past studies also in Portuguese context and fill the gaps and limitations highlighted in the Cyber University study. Consequently, the second part was dedicated to the exploratory phase. Students were asked which were the possible services to integrate to the actual mobile campus and six new services were showed. Three services thought to enhance the student life (STAYS/EVENTS/FLEA MARKET) and three with educational and organizational benefits/purposes (CHAT/CLOUD/NOTE).

*Table 1 - Participants*

Nº	Participant	Gender	Nationality	Age	Program
1	Non-user	Female	Viet Nam	24	Master in Marketing
2	Non-user	Male	Brazil	25	Master Innovation and Technology
3	Non-user	Male	Germany	25	Master in Marketing
4	Non-user	Male	Portugal	24	Master in Innovation and entrepreneurship
5	Non-user	Female	Portugal	23	Undergraduate in Business Administration
6	User	Female	Portugal	22	Master in Marketing
7	User	Female	Portugal / Italy	23	Master in Strategy
8	User	Female	Romania	22	Master in Business
9	User	Male	Portugal	23	Master in Finance
10	User	Female	Germany	27	Master in Economics

4.2

### **Results:**

Before analyzing the results in detail, it is important to acknowledge that participants overall expressed their impression that the MyCatolica is not working properly, with many functionalities not yet enabled or not updated (ie. Parking, canteen menu, etc.).

4.3

Most of the relevant transcripts, that support and explain the results are available in the appendixes section (Appendixes from 3 to 19)

### **Part One: Current image of Moodle and MyCatolica's awareness**

To better understand the needs of the participants it was relevant to know their perception about Moodle, the most influent and used platform and the awareness about MyCatolica. Practically, there is a constant and strong use of Moodle by the students because it is almost a mandatory part of their courses. They communicate with the professors and frequently check information as grades, news, syllabus of the courses and materials as slides, exercises, cases and quizzes (Appendix 3). Hence, Moodle has been perceived as an essential tool for the academic life



and more reliable. Then, the awareness about MyCatolica was almost present in all the participants (9/10).

Once understood the participant behavior, awareness, perception about Moodle and MyCatolica, it started the evaluation of the domains suggested on the literature.

## **Part Two: Evaluating the domains that could affect the adoption of MyCatolica**

### **Compatibility**

4.4

As defined by the literature, compatibility is an important aspect in the adoption of new technologies because users tend to leverage their behaviors on the knowledge they have regarding the past comparable technology that they know (Han and Han, 2014). In this case, it has been analyzed the extent to which the functionalities of MyCatolica are comparable with the university's website Moodle.

Regarding that, the majority of participants acknowledged the existence of various functionalities related to the courses' information (grades, classrooms, schedules, news and professor communications) that were similar to Moodle.

Nevertheless, the main difference highlighted by the majority, is the impossibility to access the course materials such as slides, syllabus and exercises, which are perceived as one of the most influent factor in students' academic life. That being the case, as in MyCatolica they cannot download materials, neither upload them or read them, they refer to it as a limited version of Moodle. Other participants refer to MyCatolica as a generalist platform as it combines information of all campus' platforms, providing the same information that can be found on ESCA and Catolica's Website (treasury, calendar, schedules), even though some still prefer to the website platforms because considered more reliable .

Additionally, it has been highlighted that users do not need to login every time to use MyCatolica (as it is necessary for the websites), but they cannot enroll or directly communicate with the professors.

The participants in general agree that MyCatolica should be more similar to the other platforms, because, despite offering some useful functionalities regarding campus information, it is not helpful on supporting students' academic lives. In fact, participants agree that if MyCatolica were more similar to Moodle they would increase its adoption and usage.

Furthermore, regarding the differences between the MyCatolica and Moodle, a Portuguese student noticed along the research that he could access the “restaurants” functionality. Despite appreciating it, he was nevertheless surprised that the application was available only in Portuguese, given university’s international values and considerable number of foreign students.

In sum, the main finding regarding compatibility is the need for MyCatolica to get closer to the functionalities of Moodle. For that, an upgrade of MyCatolica through the addition of interactive functionalities (upload, download, access to materials) would be desirable. Even if for users the information provided and the level of compatibility were already enough to adopt it (download it), it is clearly not enough to motivate higher level of usage. (Appendix 4)

### **Relative advantage**

Relative advantage is defined in the literature as the extent to which the new technology is perceived superior than the previous one (Rogers, 1995). In the specific context of MyCatolica, it would imply that the application would be perceived as more advantageous than the websites services.

Participants’ predominantly acknowledge MyCatolica’s portability and accessibility to all information in one tool, as important advantages relative to Moodle. Some refer specifically to the help that the application provides on welcoming new students. Others refer to the parking facility, which is useful to know if there are free slots. On the other hand, despite these advantages, the participants once again criticize the application for not providing any access to the academic materials. A negative critic was also recalled by an International non-user, which evidenced the Portuguese language and the missing chat as important disadvantages.

The relative advantages related to perceived accessibility and portability of information seems to positively influence the adoption of MyCatolica, through its initial download. However, while using<sup>4.4.3</sup> the application users perceive that Moodle is more useful, concluding that the advantages initially perceived were not enough to motivate usage (Appendix 5).

### **Perceived value**

Being defined in the literature as the “individual’s overall assessment of the utility of a product/service based on the perceptions of what is received and what is given” (Zeithaml, 1988, p.14), it has been evaluated which values MyCatolica is offering and if they are different from the ones already offered by Moodle.

When questioned about the Perceived Value of the application, the majority of participants answered that portability and accessibility to information are the most important values. The application could give you the information of the University right in your hand. Certainly, these two values, offered from MyCatolica, are different values which web-based platforms could not provide and are a positive influence for users' adoption. As well, innovation has been mentioned as a new value that increase the perceived value of the mobile campus. This value emphasizes the enhancement of the University image and the University support to the students' academic life.

Hence, users are influenced by their positive perceived value. However, even if the majority of non-users are aware of the potential values of the application, their perception of MyCatolica' value is negative because it is not supportive for their academic performance (Appendix 6).

### **Trialability**

Trialability<sup>4.4.4</sup> is defined as the degree to which a potential user can experiment with the innovation without having to commit to use it (Rogers, 1995). In the specific context of research it was relevant to understand until which level the Trialability of MyCatolica is increasing the adoption's possibility.

The fact that MyCatolica was provided for free made the trial easily accessible for all participants that were aware of its existence (9/10). Hence, four non-users out of five tried quickly and quitted, as it did not work as they expected and just one had never installed the application. The majority of the respondents sustained that they would never consider paying for the application and sustain the idea that it should be a free service offered by the University. Nevertheless, two of them would still consider paying for the service if they would perceive consistent learning utility associated to it (Appendix 7).

Then, as we can see from the results, the fact that the product is free could influence just the initial adoption, afterward it is not enough to retain. This means that students desire the application and the trialability helps to increase the appeal of it. Even though the big obstacle is to convert the initial use into final adoption, and in order to reach that MyCatolica needs to be more efficient.<sup>4.4.5</sup>

### **Complexity / Ease of use**

Complexity or Ease of use are defined as a degree to which a user perceive a specific system free from effort (Rogers, 1995; Davis, 1989). In the particular scenario of the current research, participants were asked about their perception of MyCatolica's ease of use and which were the attributes that influenced their beliefs.

All respondents agree that the ease of use is a very important factor that could influence their adoption. When asked if MyCatolica is easy to use, the majority answered positively, even though it has been highlighted by some international students that the language barrier could compromised the ease of use. The features that most strongly affect the ease of use are the attributes that affect the navigability, the page structure, main menu, design (visual and simple) and the readability.

When comparing the importance of the ease of use with contents and functionalities, the majority evidenced that the ease of use has to be a standard priority. Participants sustained that without the ease of use, the contents and functionalities are not so relevant and they would rather access Moodle instead. Overall, users and non-users define MyCatolica as being user friendly. For users, the perception of the ease of use is extremely important, even if supported by the poor functionalities provided, it is enough to adopt the application; they see value in aspects that non users don't. On the contrary, for non-users, functionalities are more important and even when the ease of use of the mobile campus is perceived, it is not enough to affect positively their adoption. (Appendix 8).

#### 4.4.6 **Resistance**

It is “the effort that a student have to perform when changing his/her habits in favor of the new technology” (Hall & Hord, 2006; Han and Han, 2014). If it is too high for the value proposed it will negatively influence the adoption.

While evaluating this aspect, it has been evidenced that the effort of changing habits of their daily routine could be strong, although, the majority of non-users do not believe that the main cause of their non-adoption is associated with resistance. They were very categorical sustaining that commonly young people easily adapt to changes, and if the tool brings convenience and comfort values for them, old habits will not be a strong barrier to overcome.

Thereby, resistance could negatively affect the usage. However, it has been shown that if the students recognize the benefits/values of the mobile campus, habits should not be a problem.

One non-user suggested the need for increasing the marketing efforts towards motivating students to use the application. In his opinion, this could be a good initiative for managing resistance (Appendix 9).

### **Observability / Social Influence**

It is the "the perceived social pressure to perform or not to perform the behavior" (Ajzen, 1991, p.188). Therefore, how is the perception of MyCatolica diffusion influences the students' adoption.

First<sup>4.4.7</sup>, it was important to understand what was the perception of the students regarding the diffusion of MyCatolica and the overall perception about it is very poor. Nine of them think that the application is not widespread and just one of them thinks that it is more or less spread. This first question was relevant to check if the sole fact of perceiving the application widespread all over the students would influence their adoption. When the non-users were asked "*If the MyCatolica application was widespread all over the students, how it would affect your willingness to use?*" " Just half of them said that they would be positively influenced, the rest manifested to be more self-centered caring more about their own feeling.

Subsequently, all of them have being submitted to a different question in order to evaluate if SI is supported by a recognition of real benefits manifested by users : "And if you were noticing that the application was bringing educational, organizational and managerial benefits to them, what would it change?" In this case, most participants considered the Social influence as a positive factor for their adoption, as it linked to real benefits. Non-users will be more likely to try it and users more retained.

Hence, the findings reveal that if the application was widespread, even the non-users would consider adopting it. (Appendix 10).

4.4.8

### **Perceived usefulness**

Defined from the literature as "The degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989 p. 320). Hence, It will be measured the amount of benefits recognized by the students if using MyCatolica and how this will influence their adoption.

For evaluating that, participants had to describe what was the purpose of the application. The biggest percentage claim that the /purpose of the application is to help the students and enhance the student life throughout a new technology that provides better communication, useful functionalities, easy access to the information, educational and learning values.

After this, the participants received a card with a statement on it and were asked to give their personal impressions and feelings about it. The card was given to them with the purpose of generating a deeper reflection.

*”This application allows you to share in real time, the different experiences that the campus provides, keeping students always informed about the initiatives of the University, which will provide greater participation and student interaction in academic life.”*

The reaction to this declaration was negative from all of the students interviewed because it sounded untrue to them. This reaction highlighted how different is the perception of the supplier and the users. A non-user also declared that if that promise was real it would strongly influence his adoption.

Accordingly, we can say that non-users’ perception of the usefulness is certainly negative and it is reflected in their non-adoption. As it has been highlighted previously, students perceived the application as a not working tool, therefore useless. But if the perception was positive it would actually influence their adoption. While, for users, whom have a different perception from the quote, perceive the tool as useful enough to be adopted. As we have noticed, users are already satisfied to use the tool as an informational tool.

In conclusion there is no doubt that the perceived usefulness influence the adoption of the mobile campus (Appendix 11).

### **Part three: Exploratory phase**

After evaluating the domains that could influence the adoption of a new technology, as suggested and supported by the literature, it was very interesting to explore how students react to alternative services. And evaluate their perception about six new services thought to overcome the adoption barriers.

To introduce the exploratory part of the interview, it has been asked to the participants to describe the desired features that they would like to see implemented.

As expected, most of them expressed the desire for accessing the academic materials. In this way they could download, upload and consult them receiving better support for their academic life. There were also new ideas being proposed. Some requested to have the Popup news about courses

or general information (i.e. deadline - teacher is sick); others would like to pay the meals through the application and have a public “CHAT” where they could communicate, interact, share notes and ask information. Another participant one asked for an internal dropbox to store and share documents. While another one asked for the interactive map of the university and all the menus of bars and canteen. All of the participants gave these suggestions because they strongly believe that they would positively influence the students’ adoption.

Despite the variety of suggestions, participants were clearly pointing out that the main desired functionality would be to allow them the access to the courses’ material. (Appendix 12)

Afterwards, the interviewer started showing and describing the mockup of each service, one by one and for each of them asking: “What is your opinion? Do you like the idea? Would you like to add any suggestion? Would you like to implement it? Will it affect your adoption? (Give as many insights as you can) “

#### 4.5.1 STAYS

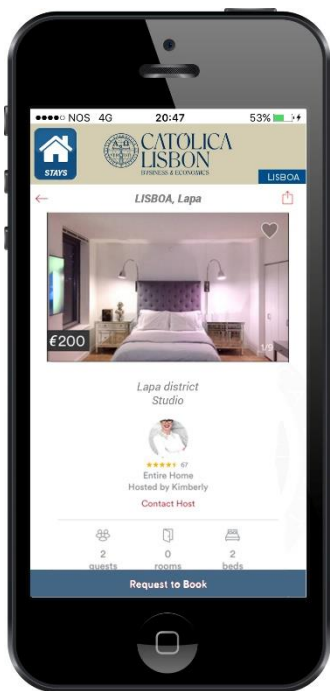


Figure 2 - Stays' Mockup

One of the first obstacle for the students moving in the new university is to find a place where to live. This is a marketplace for shared flats and rooms from students for students, so when you want to move you can easily check feedback from past students and information.

One of the first obstacle for the students moving in the new university is to find a place where to live. This is a marketplace for shared flats and rooms from students for students, so when you want to move you can easily check feedback from past students and information.

Nine had a positive reaction to it, noticing that there was not a big advantage for the Portuguese students but a big advantage brought in for the new students coming from outside of Lisbon, especially for the internationals. For this reason, STAYS service was defined as useful to welcome the students and therefore it would influence the initial adoption of the application. Very important would be to communicate this before the arrival of the students at the university.

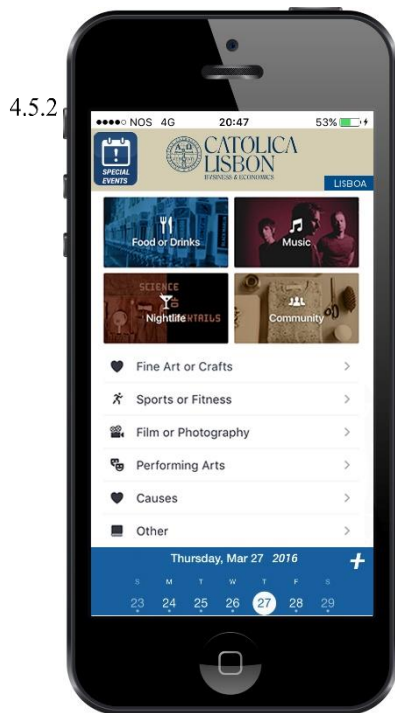
Some suggested to implement the service on the website too, maybe more functional with because of a bigger screen, where it is good to receive internal feedback from the students. Even though, it has been evidenced that many students are using Uniplaces, which could be a competitor or a partner/collaborator to develop it together.

In addition, the only participant that had a negative reaction, a non-user, introduced a new point of view that was not considered before. To whom belongs the responsibility if something goes wrong? It could affect negatively the image of the university (Suggesting as a solution a collaboration with Uniplaces or Airbnb).

Hence, in this case, the different perception of the service is influenced from their nationality. In fact, Internationals were very enthusiastic of this idea, on the other hand Portuguese students, recognize the benefit, but it will not influence their adoption. As underlined before, this service will be particularly useful to introduce the new students to the application and to the University (Appendix 13).



## EVENTS



*Figure 3 - Events' Mockup*

Students, during their academic life, spend a lot of their time at the University. But very often the University do not support their daily life outside of it, or if it does, it is always related to the academic environment. So why not to try to help them suggesting events (parties, travel ...) directly on their hands? Especially events addressed to students are welcomed to reach the target perfectly.

For this service, the general reaction was positive, even though one had a negative declaration about it, stating it wasn't necessary being that Facebook could provide the same service. One more time, it has been highlighted how useful could be for the international students. Among the ones who liked it, users and non-users mentioned that it is a good functionality but it is important to deal with the competition (Facebook) where many groups and events are suggested. To cope with the Facebook competition and make the idea more reliable, collaboration with the Student's Association or the International Club has also been suggested. Even though, if it will still be developed, it has to be done in a detailed way listening to their peculiar needs. For example, it is important that the application has no spam, that is synchronized with the academic calendar.

Furthermore, two non-users pointed to some new values created for all the students. This service could bring a better university experience and a stronger community/social value. It will allow the student community to share extracurricular experiences all together making the Católica Lisbon School of Business and Economics' student interaction more interactive.

Finally, this service could really influence adoption, seven out of ten sustained that it will influence the adoption, maybe mainly for the international students. (Appendix 14)

## FLEAMARKET



Figure 4 - FleaMarket's Mockup

Students that moves for the first time in a new city to attend the university need to buy some useful stuff at low price (guitar, surfboard, books, bike ...). This feature will be a second hand market, where students can buy and sell their stuff, from furniture to books. Especially useful for students, because of no/low income.

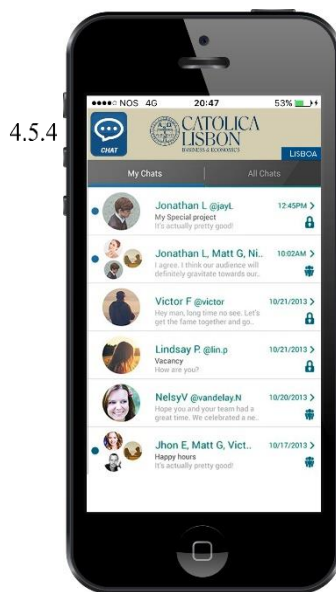
There was again a positive reaction to this service from the majority. They perceived it as a new idea/value. Some participants - three non-users and one user - were pleased to observe how a big value/benefit could by these means be brought in for everybody, regarding an international market for both Portuguese and foreign students. Even though, two supporters of the idea, pointed out that, the service is based on a small market (Católica Lisbon School of Business and Economics) and it will require a bigger users' community to be efficient and more appealing, maybe combining all the university communities. In the other hand, one of the users underlined that even if it is a smaller market and maybe not able to satisfy all the buyer's needs, it could be a safer point of purchase than OLX.

Instead, just one non-user was very opposed to it, saying that no one will use it because the market is too small to capture the opportunity, where OLX would be preferred. Essentially, he perceived it as useless.

Even if one participant was against it, the FLEA MARKET didn't have clear utility perception, maybe it has not seen as essential enough to increase the adoption of the application (Appendix 15).

After evaluating the services that might better influence the student life experience, other three services were proposed. In this case, the three services were closely related to their academic life.

## CHAT



Every student knows the problem of communicating with their group/team to exchange and share data over a social network or WhatsApp instead of communicating through the non-existing University chat, which would be easier and user- friendlier than doing it over social networks. That is the need we want to satisfy with a communication feature where students can interact and share group work data to special members (courses chat, offices, professors...)

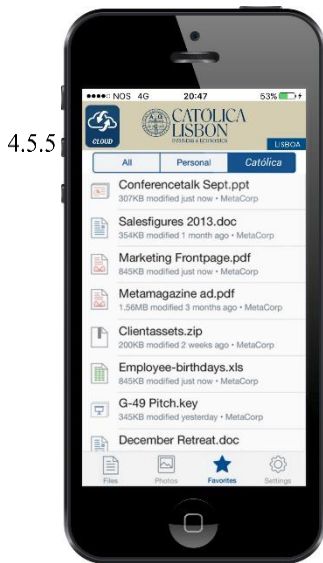
Figure 5 - Chat's Mockup

The reaction to this suggestion proved to be very enthusiastic. All of them were happy to hear about this functionality. As we have seen, it was one of the desired features proactively mentioned before. The majority would like to integrate it in MyCatolica. It has finally been perceived the enhancement of the communication value. Moreover, they would like to have it available also on their laptop. They also liked the benefits introduced by the new technology that will substantially optimize the interaction as group's course automatically settled. It has also been perceived a relative advantage in comparison to Moodle mails, because there will be a faster communication, exploiting the functionality and portability benefits of the tool. Additionally, three non-users expressed the desire to synchronize it with Moodle in order to make it complete and consistently useful (compatibility domain).

This service will introduce many benefits for their daily academic life. It will consistently influence the adoption. Management, organizational, efficiency and communication values are seen as an influential and strong value that will affect the adoption by nine of the participants. Furthermore, the adoption will also be affected by its social influence.

One non-user instead declared that it will not be personally influenced because of his habits, resistance domain (Appendix 16).

## CLOUD



How many time students forgot a paper/document. Now students could have the possibility to access all the academic material, resource in their hand ready to use it (slides, pdf, report, presentation, papers...)

*Figure 6 - Cloud's Mockup*

About the CLOUD service, the majority had a positive reaction. Then, the ones who liked it, the access to the material through the mobile device was desired. It would bring new values and bigger educational and organizational benefits. This service made one student perceive the university was becoming digital, influencing also its image.

On the other hand, two had a negative perception (one user and one non-user). Which was influenced by the resistance domain. In this case the laptop is preferred to the mobile device. This kind of service will increase the adoption for 80% of the participants. It is enhancing their academic and student life. It has been taken in account as very useful. A student has also foreseen a little influence in his learning process, for example making possible a revision/fast check of the documents while in the metro.

For the other two (one user and one non-user) the reason why it will not affect their adoption and maybe the adoption of their peers, is because of their habits. This reminds the Resistance domain, because they are used to work and study on their laptop and they won't change their routine/approach. A possible solution to face with the resistance obstacle, then, is to provide this service synchronized with the laptop platforms. In this way it will be satisfied the need of the ones used to access the document just on the laptop, making the application and the platforms more complementary. (Appendix 17)

## NOTE



This is an innovative service that will help students in taking note in a vanguard way. If alumna can't easily access, consult their notes, pics of the board with their mobile-taking system, the mobile device lose the opportunity of being useful during the class. So, why not synchronize notes, pics, audio, video...in a technological note? A innovative note taking system of the University!

Figure 7 - Note's Mockup

In this case, six respondents had a positive reaction (three users and the three non-users) and four had a negative one. The six respondents were mainly curious about it, but they were already noticing that it could bring new educational, learning and management values to their academic life. However, it has to be quick, connected with the laptop and the ease of use is required. In this case, since it is a new tech service never experienced before, a trial of it would be necessary.

The four that were disliked this idea, were addressing the cause to their "habits". They are not used to take notes with any technological device (just paper). Therefore, they do not see benefit to their daily lives as students. Plus, it has to be supported also by the professor, because often they do not allow students to use mobile devices.

This would be a new service that could really bring advantages for the students. However, the domains<sup>4,5,7</sup> that could affect their adoption (Resistance, Ease of use) cannot be forgotten. (Appendix 18)

### Closing questions

To conclude the exploratory part, the participants were asked to give a final opinion about MyCatolica and the integrated services proposed:

**"What do you think about the MyCatolica at this point?"**

Well, all the answers were deeply analyzed several times. The overall feeling of the interviewed students is that Católica Lisbon School of Business and Economics should listen more to the students' needs if it really want to support them. After the exploration part, where different services were proposed, the majority had a different perception about MyCatolica. Indistinctly from being users or non-users, since they were more aware about the potential mobile campus functionalities, the application was perceived less consistent than before. After being exposed to the new ideas, the gap, between the performance of the current mobile campus and the desired one, was perceived to be filled in order to increase its utility and consequently its adoption. The new MyCatolica should improve the functionalities to be more supportive/consistent for their daily life, bringing organizational benefits and a new experience value.

Finally, the only participant who was unaware of the application before the interview, declared that was positively surprised by the presentation of it and presented himself eager to try it. Pointing out that the cause of his non-adoption was inefficiency of the previous marketing campaigns. (Appendix 19)

#### 4.6 **Discussion of results:**

##### 4.6.1

#### **RQ1) What are the differences perceived between the traditional education management website system (Moodle, ESCA and Catolica Business School's website) and the mobile campus (MyCatolica)?**

According to the participants, Moodle is an essential tool to their daily academic life, as Catolica's professors are using it as a main tool to communicate. Participants were also evidencing how essential it is to use those platforms (Moodle, ESCA) in their daily academic lives. They are required to login almost every day in order to satisfy professors' requests, to access the course materials and upload documents, for all the information to be shown, to enroll in new courses etc. In short, these tools are decisive to support their academic life. On the contrary, the mobile campus is perceived as only useful to access basic information as grades, classrooms and tuition fees. Even more, some of the participants highlighted that Moodle is more reliable than MyCatolica and for this reason, when a certain information is desired, they prefer to access Moodle.

## **RQ2) What are the values and opportunities students expect to obtain by adopting the mobile campus?**

When first adopting the mobile LMS, students expect to have a better academic life. Thanks to the easier access and portability that the application allows and thanks to its features, the users expect to enjoy better educational, organizational, social and communication values. It is perceived as an innovation tool that could create more comfort and efficiency. In this context, the expectation about MyCatolica was not different between users and non-users. Clearly, they are looking for the same benefits when using MyCatolica, where in some cases they are satisfied enough with the poor service offered (users) and in other cases, it is not enough for their adoption (non-users).

## **RQ3) What are the barriers that currently influence users adoption of Catolica Business School's Mobile Campus?**

Previous studies have shown that the perception of Relative Advantage, Compatibility and Observability (or Social Influence) related to the LMS was influencing its adoption. However, users could also prove to be discouraged to adopt it due to a negative effect on their routines, caused by its complexity (measured in the term Ease of use) and the Resistance Factors associated with it (Han & Han, 2014; Rogers, 1995; Ajzen, 1991; Armitage and Conner, 2001).

When comparing these results with the current findings, we can notice that a similar result has been reached. The perception of the Relative advantages, is the main domain that really positively affect their adoption, students are seeking for a tool that is bringing consistent advantages to their academic life. Even though, Compatibility and Observability are important factors that could influence the adoption. Compatibility is desired and could affect the adoption, but in the Católica Lisbon School of Business and Economics context, it is reflected just by the information functionalities that are not enough for the daily academic life. Observability & Social influence domain could strongly influence their adoption because they will prove that the application has real benefits, but it is not perceived as sufficiently widespread yet. Additionally some users are not affected by the observability domain because they are more self-centered. Instead, the Trialability can just influence the initial adoption, not its maintenance.

As pointed in previous studies (Han & Han, 2014), Resistance could negatively affect the adoption. However, at the same time, it is a barrier that could be easily overcome if the application demonstrate its decisive utility.

Thereby, in the specific context of Católica Lisbon School of Business and Economics, the research evidenced that perceived value and perceived usefulness are also domains that could positively influence the adoption.

#### **RQ4) What type of features can help to overcome the barriers of adoption?**

The students highlighted many different functionalities. The most repeated and requested was the <sup>4.6.3</sup>access to the academic materials. It would be the service that more largely enhance the mobile LMS adoption. Besides this service, the new functionalities proposed were the English language (internationalization purposes), push up notifications (grades, news, deadline), campus map, canteen menu.

As it has been showed in the previous study (Han & Han, 2014), non-users acknowledge the opportunities provided by the mobile campus, although the perception of Resistance and a perceived low leveled of usefulness discourage their adoption.

The new services proposed in the research, such as “Stays”, “Events”, “Flea Market”, “Chat”, “Clouds” and “Note” were very convenient to collect new relevant insights. Students were committed to show the research their full support. Results showed that they were more interested and deeply attracted to the presented functionalities because they hold new educational, learning and organizational values in it. Therefore, “Chat”, “Clouds” and “Notes” are the services perceived as capable of providing them a better support and influence on their Academic life. Consequently, if those services were to be integrated in MyCatolica, that would affect the adoption of it. Even though, the value and influence that previous stated Domains such as Resistance, Ease of use, Perceived value and Observability have on the adoption of a new technology as MyCatolica cannot be underestimated.

Meanwhile, services as “Stays”, “Events” and “Flea Market” could significantly complement the mobile LMS. Although not indispensable, these services are considered useful to accommodate and welcome new students, with special attention to foreign ones and enhance the average student's life. “Stays” may be a good way to host international students and influence their initial adoption of the digital initiative. “Events” could augment the overall academic experience and create better community value. “Flea market” was the most ambiguous one to take part on the discussion, because even when some of the participants in the case study acknowledged the utility of it, at the end of the data analysis it had to be labeled as not essential.



Finally, if these services were to be integrated in the currently existent mobile campus, they would provide new benefits that would strongly affect MyCatolica's adoption by the students. In doing so, the students and the university's image would profit.



## Conclusion

LMS is a technology which could strongly increase the learning process and academic management in the field of Higher Education.

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In the Católica Lisbon School of Business and Economics context, the traditional education method is still perceived essential and more efficient because is supporting students' academic life and perceived more reliable, where MyCatolica is not perceived decisive. Conversely, users prefer Moodle rather than the mobile campus, as they perceive fewer advantages when compared with Moodle. The mobile campus was seen by participants as an informational tool which was interesting enough to invite their initial adoption, however was limited in terms of functionalities, failing to retain users. Even if the positive expectation about the mobile campus value was extended to both users and non-users, in fact, after the initial trial it was evaluated as less advantageous and not supportive for their academic life. As it is not very supportive and has only limited to access to basic information, students often prefer to access the platforms to check more reliable information.

In short, the current MyCatolica is not particularly useful and it is viewed as simply a different version of the web-based platforms that just offer information and do not let them actively interact with professors or accessing the materials.

During the initial trial of MyCatolica, participants expected an enhanced academic life. In their opinion, it is a technological innovation that introduces superior educational, organizational, social and communication values. But this expectation was not met by the functionalities of the application. As it has been evidenced, it is perceived as a *good enough* information tool, which is enough to satisfy users' needs and is not useful enough for the non-users.

In the literature, it has been showed that the perception of Relative Advantage, Compatibility and Observability (or Social Influence) influences the adoption of mobile campus (Rogers, 1995; Han & Han, 2014). Where perception of Complexity and Resistance discourage it (Rogers, 1995; Han & Han, 2014; Hall & Hord, 2006).

Similar results have been reached in this dissertation, with the exception of Social Influence and Resistance. Social influence could be a barrier for the majority of the students of Católica Lisbon School of Business and Economics, even though there are students that are consistently self-centered and will not be influenced by others' behaviors. Resistance has been perceived as barrier

that could be easily overcome if the mobile campus is perceived useful. Thereby, the perception of Resistance and a perceived low leveled usefulness could discourage their adoption but are not critical.

About the desired features that could overcome the barriers and enhance the MyCatolica adoption, many were the suggestions. The main advice was to introduce the access to the materials through the application, others, less important but still influencing the adoption, were the English language (internationalization purposes), push up notifications (grades, news, deadline), campus map, and canteen menu.

When analyzing the reaction to the new services proposed (“Stays”, “Events”, “Flea Market”, “Chat”, “Clouds” and “Note”). Chat”, “Clouds” and “Notes” were the features perceived as able to add more benefits to better support their Academic life. Meantime, services as “Stays”, “Events” and “Flea Market” could considerably aid and complement the MyCatolica. Although not fundamental.

In conclusion, to create/develop a superior MyCatolica, listening to the students’ needs, these functionalities have to be integrated in the existing application. They would provide new useful values which would strongly influence its adoption by the students. Meanwhile, it is essential to evidence that they would bring benefits not only for them, as it would be helpful to enhancing Católica Lisbon School of Business and Economics’ image.

The result of the current study can be a fundamental starting point for further development and upgrade of MyCatolica and other mobile LMS as it offers a deep understanding towards the factors that facilitate the adoption of a mobile campus. Students of Católica Lisbon School of Business and Economics are looking for an application that can actively improve their academic lives. A mobile LMS should adapt to the students’ learning requirements.

This dissertation presents various limitations. Considering the size of the sample and the fact that the study was focused on a specific university app., the result cannot be generalized to all mobile campuses. Furthermore, considering the purpose of the dissertation, the research was only based on a qualitative method in order to provide deeper understanding regarding students’ perceptions regarding the innovative tool. Therefore, findings are not conclusive, but clear enough to offer good insights for future studies.

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Appendix 1 - Table of Dimensions

Model	Dimensions	Literature Definition	Source	Context
Diffusion of Innovation Model (DOI)	Relative Advantages	Relative advantage is the degree to which an innovation is perceived as being better than the idea it supersedes	(Rogers, 1995)	It is necessary to understand if mobile LMS, MyCatolica, was perceived advantageous and if provides a more effective learning management, students will likely use it.
	Compatibility	Compatibility is the degree to which an innovation is perceived as consistent with the existing values, past experiences and needs of potential adopters	(Rogers, 1995)	It is important to find out the extent to which the functionalities of MyCatolica are matched with the existing PC and Web-based LMS and how affects its adoption.
	Complexity	Complexity is the degree to which an innovation is perceived as relatively difficult to understand and use.	(Rogers, 1995)	How MyCatolica is perceived easy to understand and use.
	Trialability	Trialability is the degree to which an innovation may be experimented with on a limited basis.	(Rogers, 1995)	Until which point the trialability of MyCatolica is enhancing the probability of the students' adoption.
	Observability	Observability is the degree to which the results of an innovation are visible to others.	(Rogers, 1995)	If students in Catolica Business School can easily notice other students' use of MyCatolica and comprehend its academic convenience, they would be more influenced in adopting it.
Additional attribute	Resistance	Resistance is related to the psychological resistance to the adoption of new technology because the innovation forces a change of behavior	(Hall & Hord, 2006; Han and Han, 2014)	It will be measured how students of Catolica are affected by the change in their daily behavior when adopting a new technology.
Technology Acceptance Model (TAM)	Ease of use	The degree to which a person believes that using a particular system would be free from effort"	(Davis 1989; Venkatesh, 1999; D Kim, 2014)	Participants will define their perception of the ease of use of MyCatolica and which attribute will influence more their perception (design, page structure, etc.)
	Perceived usefulness	The degree to which a person believes that using a particular system would enhance his or her job performance".	(Davis 1989; Venkatesh, 1999; D Kim and al, 2014)	It was significant to examine the grade of benefits perceived by the alumna for their specific purpose by using MyCatolica
Valued Based Model (VAM)	Perceived value	The consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given	Zeithaml, 1988	It has to be determined what values MyCatolica is bringing and if they are the same or superior then the ones that the website campus is providing.
Social Influence (SI)	Subjective Norm	"the perceived social pressure to perform or not to perform the behavior"	(Ajzen, 1991)	if students of Catolica perceived MyCatolica widespread and how it is influencing their adoption

# Research Guide

## 1<sup>st</sup> Phase

### Introduction:

"Good morning. I am Francesco Paolino (introducing myself). I am a master student at Catolica and I am doing. The interview will last between 30 minutes and 45minutes.

If it is okay with you / If you agree, our conversation will be recorded. The purpose of this is so to get all the details but at the same time be able to carry on an attentive conversation with you. All your feedback will remain confidential. I will transcribe a report, which will contain all the comments without any reference to the participants.

### Building Rapport:

- What is your nationality?
- Age?
- Which course are you attending?
- What do you like about Catolica?
- Do you usually use apps in your mobile phone?
- Which?
- For which purpose?
- ...

### Broad

#### **Domain: Website campus & Mobile campus awareness**

##### 1) Non-user

-Do you usually use the WS campus (Moodle)? For which purpose?

##### 2) User

-Do you usually use the WS campus (Moodle)? For which purpose?

##### 1) Non-user

-I would like to continue by asking you to explain/describe what you know about the mobile campus/university application...

##### 2) User

-I would like to continue by asking you to explain/describe what you know about the mobile campus/university application...

##### 1) Non-user

-Do you use it?

##### 2) User

-Do you use it?

-If yes how often?

##### 2) User

-Can you briefly describe your University application/MyCatolica (what do you remember about it?... How does it influence/affect your academic life and if it is a daily essential tool....

### Narrow

I am now going to ask you some questions that I would like you to answer to the best of your ability. There is not write of wrong answer, just let me know what comes to your mind.

(If the participants will be not able to come out with significant reasons, I will make more direct and peculiar/precise questions to them.)

## **2<sup>nd</sup> PHASE**

### **Domain: Compatibility**

#### 1) Non user:

- Since you said that you used the WS(Moodle), what do you think about the functionalities of MyCatolica, are they matching/similar with the existing WS campus based?
- How comparable are both? /What are the differences noticed?
- The fact that the functionalities are very similar/not similar, did it influenced/affected your decision of non-adoption?

#### 2) User:

- Since you said that you used the WS(Moodle), what do you think about the functionalities of MyCatolica, are they matching/similar with the existing WS campus based?
- How comparable are both? /What are the differences noticed?
- What are the differences noticed?
- The fact that the functionalities are very similar/not similar, did it influenced/affected your decision of adoption?

### **Domain: Relative advantage**

#### 1) Non-user:

- What do you think are the strongest and weakest points of mobile campus (advantages/disadvantages).
- And if you compare/when comparing the WS campus with the mobile one, what do you think are the strongest and weakest points of mobile campus (advantages/disadvantages).
- Would these advantages bring more efficiency in your learning process/management? -In addition, what about the disadvantages, would they influence negatively your learning process?
- Are these disadvantages influencing your adoption?

#### 2) User:

- What do you think are the strongest and weakest points of MyCatolica (advantages/disadvantages).
- And if you compare/when comparing the WS campus with the mobile one, what do you think are the strongest and weakest points of MyCatolica (advantages/disadvantages)?
- Are these advantages bringing more efficiency in your learning process/management? -In addition, what about the disadvantages, do they influence negatively your learning process? Are the advantages influencing your adoption?

(After they come out with a spontaneous question, I will open the application and show it to the participant asking , after they took a look of it, if anything more will come up to his/her mind. This could be helpful to evidence the two levels and understand them separately. I will adopt this strategy for every question directly related to the characteristics/features of the application)

### **Domain: Perceived value**

#### 1) Non-user

- What are the values brought in by MyCatolica?
- Are they different from the values that the WS based already provided you?
- Why are these not enough to adopt it?

#### 2) User

- What are the values brought in by MyCatolica?
- Are they different from the values that the WS based already provided you?
- Where these the main reasons that made you adopting it?

### **Domain: Trialability**

The application is available for free and it allowed you to try it without relevant/significant obstacles.

#### 1) Non-users

- How it influenced you when determining the efficiency value and the adoption?
- Why?

#### 2) Users

- How it influenced you when determining the efficiency value and the adoption?
- Why?

**Domain: Complexity / Ease of use**

1) Non-user

- How the ease of use of an application is affecting your usage/adoption of it?
- What are the functionalities that may affect you more?(ie. Navigability, readability, understand the functions, short cut, main menu, page structure...explore the app with the participant)
- How important is the ease of use in relation with the contents and functionalities?

2) User

- How the ease of use of an application is affecting your usage/adoption of it?
- What are the functionalities that may affect you more?(ie. Navigability, readability, understand the functions, short cut, main menu, page structure...explore the app with the participant)
- How important is the ease of use in relation with the contents and functionalities?

(After they come out with a spontaneous question, I will open the application and show it to the participant asking , after they took a look of it, if anything more will come up to his/her mind. This could be helpful to evidence the two levels and understand them separately. I will adopt this strategy for every question directly related to the characteristics/features of the application)

**Domain: Resistance**

Before the introduction of MyCatolica, all the students were accessing the mobile campus through the Website. After that, students had the possibility to access it directly from their mobile device. However, some of them changed their habits, adopting the tool as a main resource, some other did not.

1) Non-user

- In your opinion, what do you think/see as the possible reasons for that?
- Which could be the most relevant/significant reason?
- Regarding your specific situation, which is the reason why it was not enough to change your habits (keep using the WS)?

2) User

- In your opinion, what do you think/see as the possible reasons for that?
- Which could be the most relevant/significant reason?
- Regarding your specific situation, which is the reason why it was enough to change your habits (Start using MyCatolica)?

**Domain: Observability / Social Influence**

1) Non-user

- Do you think MyCatolica is widespread all over the students?
- If yes, which is the reason why this did not influence your adoption?
- If no, If the MyCatolica app was widespread all over the students, how it would affect your willingness to use?
- And if you were noticing that the application was bringing educational (and none) benefits for them, what would it change?

2) User

- Do you think MyCatolica is widespread all over the students?
- If yes, is this the reason why you adopted it, or there are any different one?
- If no, what leveraged your willingness to use?
- If you were noticing that the application was bringing educational (and none) benefits for them, what would it influence more your willingness to use? explain better...

**Domain: Perceived usefulness**

1) Non-user

- In your opinion, what is the scope/purpose of the MyCatolica?  
"This application allows you to share in real time, the different experiences that the campus provides, keeping students always informed about the initiatives of the University, which will provide greater participation and student interaction in academic life." (Printed it in a card and given to the respondent)
- What is your impression/feeling about this declaration? Does the application maintain its promise?
- If yes, why it was not enough to make you adopt it?
- If no, try to explain why

2) User

- In your opinion, what is the scope/purpose of the MyCatolica?

"This application allows you to share in real time, the different experiences that the campus provides, keeping students always informed about the initiatives of the University, which will provide greater participation and student interaction in academic life." (Printed it in a card and given to the respondent)

-What is your impression/feeling about this declaration? Does the application maintain its promise?

-If yes, was this one of the main reasons to make you adopt it or there were some others?

-If no, which were then the main reasons that influenced your adoption

### 3<sup>rd</sup> Phase

#### Exploration

##### 1) Non-user

-If you have the possibility to add new features to MyCatolica, which are the additional and desired features you would like to integrate?

-Will these bring new values for the students? And for you?

-Will these strongly influence your adoption/use?

-If not mentioned, what would you think about the integration of section like events, flea market, jobs, chats, stays? (Showing them the mockup)

(After the first three questions, I will present him/her some cards showing each possible service to integrate. The service will be represented thanks to a Mockup service that highlight the functionalities, values etc supported by a brief description of it).

##### 2) User

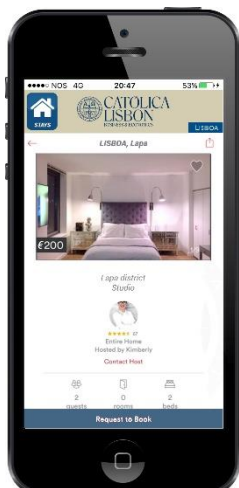
If you have the possibility to add new features to MyCatolica, which are the additional and desired features you would like to integrate?

-Will these bring new values for the students? And for you?

-Will these strongly influence your use?

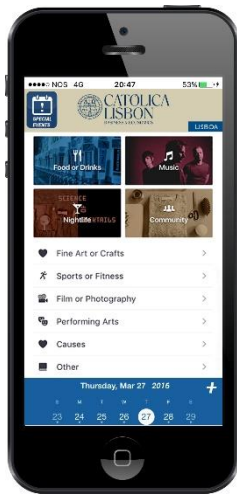
-If not mentioned, what would you think about the integration of section like events, flea market, jobs, chats, stays? (Showing them the mockup)

(After the first three questions, I will present him/her some cards showing each possible service to integrate. The service will be represented thanks to a Mockup service that highlight the functionalities, values etc supported by a brief description of it).



#### STAYS

One of the first obstacle for the students moving in the new university is to find a place where to live. This is a marketplace for shared flats and rooms from students for students, so when you want to move you can easily check feedback from past students and information.



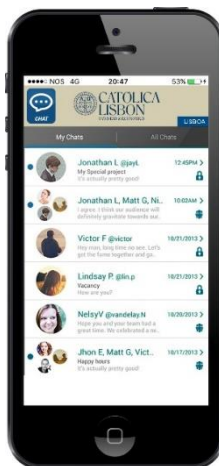
### EVENTS:

Students, during their academic life, spend a lot of their time at the University. But very often the University do not support their daily life outside of it, or if it does, it is always related to the academic environment. So why not to try to help them suggesting events (parties, travel ...) directly on their hands? Especially events addressed to students are welcomed to reach the target perfectly.



### FLEA MARKET

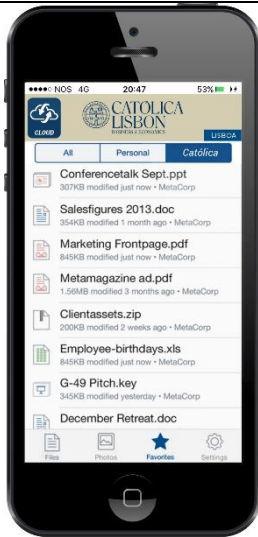
Students that moves for the first time in a new city to attend the university need to buy some useful stuff at low price (guitar, surfboard, books, bike ...). This feature will be a second hand market, where students can buy and sell their stuff, from furniture to books. Especially useful for students, because of no/low income.



### CHATS

Every student knows the problem of communicating with their group/team to exchange and share data over a social network or Whatsapp instead of communicating through the non-existing University chat, which would be easier and user- friendlier than doing it over social networks. That is the need we want to satisfy with a communication feature where students can interact and share group work data to special members (courses chat, offices, professors...)





**CLOUDS**

How many time we forgot the famous paper/document “falta sempre um papel” Now students could have the possibility to access all the academic material, resource in their hand ready to use it (slides, pdf, report, presentation, papers...)



**NOTE**

This is an innovative service that will help students in taking note in a vanguard way. If alumna can't easily access, consult their notes, pics of the board with their mobile-taking system, the mobile device lose the opportunity of being useful during the class. So, why not synchronize notes, pics, audio, video...in a technological note? A innovative note taking system of the University!

**Closing**

What do you think about the mobile campus at this point?

"Is there any other information about mobile campus/MyCatolica or other aspects of it that you think would be useful for me to know?"

Thank you for your participations and support!

If along the interview participants will highlight any new/different ideas/dimension, they will be incorporated and checked with others (dimensions)

#### Appendix 3 - Moodle's perception and MyCatolica awareness

"... I am almost daily using Moodle due to my university matters such as professor's slides, being updated about readings and cases that we need for the next class or maybe even figuring out members of my courses. With the help of Moodle I can for example see who the person is, see their student number and get their contact information. Same is for the professor. I can see their syllabus, what they want me to do for homework and I can also see their contact information which is very important during the exam period or if the deadline of the projects gets closer "(Participant 1)

"Yes I did and I am still doing it. It is very useful and relevant for my studies. Professors share the course material on it and we can also deliver our homework." (Participant 3)

"I usually use it to check the documents (materials), to check the syllabus of the course, for the homework and finally to check the grades." (Participant 7)

"Yes, because it is decisive for our academic life. Especially for the materials and to upload the assignments" (Participant 9)

"I am not aware of it and I never searched for it "(participant 4)

#### Appendix 4 - Compatibility Domain transcript

"You could check the classes but you cannot access the slides." 3

"Well I can say that Moodle and Esca are different. Different layout and different functionalities. But I can see that the application tends to combine same functionalities..." 4

"I think it is similar for news, for the messages received from the professor, to check the grades (when it is updated) but for example slides and materials are just on Moodle" 8

"There are some similar one like course schedules and supposedly it has more functionalities (restauração, treasury) the main difference is how to access it and maybe MyCatolica tries to combine functionalities of other platform (ESCA)..." 9

"Functionalities are similar but without the need of accessing two or more different platforms such as Moodle or ESCA. "(participant n°2)

"The first difference that I notice is the 'Restauração' ... But why is it in Portuguese? Can't you change the language?...This is not good at all for our University composed by international students." 4

"I think the idea of having Moodle embodied in a mobile application is great. I hate it when I need to log in every time and it is very difficult to read the homepage through the smartphone screen. So that is why I am very relieved to see that such an App is existing. However, I do not think it is completely similar and a bit confusing at the

beginning once you open it. It takes a while to understand the different functions because I am so used to the webpage." 1

"Moodle has to be accessed to download materials and submit assignments. MyCatolica should help students with the everyday life on campus, which I do not think it does, unless it has recently been improved. ... "6

"If I go on Moodle, I can open documents/material...and this is not happening in the app." 7

"The class enrollments on Moodle and those in the app do not really match. While Moodle also includes the enrollments of the semester, which has already passed, the app shows only enrollments of classes of the currently ongoing semester (but both terms). Hence, with the app you cannot access class material of previously attended classes." 10

#### Appendix 5 - Relative Advantage Domain transcript

"... is the ability to access everything you need from your mobile phone such as classes, fees situation and that it is fast...A strong advantage is to have all access in one app without the need of going to another platform "2

"The biggest advantage is that thanks to the mobile device, you can access to the platform/information from whenever you want! We always have the mobile phone in our pocket" 4

"The portability could influence a lot my academic life..." 7

"I think portability, easy and fast accessibility (login)/ And sometimes it is good to not feel dependent on the laptop" 9

"...It is fast to access as people usually have their phone always with them even when they do not carry their computer or do not want to start it... Hence, it is very useful to get information quickly "10

"it catch up with technologies, in theory it will help to enhance students daily life standards..."5

"it had information on parking lot availability" 6

As big disadvantage perceived by the largest part, which was previously highlighted, is the impossibility of accessing the materials.

"Comparing the two different tools, the main difference and disadvantage that I can highlight is that through the application I cannot access to the academic material." 7

"As a disadvantage I would like immediately to highlight that it is in Portuguese and does not have a message/chat functionality. It is a mobile campus and I think this has to see as a standard." 3

"Yes this little advantage influence my adoption...but why can't we have the same services of the platforms combined here?" 9

This demonstrate that MyCatolica does not have advantages besides the accessibility and portability and for this reason is not bringing more

*efficiency to students' academic life, affecting negatively their adoption.*

*"The biggest disadvantage is that none of the functionality is indispensable for my academic life." 7*

*"The application is handy, but the platforms are very useful." 9*

#### *Appendix 6 - Perceived Value Domain transcript*

*"...easy access/ portability It is immediate to say that the biggest value is the Easy access at one touch!" 2*

*"The biggest values that I see are the portability and the accessibility "4*

*"...We have to be innovative and this innovation enhance the image values of the University ...The problem is that is badly developed and not really helpful, where the output could be a bad perception of Catolica...I mean this is the opposite effect! I do not see any value that support me 3*

*"The main value is to feel along the technology development / Plus it saves time, effort and makes our academic life easier, more convenient "9*

#### *Appendix 7 - Trialability Domain transcript*

*"I tried just because it was for free" 3*

*"It is very good because it gives you the possibility to try ..." 4*

*"I will not pay to try it, free. The fact that it is for free it is positive for the trial" 7*

*"Well I will not pay for it...the fact that it is free, it helped my trial and subsequently my adoption "8*

*"I think it should be a service offered for free to the students." 2*

*"I would only buy it if my colleagues tell me it is worth it and improves my learning process." 1*

*Appendix 8 - Complexity and Ease of Use Domains transcript*

*"It is very important to have an easy use of the application" 1*

*"It has a huge impact. If it is too complicated I will for sure not use it. Apps are supposed to make your life easier, not more complicated."10*

*"I think it is very easy to use... But without functionalities it is not good! 7*

*"Navigability, Readability, Main Menu" 1*

*"The functionality that may affect the most is the language, the app should be available in different languages, especially for the fact that Catolica has students from many countries." 2*

*"...ease of use otherwise I will access the websites. It has to be easy and fast to be used on your mobile phone otherwise people would choose login in to Moodle through the browser." 2*

*"I would tend to ease of use, but then very important are also the content. In addition, if the application is not user-friendly, the contents and functionalities will never be used" 3*

*"The application is easy to use, so I would say that contents and functionalities are very important. If I was supported by the functionalities, ease of use was not so influencing in my adoption."6*

*"Ease of use is a standard nowadays...but still very important. If you do not have it, you cannot access to the content and functionality in an easy way ...and you will stop to use it, because it is useless." 4*

*Appendix 9 - Resistance Domain transcript*

*"Once you get used to something, you might not feel the need to put the effort in getting to know something new. Most information given by the app do not have to be accessed all the time. Hence, it might be enough to check them when there's a computer around."10*

*On the other hand, some contributors sustained that since young people easily adapt to changes, if the tool brings convenience and comfort values for them, old habits will not be a strong barrier to overcome.*

*"...I am pretty sure that the habits are not a big problem, I mean if it is bringing real values and efficiency, we as students are very elastic and tend to be comfortable/lazy and we will adopt it easily."9*

"...the Marketing campaign wasn't effective and enough for the adoption. I am a student and did not know about it." 2

#### Appendix 10 - Observability & Social Influence Domain transcript

"If my colleagues are using it I will try to put effort to try...I mean if others are not doing it why should I? 3

"If I saw more people were using it, I could be affected because it would seem real..." 4

"Usually I am not easily influenced by the people around me..." 7

"...I do not really care how many other students use the app..." 10

"I do not really care about the utility for the other students. I would like to try it and understand if it useful for my daily academic life" 2

"Yes If I saw more people were using it, I could be affected because it would seem real" 4

"Well if my colleagues use it there must be something positive, some benefit...so I will check it out" 8

#### Appendix 11 - Perceived Usefulness Domain Transcript

"Maybe it is to make our life better or easier? Maybe to have a better quicker communication?" 5

"I think it is to simplify the academic life...easier student life." 6

"I think that it is to serve students and to help them in their educational matters" 1

"To improve student's life, offer the students information about their life at Catolica through the most growing tech (mobile phones) " 2

"Maybe the real intention was to make our studying process and student life inside the university easier?... " 3

"No, it sounds a big lie" 9

A non-user even felt disappointed, explained that if it was real it would strongly influence his/her adoption.

"If it is real I would adopt it immediately, but I do not have a positive feeling. While I was here, you made me use it...I do not see functionalities helpful for my daily academic life. 4

Appendix 12 - Desired Features transcript - Exploratory phase

"I would like to have Popup news, notification (i.e. teacher is sick - deadline)..."<sup>3</sup>

"English Language"...<sup>1</sup>

"... I would like to introduce the functionality to pay the meals...it would be great.

I would like also to add an interactive tool where students can communicate and interact, share notes, ask information...maybe a CHAT?..."<sup>6</sup>

"I would like to have a "working tool" as google drive, internal dropbox to store and share the documents. I would like also to have the daily menu of the cafeteria and some promo code for the food..."<sup>8</sup>

"I would include an interactive map, with user navigation, including room availability and parking lot capacity. Also with all the bars/canteen and the menus for each day. Besides, a tab for all the events going on at the university (although this was one of the categories, it never worked properly in the old app).<sup>6</sup>

Appendix 13 - STAYS transcript

"I am really glad for this idea! I was struggling a lot to find the right room. But It has to be communicated before our arrival at Catolica. Great for international students. I would be happy to adopt it"<sup>2</sup>

"It seems like a very good idea. Especially for international students. You do not just find flat/rooms but is targeted and useful for students ( if I go to OLX I look for shared flats but I will not find students like me) here I open it and I'm directly in contact with other students. ...I can say that since I'm Portuguese it will not affect my adoption... But for sure it will influence the international student's life..."<sup>8</sup>

Few of them, one user and one non-user, supported the idea and suggested a possible collaboration with UNIPLACES and adding it should be implemented on the website platform as well.

"...Develop it with a partner (Uniplaces) implement it on the website too. It's great that it has is internal feedback from students, I think that you can include this service but most students are using Uniplaces or other platforms anyways. ...But the fact that it is related to the internal Catolica community is very interesting, I would love to receive feedback from students like me..."<sup>1</sup>

"It is a sensitive subject, if it doesn't go right they will address directly to the university...it could be useful if suggested with the support of different company like Uniplaces/Airbnb...I think it is hard to implement because of responsibility matters. If something troubles the students it will project this feeling on Catolica's image..."<sup>5</sup>

"...if you look for an apartment you do not use a little mobile application but rather use your laptop to have a closer look at the

rooms. So I would not use this function on my phone. Only if it is provided at the website because the screen on my phone is too small." 1

"...I think it would be a nice additional feature in especially for international students. However, those students will first have to know that the app exists in order to be able to use it. As long as it would only stay as an exchange of rooms or apartments between Catolica students, it would be a good feature. If also other people would post their announces it could get out of scope" 10

"Sending an email about it before the student's arrival to Catolica is required. Students have to be informed that they have this possibility...it will influence the initial adoption for sure and it would bring a great value for the international students..." 8

#### Appendix 14 - EVENTS transcript

" If it is just inside of Catolica community, events to highlight are not many. You don't need the app...there is no need. But If you bring in something new and update it very often yes! Usually those things are on Facebook (events)..."4

"...It would be great, especially for new international students! It will definitely influence my adoption and a great tool to increase our experience here! ..."2

"I like the idea. However, I think as I said before, Facebook is a big competitor. And every student uses Facebook in their free time...If I want to see where my friends are going to next weekend, I'd rather look for it on Facebook." 1

"...I think it's great! But once again, Facebook events and Facebook groups can do that. So in order to work well, it must have a big database of users and only with relevant events and parties..."7

A collaboration with the Student's Association or the International Club has also been suggested.

" ...It could also be supported by the students union or international club!..."5

"If it becomes about advertising whatever event, I would not like it. It should be only about university parties, trips etc. I think it would be good to stay informed about parties, get together, dinners etc., as long as it does not become "spam" and too much." 10

"...It will definitely influence my adoption and become a great tool to increase our experience here! You are surprising me! All the events suggested are always related to the academic life and the extra curricular ones are often few..." 2



"Perfect, I would like it...It is a nice idea...it s a good value for the community...It will increase my will to use it and it will also be good for the students community" 3

One of them even suggested it would be positive to have it synchronized with the academic calendar

"...I would like to have this but just if it is synchronized with the calendar where I can also see Planners and dead lines, I mean all in one..." 8

"I would like to have it in MyCatolica and yes, it will increase the possibility of adoption and be very useful for international" 5

#### Appendix 15 - FLEA MARKET transcript

"Honestly, nobody will use it. You want to sell it something with in a smaller market? I would prefer to go on OLX. I just see disadvantages... In my opinion this idea is useless, no increase in adoption probability." 4

" ...when I was in Australia, in an university that had 40,000 students, they had several Facebook groups. One to rent houses, another one for events and one called the "marketplace". It's a great idea! People sold all kinds of stuff that were in good use, but because international students have to leave, they would sell at cheap prices. It has potential, but you must have a lot of users and people uploading ... If it will create a student community it could work very well and influence the students adoption." 6

"...it is good idea, where more value will be reached combining all the university communities.  
It provides good benefits for the International students that can buy products for cheaper price and maybe even for locals that can sell their stuff. I think it could influence the students adoption." 7

"Yep, It would be nice...I could see a value for the students. I would like to buy a bike, but I am not feeling safe to buy it on OLX. To make business with my colleagues from Catolica instead would be better. But I have got to say that the market created has a smaller supply than OLX, so maybe it wouldn't be able to satisfy all the buyers' needs." 8

"It is Interesting...It also bring value to the locals that can sell a lot. Where for internationals, the biggest benefit is to buy products for low price with better reliability than OLX. It could be useful!" 5

"Well it will allow students to save money. It is positive for the students' community. It is also good for the locals (students) as they can sell products." 9

"Very interesting...I was looking for an abajour but I was obliged to go to IKEA to buy a new one! Maybe through this, I would find a cheap and desired one. It could be useful for foreigners...but it will not affect

my adoption and I think it will also not influence the other students)"  
2

"Even though this is not so relevant for my adoption, maybe I will sell something there." 5

"I think this could be very useful and increase my possible adoption and of course my colleagues one." 9

#### Appendix 16 - CHAT transcript

"I like this idea very much and I think you should integrate it in the MyCatolica Application...it really increases our communication ability! And finally, yes it would affect my adoption. But students should also be able to connect this network with their computer because you usually read the documents on your laptop." 1

"The idea of having a group for each course is a big advantage for us, it really increase our communication! This service would optimize group assignments so it would increase the overall performance and time management to do the required tasks." 1

"This is perfect; I really like this idea... I think it is the most valuable feature you showed me so far.

On Moodle, there is a way to internally send e-mails, but it is not fast. Through this feature, it will be possible and finally we could exploit the functionality and portability benefits! If it shows to be simple and functional, students will be more likely to adopt it." 6

"Yes please! However, not just in the mobile, do it also on Moodle!"  
5

"Good and nice! This will make the application upgrade a lot. It will increase the adoption of the app and it will enhance our organization and management life." 3

"Hence, my adoption would depend on how many and who would use the feature too." 10

"... even if useful I want it on the laptop version, because I don't have a habit of using my mobile phone to do that, it will not influence my adoption, maybe my colleagues..." 4

#### Appendix 17 - CLOUDS transcript

"...No personal need. Maybe my colleagues... I use the laptop more."4

"I already told you that I need this great (laughing)" 2

"As I told you before I was looking for something like this. Finally a more digital University." 8

"It will increase our organization power and therefore increase the adoption, it helps the academic life." 7

"It will influence a little bit my learning process, for example, when I'm on the subway; I wish to have my documents in my phone (to read them before classes start)." 9

"...Again I use the laptop more. Maybe useful for my colleagues." 4

"...people usually download/access them on their laptops, so they don't feel the need to use an app." 6

#### Appendix 18 - CHAT Transcript

"Interesting It could strongly affect the adoption, but more important, it could bring in a new way of taking notes.... Even though, sometimes the professors do not allow us to use our mobile phones or laptops." 3

"It doesn't attract me. When I'm studying and taking notes I do not use electronic devices." 4

"I'm used to take notes on papers! Hence, I would most likely not use it and my adoption probability would not change." 10

"...It creates values in your personal organization and individual learning process...If it will be easy to use it will increase the adoption of the app!" 9

"I never thought about this, it seems a new way of taking notes. But I have to try it before saying if it is crucial for the adoption." 2

"Yes it's a great idea but again. It has to be quick and you need to be able to connect it with the laptop. Yes it would increase my adoption due to the educational aspect." 1

#### Appendix 19 - Closing questions transcript

**Participant number 1-** "I think it is a great idea to implement such a mobile application. However, there is a lot that needs to be done such as the language barrier, the speed of usage, the different functionalities and the structure. However, there should be a separation and distinction between the services that it offers. If the value proposition is based on an educational program, the App should serve its purpose it should not drift too much into "fun" and "hobbies" such as events, partying, flea market but rather offer services and functionalities that underline the educational aim of Catolica."

**Participant number 2-** "I think that it is a great tool for the daily life of the students. Thanks to the new services showed, I think that Catolica should listen more to our needs. My idea about Mobile campus has

changed after this interview...now I was left desiring some of these features. I am pretty sure that it will be adopted by the majority of the students.

**Participant number 3** -"This is a totally different approach, if they will relaunch it with these features, I would like to use it. It will create unique values to the student of Catolica. Organizational benefits and better experience will be delivered. It will affect also the overall image of Catolica (not just of its students) but university will increase its image!

**Participant number 5** -"it is a good project... if the MyCatolica will continue like this ,not being updated and being dysfunctional, we will have even less users. The suggestions here are interesting and they seem a good option to create better value than the existed one (organizational, learning, experience)

It will make us save time, it will make our student life more organized and there will be easier communication... management. We have many platforms but none of them is complete. These integrated services are a good idea.

**Participant number 6** -"Well, now I can see many more gaps that MyCatolica does not satisfy! And this services seem very helpful for the students daily life and for the experience at Catolica.

**Participant number 7** -"If I compare the actual MyCatolica with a desired one I would also say that I will be willing to pay for it. MyCatolica need to really improve its current functionalities and integrate new services to attract and retain! I think they could add value, but the currently existent one should be improved!

These services could increase the adoption especially for international students. And the overall output will affect our academic management, experience and communication. It really would be an innovative tool.

**Participant number 8** -"Before my idea about the mobile campus was strictly related to the academic life (inside the university) but now I see that thanks to development and innovation of the technology it is possible to integrate new useful services. This could be a strong turnover in the adoption and retention for the users. It really create better interaction between students and professors.

If it will be efficiently implemented, it will bring great support to us and a different experience!

**Participant number 9** -"In general you are not inventing anything new, but integrating all these extra services you create convenience through adapting to the specific students' needs (daily life)... I really like this idea. It will increase our adoption but also our daily life will be enhanced...great I love it. Do you intend to launch it?

**Participant number 10** -"There is room for improvement. The freezing is annoying and some features are not working. So far it is rather an app which I only use to get some particular information I need immediately. Not much more than that.

They could provide some additional value for sure, but they should be very well implemented and only restricted to sharing among Catolica students. I think most important would be to share course related material (e.g. case studies) or features to communicate group projects

*etc. The flea market also seems to be a nice feature if well implemented.*

*Participant number 4 - "I have a different idea than before because I see it looks better than I thought. I have tried it and now I think that the main reason I have not used it before was the marketing campaign... I didn't noticed it."*