Individual adoption to innovation
A study of MOOCs in Swedish universities

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Abstract

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Title: Individual adoption to innovation: A study of MOOCs in Swedish universities

Background: Rapid development of digital technologies creates innovative ways of learning, Massive Open Online Courses being one of them. To keep up with the development, two Swedish universities have launched their own courses despite lack of clear benefits for education. Exploring the adoption process of employees and identifying differences between universities are important as the acceptance of innovation among employees is crucial for success.

Purpose: The purpose of this study is to explore the adoption process of a new innovation in the education sector, thus contributing to a more concrete research of individual adoption of an innovation in education context.

Research question: What are the differences between the two Swedish universities in the adoption of an innovation, being MOOC, based on the individual perception of the employees?

Methodology: A qualitative embedded multiple case study strategy, with deductive reasoning.

Conclusion: The findings acknowledged that the adoption of MOOCs occurs on individual level at the universities despite unclear outcomes, absence of performance-based incentives and lack of managerial support. Hence, the findings suggest that non-financial incentives and innovativeness of the individuals were the important factors triggering the acceptance. Moreover, a presentation of potential outcomes and personal benefits of the MOOCs will enhance the adoption.

Keywords: MOOC, innovation, individual adoption, acceptance, TAM
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Thank you!

Stockholm, May 2015,

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Yulia Lvovskaya                 Sofoklis Per Lamprou
# Table of content

1 Introduction .................................................................................................................. 1
1.1 Problem background ................................................................................................. 1
1.2 Problem statement .................................................................................................... 2
1.4 Delimitations ............................................................................................................. 4
2 Literature review .......................................................................................................... 5
2.1 Individual adoption of innovation ............................................................................ 5
2.2 Diffusion of innovation ............................................................................................. 5
2.3 Technology Acceptance Model ................................................................................ 6
  2.3.1 Behavior intention and attitude .................................................................................. 7
2.3.2 Perceived usefulness and ease of use ..................................................................... 8
2.3.3 Critics of TAM ......................................................................................................... 9
2.4 Variables affecting TAM ........................................................................................... 9
  2.4.1 Prior experience ..................................................................................................... 10
  2.4.2 Personal innovativeness .......................................................................................... 10
  2.4.3 Managerial support ................................................................................................ 11
  2.4.4 Training ................................................................................................................ 12
  2.4.5 Incentives .............................................................................................................. 12
2.5 Theoretical framework ............................................................................................. 13
3 Methodology .................................................................................................................. 15
  3.1 Research approach ................................................................................................... 15
  3.2 Research design ........................................................................................................ 15
  3.3 Research strategy ...................................................................................................... 16
  3.4 Sample selection ....................................................................................................... 16
  3.5 Data collection .......................................................................................................... 17
    3.5.1 Preparation ........................................................................................................... 17
    3.5.2 Interview process ................................................................................................. 18
    3.5.3 Interview guide ................................................................................................... 19
  3.6 Operationalization and data analysis ....................................................................... 20
  3.7 Critics of choice of method ...................................................................................... 22
    3.7.1 Reliability and validity ......................................................................................... 22
4 Empirical findings ........................................................................................................ 23
  4.1 Lund University ........................................................................................................ 23
    4.1.1 Introduction ........................................................................................................... 23
List of tables

Table 1– Table of respondents ................................................................. 25
Table 2 – Operationalization of variables .................................................. 27
Table 3 – Empirical summary .................................................................. 39
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOOC</td>
<td>Massive Open Online Course</td>
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<td>TAM</td>
<td>Technology Acceptance Model</td>
</tr>
<tr>
<td>IT</td>
<td>Information Technology</td>
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<td>IS</td>
<td>Information System</td>
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<td>KI</td>
<td>Karolinska Institute</td>
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<td>LU</td>
<td>Lund University</td>
</tr>
<tr>
<td>BI</td>
<td>Behavior Intention</td>
</tr>
<tr>
<td>PU</td>
<td>Perceived Usefulness</td>
</tr>
<tr>
<td>PEU</td>
<td>Perceived Ease of Use</td>
</tr>
<tr>
<td>PI</td>
<td>Personal Innovativeness</td>
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<td>PIIT</td>
<td>Personal Innovativeness in the domain of Information Technology</td>
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<tr>
<td>SPOC</td>
<td>Small Private Online Course</td>
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</table>
1 Introduction

This chapter presents the background of the research subject and the discussion of the current problem background and the purpose of the thesis along with the research question.

1.1 Problem background

With digital technologies and the Internet rapidly growing, new ways of learning were created (Berge & Collins, 1995) providing higher education with the possibility to disseminate knowledge to significantly larger number of people than before (Zhang & Hong, 2010). Recent advancement of the web and broadband technology has created a high interest in the industry of online education (Dabbagh & Kitsantas, 2004). Computer-based technology creates the possibility to connect via the Internet and thus enhancing the interactivity and transaction speed (Friga, Bettis & Sullovan, 2003). E-learning is a technological medium that enables individuals to engage in learning despite restrictions in time or geographical boundaries though enhancing knowledge development (Sun, Tsai, Finger, Chen & Yeh, 2008) and utilizes systems such as email, online interactive classes and multimedia content to name a few (Zhang & Hong, 2010). The e-learning industry has grown internationally, and still has a great perspective of further expansion (Clarke, 2013).

As the Internet has made immense quantities of information freely available and the use of e-learning in higher education is increasing, the creation of Massive Open Online Courses (MOOCs) seemed like a very logical outcome of digitization (Haggard, 2013; Clarke, 2013). Oxford dictionaries (2013) define a MOOC as “a course of study made available over the Internet without charge to a very large number of people”. Thus, MOOC is an online course without entry requirements which is significantly larger than a traditional distance learning course due to an open registration and publicly-shared curriculum (McAuley, Stewart, Siemens & Cormier, 2010). MOOCs are considered as a continuance of the trend in innovation and the use of technology triggered by e-learning (Siemens, 2013:5). The upsurge of the MOOCs began in the fall of 2011 with the tuition-free course “Introduction to Artificial Intelligence” offered by Stanford University with over 150,000 people signed up for it (Pappano, 2012). As a result of such success, commercial education companies offering MOOCs, as for-profit Coursera and nonprofit edX, were formed establishing partnerships with highly ranked US universities (Thu-Houng Ha, 2014). For universities MOOCs can be a trigger to an education transformation, including quality and access, with the use of online technologies (Anant Agarwal: Why
massively open online courses (still) matter, 2014). Data, collected from student’s clicks and forum posts on the website, and submitted homework, can be used to analyze how students learn and develop efficient learning strategies (Daphne Koller: What we're learning from online education, 2012). Besides, MOOCs could be value added for learners as well. Daphne Koller (2012) highlighted the important problem of higher education: despite the fact that the higher education is available in the US, it is still unaffordable for many students due to incredibly high costs. As for 2012 public universities increased the tuition fee by 27% in the last five years and since it takes students longer time to gain return on the investment on their own education, the enrolment in the USA slowly started to decrease (The digital degree, 2014).

MOOCs have various effects on a professor’s role. On one hand, the MOOC platforms provide many academics with a chance to increase their influence (Billsberry, 2013). On the other hand, to produce a high-quality MOOC requires a professor to put significant effort during the development process and while the course runs, spending around 8 to 10 hours per week as a result diverting time from research and traditional teaching (Kolowich, 2013). As it is unrealistic to hire enough professors to correct all the assignments, a technology-based assessment is applied for grading straightforward testing such as true/false and multiple choices (Sandeen, 2013). Furthermore, a decreasing amount of students in a virtual classroom caused by drastic dropout during the MOOC, does not indicate a bright future for teachers (Koller, Ng, Do & Chen, 2013). The high dropout ratio could be explained by the fact that the majority of universities still do not accept MOOC’s credits towards a degree which decreases student’s willingness to take a MOOC (The digital degree, 2014). As a solution to a lower percentage of a course completion, in January 2013 Coursera launched an option of obtaining an official recognition from universities by joining a Signature Track where students pay a fee of $30–$100 for the identity-verification services and are rewarded with the certificate upon passing the course enhancing the opportunity of career development (Koller et al., 2013).

1.2 Problem statement
Despite that e-learning as a pedagogical form in Sweden has been recognized and awarded by International E-Learning Awards in 2005 and 2013 (Örjestål, 2005; Första pris på International E-Learning Awards, 2013), the Swedish universities are under pressure due to the changing nature of education. This demands insightful strategies and resources from the Swedish universities to retain their competitiveness towards international universities (Bienenstock, Schwaag-Serger, Benner & Lidgard, 2014). One can perceive that Swedish universities as
organizations need to be innovative to cope with the pressures and to stay competitive. Innovation is argued to be crucial in strengthening and sustaining organization’s high performance and improving industrial competences (Gopalakrishnan & Damanpour, 1997) and a MOOC can be accounted for such an innovation.

In March 2015, an investigation has been initiated by the Swedish government to identify whether MOOCs can be applied in the higher education and how Swedish universities can be affected by the international development, covering aspects such as finance, grading and student rights (Regeringen ger uppdrag om att analysera öppen nätbaserad utbildning, 2015). A dilemma for Swedish universities offering MOOCs is that the MOOCs do not provide students with a grade or degree, meanwhile the degree is a strong trademark in Swedish education (Collberg, 2013), and also a fundamental part of each institution's existence (MOOCs kan utveckla – men knappast hota – den svenska högskolan, 2013). According to university chancellor Lars Haikola, offering courses for free is not new in Sweden, rather the absence of entry requirements is the difference. He further argues that the MOOCs demand a considerable amount of resources by the universities compared to traditional lectures but emphasizes the importance that higher education is a part of the digital development (Ibid). From a survey carried out in 2013 on the adoption of MOOCs among educators around the world it is clear that there is an interest to adopt to this innovation as 43 percent claim that they plan to offer MOOCs in the next three years, 44 percent state that the biggest value is to keep up with development of education, though 41 percent believe the lack of consistent review and grading is the biggest drawback (Afshar, 2013).

Despite the ongoing investigation regarding the applicability of MOOCs in the Swedish higher education, already in 2014 the two major Swedish universities, Lund University and Karolinska Institute, announced that they would start offering such courses (Eliasson, 2014). Previous research claims that the individual’s perceptions regarding the use of innovation significantly affect the user acceptance (Moore & Benbasat, 1991), and that the employee's unwillingness to accept an innovation hinders organizational benefits that the technology can enable (Talukder, Harris & Mapunda, 2008). Therefore, it is crucial for organizations to understand factors that influence adoption and user acceptance in the workplace (Venkatesh, Morris, Davis & Davis, 2003; Talukder et al., 2008). Moreover, an analysis of publication during 1998-2005 conducted by Palvia & Pinjani (2007) concludes that the adoption of IT (Information Technology) in higher education institutions and universities has not been sufficient as only 2 out of 737 articles
published during this period cover the following subject.

1.3 Purpose
This thesis focuses on the comparison between the two Swedish Universities, Lund University and Karolinska Institute, which have recently launched their first MOOCs in order to understand how the employees accept MOOC. Thus, the purpose of this study is to explore the adoption process of a new innovation in the education sector, thus contributing to a more concrete research of individual adoption of an innovation in education context. The research question is the following:

*What are the differences between the two Swedish universities in the adoption of an innovation, being MOOC, based on the individual perception of the employees?*

1.4 Delimitations
The study will be focusing on the education sector in Sweden, more specifically the two universities Lund University and Karolinska Institute. These universities are chosen as they both recently teach MOOCs and are acknowledged internationally (Lund University, 2015; Karolinska Institute, 2015).
2 Literature review

This chapter will review relevant theories and models aiming to give the reader an overview of the research field followed by a theoretical framework which visualizes how the theories will be used.

2.1 Individual adoption of innovation

New systems or IT serve as innovations for potential adopters (Agarwal & Prasad, 1997). Further on, this paper adopts Rogers (1976) definition of innovation as an idea or object identified as new by an individual. An innovation can be recognized as new to an individual adopter, team or a group, an organization, an industry or even the wider society (Gopalakrishnan & Damanpour, 1997). Technology provides organizations with the possibility to considerably improve their performance (Talukder et al., 2008). Upon introducing an innovation, “routinization” of an innovation as a part of regular work behavior is the desired outcome from an organizational perspective (Saga & Zmud, 1993). Organizational benefits provided by innovation may not be fully realized due to the resistance of adopting an innovation by employees (Talukder et al., 2008). A decision made by an individual or an organization concerning the acceptance or rejection of an innovation refers to adoption (Frambach & Schillewaert, 2002). This paper focuses on individual adoption which occurs within an organization and as claimed by Frambach & Schillewaert (2002) lacks extensive research. Hence, it is essential to explore factors that affect user acceptance in order to increase an understanding of individual adoption of an innovation (Talukder et al., 2008).

2.2 Diffusion of innovation

As the adoption of innovation is affected by individual’s perception, within the field of innovation adoption, it is acknowledged that different groups of adopters have different characteristics towards the adoption. These differences are described as the diffusion of an innovation (Waarts, Everdingen & Hillegersberg, 2002). From a systematic literature review of diffusion of service innovations Greenhalgh, Robert, Macfarlane, Bate & Kyriakidou (2004) identified different conceptualization of diffusion of knowledge. A conceptualization that fits in this thesis is taken from the interdisciplinary academic discipline of organization and management, information and communications technology, sociology: “transfer of knowledge, both explicit (formal and codified, as in a guideline) and tacit (informal and embodied, as in “knowing the ropes”)” (Ibid, p 587). The spread of an innovation within a specific set of prospective adopters is called the diffusion model, in which researchers try to model
innovation’s entire lifecycle (Mahajan & Muller, 1979), as the innovation passes from one individual or organization to another (McIntyre, 1988). The model of diffusion of innovation was first developed by Rogers (2002) who demonstrated individual adoption process over time describing adopters with different set of characteristics and values. The first individuals in a system to adopt an innovation are innovators who demonstrate interest in new ideas. Individual adoption has mainly private consequences and is determined by a combination of attributes of an innovation and the individual’s needs (Wejnert, 2002). The diffusion of an innovation is argued to be adopted more easily if it is adopted incrementally by being broken down into more manageable parts (Rogers, 2002). The benefits of an innovation need to be clear and visible for individuals who will act as facilitators for the adoption process and could increase the potential absorption of an innovation (Greenhalgh et al., 2004). Therefore, there are different ways of spreading an innovation among individuals. Pure diffusion can be described as informal, decentralized and unplanned spread of an innovation between peers, whereas active dissemination is opposite where the spread of an innovation is planned, formal and centralized (Greenhalgh et al., 2004).

2.3 Technology Acceptance Model

Models that try to clarify the relationship between attitudes, user perception and eventual innovation use exist (Agarwal & Prasad, 1997), one of the well-acknowledged models in this research area is the Technology Acceptance Model (TAM) developed by Davis in his doctor dissertation (1986). TAM was initially developed to predict individual’s usage and why users accept or reject IT and Information Systems (IS). TAM includes factors as perceived usefulness (PU) and perceived ease of use (PEU) to identify the impact on individuals behavioral intentions (BI) depending on beliefs and attitudes leading to the user acceptance (Legris, Ingham & Collerette, 2003). It is empirically proven that the TAM predicts around 40% of system use (Hu, Chau, Liu Sheng & Yan Tam, 1999; Ajzen & Fishbein, 1980), and that usefulness is the strongest predictor to an individual adoption (Bhattacherjee & Harris, 2009). The majority of researchers that applied TAM in their research have used a quantitative research design to extend and continuously try to explain factors which predict individual’s adoption to IT (Legris et al., 2003). Since the first research using TAM numerous studies have adopted and modified the model using additional constructs to explain user’s acceptance of new technology. In a meta-analysis by Venkatesh et al (2003), reviewing 22 studies identified 32 constructs. In another meta-analysis of 88 TAM studies shows that the original constructs used are highly reliable and may be used in a variety of contexts. In previous research TAM was studied in
different software categories and subsequently grouped in office automation, software development and business application tools with respondents covering both students and professionals (Legris et al, 2003).

2.3.1 Behavior intention and attitude
An important factor for an individual to perform a specific behavior is the intention. Intentions in performing a specific behavior are described as motivation factors that influence a specific behavior (Ajzen, 1991). Azjen (1991) further argues that motivational factors are indicators of how hard individuals are willing to try and the effort that individuals are planning to exert to perform a specific behavior. The stronger the individual’s intention to perform a specific behavior, the more likely the performance to be affected (Ibid). The behavioral intention is argued to be an important predictive variable in IS usage as prior research has identified that unwillingness to use IS could be a factor of organizational failure since the organization is not able to enjoy the benefits of new systems (Venkatesh et al, 2003).

As mentioned above individual’s BI to use IS/IT is decided upon what attitude individuals have towards the PU. Attitude can be described as the overall positive or negative evaluation of a specific behavior after interpretation of the consequences of performing a certain behavior (Huh, Kim & Law, 2009). Warshaw & Davis (1984) define behavior intention as “the degree to which a person has formulated conscious plans to perform or not perform some specified future behavior” (Ibid, p. 214). The IS/IT research has identified many antecedents to individuals behavior such as social influence, user training and support, the factors that are argued to affect individuals behavior and beliefs. These factors are processed within individual’s awareness during specific situations and are argued to be explicit or perceptual as individuals can report on them (de Guniea, Titah & Léger, 2014). Furthermore, it is argued that implicit factors are important as they are created when individuals actually use and interact with IT/IS system (Ibid). The distinction between belief and attitude is argued to be of importance. Within the social psychology literature the cognitive part is what is described as beliefs whereas attitude is the affective, this description of attitude is what the TAM is based on (Agarwal & Prasad, 1999). A study carried out by Agrawal & Prasad (1999) demonstrates that the importance of individual’s differences in beliefs affects the attitude and behavior intention. The study highlights that due to differences in individuals’ prior knowledge and experience the learning and adoption of innovation are affected.
2.3.2 Perceived usefulness and ease of use

PEU and PU are two approaches that TAM is based on, these factors are argued to be determinants of the behavioral intentions to technological use. As seen in figure 1, TAM consists of the variable PU which is defined as “the extent to which a person believes that using an IT will enhance his or her job performance” (Davis, 1989, p. 320). This variable is identified as the primary predictor of individual’s intention to use new IT (Brown, Venkatesh & Goyal, 2014). As PU is argued to influence individual’s attitude towards the usage of IT and also the BI, hence Bajaj & Nidumolu (1998) argue that individuals form intention to perform specific behavior despite a negative attitude towards it. Previous research has found significant positive relationship between individual’s PU and adoption. In a study on 133 individuals Bhattacherjee & Harris (2009) identified that usefulness was the largest predictor of individual adoption of new IT. When introduced to an innovation individuals assess how the usage of particular innovation can strengthen their job performance, effectiveness and productivity (Davis et al., 1989; Venkatesh & Davis, 2000).

PEU is defined as “the degree to which a person believes that using an IT will be free of effort” (Davis, 1989, p. 320). Individual’s perception of ease of use is argued to influence not only individual’s perception of the usefulness of IT but also attitude and thereafter the BI towards it. Individual’s attitude towards IT does also affect the intention of using IT and in the end the actual use of IT (Venkatesh & Bala, 2008). Different connections between PU, PEU and BI were also identified by Davis (1989) who found that the relationship between PU and BI was stronger than between PEU and BI, though PEU influenced both PU and BI. This can be
interpreted that if an IT/IS innovation is not useful for an individual, the level of ease of use has no affection on the usefulness and thereafter the intention of using it. In the same manner it can be interpreted that if an IT/IS innovation is useful, individuals can adapt despite the level of difficulty.

2.3.3 Critics of TAM
Despite the fact that the TAM is widely used to predict individual adoption and usage of new IT, prior research has identified limitations and difficulties with the model. First of all, the meta-analysis conducted by Legris et al (2003) demonstrates that the results from previous research on TAM have not been clear nor consistent. Further on, external variables of TAM have been changed depending on researcher and context as such lacking any pattern in including external variables (Ibid). Another common criticism of TAM is the lack of useful and actionable guidance for practitioners (Lee, Kozar & Larsen, 2003). To minimize this limitation some researchers have developed context-specific determinants to PU and PEU for example Karahanna, Straub & Chervany (1999) in electronic communication systems, Koufaris (2002) in e-commerce and Rai and Bajwa (1997) in executive IS. These studies have immense theoretical value because of its concrete research focus identifying determinants to the specific IT system (Venkatesh & Bala, 2008). Other researchers have been focusing on both a general and context-independent determinants covering a broader range of systems extending the initial TAM (Venkatesh, 2000; Venkatesh & Davis, 2000). Furthermore a limitation of prior research is the usage of students as respondents advising scholar to use professionals in a business environment (Legris et al., 2003). This aspect does also create limitations as most professional respondents are not voluntary users as the usage of new IT is usually required to perform a job assignment (Adams, Ryan & Todd, 1992).

2.4 Variables affecting TAM
A number of constructs, which are not explicitly included in TAM, are related to individual differences meaning that dissimilarities exist between various individuals’ perceptions and behaviors (Agarwal & Prasad, 1999). Putting this in a context of TAM it could be referred to an individual’s behavior towards an innovation. The individual differences have been determined as essential variables in the adoption of an innovation (Ibid), thus inclusion of such variables in the model allows to gain a broader perspective on the issues related to individual adoption of an innovation (Talukder et al., 2008). Apart from attitudes, management actions and strategies also have effect on individual usage of an innovation (Leonard-Barton & Deschamps, 1988). Organizational factors can also be described as external factors, this concept
is argued to be important by Ajzen & Fishbein (1980) when understanding the behavioral phenomena of an individual during the adoption of an innovation. Furthermore it is argued that external factors affect not only the attitude and usage, but also an individual’s awareness to and application of an innovation within one’s job (Frambach & Schillewaert, 2002).

### 2.4.1 Prior experience

Scholars have been using various terms for experience, for instance skills, prior experience or previous relevant job (Lee, Kim, Rhee & Trimi, 2006; Igbaria, Zinatelli, Cragg & Cavaye, 1996). In this paper, the term prior experience is chosen which is identified according to Talukder (2011) as individual’s past experience with similar innovation, demonstrates the degree of experience an individual has obtained from training courses, self-training and previous experience. The individual’s awareness of innovations, experience and skills associated with using innovation tend to simplify the adoption (Frambach and Schillewaert 2002; Greenhalgh et al. 2004). Szajna (1996) emphasizes that the experience has shown to be significant in an experimental sample, thus calling for further search. A study carried out by Lee et al. (2006) demonstrates a critical influence of individual experience on the usage of a technology. The study suggests that individuals with prior experience with a similar technology have higher awareness of the benefits associated with using the technology as such accepting the technology easier.

According to Ajzen & Madden (1986) prior experience is considered to be a crucial determinant of behavior. Taylor & Todd (1995) conducted a study in order to identify the role of prior experience in IT usage. The findings proposed that the TAM2 is suitable for measuring IT usage for both inexperienced and experienced users. Therefore, the authors suggest that the model can be used for predicting usage behavior despite an individual’s absence of prior experience with the technology. Venkatesh & Bala (2008) emphasize that even users with significant experience pay attention to ease of use, as a result making experience a vital determinant in user reaction towards an innovation.

### 2.4.2 Personal innovativeness

Agarwal & Prasad (1998) explain that the term personal innovativeness (PI) has been derived from its operational definition – “individuals are characterized as ‘innovative’ if they are early to adopt an innovation” (Agarwal and Prasad, 1998, p.206). The authors refer to PI as individual’s willingness to use an innovation. Innovativeness is associated with individuals who adopt new ideas relatively early in comparison to other members of a social system (Rogers,
2002). This goes in line with the studies about innovation diffusion which point out that individuals with high level of innovativeness constantly seek for information about new ideas (Lu, Yao, Yu, 2005). Frambach & Schillewaert (2002) define PI as “the tendency of a person to accept an innovation within a product class, independently of the communicated experience of others” (Frambach & Schillewaert, 2002, p.171) meaning that some people are ready to accept an innovation while others may resist. The level of individual’s reception to change within an organization is a crucial variable in determining the success of adoption (Zmud, 1984; Frambach & Schillewaert 2002).

The impact of PI on adoption is not included in TAM, although both empirical and theoretical support exists emphasizing that PI as one of the major variables in innovation adoption (Lu et al., 2005). Moreover, some studies confirm that PIIT (PI in the domain of IT) has a significant influence on PEU and PU (Lewis, Agarwal & Sambamurthy, 2003; Lu et al., 2005). According to Agarwal & Prasad (1998) adding PI in the TAM will further explain the process of the formation of adoption intentions and what role individual traits play in technology adoption. Their findings indicate that PIIT can be used to recognize early adopters who can take a role of a change agent. Individuals who consider themselves early adopters will use an innovation without managerial support meanwhile the less predisposed individuals require the support in order to start using the innovation (Leonard-Barton & Deschamps, 1988).

2.4.3 Managerial support
Managerial support consisting of encouragement by senior management and allocation of sufficient resources measures the extent to which employees are likely to take up an innovation (Talukder, 2011). In trainees’ perception managerial support is referred to the extent to which managers provide them with an opportunity to acquire new skills through participating in continuous learning (Facteau, Dobbins, Russell, Ladd & Kudisch, 1995). Tharenou (2001) proposes that managers need to encourage employees to participate in trainings and development and subsequently help them to use skills gained from training.

Igbaria et al. (1997) argue that managerial support has to ensure sufficient resource allocation and also to act as a change agent creating a useful environment in order to ensure IS success. Thus, managerial support leads to greater system success while the absence of such hinders the utilization of IS (Ibid). This statement is supported in the authors’ studies ruling out that managerial support positively influences PEU and PU. Similarly, Lee et al. (2006) have also found the positive relationship between managerial support and PEU.
2.4.4 Training
Since the early research on TAM, training has been considered as one of the key factors that affects user perceptions about technology (Davis et al., 1989). The major aspect of training is knowledge transfer, it creates a possibility to communicate procedural and conceptual knowledge to the users as such ensuring the effective usage of technology (Venkatesh, 1999). Talukder (2011) states that knowledge and expertise are affected depending on the extent to which training is provided to individuals by the organization. The study argues that increased training positively affects the adoption of an innovation as such enhancing knowledge in usefulness. The findings by Mun, Jackson, Park & Probst (2006) demonstrate the importance of developing training interventions and various implementation strategies in order to clarify and disseminate the potential benefits associated with the use of the technology as such facilitating technology acceptance. A study by Raymond (1998) indicates that training has a positive impact on perceived usefulness. White & Christy (1987) point out that employee computer training has been determined as a crucial element for preventing acceptance problems in order to assure both individual and organization computing success as such training on the basic and advanced level integrated in a strategy aim to enhance end-user effectiveness and efficiency.

2.4.5 Incentives
Incentives are referred to material or other benefits that employees within an organization may be provided with upon adopting an innovation (Talukder, 2011). Venkatesh & Bala (2008) introduce the concept incentive alignment that helps to recognize incentives and interests of users’ involved in a process since their own objectives may not go in line with the organizational. The authors propose that incentive alignments are an important intervention during the pre-implementation stage and have the possibility to strengthen user acceptance. However, they claim that the research on the role of incentive alignment in IT adoption context is limited as such calling for further research in this area. This thesis uses the term incentives as it is easier to understand. Individuals will be motivated to work harder to accomplish a high level of performance if performance-based incentives are introduced (Todd & Benbasat, 1999). Ba, Stallaert & Whinston (2001) suggest that incentives should not be interpreted as only organizational rewards for using a system but rather account for individual’s perception that there is a fit between the IT and the individual’s job requirement.
2.5 Theoretical framework

The literature review above is positioning a theoretical framework to explore the individual adoption to an e-learning innovation in two Swedish universities – Lund University and Karolinska Institute. Figure 2 below presents how the theoretical concepts, derived from various studies about TAM, are being used in this study in order to identify the individual adoption process in each organization and subsequently compare. The inconsistency in the results and the absence of clear structure concerning external variables affect the model credibility. Even though the model has its pitfalls, it has been decided to use TAM due to its establishment and wide use within studies concerning technology acceptance. Thus, by applying this model in order to study the individual adoption of MOOCs in Swedish universities, could provide significant results in understanding the acceptance of such innovation. The purpose of this study is not to clarify TAM but to study the acceptance of MOOCs in two Swedish universities.

Among individual characteristics prior experience and PI were chosen in order to further explore the effect individual traits have in the adoption process. Since online education has been present in both universities for a number of years, it is interesting to examine how prior experience influences individual acceptance of MOOCs. Examining PI, which influences PU and PEU, will demonstrate the innovativeness of the individuals and the potential benefits associated with the innovation usage. This is particularly interesting due to the unclear outcomes of teaching MOOCs at the Swedish universities.

Organizational factors will clarify how individual’s awareness of an innovation is affected by variables such as managerial support, training and incentives, and what role they have in the adoption of an innovation process. Such factors will be especially important for the comparison between the two universities possibly demonstrating various practices and outcomes. Thus, exploring both material and immaterial incentives will clarify the possible affect they could have on the individual acceptance as such enhancing the understanding of the individual’s decision towards acceptance or rejection of an innovation. An interesting aspect here is the non-monetary incentives that would hopefully shed light on a fit between MOOCs and the individual’s job requirements. Further on, managerial support will explain how resources are used in order to stimulate acceptance of innovation. Since training is considered an important factor that creates knowledge and affects usefulness, it is crucial to study this variable in order to rule out if it allowed employees to identify the benefits of MOOCs.
Finally assessing diffusion of innovation by examining such aspects as informal or active dissemination will indicate whatever the benefits of the MOOCs are realized and if the individuals are willing to absorb it as such “routization” of the innovation in a university’s daily activities. The diffusion of innovation has not been included in the conceptual model as it is not a part of TAM. This concept was added in order to understand the future of MOOCs within the universities such as how the acquired knowledge will be shared and applied.

**Figure 2: Conceptual model**
3 Methodology

The following section will present the methodological choices for the study, including research approach and design, descriptions of the case study, selection and data collection as well as operationalization and method for analysis. A table of the operationalization is presented in the end displaying how each concept will be measured.

3.1 Research approach
The research approach of this thesis is based on a deductive approach. This approach is suitable for this research as the aim is to identify relationships between the variables stated in the theoretical framework in order to understand the individual acceptance as well as enhancing the understanding of technology acceptance in education sector. This is in line with Saunders, Lewis & Thornhill (2009) stating that a deductive approach is useful when proposing a relationship between concepts or variables. To be able to identify the relationship between the variables a qualitative method has been chosen for this study to collect empirical data for reaching an answer of the purpose. The majority of researchers who have applied TAM in their research have used a quantitative research design to extend and continuously trying to explain factors to predict individual’s adoption of IT (Legris et al., 2003). By using a qualitative approach the researchers aim to identify underlying factors and attitudes that affect the respondents’ adoption process of MOOCs.

3.2 Research design
An exploratory research design has been selected as the purpose of this thesis is to create a deeper understanding of the differences in the adoption process by users in the MOOC development process in each university. A qualitative setting gives the researchers the possibility to ask further questions and gain a deeper understanding and insights to the innovation. This is in line with Saunders et al (2009) who argues that an exploratory design facilitate new insights, clarifies understanding of problems and assesses the phenomena from new perspectives. This is suitable for this research as MOOC could be considered as an unexplored area and that this may lead to changes in the direction as a result of gaining new information. Though, it is argued that an exploratory design is not optimal in explaining how and why a phenomena occurs in detail which is neither the aim with this thesis. A limitation with using a qualitative research design is that it could be a very subjective view of a topic. Findings from research could be the results of what researchers interpret as important (Bryman, Bell & Nilsson, 2005).
3.3 Research strategy
As two universities are investigated, this study adopts a multiple case study research strategy in order to gain an in-depth understanding of technology by individuals in the Swedish universities. Such research strategy is often used in exploratory research and is relevant during an investigation of a particular phenomenon (Saunders et al., 2009). According to Baxter & Jack (2008) a case study approach provides with more clear understanding of participants’ actions due to increased collaboration between a researcher and respondents. Hence, this approach is applicable in this study allowing the authors to gain an in-depth understanding of individual adoption process.

To gain a thorough understanding of individual adoption of a MOOC within the two organizations, it has been decided to focus on employees with different roles in the MOOC project such as a project leader, a professor and an employee with technical expertise. An analysis of two cases focusing on the main actors will allow to summarize action of each organization separately and then incorporating the results in the main case in order to see possible discrepancies between the two universities. An embedded arrangement in case study occurs when a secondary unit of analysis is incorporated within each case allowing to conduct more extensive analysis strengthening the particular case (Yin, 2012). Thus, this thesis has an embedded multiple case study approach. Due to the limited amount of cases there is a limitation of the generalizability of findings to be applicable on other research settings or organizations. Though as this thesis does not aim to generalize, rather to explain what is going on in a specific research setting, a case study is considered applicable (Saunders et al., 2009)

3.4 Sample selection
The following two universities – Karolinska Institute (KI) and Lund University (LU) were chosen since their first MOOCs are already available at the perspective education platforms (edX and Coursera). LU is one of the oldest universities in Sweden ranked as the top university in Sweden and #60 among the top 100 universities in QS World University Rankings (Lund University, 2015). KI is regarded as one of the leading medical universities in the world acknowledged for its research and is also accounted for over 40 percent of the total academic research in Sweden (Karolinska Institute, 2015). Both universities have a long experience in the field of distance- and e-learning environment offering many courses and even whole programs through distance learning. Given this information KI and LU were considered appropriate samples for the purpose of this thesis. Thus, a non-probability sampling method, using judgmental technique, was chosen which is suitable when working with very small
samples such as case study where each case is highly informative (Neuman, 2005; found in Saunders et al. 2009: 238-239). Thereafter, a snowball sampling technique was used to identify employees with various roles who have been involved in the process of producing MOOCs, thus enhancing the perception of the innovation. Though there are limitations with snowball sampling, such as having too homogenous sample of respondents (Lee, 1993; found in Saunders et al. 2009). This could affect the end results as identified respondents could be highly positive to MOOC.

The authors firstly contacted the project leaders at the respective universities to describe the research area of the thesis via e-mail and telephone, thereafter new possible respondents were identified who were subsequently contacted. Initially the aim was to interview at least one respondent at different levels at the institutions, from the principals, project leaders, professors and individuals with technical expertise. The aim with this approach was to get a broader understanding of the perception of the process and also avoid the “good news” syndrome (Saunders et al., 2009). Due to the respondents’ time constraints certain potential respondents rejected to participate. Because of the risk of having uneven respondents for one of the cases, the authors identified three roles and interviewed one employee per university for each role. These roles have been a project leader, a professor and an individual with technical expertise. Though there are limitations with such a small sample size. Guidelines present a minimum of twelve respondents in depth interview to gain an understanding of commonalities in a homogenous group (Guest et al., 2006: found in Saunders et al., 2009). Although, a small sample size resulted into more focused sample allowing the authors to explore the problem in detail as such leading to a deeper understanding of the acceptance of an innovation.

3.5 Data collection

3.5.1 Preparation
Before the interviews were executed, the authors contacted three informants that could possess knowledge within the field. The informants were two journalists having conducted research about MOOCs in Sweden and the former university chancellor Lars Haikola. This was done in order to increase the validity of the questions for the interview guide and to enhance the authors’ knowledge of the MOOC development in Sweden that might not been presented in the media.
3.5.2 Interview process
The gathered empirical data consisted of six semi-structured interviews, three from each university. The respondents from each university and their roles are presented in Table 1 as well as time and duration of the interviews. To gain deeper insight in the adoption process of MOOCs semi-structured interviews consisting of open questions were developed. According to Saunders et al (2009) such approach allows to post open questions and change the order of the questions depending on the flow of the conversation. Therefore, respondents were able to provide thorough information concerning the influence of certain variables on the adoption of the MOOC.

During the initial contact, the potential respondents were informed about the purpose of the study as well as the estimated duration of an interview. The respondents were also offered anonymity as topics that concern managerial support can be considered sensitive as such allowing the respondents to openly discuss the topic. According to Saunders et al (2009) interviewees who are offered anonymity will speak more open about sensitive subjects, diminishing the possibility of withholding information as well following ethics in research. The interviews lasted between 50 to 90 minutes, with one author leading the interview and the other author taking notes. Two of the interviews were conducted in English by one of the authors while the other four were conducted in Swedish by the other author. All face-to-face interviews were conducted at the interviewees’ offices as such decreasing an environment uncertainty which could affect the interview (Bryman, Bell & Nilsson, 2005). The telephone interviews were conducted on time and dates that were chosen to suit the respondents’ schedule. In the beginning of each interview the respondents were asked for the permission to record them, subsequently the interviews were transcribed.
Table 1: Table of respondents

<table>
<thead>
<tr>
<th>Case</th>
<th>Area</th>
<th>Interview type</th>
<th>Referred to as</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lund University</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project leader</td>
<td>Face-to-face</td>
<td>PL1</td>
<td>2015-03-30</td>
<td>60 minutes</td>
<td></td>
</tr>
<tr>
<td>Multimedia developer</td>
<td>Face-to-face</td>
<td>IT1</td>
<td>2015-03-27</td>
<td>55 minutes</td>
<td></td>
</tr>
<tr>
<td>Project assistant and teacher</td>
<td>Face-to-face</td>
<td>PROF1</td>
<td>2015-03-25</td>
<td>45 minutes</td>
<td></td>
</tr>
<tr>
<td><strong>Karolinska Institute</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project leader</td>
<td>Telephone</td>
<td>PL2</td>
<td>2015-04-01</td>
<td>90 minutes</td>
<td></td>
</tr>
<tr>
<td>Structural designer and team coordinator</td>
<td>Telephone</td>
<td>IT2</td>
<td>2015-04-01</td>
<td>80 minutes</td>
<td></td>
</tr>
<tr>
<td>Course team leader and teacher</td>
<td>Telephone</td>
<td>PROF2</td>
<td>2015-03-25</td>
<td>70 minutes</td>
<td></td>
</tr>
</tbody>
</table>

3.5.3 Interview guide

The aim with the interview guide was to be a guideline in order to cover certain themes of interest for this thesis and also to identify awareness, challenges and opportunities that the respondents might have encountered. The interview questions were divided into different themes that are in line with the literature review and the theoretical framework presented in figure 2. The questions were developed as open ended questions so that the respondents could speak without any limitations hindering possibilities in finding new aspects or views to the given themes. The interview guide is featured in Appendix 1. As the interview was of a semi-structured character follow up questions were asked throughout the interview. As the respondents had different roles in the project and also different backgrounds, the questions were tailored to each respondent during the interview. Some questions from the guideline were excluded as the respondents had already highlighted this information previously, while some questions were asked again later on during the interview since the respondents drifted from the theme or had no answer at that moment. The aim of asking certain questions multiple times, was that during the interview respondents realized new views and aspects which reminded them of certain information. Typical questions covered aspects regarding challenges and were asked again in the specific themes. Though a stricter interview guide increases the ability for other researchers to replicate the study, as this research is exploratory in its design it is important to differ from the interview guide as this can foster the exploratory findings (Saunders et al., 2009).
3.6 Operationalization and data analysis

The theoretical concepts that are presented and defined in the literature review have been the base for the theoretical framework to be able to guide the interview and to analyze the gathered empirical data. In order to identify relevant data from the empirical material, the theoretical definitions have been presented clearly. This is in line with Eliasson (2010) who argue that concepts need to be defined in a clear and unambiguous manner. A conceptual definition was then provided to clarify what the theoretical definitions aim to identify the relationship to the research context. Thereafter the theoretical concepts were broken down into measurements aiming to further clarify the guidance of the empirical research from where interview questions can be created. An operationalization is important in research as it confirms that the theoretical concepts are answered and measured in a rigorous way (Saunders et al., 2009).

The collected and recorded interviews were transcribed into a text document where all information was written down, not leaving out anything. Thereafter the transcribed data from the interviews was analyzed using three sub-processes recommended by Saunders et al (2009) and Miles and Huberman (1994). Firstly the data was reduced keeping the relevant data covering concepts from the theoretical framework which eased the analysis. Then the data was organized in a table, highlighting the most important parts which further facilitated the analysis process as it became even more visual identifying important differences that facilitate conclusions during the analysis (see table 3). This is also in line with Yin (2011) who argues that visualized empirical data is beneficial to draw conclusions and verifications. The three steps for analysis were useful to identify valuable information in the large amount of data that a qualitative research generates and enhances the analysis (Miles & Huberman, 1994).
<table>
<thead>
<tr>
<th>Concept</th>
<th>Theoretical definition</th>
<th>Conceptual definition</th>
<th>Measurement</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior experience</td>
<td>Individual’s past experience with similar innovation (Talukder, 2011)</td>
<td>To get an understanding of individuals prior experience affect their adoption</td>
<td>Skills (Lee et al., 2006) Experience (Farr &amp; Ford 1990) Relevant job</td>
<td>What were your relevant competencies/experiences before launching a MOOC?</td>
</tr>
<tr>
<td>Personal Innovativeness</td>
<td>Individual’s willingness to use an innovation (Agarwal and Prasad, 1998)</td>
<td>To gain a deeper understanding of how individuals perceive the opportunities with MOOCs</td>
<td>Early to adopt an innovation (Agarwal and Prasad, 1998) Tendency to accept</td>
<td>How do you believe MOOC will affect your role at the university?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>an innovation (Frambach &amp; Schillewaert, 2002) Receptiveness to change</td>
<td>What new skills do you think has been developed within the organization during this period?</td>
</tr>
<tr>
<td>Managerial support</td>
<td>The extent to which managers provide an opportunity to acquire new skills through participating in continuous learning (Facteau et al., 1995)</td>
<td>To get an understanding in how the support by the management have affected the adoption process</td>
<td>Encouragement (Talukder, 2011) Allocation of resources (Talukder, 2011) Opportunity to acquire new skills (Facteau et al., 1995)</td>
<td>Have you received support from the platform supplier? What are your experience of all the participants in this project, have the feeling been positive or reluctant, has there been a need for persuasion?</td>
</tr>
<tr>
<td>Training</td>
<td>Creation of knowledge transfer (Venkatesh, 1999)</td>
<td>To get an understanding if the training has been sufficient and beneficial when creating MOOC</td>
<td>Communicate procedural and conceptual knowledge (Venkatesh, 1999)</td>
<td>What type of training activities have been offered?</td>
</tr>
<tr>
<td>Incentives</td>
<td>Material or other benefits that employees within an organization may be provided with upon adopting an innovation (Talukder, 2011)</td>
<td>To gain a deeper understanding of the incentive factors working with MOOC</td>
<td>Material or other benefits (Talukder, 2011) Fit between the IT and the individual’s job requirement (Ba et al., 2001)</td>
<td>Have you received much recognition or appreciation from the management for the amount of work spent on MOOCs? Where some more convinced of the advantages of MOOCs?</td>
</tr>
<tr>
<td>Innovation diffusion</td>
<td>The spread of an innovation within a specific set prospective adopters (Mahajan &amp; Muller, 1979)</td>
<td>To gain a deeper understanding of the universities planning or spreading the knowledge</td>
<td>Pure diffusion (Greenhalgh et al., 2004) Active dissemination (Greenhalgh et al., 2004)</td>
<td>What are your plans in sharing the expertise and knowledge gained from this project? How was the collaboration between you and your colleagues?</td>
</tr>
</tbody>
</table>

Table 2: Operationalization and measurements of variables
3.7 Critics of choice of method

3.7.1 Reliability and validity
The reliability of the study could be considered strong as there is a possibility to replicate the study (Bryman & Bell, 2005) since the study is limited to the two universities in Sweden. However, since both cases have not offered MOOCs for more than a year, a replication of the study in the future might not reach the same findings. Another factor that affected the reliability was the interviewer bias as both authors led different interviews which were conducted in both Swedish and English (Saunders et al., 2009). This is perceived as a limitation that could affect the interviewees’ responses.

Because all respondents in this research have been involved in the development of MOOCs at their specific institution and possess the expertise and knowledge for the desired sample the validity could be perceived strong as validity displays that the research is measuring what is intended to be measured (Bryman & Bell, 2005). A realized limitation with this thesis that can affect the validity of the findings is the use of telephone interviews with respondents from one case due to geographical distance. Though the interviews were conducted on times and dates that suited the respondents’ schedule, the authors interpret that there were some differences in the amount and depth of information that was reported between cases. As such time constraints are perceived to be a factor that could have affected the validity information by respondents. With some respondents the face-to-face interviews lasted longer than the predetermined time as the respondents became more comfortable during the interview. This could be perceived as a factor that affects validity since some interviews covered more aspects than the other.
4 Empirical findings

This chapter consists of the empirical findings of interviews from both cases. The findings from each case are divided separately, furthermore the findings are presented under each of the concepts used in the operationalization to give a clearer overview for the reader. In the end a table summarizes the most important aspects regarding differences and similarities between the cases to facilitate overview for the reader.

4.1 Lund University

4.1.1 Introduction

The awareness about MOOCs started in the beginning of 2013 when universities in the USA started to adopt to the MOOCs and LU found themselves in a competitive situation. According to PL1 LU became forced to produce MOOCs to avoid missing out the opportunity and be left outside, therefore an investigation was initiated. Firstly the investigation was aimed to cover both e-learning and MOOCs, but later on MOOC almost got an individual investigation as there were some formal aspects that required further investigation. Thereafter a decision to implement a pilot project was made in order to see what the MOOC is and what the outcome could be. Student union was critical as the resources used for producing MOOCs could be used campus activities (PL1). After the investigation and during the process the approach towards the adoption of MOOC changed, quoting PL1: “After the investigation and during the process it has gotten even clearer what this is about, that we will learn something from this type of learning environment”.

4.1.2 Prior experience

LU has been offering online courses for a long time and the respondents had prior experience from the digitalized learning environment before they started to develop MOOC. IT1 expressed that LU is far ahead in this area, though this experience has strengthened their skills in the area they previously believed they were good at which is described as very positive. With experience in online-based education projects, learning platforms and digital tools, the MOOC project brought new experiences in the field of e-learning for PL1 which is perceived as very useful for future projects. Having prior experience in multimedia development was beneficial, and IT1 was working primary with the activities related to video production during the MOOC project. IT1 realized the importance of technical skills and their more common use in education and teaching which can be valuable for campus teaching as well. IT1 works at the institution which
has been offering online courses for a long time and even has a department for the recording of online course.

4.1.3 Personal innovativeness

There are many purposes and goals with implementing MOOCs at LU as mentioned above. For PL1 perceived marketing as the initial purpose of this project, mostly because of the criticism from the student union about the funds used in the MOOC project which were not taken from the education fund. Later on it has evolved into a new form of education as LU’s students became participants of the courses. Still, PL1 believed that it is perceived hard for the employees to clarify the difference between marketing and education, and it is clearly that MOOCs affect regular courses but it is not clear in what way. The perception of the purpose by LU to launch MOOCs is even described as a necessary evil to be able to be compared with larger universities in the US, Spain and France, as PROF1 (2015) stated “...so it is not a competitive advantage, it is more a must, I believe.” So, producing MOOCs is a way to put LU on the map, to show the world that they exist, rather than only focus on the education (PROF1). Moreover, marketing, described by PL1, has been an argument for funding internally, and therefore the MOOCs have been used as a method of advertising the master programs with similar subject (IT1). Still there is an interest in being a member on the Coursera platform as IT1 states it “the platform is aimed at the top 100 universities, so there's a temptation to be involved in such projects as pure marketing. That we appear along with the giants”.

It became clear that all involved faculties and institutions worked very differently which was not expected as PL1 states: “we understood that it had very much to do with the tradition and culture of those different institutions, in how you work in general. It was shown very clear in this project I believe.” This differences between employees at institutions are also described by IT1 who believes that there are different cultures where some might be more innovative while others might hold on to the traditional classroom teaching and others see MOOCs as a complement. IT1 expressed that at the institution commitment by involved participants was good, meeting the expectations, as many professors and teachers put much time and effort in their work having a high ambition level. Contrarily, at PROF1’s institution the expectations were not met since it seemed that the project was not anchored in the institution and professors were not willing to put time in producing MOOC, quoting: “We lack that teachers had received a mandate from above, we needed their input, we needed their feedback, we needed their quality audit, and these bits we did not get”. However, attracting professors to participate in recording was not problematic, rather sustaining professors during the rest of the process. The perception
that MOOCs are just a marketing gimmick which does not deliver any educational relevant results as grades is described as a factor for lack of engagement (PROF1). By incorporating it in to regular education PROF1 believes that it will enhance the engagement and the understanding of its purpose. The internal survey showed that some professors had already incorporated some material in regular courses and that others plan on doing the same. IT1 perceived that MOOCs will remain and become a part of LU’s long term strategy, although not in the same appearance as today and that they will probably not have any final shape either, as such IT1 expressed interest in the development process. By launching MOOCs, LU has ensured that it will be a part of the development. Such perceptions of different possibilities with MOOCs is similarly stated by PROF1 quoting: “I don’t believe that MOOCs have any clear role, contrary it is an interesting multifaceted role”. Further the roles that a MOOC can have in developing Swedish universities was not obvious for PROF1 initially, rather its usefulness became more evident during the work process. Reflecting on the competences that have been developed during the project, IT1 believes that the mindset of the usefulness of MOOCs has been broadened. PROF1 identifies plenty of opportunities with the MOOCs as assisting shorter courses, providing with research and becoming a part of study material. PROF1 believes that the university will not charge for MOOCs, and that starting to offers credits for completed MOOCs could be a challenge but not impossible, to accomplish this an engagement by students and a possibility to follow students learning process is required.

4.1.4 Managerial support
IT1 states that the project was resource-demanding as a result the involved employees had to divert from campus activities, although this was acknowledged by the management showing support. For PROF1, the managerial support and training was perceived farsighted and supportive, all expectations were surpassed from the project leader and by LU though not by the institution as the project was not anchored. At IT1’s institution record studio was used in the development process, though at PROF1’s institution students enrolled in movie-based program were hired and used throughout the process. This was needed as the institution did not have the expertise nor the time for this task. A continuous challenge with the MOOC project is future sustainability for this type of course which is needed to be solved. For example the ambition level grew during the process as involved professors wanted to do more advanced things which led to increased expenses that were above the budget. The institutions and faculties therefore had to invest money from their
own pocket (PL1). Charging for verified certification could be one opportunity in the long term though the income, gained from this, is low in relation to the development cost (PL).

4.1.5 Training
At LU PL1 has not been direct involved in the development of the MOOCs rather acted as a holistic coordinator of the three teams by planning the work in the different involved faculties and setting up the time plan. To support the teams during the project, PL1 and the colleagues have also been responsible for setting up activities and workshops by inviting experienced people covering practical issues such as presenting in front of a camera, developing multiple choice questions, working with peer-review activities, moderating forums, and working with the platform (PL1). PL1 further states that there was an idea to use a tool for project leading, where involved teams would check off what they were doing and through this tool PL1 would see how the process was developing, this idea was abandoned as the teams worked very autonomously. IT1 had also been involved in the training at IT1’s institution assisting teachers’ presentations and explaining which possibilities are available and which are not. This training has been very appreciated by the professors and facilitated the work when the teams took on the project themselves. Furthermore PROF1 expressed that the university was very supportive during the process, as well as the platform supplier Coursera. PL1 further explains that activities and workshops covering important aspects in the development process had in some cases been recognized to be offered too early in the process for employees, quoting: “..in some cases, we talked about how to moderate the forums but it was months before the course’s start, and once when the course started, you have forgotten it..”. Meanwhile PL1 also highlights that such experience provided with specific knowledge about the MOOC development process.

4.1.6 Incentives
The incentives for involved in the MOOC project have not been clear from the beginning and the compensation for the amount of time that has been invested is described as probably not been enough. Still it has been clear from the start that this project was voluntary and that all participating faculties had to apply to develop a MOOC at their faculty or institution and that individuals probably have seen the experience itself as a form of compensation (IT1). During the project other benefits have been realized that were not identified when initially starting the project. Because of the vast amount of participants one course can generate, this can increase amounts of clicks on professors and their publications which is also seen as incitements, and teachers of a MOOC can become visible on search results on Google where they would not be otherwise (IT1). As a result the professor can receive attention from professors in the US.
leading to new contacts and networks which could be beneficial for the professor’s career, stated by IT1: “This project is full of moments where you realize opportunities you can benefit from, that has been great!”. Further PROF1 expressed interest to be involved in future projects as MOOC, hoping that this experience will facilitate further development in the career, quoting: “I like this interface where education meets information, so I hope that I will continue to work with it and that we will see MOOCs as an important part here...”. These opportunities for acknowledgment are also mentioned by PL1 who explains that if a professor is participating in an attractive course and becomes a star within his or her field, this can lead to increased invitations to conferences and such. On the MOOC’s discussion board participants were comparing various professors which means that just standing in front of the camera is not enough to be acknowledged (PROF1).

4.1.7 Diffusion of innovation

There is no actual elaborated plan in sharing the generated knowledge internally or externally at LU yet as the first courses has just ended. LU is currently in the evaluation phase identifying relevant areas in the process for sharing through meetings at the institutions. Formal reports summarizing learning outcomes from this project will be created and hopefully as PL1 expressed that some standardized settings might be developed considering the differences at various institutions. However, the professors who are interesting in the MOOCs tend to attend these meetings since there is still resistance towards the MOOCs from some employees, but in overall there are no perceived challenges in the knowledge sharing (PL1). The aim with such meeting is to focus not only on those who are interested in MOOCs, but for employees who are interested in online-based learning in general such as peer review, leading to discussions and knowledge sharing through workshops and seminars at the university (PL1). Though IT1 is not involved nor informed of the knowledge sharing process covering LU at large, the view of knowledge sharing is similar to PL1. IT1 is more involved in the knowledge sharing process with the involved faculties though seminars and workshops, although hopes that seminars will be offered to the rest of the university (IT1). IT1 believes that the technical opportunities of sharing knowledge depend on attitudes, quoting: “I think it's more about the attitudes and approaches to it, get people interested in it and get the right people to ask for this, then I do not think the actual implementation is some concern”. PL1 is not sure the internal competences that have been developed, quoting: “I believe professors have learned to formulate their knowledge area in way that is concise and in a simpler form, and present it in an attractive way in video lectures”. This is also highlighted by IT1, quoting: “I think it's probably a fuzzy thing, attitudes
have changed a bit, there is a greater awareness of what it demands to develop these courses and that it is possible to make them here.”

4.2 Karolinska Institute

4.2.1 Introduction

PROF2 got interested in the MOOCs through a colleague, however PROF2 did not propose the idea to the management. IT2 believed to be an initiator for the MOOC in KI, although the first time IT2 proposed the idea of starting a MOOC to the management, the proposal was turned down due to a lack of interest. Despite being turned down, IT2 came with the same idea one year later approaching new management who accepted the idea, quoting “wow, what an amazing opportunity!” PL2 was the one who proposed the idea to the Dean, and the crucial aspect here was as according to PL2 the shape and presentation of idea. PL2 proposed to the management not to produce MOOCs but to join the edX platform. The proposal was short stating purpose, vision and the potential disadvantages of missing the opportunity to join the edX. PL2 claimed that the first main purpose with the MOOC is not educational but rather marketing KI nationally and benchmarking by becoming a member of “the edX consortium” as such positioning KI among top 10 elite universities. “How can we make education as strong as research”, wondered PL2 and explained that the problem is that in Sweden KI is considered as strong research institution but it also has a quite good education that many people are not aware of. It was also important to market not only KI but Sweden as a whole, quoting: “as a really strong destination for education”. IT2 also saw MOOCs as an opportunity to promote KI not only as research-driven institution but also as an education institution. A collaboration with an elite university is an efficient marketing strategy for KI. PROF2 thought that positioning KI as the first Swedish university among elite universities was the initial purpose, although what KI gained in terms of profit from this marketing initiative is unclear as the university is a not for profit organization. PROF2 instead highlighted the dissemination of knowledge as the main purpose, quoting: “for me the purpose was to increase people’s health in the world, directly to those who find it useful”.

4.2.2 Prior experience

PROF2 said “I have had a live course for a long time and I am a bit tired of it, and this MOOC – I think it is very exciting” and describes the further plans of using MOOC in the teaching. PROF2 kept with the MOOC despite extra work due to two reasons: firstly, being a researcher implies that you work extra and secondly, it gave something else rather than money. IT2 had
an experience, dated 15 years ago, of being a lead teacher in a course at a US university expressing that there was no physical contact with students. Under several occasions, IT2 points out that KI is skillful when it comes to online education. Upon taking responsibility for the MOOC project, PL2 had been responsible for driving pedagogical innovations at the KI ensuring that, quoting: “whatever we do is in line with the KI strategy”.

4.2.3 Personal innovativeness

According to IT2 one of the further applications of a MOOC that concerns knowledge dissemination is called SPOC (Small Private Online Course) which is similar to MOOCs, although SPOC gives an opportunity to choose with whom you want to share content. IT2 believed that SPOCs can be useful not only for students but for professional as well and could be applied in other research areas except medicine. PROF2 had a plan to develop a “micro MOOC” which is directed towards professionals in a certain area. The idea of developing an online course for professionals was out for a while but only with a MOOC this procedure became much clearer. PROF2 further suggests that MOOCs can transform the whole university life, for instance students living in rural areas can study online and meet once a month to complete some practical assignments. Similarly, IT2 proposed that a student can study online via MOOC material, go to the clinical placement to obtain practical knowledge and then take an exam in a traditional way not via the MOOC. IT2 noticed that KI already had a purely online master program (was present before MOOCs), it is just a question of “how far you want to push it” PL2 saw MOOCs as more interactive and better quality providing with the possibility to obtain certificates, develop competences and attend full programs, quoting: “People can take the first two years online and come to the hospital site only for practice”.

PL2 highlighted that it is crucial to reuse the material presented in MOOCs in KI, so at a local context. It is extremely important that MOOCs could be applied for campus courses (IT2). PROF2 is already using some of the content presented in the MOOC in the live course. It could be further implemented into university education by for example asking students to watch a number of videos prior seminar - the important aspect here is to stimulate discussion within students as this is the way to understand if a student has really learnt something in comparison to just watching a video (PROF2). PL2 also describes that the MOOC material is already used in team based learning and online courses for PhD programs. The future issues concern the employees’ desire to do a MOOC in the coming years as employees at KI are trigged by innovation and they will not agree to conduct similar tasks for 3-4 years, and MOOC is not seen as an innovation anymore (PL2). Thus, KI is trying to position MOOCs as a daily activity and
for that reason MOOC LAB was created which is an organization that is responsible for production of MOOCs (PL2).

4.2.4 Managerial support
A competition was held to determine the first faculties to develop MOOC, showed faculties who were really interested in joining the project. It is much more efficient way than delegating tasks without realizing if the faculty wants to be a part of it (PL2). Employees in charge of developing a MOOC received a “premium support” including video development team, platform and structure designers. PROF2 was provided with a team consisting of technical project leader, production crew, an instructional designer and a researcher with whom PROF2 had cooperated with earlier. The team had a lot of communication about action plan but everything became quite clearly in a short time, quoting: “There was a lot of discussion…. But it became very clear quite fast how a teacher prepares for recording a MOOC video”. Having a professional team simplified the process of creating the MOOC as there was no need to do everything alone and the process was rather fun and rewarding (PROF2).

For the first two MOOCs the budget was split 50/50, although after experiencing the level of motivation from the two faculties, it would have been more efficient to distribute funds based on the motivation as such providing the active ones with more resources to develop a high-quality MOOC. With the restricted budget for each course the money allocation was a challenge. If some of the teachers wanted to get paid it led to money shortage for the production team meaning that the later could produce less. So there was always an issue of balancing the budget. Eventually teaching assistants got paid (IT2). PL2 provided the project group with two types of support – operational and tactical. The first one ensured coaching and informing about what has to be done, the second one ensuring that the team understands the importance of the project. It is important that employees find a work balance as it might be interesting to be involved in a MOOC now and make an impact but in a 12 month period this could be over (IT2).

4.2.5 Training
Upon participating in the competition, all participants were obliged to watch a demo video called “edX 101” and it was recommended to do some other things related to a production of a MOOC. Such pre-training stimulated that idea of what MOOC is for the KI (IT2). Faculties had to start project groups in a really short time, put up studios and provide employees with training (PL2). All the tacit knowledge about the edX platform was acquired and then employees
received extensive training via Skype (PL2). By obtaining this knowledge employees could use it any time they want without help (IT2). During the development of a MOOC some people had troubles presenting in front of the camera (IT2). Besides, a number of teachers had troubles during video shoot as being used to have long lectures, their videos were about 17 minutes long which is not typical for a MOOC where lecture are much shorter (PROF2). So a number of trainings were provided to teach employees to present in front of the camera since the majority is not trained for that. There was a coach specialist responsible for such sort of training, which was a new thing (PL2).

4.2.6 Incentives
Originally, there was no budget provided for the teachers, there were some money for the teacher’s assistants. Out of 15 teachers involved in the MOOC development, only two insisted on getting compensation, the rest worked for free (PROF2). PL2 believes that such voluntary involvement in the MOOC project is due to high interest in new ways of learning, such as active learning, blended learning approach or flipped classrooms, among employees. One of the driving factors for professors to engage in the MOOC was an opportunity to develop their career. One type of employees are very innovative and progressive and they saw a MOOC as a beneficial way of improving their own teaching while the other group of employees also had a clear vision – what advantages does the MOOC have and how can it be used in a global context (PL2). IT2 also told that some of faculty members did not want to be a part of the project as they did not have time nor saw a value in this. Contrary, for PROF2 MOOCs helped to fulfill the mission of disseminating knowledge globally to a much greater number of people. Similarly, IT2 emphasized that MOOCs provide with a tremendous opportunity to globally share knowledge with people. Both stress that knowledge dissemination was one of the main reasons for joining the MOOC movement. “Motivation is about getting things done” PL2 states. It is highly important to keep staff motivated while engaging with an innovation such as MOOCs which was a challenge in the beginning. One important aspect concerning MOOCs at KI was, quoting: “an internal motivation to be first” (PL2). The management contributed by providing operational support such as coaching and production of a MOOC as well as tactical explaining to the project group the importance of MOOCs for competency development (PL2).

4.2.7 Diffusion of innovation
PL2 emphasizes that KI’s management took the decision of joining the edX consortium not starting to produce MOOCs. Thus, the level of engagement KI has in this consortium affects the assistance they get. This is seen as a knowledge exchange: KI learns about a production of
a MOOC while edX gains knowledge about the performance of European universities. PROF2 was not aware about internal knowledge sharing gained from MOOCs. IT2 explains that knowledge sharing happens on an intuitive level which is regular for people working within academia – employees share their research with colleagues. Later on, a formulized plan to share knowledge gained from the MOOC project exist, such as a formal web page where the important information regarding MOOCs is stored. Then IT2 also tries to promote research based on the data collected from the MOOC by publishing articles and promoting them internally and via conferences. PL2 also mentioned the webpage with all the documentation about various phases of the MOOC production. It is crucial to ensure that knowledge is disseminated and not kept embedded into one specific person. “I never vision me being central in this forever” states PL2 about the role in the MOOC project and for that reason PL2 is already trying to pass on the project to other colleagues. MOOCs play a small part in much larger projects that are aimed towards considerably improving the KI’s technical platform, the priority is to digitalize as many processes as possible internally (PL2). For example, the edX platform is used by KI internally, and there is an opportunity to further develop technical competences (PL2). It is important to understand how MOOCs can be used as innovative technology in education (PL2). Engaging in MOOCs shows that KI is aware about possible transformation of higher education. Hence, it allows the organization to participate.

4.3 Empirical summary
The table 3 below presents a summary of the main similarities and differences between the cases that were identified after conducting the interviews.
<table>
<thead>
<tr>
<th>Awareness of MOOCs</th>
<th>Karolinska Institute</th>
</tr>
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<tbody>
<tr>
<td>• Via professional network</td>
<td></td>
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<tr>
<td><strong>Decision making</strong></td>
<td></td>
</tr>
<tr>
<td>• Thorough investigation on MOOCs and E-learning</td>
<td>• Quick decision in joining edX consortium</td>
</tr>
<tr>
<td><strong>Prior experience</strong></td>
<td></td>
</tr>
<tr>
<td>• Distance and online learning</td>
<td></td>
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<tr>
<td>• Perceive themselves as being far ahead in the area and skillful</td>
<td></td>
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<tr>
<td><strong>Personal innovativeness</strong></td>
<td></td>
</tr>
<tr>
<td>• Voluntary participation</td>
<td>• Clear idea that MOOCs are beneficial for developing learning techniques and spreading knowledge globally</td>
</tr>
<tr>
<td>• Perceived the original purpose as marketing</td>
<td></td>
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<tr>
<td>• Already use material from MOOC in other courses</td>
<td></td>
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<tr>
<td>• Frame the decision in joining Coursera as a marketing strategy, advantages of improving education were realized later on</td>
<td></td>
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<tr>
<td><strong>Managerial support</strong></td>
<td></td>
</tr>
<tr>
<td>• Formal application was required to participate in the project</td>
<td>• Premium support (including technical resources)</td>
</tr>
<tr>
<td>• Project groups received support and acknowledgment from the university management</td>
<td>• Tactical support to understand the importance of the project</td>
</tr>
<tr>
<td>• Received financial support though with limited budget</td>
<td>• Express difficulties in sustaining innovation: keeping high motivation among employees</td>
</tr>
<tr>
<td>• Challenges to keep within the budget</td>
<td></td>
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<tr>
<td>• Teams had to allocate technical resources themselves</td>
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<tr>
<td>• Not anchored in all institutions</td>
<td></td>
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<tr>
<td><strong>Incentives</strong></td>
<td></td>
</tr>
<tr>
<td>• No official financial incentives offered</td>
<td>• The majority of employees participated in the project due to interest in online education</td>
</tr>
<tr>
<td>• Perceive that MOOCs can improve teaching</td>
<td></td>
</tr>
<tr>
<td><strong>Diffusion of knowledge</strong></td>
<td></td>
</tr>
<tr>
<td>• Informal knowledge sharing through discussion with colleagues</td>
<td>• Internal webpage for knowledge sharing was developed as dissemination of knowledge is of high importance</td>
</tr>
<tr>
<td>• Seminars and written reports but did no formulated plan in knowledge sharing</td>
<td>• MOOC is a part of much bigger change process within the organization</td>
</tr>
<tr>
<td>• No perception of technical challenges in sharing knowledge, creating a positive attitude is an important factor</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Empirical summary
5 Discussion

This chapter analyzes as well as discusses the empirical findings in relation to the theoretical concepts. It highlights both the similarities and differences between the cases though putting emphasis on the differences and discusses possible explanations in regards to the theoretical framework.

5.1 Awareness of MOOCs and perception

When introduced to innovations individuals assess how it can strengthen their job performance, effectiveness and productivity (Davis et al., 1989; Venkatesh & Davis, 2000). The behavior by individuals is an important factor that affects the usage and adoption of innovations and therefore affects the potential benefits by an organization adopting to an innovation (Venkatesh et al, 2003) as this will also affect the performance (Ajzen, 1991). At LU the perception is that the university found themselves in a competitive situation but also found MOOCs useful to be able to position themselves internationally according to PL1 and PROF1. In contrast to KI, IT2 quickly understood the opportunities as well as PROF2 who’s personal purpose was to increase people's’ health in the world. PL2 proposed the management to join the edX consortium and not to only produce MOOCs but also to position KI internationally. This shows that the purpose and benefits with MOOCs initially were difficult to assess by individuals in their adoption process, maybe because MOOCs is an innovation in Swedish education system. According to Lu et al (2005) certain individuals constantly strive to find information for new ideas. Where LU acted out of a competitive situation KI could be perceived having a more clear view of the usefulness. Both universities can be described as having a positive attitude towards MOOCs as they adopted, though the initial intentions differ as well as their behavior. The instinctive drive in being first and also highlighting the educational part of KI could be factors that facilitated the usefulness and purpose with MOOCs and in the end the adoption process. This factor could be perceived as tangible to communicate and understand internally at KI. Being first in Sweden could create a competitive mindset, stimulating the drive and increasing motivation among other employees involved in the MOOC project. Therefore just positioning LU among top universities could be considered less tangible whereas being first in Sweden in this context could be perceived more tangible. Since education at LU is already acknowledged internationally this might not have been as strong of a motivational factor as it was at KI. The behavior at KI was to act quickly, leading to a shorter decision process to reach the goal in of being first in Sweden, handling the level of ambiguousness different than LU who initiated a thorough investigation.
5.2 Prior experience
The majority of respondents emphasized that prior experience in online and distance education had made them skillful in the area of e-learning, and thus working with a MOOC. According to Frambach & Schillewaert (2002) skills and experience identified with using an innovation have a tendency to facilitate the adoption. Thus, since MOOC is seen as an innovation of e-learning, the area in which the individuals have significant experience in, the respondents believe that it would not be challenging to produce and teach a MOOC. As PEU influences attitude and the intention of using a technology (Venkatesh & Bala, 2008), it could be ruled out that a positive prior experience and skills gained from it have significant influence of the adoption of an innovation.

The acceptance will be simplified as an individual has high awareness of the benefits related to using an innovation which is obtained from prior experience with a similar technology (Lee et al., 2006). Among respondents at KI such awareness was more vivid, for instance IT2 and PROF2 discuss a possibility of developing purely online programs for mass education, mentioning that KI already provides students with an online degree but to restricted number of participants per program. IT2 is in charge of driving pedagogical innovations such as a plan to digitalize as many processes as possible at the university which clearly demonstrates the high interest in the MOOCs. Contrarily, at LU it was not clear if the employees had an explicit understanding of the benefits of the MOOCs (PL1), and the potential advantages became clear during the process of producing a MOOC (IT1). PEU is associated with the ease of using technology while PU refers to understanding how a certain innovation can increase individual’s job performance (Venkatesh & Bala, 2008). In both cases experience gained from earlier engagement with distance course affected the adoption of the MOOCs as individuals perceived it as not challenging. Although, the main difference lies in the interpretation of the possible benefits associated with the MOOCs. Despite prior experience of working with e-learning, employees at KI were able to identify the potential advantages before the initial course production took place which only strengthened the positive attitude towards the adoption. Meanwhile, at LU the benefits were realized only during the actual development of the course, which subsequently resulted in a more profound interest in the MOOCs. Still, it is clear that PEU played a dominant role in shaping the positive attitudes towards the innovation leading to the acceptance of it.
5.3 Personal innovativeness

There are many opportunities with MOOCs, according to the respondents, and only the innovativeness by the user or regulations could be described as the limitation. In the case of LU the initial stage of the development, the perception was that LU had to formally frame the project as a marketing project because of criticism from student union regarding resource allocations (PL1). As the individual level of receptiveness to change is important for the success of an adoption for an organization according to Huh et al (2009), furthermore PU is identified as the primary predictor towards the intention of usage (Brown et al, 2014). There were according to PL1 difficulties to clarify the difference between marketing and education throughout the project as the project was a pilot project to explore the outcomes. As behavior is decided upon attitude towards the usefulness according to Huh et al (2009), one could interpret that there were difficulties to identify the benefits with a pilot project focusing on marketing rather than on education. This could also affect the level of innovativeness among involved employees on certain institutions at LU as the project was not perceived as being anchored in the organization which might form an impression of the importance and usefulness. This is also described by Greenhalgh et al (2004) who argues that clear and visible benefits of innovations facilitate the adoption process. Although, the work progress at LU could be perceived quite autonomous with the different cultures and traditions in how work is conducted (PL1, IT1). This could be perceived that the level of innovativeness and ambition was high as the individuals adopted to the ambiguousness of the situation and cope with the challenges in their own way, reflecting the different behavior at each team that could be a tendency of accepting an innovation differed among individuals.

Routinization of an innovation to become a regular part of work is perceived highly desired by organizations (Saga & Zmud, 1993), as well as the performance is affected if the intentions are strong (Ajzen, 1991). Though as today some materials from the MOOC course at LU and KI are used in regular courses which would foster the further engagement. Though the intentions could be perceived stronger at KI as a MOOC LAB has been created which is responsible for the production (PL2), displaying a different behavior, thus LU has just ended their first courses when the interviews were conducted. The reason for the differences in the behavior could be argued either that KI is ahead of LU in the adoption process or because their level of innovativeness is more apparent. It could be perceived that the creation of the MOOC LAB would enhance and foster performance of the future MOOC development, hence arguing that the intentions could be stronger at KI. According to Lu et al (2005) the diffusion of innovation
exemplifies that certain individuals constantly seek for information about new ideas as their level of innovation could be considered as high. Adoption will be enhanced if the process is broken down to manageable parts according to Rogers (1995). The opportunities for incorporating MOOCs in the campus education differ between the universities, which shows various intentions and levels of innovativeness. At LU it is believed that MOOCs will be a part of the long-term strategy (IT1) and could be included in study materials as well as deliverable for research (IT1, PROF1). However, at KI more facets of the MOOC application were identified such as SPOC (IT2) and micro MOOC (PL2). Thus, it could be perceived that the respondents at the KI innovative since they have a clear future plan concerning the MOOC development and its applicability. Since they are looking for new ideas, the PU could be argued to be more vivid. MOOC could be a trigger to a changed university life since students can study online and once per month go to the clinical placements to obtain practical knowledge (PROF2, IT2). This implies that the opportunities are either broken down in to manageable parts or aim towards seeking new areas of application for MOOCs. Therefore, universities can decrease costs by educating people via MOOCs subsequently transforming the higher education.

5.4 Managerial support
According to Igbaria et al. (1997) management has to ensure success of IT adoption by providing resource allocation and managerial support and thus creating a positive environment. At both cases the teams were provided with financial support, although to stay within the budget was a challenge. Throughout the project some team members wanted to produce something more advanced (PL1). A similar problem was observed at KI, where the originally equal division of the budget between the groups became an issue since the level of motivation and willingness to produce a high-quality course was different (IT2). However, the extent of managerial support was significantly different between the two universities. The PROF1’s team had to allocate technical resources themselves, such as hiring own team, while PROF2 received this support from the management which simplified the process of producing a MOOC. It is argued that the absence of managerial support hinders the utilization (Igbaria et al., 1997), and the encouragement and allocation of sufficient resources by managers determinates the likelihood of innovation adoption (Talukder, 2011). However, individuals who are willing to use an innovation do not require managerial support in order to begin using the innovation (Leonard-Barton & Deschamps, 1988). Thus, it could be concluded that PROF1 had high level of PI since despite lack of full managerial support and unclear purpose with the MOOCs, PROF1 was still willing to adopt an innovation and overcome uncertainty associated with the
benefits that MOOCs have. Although, the extent of managerial support varied between the universities, it did not seem to affect PEU but only due to the strong PI of an individual. This could be concluded that PI has a strong influence on individual adoption, which triggers individuals to take up an innovation.

Management has to ensure allocation of sufficient resources (Talukder, 2011) and provide an opportunity to gain new skills (Facteau et al., 1995). The main difference between the two cases was the extent of the learning process. At LU employees were provided with only financial support unless a certain institution already had technical expertise meanwhile at KI both financial and technical support existed which resulted in higher PEU among team members. Thus, the role of managers as a change agent should be emphasized. In order to create an environment that would facilitate the adoption of an innovation, managers should provide not only financial support but also other resources vital for understanding how an innovation functions, such as people with relevant competences. Secondly, during the first usage of the innovation it is important to create guidelines and document them; thus ensuring that an innovation becomes a part of daily activities which results in knowledge creation and simplification of the process of using the new technology. Finally, the future teams could be provided with only financial resources and guidelines as the process will become standardized and therefore will not require extended resources.

5.5 Training
Both universities provided employees with training that was relevant for the development of a MOOC. Various activities related to MOOCs took place, such as discovering various features of a provider’s platform, and presenting in front of the camera (PL1, PL2). Although, it was observed that some training took place months before the project start which resulted in the information being forgotten once the MOOC development began (PL1). At LU, the original plan was to have a reporting tool but since the teams were working autonomously and engaging in learning the idea was put aside, which was interpreted as positive (PL1). However training is vital knowledge that ensures the effective usage of innovation is communicated to employees (Venkatesh, 1999) as knowledge enhance PU (Talukder, 2011). Basic and advanced trainings help to prevent the rejection of an innovation and thus increase efficiency and effectiveness (White & Christy, 1987). In both cases, emphasis was put on providing individuals with relevant knowledge about the various aspects of developing a MOOC. The connection between training and PEU can be established since it clearly simplified the adoption of MOOCs. Yet, it should be noted that the training should be provided at the right time, hence not too early in
order to increase the purpose of a training. This could also lead to decreased costs as there is no need to repeat the training. It could also be argued that such intensive training could facilitate a manager’s work since the teams have broad knowledge about usage of an innovation and thus do not require extensive supervision. The aspect that was mentioned at KI, however not brought up at LU, was that training was also aimed at increasing the awareness of MOOCs and the purpose of the project (PL2). The clarification of benefits helps individuals to understand how an innovation can enhance his or her job performance as such affecting PU. As this variable is crucial in predicting individual’s intention to use an innovation (Brown et al., 2014), it is vital that training not only focus on the practical issues but also takes into consideration individual gains from accepting the innovation.

5.6 Incentives
According to Todd & Benbasat (1999) performance-based incentives lead to increased performance by individuals. It was not highlighted that the employees were paid for the participation in the MOOC development, but according to IT1 the compensation was not enough. At KI only few employees insisted on financial compensation (PROF2), yet there was a high level of engagement (PL2). Individual perception that a fit between innovation and the individual’s job requirement should not be underestimated (Ba et al., 2001). While, at LU non-financial benefits were not presented accurately as they were realized during the process, and at KI the immaterial incentives included knowledge dissemination and technology improvement. At KI, MOOCs were seen as a way of improving own teaching and also a possibility to advance their career (PL2). For instance, IT2 promotes research based on the data collected from MOOCs. At LU, during the production of MOOCs teachers saw a participation in the course as a possibility to gain international recognition among peers within a respective field of studies (IT1, PL1) as well as increase experience that could be beneficial for career development (PROF1). Thus, the empirical findings demonstrate incentives that were recognized by individuals on their own. As mentioned earlier, incentives are vital during a pre-implementation stage (Venkatesh and Bala, 2008). As some employees at KI had a clear vision of the MOOCs benefit already in the pre-production stage it could explain the clear understanding of PU and thus a high level of motivation. However, at LU such benefits were figured out during the process by individuals which helped to realize personal benefits associated with the project; thus, stating clear benefits is crucial. It provides employees with potential benefits of an innovation that from the beginning seems to lack direct connection to
one’s job responsibilities which eventually has a positive influence on the PU already in the pre-implementation stage.

5.7 Diffusion of innovation
It is perceived to be highly desired by organizations to make introduced innovations a part of regular work through routinization (Saga & Zmud, 1993). The benefits of an innovation need to be clear and visible (Greenhalgh et al., 2004) and by breaking down the innovation into manageable parts to adopt it incrementally is argued to facilitate the adoption process (Rogers, 2002). The spread of an innovation can be performed either informally and unplanned between peers, usually decentralized called pure diffusion or through active dissemination that are more planned, formal and centralized. Respondents at both universities express that knowledge is shared informally through discussion as IT2 states that knowledge sharing happens on intuitive level. Through the plans to disseminate the gained knowledge and experiences throughout the university was different. The plan at LU is to share the gained knowledge from the MOOC project through written reports, seminars and meetings aiming to identify any standardized setting for future development of MOOCs (PL1). A positive attitude towards MOOCs is a determining factor that affects the receptiveness of knowledge from the rest of the university (IT1). The view in knowledge dissemination was different at KI since the initial idea of joining the edX consortium was born from a willingness to share knowledge so KI gains knowledge in producing MOOCs and edX gains knowledge about performance of European Universities according to PL2. As it was important that the knowledge was not embedded into specific individuals the idea was to store all the knowledge online, which was also a part of KI larger project that aims to digitalize as many internal processes as possible according to PL2.

It is clear that there is an aim at both universities to make MOOCs a part of regular work through routinization, though their behavior and attitude can be perceived differently. The diffusion of the innovation at LU could be described as a somewhat pure diffusion process as their behavior are rather unplanned spread of innovation where the knowledge is spread among peers in meetings and seminars. As the receptiveness of shared knowledge is influenced by the attitude towards the innovation it is important for LU to present the benefits clearly and visible at these meetings so that the individuals within the organization accept the innovation. If the attitude towards MOOCs are to some extent negative, this will affect the behavior among employees as this affect the usefulness. Through these seminars and meetings it is also important to stimulate and ignite employees’ level of innovativeness by highlighting the usefulness on regular campus courses and ease of use. In contrast at KI the intention was initially to gain knowledge from the
EdX consortium and also their plan to disseminate knowledge internally at the institution is different than in LU. KI has an approach more described as active dissemination where their formal internal application to the university management to be a part of the consortium shows an awareness of the importance of sharing knowledge. By documenting all phases and have them available on a website presents a more planned approach to knowledge dissemination. This behavior and intention can facilitate the adoption process as the innovation is broken down in clearer and more manageable parts. It can be argued that there was a strong positive evaluation of the usefulness of MOOCs and the knowledge gained from it as their behavior was to have a clear plan in dissemination of knowledge. This in turn could be important factors that affect other employees’ behavior and intention as the knowledge is available easily through the website which can affect the PEU. It can be perceived that respondents at KI had a strong instinctive drive to use technology and also a drive to educate others both internally and externally. The reason for this could be that KI is a research institute, striving in identifying new opportunities for research and to disseminate knowledge to the world.
6. Conclusion

This last chapter will summarize the most important findings. Theoretical and managerial implications, limitations and suggestions for future research will also be discussed from the findings of this research.

The purpose of this thesis was to explore the acceptance of MOOCs in Swedish universities. The findings showed the experience in working with various types of e-learning as positive, and since a MOOC is seen as an innovation in e-learning, it will not be more difficult to develop one, hence there is a desire to try out MOOCs. Moreover, awareness of the benefits associated with the similar technology led to further understanding of the potential advantages associated with MOOC, thus strengthening the adoption. Training, such as presenting in front of a camera and using a MOOC platform, was beneficial in order to grasp the technical aspects required to produce and teach a MOOC as such simplifying the process of the MOOC development. Interestingly, the absence of financial incentives was not significant despite the extra working hours required to produce a MOOC. Instead, the immaterial incentives played a crucial role in the acceptance of MOOCs. Such incentives consist of clear purpose of the project as knowledge dissemination, technology development at a university and marketing, as well as benefits for employees, such as international recognition, networking and improved teaching methods. Hence, understanding the aim and the potential advantages related to one’s job requirements and career opportunities allows employees to see the possibilities that MOOCs provides thus enhancing the individual acceptance. Contrarily, lack of clearly defined objective decreases employees’ perceptive of MOOCs though it not hinder the acceptance. The most important factor that drives MOOC’s acceptance is the employees’ innovativeness. Despite absence of clear outcomes and challenges, innovative individuals will still be willing to develop a MOOC and influence the acceptance of colleagues through motivation. The diffusion of MOOCs at some point occurs on an intuitive level as individuals share their experience with colleagues. However, a more formalized way, for example seminars and reports, exists to ensure the spread of MOOCs within a university.

6.1 Theoretical contribution, limitations and further research

This study covered the acceptance of the MOOCs in two Swedish universities. Previous studies has concluded that research in the context of higher education institutions and universities have not been developed. This thesis enhances the understanding of innovation adoption and adoption of IT in higher education institutions.
A limitation of this thesis is the qualitative approach that is affected by the subjective interpretation of the empirical findings by the authors. A recommendation for future research is to apply a quantitative approach, which is more common for TAM, in order to measure and compare the effect of various variables on the adoption of MOOCs in universities. Another limitation is the generalizability of the results as the thesis only focuses on two universities in Sweden. Hence, by performing a quantitative study focusing on all universities in Sweden that are offering MOOCs today or are in their development process would be very interesting. As there are not so many universities in Sweden that have decided to offer MOOCs, there is a great opportunity for future researchers to cover all involved participants in the process to identify findings in the adoption process that could be generalized in Sweden.

From this thesis the authors have interpreted that professionals in the education sector are perceived as highly innovative. Hence, a quantitative approach comparing professionals from different contexts could identify more interesting aspects in the field of technology acceptance. Secondly, the critical role of incentives, specifically the non-financial ones, possess an interesting future topic for research that could be focused on understanding the crucial role of the immaterial incentives in the adoption process in the education sector.

6.2 Managerial implications
The findings of this thesis acknowledged several guidelines for managers responsible for a MOOC project in a university. The role of a manager as a change agent during the adoption of MOOCs should be emphasized. In order to create an environment that would facilitate the acceptance, managers should firstly provide managerial support which includes not only financial but other resources vital for understanding how an innovation functions, such as people with relevant competences. The manager should present a clear purpose including various responsibilities, a plan for execution, goals and potential impact with the project especially since it is not clear whether MOOCs are in line with the individual’s job requirement. This will help an employee to understand the usefulness of MOOCs and subsequently shape a clearer attitude to the innovation which will influence its adoption. Secondly, during the production of the first MOOC it is important to create guidelines and to document them; thus ensuring that MOOCs become a part of daily activities which result in creating knowledge and simplifying the process of using the new technology. Finally, the future teams could be provided with only financial resources and guidelines as the process will become standardized and therefore will not require extended resources.
List of references


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**Appendix 1: Interview guide**

**Background and purpose**
- How have you been involved in this MOOC project?
- From where do you believe the idea of offering a MOOC originate?
- What do you think the purpose is by offering MOOCs?
- Do you believe your university has been aiming to become more digitized and thus reaching the goal by offering MOOCs, or was a MOOC something that you did not want to miss out on?

**Prior experience**
- What were your relevant competencies/experiences before launching a MOOC?

**Personal innovativeness**
- How do you believe MOOC will affect your role at the university?
- What new skills do you think has been developed within the organization during this period?
- What part of the whole process went more difficult than expected?
- Do you believe that MOOCs can transform Swedish higher education system? In what way?
- Do you see MOOCs as a short-term experiment or rather a long-term strategy?
- Where do you see MOOCs in 5 years in Sweden?
- What challenges/problems do you see in the future?
- Do you believe that MOOCs can improve teaching techniques? In what way?

**Managerial support**
- Have you received support from the platform supplier?
- Which support did you receive from the university?
- Did you have many meetings with the group?
• How much time have you dedicated to developing a MOOC?
• What were your expectations with the project, participant professors, engagement, partnership?
• What are your experience of all the participants in this project, have the feeling been positive or reluctant, has there been a need for persuasion?
• Did you get enough financial resources?

Training
• What type of training activities have been offered?
• Where there any challenges within the team?
• What difficulties did you experience during the development of MOOC?

Incentives
• What new competencies has been developed during this period?
• Were you provided with any reward upon delivering the course, ie. Bonus?
• Have you received much recognition or appreciation from the management for the amount of work spent on MOOCs?
• Has there been a need to motivate teachers?
• Where some more convinced of the advantages of MOOCs?
• What benefits have you seen in the MOOC project?

Knowledge diffusion
• Did you collaborate with any universities in developing the MOOC?
• What are your plans in sharing the expertise and knowledge gained from this project?
• How was the collaboration between you and your colleagues?