INTRODUCTION

In its Commission Work Program 2013, the European Commission (2012) states that:

Education and training systems are not keeping up with changing labour market needs – resulting in shortages in key areas like science, mathematics and e-skills. Higher education is not sufficiently connected to research and innovation activities and is slow to build capacity in areas like ICT – which both reflects and contributes to a lack of internationalization. Life-long learning is still developing, and public policy and business practices do not reflect the need for older workers to extend their working careers. (p. 7)

The European Commission has funded a number of successful R&D projects focused on mobile learning. Additionally, several EU countries (e.g., Denmark, The Netherlands, and UK) have supported the used of mobile learning in schools and universities.

KNOWLEDGE, NEW LABOUR MARKET, AND UNIVERSITIES

A key debate is why do some companies gain a long-term competitive advantage and others do not. The resources and capacities theory states that it is the heterogeneity of resources within the companies and their imperfect mobility, which helps to explain the sustained differences in the profitability observed. Intangible resources, such as knowledge, present these characteristics (Crook, Ketchen, Combs, & Todd, 2008; Helfat, Finkelstein, Mitchell, Peteraf, Singh, Teece, & Winter, 2009; King, 2007; Lockett, Thompson, & Morgenstern, 2009; Newbert, 2008; Peteraf & Barney, 2003).

Literature states that resources and capacities are heterogeneous among firms, that is, resources that nourish the production process of an industry are distributed among the firms that form it in a heterogeneous way. Resources heterogeneity inside one industry is explained in this theory context by the lack of higher resources. In addition, they must be durable in order to enable a long-term competitive advantage. If they depreciate rapidly, the incomes generated will be squandered shortly (Barney, 1991;
Peteraf, 1993). Moreover, there must be limits to the ex-post competence so that rival firms cannot easily substitute or imitate critical resources (Grant, 1991). On the one hand, the absence of substitute products diminishes the importance of competitive pressures. On the other hand, several factors called “isolating mechanisms” avoid, limit, or delay the capacity of copying critical resources and thus protect firms from imitation and keep their incomes flow. Some examples of these isolating mechanisms can be causal ambiguity, the time-understanding diseconomies, efficiency of large-scale resources, inter-connections or interrelations between resources’ stocks or resources’ erosion (Dierickx & Cool, 1989a, 1989b; Lippman & Rumelt, 1982).

Finally, the possession of resources that competing companies cannot imitate or substitute is not a sufficient condition to achieve a sustainable competitive advantage. Therefore, the existence of limits to mobility becomes necessary. The resources immobility presents two levels: perfect or imperfect immobility. Perfect immobility means that these resources cannot be marketed, as in the case of idiosyncratic resources that lack an alternative use out of the firm. However, imperfectly immobile resources are marketable although their value inside the firm that uses them at that moment is higher than the value they would have in another firm.

Knowledge within companies, organisations, and nations are intangible resources. These resources constitute their knowledge-based resources, which, despite contributing towards the creation of value within the company, are not reflected in its economic-financial statements. For example, the value to a Spanish company of a business relationship with a strategic partner in Myanmar or the knowledge of an employee with working experience in Tajikistan.

A typology of knowledge-based resources (intellectual capital) differentiates between human capital, relational capital, and structural capital. The essential components of human capital are the skills and knowledge of the company’s employees. The scope of human capital is internal and resides in the mind of the employee, which makes it difficult to codify. Relational capital refers to the flows of knowledge between individuals within a network and, therefore, includes the knowledge present in the relationships established with the environment, both internal and external. The first group would contain the relationships between company employees, managers, and shareholders. The second group would consist of the relationships developed by the company with customers, suppliers, competitors, public administrations, and other interest groups. Finally, structural capital represents the knowledge that remains behind in the company when the employees have finished their working day, in other words it is that knowledge that does not depend on certain individuals or specific relationships but belongs to the company (for example, organisational routines, strategies, and organisational culture) (Ordóñez de Pablos, 2012).

Managers must know what knowledge types exist in their companies and organisations and where each of these is located. To ensure this, it is necessary to measure the existing intellectual capital within companies, draw up organisational knowledge maps, and compile intellectual capital reports.

The European Commission makes special mention of the strategic role played by the knowledge triangle—education, research, and innovation—in regional economic and social development. Universities and research centres are an essential pillar of the knowledge society.

According to OECD (2008), tertiary education policy is increasingly important on national agendas as it is a major driver of economic competitiveness in an increasingly knowledge-driven global economy. Countries must raise higher-level employment skills to sustain a globally competitive research base and to improve knowledge dissemination in societies.
Education contributes both to social and economic development through four major missions:

- The formation of human capital (primarily through teaching);
- The building of knowledge bases (primarily through research and knowledge development);
- The dissemination and use of knowledge (primarily through interactions with knowledge users); and
- The maintenance of knowledge (inter-generational storage and transmission of knowledge).

The “Education and Training” chapter of the European Commission states that:

…open and flexible learning is about fully exploring the potential of ICT to improve education and training systems, aligning them with the current digital world. ICT tools, Open Educational Resources, and open practices allow for an increase in the effectiveness of education, allowing for more personalised learning, a better learning experience, and an improved use of resources. Such measures also promote equity by increasing the availability of knowledge. Ultimately, opening up education may lead to a situation where all individuals may learn anytime, anywhere, with the support of anyone, using any device. (European Commission, 2014)

The European Commission (2008) describes nine possible actions for responding to the challenges and obstacles facing universities today, in a context of modernisation and international crisis, and for achieving the objectives of the Lisbon Agenda, identified by the European Commission in its Communication of 2006, “Delivering on the Modernization Agenda for Universities: Education, Research, and Innovation.” These reforms can be grouped into three principal areas: curricular reform, university governance, and research and innovation. These nine actions are the following:

1. Break down the barriers around universities in Europe
2. Ensure real autonomy and accountability for universities
3. Provide incentives for agreements with the universities
4. Provide the right mix of skills and competencies for the labour market
5. Reduce the funding gap and make funding work more effectively in education and research
6. Enhance interdisciplinarity and transdisciplinarity
7. Activate knowledge through interaction with society
8. Reward excellence
9. Make the European higher education area and the European research area more visible and attractive in the world

In the knowledge economy and society, there are four basic interdependent elements: 1) the production of new knowledge, 2) the transmission of knowledge through education and training, 3) the dissemination of knowledge via new information and communications technologies, and lastly, 4) the use of knowledge through new services or industrial processes. In all these actions, the universities and research centres are key players with respect to achieving success.
Universities perform their activity within a globalised competitive environment and compete with each other to attract and retain the best possible human capital whilst at the same time competing for funding. They also face the risk of losing knowledge, for example, when a researcher with a solid international career decides to leave and go to another university because the remunerative conditions or career development opportunities do not fulfil expectations (Blackman & Kennedy, 2009).

The evolution of information technologies, mobile devices, and social media, as well as the needs of students, workers, and academics has experienced rapid changes in the past several years. This complex and dynamic reality requires new forms of delivery of learning content to students, the building of special learning environments, and new teaching methodologies for academics. Old teaching practices (from the building of teaching materials to the evaluation processes and tutorial services) need to be adapted to provide customized and context-adapted learning opportunities. There are drivers, barriers, and success factors within distance and mobile learning devices and systems that need to be explored and tested, such as widespread availability and/or the lack of policy support.

CONTENTS OF THE BOOK

The purpose of this book is to analyze the role and challenges of distance and mobile learning in higher education today. The book will focus on real experiences of higher education institutions and academics implementing distance and mobile education courses.

The book presents a collection of 14 chapters that addresses different key topics from distance learning, education challenges, and mobile learning to life-long learning, role of faculty, virtual universities. Now, we will briefly describe the contents of each chapter.

Chapter 1 (“Distance Learning in Architecture/Planning Education: A Case Study in the Faculty of Architecture at Selcuk University,” by H. Filiz Alkan Meshur and Havva Alkan Bala) states that creating alternative learning environments within present architectural education systems results in significant added value to a student’s education. Architectural problems solved in an international context are more in-depth and layered than the conventional process. They also state that all the opportunities that modern education technology offers should be effectively used in order to provide higher quality education services to a larger and wider range of students. Turkish students could reach the SAIT’s planning and architectural accumulation by using ICT.

Chapter 2 (“A Comparative Study of Business and Engineering Students’ Attitude to Mobile Technologies in Distance Learning,” by Andreas Ahrens and Jelena Zaščerinska) discusses the findings of an empirical study that shows that both business and engineering students’ attitude to mobile technologies in distance learning within the institutionalized blended educational process of higher education is positive. Students’ positive attitude to mobile technologies in distance learning is considered as a favorable opportunity for the increase of the level of students’ knowledge and skills, as well as competence, in general.

Chapter 3 (“Using iPads in University Mathematics Classes: What Do the Students Think?” by Rim Gouia, Cindy Gunn, and Diana Audi) reports on two studies carried out with undergraduate students in first-year Mathematics classes. The first study investigates regular use of iPads over the course of one semester and compares the students’ performance in a traditional classroom and the iPad classroom. Overall, the students reported positive impressions regarding the use of iPads in their Mathematics classes. However, only 47% stated that they would join an iPad class in future semesters. The second study is a qualitative follow-up to the first to gather more information on why the majority of the students said they
would not join an iPad class in the future. This chapter further argues that although the use of technology has become the expected norm in higher education it is important to understand the students’ views on the use of technology, in the case of this chapter, iPads, before introducing any new technology in class. The students in the two studies could see both the value and the drawbacks that the use of iPads in their Mathematics classes would provide. The findings suggest that as supplement to instruction the use of iPads have the potential to enhance the learning process but classes delivered using iPads only would not meet the educational requirements or expectations of the study’s participants.

Chapter 4 (“Leveraging Asynchronous Online Instruction to Develop Elementary School Mathematics Teacher-Leaders,” by Drew Polly) provides the theoretical framework of learner-centered professional development and explains how the six courses in the program embody the framework and support teachers’ development of knowledge and skills related to mathematics teaching and learning. The author, Drew Polly, shares the findings of a study that evaluated teacher-leaders performance on five student-learning outcomes in the program as well as feedback on course evaluations and end-of-program surveys. Data analysis indicated that every teacher-leader demonstrated proficiency on each student-learning outcome. Implications for the design of asynchronous online programs are also shared.

Chapter 5 (“Evaluation of Mobile Learning Project at the UAE University: College of Engineering Case Study,” by Mousa. I. Hussein) states that results from faculty and students’ surveys identified that IT-based learning and laptops are valuable tools in the education process and are convinced that they contributed significantly to the improvement of the learning process. However, the effective implementation of learning technologies in general and laptops in particular requires a preliminary framework of infrastructure and faculty development for blended learning. To enhance teaching with laptops and to improve student outcomes, it is indispensable to take a close look at existing course curricula and pedagogical strategies to create a meaningful teaching and learning environment. The author believes that the use of laptop in the classroom is discipline and course specific. Faculty needs to find ways to implement different technologies (not necessarily laptop) to assist students to better understand difficult concepts more easily, to expand classroom discussion and to better integrate classroom theory with laboratory experimentation.

Chapter 6 (“Challenges and Opportunities for Virtual Universities in the 21st century,” by Luísa Margarida Cagica Carvalho) addresses the importance of virtual universities, the advantages and challenges on the global education market in 21st century, and also presents the case of the Portuguese virtual university, Open University of Lisbon, as a complement to the theoretical approach.

Chapter 7 (“Promoting Interaction in an Asynchronous E-Learning Environment,” by Maria Pavlis Korres) analyzes the various ways an e-learning environment can promote interaction among participants by using the appropriate communication tools and presents the results of a pilot e-learning course, confirming that different types of interaction can be promoted at a high level in an online environment.

Chapter 8 (“M-Learning in the Middle East: The Case of Bahrain,” by Evangelia Marinakou and Charalampos Giousmpasoglou) studies the adoption of m-learning at universities in the Kingdom of Bahrain, as well as the relevant current developments and challenges related to the major stakeholders (educators and students) in higher education. It mainly investigates the educators’ views and perceptions of m-learning, as well as its future potential in higher education. Most of the educators use m-learning tools to some limited extent, and there is still opportunity to reach full integration with curriculum and the blended learning approach. Further, it is proposed that professional development should be provided to instructors to enable them to use the available new technologies in an appropriate and effective way.
Chapter 9 (“Mobile Education Mitigating the Heavy Magnitude of Illiteracy in India,” by Kshama Pandey and K. C. Vashishtha) states that advances in technology during the past decade have created a worldwide boom in the sale of this kind of technology, permitting private individuals to enjoy personal, mobile wireless connectivity. The widespread ownership of mobile technology in the form of mobile phones, especially among young people, has created opportunities and challenges for educators.

Chapter 10 (“The Role of Internet Technology in Higher Education: A Complex Responsive Systems Paradigm,” by Robert J. Blomme) shows that learning can be facilitated when Internet Technology is used to increase the quality of interaction between organizational members, leading to the Social Act. As is widely agreed upon, modern Internet Technology can be used to set up information portals, e-learning possibilities, and social media tools. In view of the perspective on organizational learning reported in this chapter, the added value of Internet Technology likely lies in the use of social media and interactive portals which promote responses and interactions and which facilitate the speedy delivery of feedback. Finally, the authors concludes that Internet Technology may particularly contribute to learning when organizations are viewed as complex responsive systems. With the help of the insights developed through Mead’s and Stacey’s approaches, learning processes can be stimulated even better when people interact directly and when social acts are possible. Since the social act remains the major condition for learning and knowledge development, a final word of caution is needed here: effective face-to-face interaction can only partially be replaced by Internet Technology.

Chapter 11 (“Internet Technology and its Application in Competence Development of Highly Educated Staff: The Role of Transfer,” by Robert J. Blomme) discusses how Internet Technology can only partly be used as a means for competence development and aims to understand the assumptions underlying competencies, competence development, and transfer.

Chapter 12 (“Google Educational Apps as a Collaborative Learning Tool among Computer Science Learners,” by Vasileios Paliktoglou, Tasos Stylianou, and Jarkko Suhonen) describes a study to examine the reception of the students towards Google Educational Applications as used to support teamwork. The data was collected through pre- and post-Google Educational Collaborative Applications experience questionnaires and an interview. The authors conclude that social media, and more specifically Google Educational Applications, can support social-constructivist models of pedagogy and that Google Educational Applications (as social media tools) have the potential to play an important role in the future of learning environments. The study provides experimental evidence that the use of Google Educational Applications can increase student engagement, and thus, Google Educational Applications can be used as an educational tool to support teamwork.

Chapter 13 (“Factors Influencing Behavior of Selecting Touch Screen Mobile Phones,” by Muhammad Khaliq and Senorita Lokie Tunggau) analyze the influence of factors affecting on the behaviour intention of customers. The authors used perceived ease of use, perceived usefulness, and social influence as predictors, while behavioral intention was employed as dependent variable. A total of 260 participants were involved in this study. The participants were selected through non-probability sampling technique, namely Snow ball. The results of the empirical research suggest that students would only adopt touch screen mobile phones if they find their usefulness, thus the adoption rate of touch screen mobile phones will increase if the young generation finds that there are more practical benefits, compared to using traditional phones. The rational is possibly because of the fact that touch screen mobile phone are based on a new technology, contributing to the unique characteristic of touch screen mobile phones. Finally, social influence has a significant relationship with behaviour intention. The result shows that students would only adopt touch screen mobile phones if they find their usefulness, thus the adoption rate of
touch screen mobile phones will increase if the young generation finds that there are more practical benefits, compared to using traditional phones. The rationale is possibly because of the fact that touch screen mobile phone are based on a new technology, contributing to the unique characteristic of touch screen mobile phones. Finally, social influence has a significant relationship with behaviour intention.

The last chapter of the book, Chapter 14 (“Mobile Wireless Technologies Application in Education” by Maryam Haghshenas, Abouzar Sadeghzadeh, Roghayeh Shahbazi, and Mojtaba Nassiriyar), examines examples of mobile technology implementations in current education stages are then presented, such as mobile technology uses in higher education along with technologies used for early learners.

This collection of 14 chapters aims to provide comprehensive coverage and understanding of the learning processes, its complexities and challenges in the context of higher education, and the role of information technologies for mobile and distance learning. The chapters bring together researchers in the field of technology and higher education, both theoretical and practical contributions, to help readers in the development and dissemination of new approaches to both mobile and distance learning.

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