

A Survey on Knowledge Management in Universities in the QS Rankings: E-learning and MOOCs.

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Structured Abstract

Purpose—Many public organizations are employing Information Technology “IT” in Knowledge Management “KM” (Silwattananusarn and Tuamsuk, 2012; Alavi and Leidner, 2001; Chatti et al., 2007). Within universities, the use of IT could be an enabler to create and facilitate the development of knowledge (Joia, 2000; Garcia, 2007; Tian et al., 2009; Sandelands, 1997); to improve knowledge sharing (Aurelie Bechina Arntzen et al., 2009; Alavi and Gallupe, 2003); to develop communities of practice (Adams and Freeman, 2000). In the educational organizations IT is also a tool to improve the quality of learning (EC, 2000). E-learning is based on digital technologies (Aspen Institute Italy, 2014), through multiple teaching methods (Derouin et al., 2005), as tools for KM (Wild et al., 2002). The websites of some universities allows anyone to follow free lessons, through the internet. These types of free online courses are known as Massive Open Online Courses „MOOCs“ (EC, 2014; Sinclair et al., 2015). The purpose of this study is to verify the type of teaching adopted by European universities and understand how training through e-learning can improve the processes of transmission and sharing of knowledge allowing everyone, not only to students, to take lessons through the web.

Design/methodology/approach—The analysis allows detecting data on universities by region through the study of the websites of the top 100 European universities present in a ranking called Quacquarelli Symonds, “QS World University Rankings 2015/16”. The method used to collect the data was marked by the creation of a specific database in which are inserted, for each university, different information: status (public/private), size, age, number of enrolled students, references on websites. In this Excel spreadsheet was also taken into account the type of educational offer provided by each university, with particular reference to the provision of online courses and courses open to all.

Originality/value—The article aims to provide a detailed study on the use of technology in the educational context. The exploration allows you to design, within other universities unranked, styles of teaching online to share knowledge.

Practical implications–The survey, currently, is the first step of a larger project which aims to analyse the different types of e-learning platforms used by 100 universities in the European rankings QS to make teaching online. From the results of this first phase, it has emerged that all the surveyed European universities provide training not only through classroom lessons, but also with a variety of courses through e-learning even for free through MOOCs.

Keywords–Knowledge Management, Universities, E-Learning, MOOCs.

Paper type–Academic research paper.

1 Introduction

The Knowledge management “KM”, according to a systemic approach and organizational, is a process, characterized by creation, use, storage, sharing, transfer and retrieval of knowledge, which aims to improve the performance of an organization (Aurelie Bechina Arntzen et al., 2009). Hansen et al. (1999) argue that it is possible to define two strategies to implement the KM: one focused on the technology called „codification strategy”, in which knowledge is carefully codified and stored in databases, and the other closely linked to the role of individuals „personalization strategy“ which is shared mainly through direct person-to-person contacts. Nonaka and Takeuchi (1997) argue that the use of information and communication networks in organizations facilitate, within the combining process, the conversion of knowledge.

IT in universities is a tool to improve the quality of learning (EC, 2000), to redefine some of the strategies and concepts of teaching and learning (Klimov, 2012), to allow evolving from traditional forms of learning in e-learning. (Alkhalaf et al., 2012). Elearning is in fact based on digital technologies and is spread through the web (Aspen Institute Italy, 2014), through multiple teaching methods (Derouin et al., 2005), to deliver and distribute learning through education and training programs (Esposito and Mantese, 2003), as KM tools (Wild et al., 2002).

The purpose of the study is to examine how learning through the network (e-learning) adopted by the European universities can facilitate transmission processes and knowledge sharing.

The article aims to provide a detailed study on the use of technology in the educational context. The survey, currently, is the first step of a larger project which aims to analyse the different types of e-learning platforms used by 100 universities in the European rankings QS to make teaching online.

The paper is organized as follows: some preliminary considerations; exhibition on the research method adopted; show the main results obtained and discussion; conclusions.

2 Some preliminary considerations

Development of the Internet and its applications have led to an increase of the computer in the learning process (Oproiu, 2015). This is the reason why educational institutions have an increasing need to use virtual learning environments “VLE”, namely the e-learning platforms that accompany the traditional teaching-learning process, through e-learning. The EC (2001) defines e-learning as „*The use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration*”. Holmes and Gardner (2006) consider e-learning simply as a „*Online access to resources for learning anytime, anywhere*“. Alkhalaf et al. (2012) state that the term E-learning refers to a type of education and learning system in which time, distance, or both physically separate students and teachers. This separation is filled with the help of communication technology, including the Internet and emerging educational technologies. E-learning is understood by Clark and Mayer (2011) as an instruction given on a digital device, such as computer or mobile device, which is designed to support learning, through education and training programs (Esposito, and Mantese, 2003), delivering training content electronically through computer based learning, Web-based learning and virtual classrooms (Asfor Glossary, 2007). In fact, develop an e-learning system means increasing an integrated training environment using network technologies to design, deploy, select, manage and expand the resources for learning. The most frequently used methods for achieving this integration are: the asynchronous self-learning through the use of pre-packaged content available on the delivery platform; synchronous learning through the use of video conferencing and virtual classrooms; collaborative learning through the activities of virtual learning communities. According to Garrison (2011) e-learning is an electronically mediated communication asynchronous and synchronous with the aim to build knowledge. Guri-Rosenblit (2005) states that E-learning is “*A new phenomenon and relates to the use of electronic media for a variety of learning purposes that range from add-on functions in conventional classrooms to full substitution for the face-to-face meetings by online encounters*”.

Nacamulli (2003) asserts that the e-learning includes the processes of training, learning and KM enabled by the Internet (network). The e-learning relates more specifically, the processes of transmission, exchange and development of knowledge among individuals, groups and organizations. E-learning can be used as an important tool for KM (Wild et al., 2002). E-learning allows participants to gain new insights.

The use of groupware, work-flow systems, communications via email, chat rooms, work spaces, discussion rooms, forums and message boards help students create knowledge through collaboration (Lau and Tsui, 2009). Students share ideas during social interactions and all that translate into the transfer of knowledge through the stages of outsourcing and internalization of knowledge. Learning is actually highly social activity and the implementation of electronic social interaction helps students gain knowledge exchange through socialization.

Barker (2005) states that knowledge sharing can be done in two basic ways: by going to the various artifacts of knowledge storage (such as books, websites and experts) or through the creation of a community of practice.

Zemsky and Massy (2004) identify three different definitions of e-learning: (1) as distance learning via the Web; (2) as a set of software for organizing online courses and present materials; (3) as learning electronically mediated.

(1) The term e-learning is often used interchangeably with that of distance education (Holsapple, and Lee-Post, 2006). Guri-Rosenblit, (2005), however, says that training at a distance, by its very definition means the physical separation of the learner by the teacher, differs from e-learning for three reasons. (a) Physical separation between teacher and student, in distance learning, occurs in some stages of the learning process. The new technologies offer, instead, a rich plethora of uses of learning and teaching processes; (b) A second distinctive feature of distance education is its focus on the needs of specific clientele who for various reasons cannot participate in a face to face meeting, a school or a conventional campus. (c) A third important feature of distance education at the university level in recent decades has been its ability to expand access to higher education by providing economies of scale.

(2) E-learning includes a wide range of instruments that are used for distribution, presentation and transfer of educational content (Klement et al., 2015). Internet Based Training “IBT” consider all network technologies such as email and newsgroups, the contents of which cannot necessarily be distributed via the web. (Esposito and Mantese, 2003). Web Based Training “WBT” allows the distribution of educational and training content through a web browser (Internet Explorer, Firefox) on the public Internet, extranet. Learning Management System “LMS” is a software platform that allows the management of both Internet and in intranet in the training process. The Learning Content Management System “LCMS” is a software solution that should change some of the management functionality of an LMS with those needed to create, manage, store with ease and simplicity the content of the training courses. LMS represents a virtual environment ,class` consists of tutorials, quizzes, study instructions, exercise plans or discussion forum (Klement et al., 2015).

(3) The third e-Learning category turns attention to learning materials themselves, rather than their distribution (Zemsky and Massy, 2004). Despite their seemingly diffuse nature, what all of these products and resources have in common is that they involve being mediated electronically and that learning in a digital format is interactive. According to Sangrà et al. (2012) definitions emerged in the literature on e-learning can be grouped into four categories.

- *Technology-Driven*: the definitions of this first category emphasize the technological aspects of e-learning, while presenting the rest of its characteristics as a secondary.
- *Delivery-System-Oriented*: this second category presents e-learning as a means of access to knowledge (through learning, teaching, or training). In other words, the focus of these definitions is the accessibility of resources and not the results of any achievements.
- *Communication-Oriented*: This third category consider the e-learning is a communication, interaction, and collaboration tool and assigns secondary roles for its other aspects and features.
- *Educational-Oriented Paradigm*: this fourth category defines e-learning as a new way of learning or as an improvement on an existing educational paradigm.

In table 1 were classified in the above categories, the main definitions of e-learning studied in this paper.

Recent studies analyse different aspects of e-learning in universities in Europe and beyond. Castillo-Merino and Serradell-Lopez (2014) dwell on how students enrolled in courses via the web are more motivated and achieve the high performance, achieving better grades when they carried out examinations than students who attend the university campus. Yilmaz et al. (2016) examine how motivation, in the e-learning process, it is considered an important factor in student learning. Alkhafat et al. (2012) have shown that the use of e-learning services, in universities, allow you to provide basic information and also help students to take important decisions effective and precise, thus increasing the overall productivity of the process of teaching and learning. Huang et al. (2012) states that, unlike traditional classroom teaching, e-learning has the intrinsic limitation of being able to provide an interactive feedback. A mixed mode - the integration of e-learning in a traditional classroom setting - seems to be a more reasonable solution. The authors refer to the mixed approach in e-learning "MMEL". MMEL is a kind of mixed or hybrid learning that integrates online learning and the classroom, to improve learning efficiency. Lin and Wang (2012) argue that the Blended learning combines two teaching methods: the face to-face teaching in the classroom and e-learning-based teaching platform based on web. Students can use the e-learning system for the recovery of teaching materials and to

obtain information about the course directly by the teacher. Masud (2016) states that any e-learning system can be considered as a closed system, as it allows the access of learning materials only to users registered at the university. The current e-learning systems do not allow a user to access the e-learning content in other systems, even if the user has the cooperation with other institutions. A collaborative e-learning environment facilitates the sharing and access to e-learning content (e.g. handouts, videoconferencing, audio, text, the testing samples, discussion, etc.) between users (i.e. teachers, students and researchers) in different systems.

Table 1: The classification of the main definitions of E-learning.

No.	Category	Definitions of E-Learning	References
1	Technology-Driven	<ul style="list-style-type: none"> - Online access to resources for learning anytime, anywhere. - The use of electronic media for a variety of learning purposes. - Processes of distance teaching / learning based on digital technologies and, in most cases, distributed via the web. - As distance learning via the web; as a set of software; as learning electronically mediated. 	<p>Holmes and Gardner, 2006</p> <p>Guri-Rosenblit, 2005</p> <p>Aspen Institute Italy, 2014</p> <p>Zemsky and Massy, 2004</p>
2	Delivery-System-Oriented	<ul style="list-style-type: none"> - Instruction delivered on a digital device such as a computer or mobile device to support learning. - A powerful tool for delivering many and varied instructional technologies and methods. - Educational methodology that offers the possibility of deliver training content electronically (e-learning) over the Internet or intranets. 	<p>Clark and Mayer, 2011</p> <p>DeRouin et al., 2005</p> <p>Asfor Glossary, 2007</p>
3	Communication-Oriented	<ul style="list-style-type: none"> - A type of education and learning system in which time, distance, or both physically separate students and teachers - An electronically mediated communication asynchronous and synchronous with the aim to build knowledge. 	<p>Alkhalaf et al., 2012</p> <p>Garrison, 2011</p>
4	Educational-Paradigm-Oriented	<ul style="list-style-type: none"> - The use of new multimedia technologies and the Internet to improve the quality of learning. - All those tools and processes that are realized with the use of IT and not, to deliver and distribute learning through education and training programs. 	<p>EC, 2001</p> <p>Esposito and Mantese, 2003</p>

Source: Adapted by Sangrà et al. (2012)

Some universities offer courses via the web not only to students enrolled at the university, but also to other parties, non-members, free of charge. These types of free online courses that are offered by the universities are known as Massive Open Online Courses “MOOCs”. MOOCs are, in fact, online courses open to all without restrictions (free of charge and without a frequency limit), usually structured on a set of learning objectives (EC, 2014). A MOOC is an online course with the possibility of free and open registration (McAuley et al., 2010), from any geographical location and

without the need to meet the formal entry requirements (Sinclair et al., 2015). Course participants form a learning network and support the knowledge that is provided not only by experts, but also by all the supporting members of the same community.

3 Methodology

The survey was implemented through the acquisition of documentary information found on the internet, (Corbetta, 2014). Were taken into consideration the activities carried out by different universities through the analysis of their websites. It was adopted this method, compared to others, since it was considered more convenient, in order to obtain quantitative data on European universities in a short time.

The investigation, in particular, was carried out by examining the websites of the top 100 European universities in a ranking, which allows you to collect data on universities by region. An international ranking was used called Quacquarelli Symonds, better known as the QS World University Rankings 2015/16. This ranking detects the first 800 universities worldwide that have distinguished themselves in four areas: research, teaching, employability and internationalization (ANVUR, 2014).

For every university it has been given a final score, based on detection of six indicators related to performance. (1) The first indicator is the academic reputation, which is measured through a survey in which academics are invited to identify the institutions in which it is carried out for the best job in their field of expertise. (2) The reputation of the employer is based on a survey in which it asks for employers to identify the universities that are able to offer a better preparation. (3) The student ratio and faculty determines the number of academic staff employed compared to the number of enrolled students. (4)The citations per faculty aim to assess the impact of the research in universities and collect information using Scopus, the largest database in the world of abstracts and research citations. Must be counted, finally, (5) the proportion of international faculty and (6) proportion of international students that indicate the number of teachers or existing international students in the universities.

The specific ranking, which was used for this study focused only and exclusively the top 100 universities, found by geographic area, by including in the website drop-down list „QS World University ranking 2015/16“ the word „Europe“. It was selected this ranking than others, because it allowed to perform, in a simple, research of universities by region. The method used to collect the data was marked by the creation of a specific database in which are inserted, for each university, different information i.e. those relating to the status (public/private), size, age, number of

enrolled students and references on websites. In this Excel spreadsheet was also taken into account the type of educational offer provided by each university, with special reference to the training practices through technology platforms, with the delivery of online courses and courses open to all.

The research, in particular, made it possible to check for every single university in the presence of their website of appropriate e-learning platforms. The survey was carried out by placing on the homepage of each university in the box „find“ keywords: „E-learning“, „MOOCs“, „Online Courses“ and „Distance Education“.

4 Results and Discussions

The analysis of the results, through the Excel spreadsheet, has identified the presence in the sample of the study of the elements referred to: status; size; age of each university, the number of enrolled students; references to websites.

In reference to the status of the universities, it has emerged presence of No. 97 public universities and only No. 03 private universities which are respectively (Ecole Normale Supérieure-Paris; Chalmers University of Technology, Université Catholique de Louvain „UCL“).

In reference to the size of the universities, the data collected have identified universities: extra-large, large, medium and small. (See table 2). No. 24 universities are extra-large with more than 30,000 students. No. 58 universities are large with fewer than 30,000 students. No. 14 University are medium and have less than 12,000 students enrolled. No. 04 are small universities with less than 5,000 students.

The universities that have less than 50 years of history are No. 05; No. 14 universities have less than 100 years; the rest of the universities, namely No. 81 universities, have over 100 years of history. (See table 3).

The analysis of the number of students within the 100 universities, showed that the University of Geneva has the fewest students enrolled (1,413). La Sapienza University of Rome has the largest number of students enrolled (115,304).

The 100 universities, according to the country of origin, are distinguished: No. 30 universities are in the United Kingdom; No. 14 are German; No. 12 of the Netherlands; No. 08 is the Swiss Confederation; No. 07 France; No. 05 Belgium and Sweden; No. 04 Spain; No. 03 Denmark and Italy; No. 02 Austria, Finland, Ireland and Norway; No. 01 Russia. (See Figure 1).

The study of the websites of 100 European universities present in the ranking it shows that training is provided not only in the classroom, but also with a variety of courses implemented through e-learning. These online courses are not intended only to students enrolled at the university, but also extended to other entities not registered, free of charge. The survey, currently, is the first step of a larger project. From the results of this first phase, it has emerged that European universities surveyed providing training not only through classroom lectures, but also with a variety of courses that are required by the web (E-learning) also in a free (MOOCs). The educational activities are provided at distance: with access restricted to members only (32%); with free access through MOOCs (22%); mode is reserved is free (46%)

The e-learning services provided by European universities are available and can be accessed by anyone through websites (62%). The remaining 38% of e-learning services are not available to everyone on the website of the universities and therefore must register to be able to consult their e-learning courses offered.

They have been selected, in this ranking, No. 06 European universities that adopt courses through e-learning, to examine the contents of the respective sites e-learning. It is possible to supply, currently, the data of No. 02 universities (Technische Universität Dresden “TU” and Ecole Normale Supérieure-Paris “ENS”) which were chosen for two criteria: university that belong to the European Union and different in size.

TU of Dresden is a public university, is among the extra-large universities, according to the ranking Qs, it has a number of students amounted to 36,284. This university has a website for managing courses through e-learning through the learning platform called OPAL (Online Platform for Academic Learning and Teaching) in which students and teachers can access by registering. This website provides manuals and other useful information, both for students and for academics, in order to easily use the service. The list of courses offered by e-learning, is not freely available, but it is only available to registered users on the platform.

The Ecole Normale Supérieure-Paris „ENS“ is a private university, has only No. 2,166 enrolled students and is among the smaller universities, according to the QS ranking. The ENS offers MOOCs courses through the platform called Coursera. It has a website where they are exposed all the courses that can be followed for free, all the information on these courses, programs of study and the names of teachers who hold them.

The study of methodology that was used, through the analysis of the websites of the universities, has the advantage of analysing the universities according to a predetermined parameter in the ranking „QS Rankings 2015/16“. This criterion has allowed to obtain the objectives and results devoid of evaluation subjective in analysis and in the choice of universities.

5 Conclusions

This research has allowed us to observe in a short time, through websites, the number of universities that adopt the e-learning platforms. The exploration, however, at present, has revealed, through the construction of a specific database, the presence in 100 universities in e-learning platforms that offer courses not only to enrolled students, but also for students not enrolled (MOOCs). The survey, at the same time, it does not have, in this phase, data from interviews to insiders, to understand how e-learning takes place in some universities selected in the same ranking.

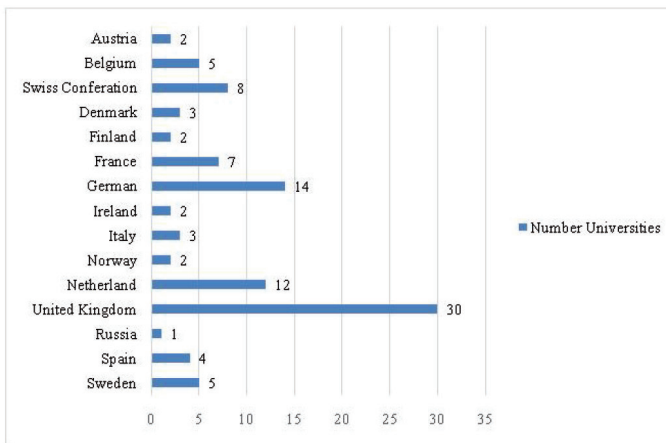


Figure 1: Number of Universities by country.

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