

University in Knowledge Society: Role and Challenges

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Abstract. The aim of this paper is to shed light on higher education in general, and enlighten challenges and changing role of university in the context of knowledge society. Knowledge society, primarily focused on knowledge production and generation of innovation in complex networks, is meeting continuous changes, mainly triggered by the rapid technological development. New technologies have significantly enhanced the production and dissemination of knowledge, the prerequisite of innovation. As universities have traditionally been the primary producers and disseminators of knowledge, and generators of innovations, the rapid technological development coupled with the recent economic and social changes is significantly affecting the role of universities. This being the case, universities will face multiple challenges implying notable reforms. Based on the above, the main assumption of this paper is that universities need to review their mission, and renew their methods and practices if they aim to maintain their traditional role of knowledge creators. This paper proposes that universities will have to embrace a new more social, and market-oriented role based on cooperation in diverse networks in order to be able to address economic concerns, enhance new ways of producing knowledge, and provide education and research that meets the needs of knowledge society that is expecting high quality research, and education that guarantees wide access to knowledge, continuous knowledge production, and equal opportunities to all for lifelong learning. The paper draws on previous literature in the field of higher education trying to answer two questions: How will universities meet the needs of knowledge society? Will universities maintain their traditional role as primary providers of higher education and as main knowledge creators?

Keywords: university, knowledge society, higher education, knowledge creation, ICT

1. Introduction

Over the past decades the role of universities has changed in most fundamental ways (Dunderstadt et al. 2005) due to the requirements of knowledge society where creation of knowledge, the foundation of innovation and development, plays a decisive role. It is widely acknowledged that within the framework of knowledge society, knowledge production and generation of innovation are seen as the primary contributors of economic and social development. In knowledge society research is conducted and knowledge created in complex global networks (Castells and Cardoso 2005) and knowledge alliances (Neubauer 2012) with the aim of enhancing knowledge production and making it more effective. This is putting pressures on universities that traditionally have assumed the role of main knowledge producers focusing on in-house knowledge creation. Consequently, in the context knowledge society, the traditional role of university may be seriously challenged. Although universities have previously been the leading producers of knowledge and innovation, there is no guarantee that they in knowledge society will be able to maintain such leading position. Accordingly, it is increasingly questioned, whether universities will have the capacity of continuously generating such new and relevant knowledge that today's knowledge society demands in order to enhance economic and social development. Knowledge society challenges higher education also because knowledge is increasingly created in multiple ways and by diverse organizations and institutions (Beerkens 2008) that in many respects differ from universities. Additionally, universities are challenged in economic terms as the global financial crisis followed by country-specific economic recessions gave rise to reductions in public funding and considerable cuts throughout entire educational systems. It has been widely noted that reduced public funding has not only affected teaching, administrative personnel, and educational facilities, but also limited students' opportunities to initiate academic career and possibilities to participate in lifelong learning.

Based on the above mentioned concerns, the main assumption of this paper is that the entire system of higher education and universities in particular, will have to push through significant changes concerning their mission as well as methods and practices in order to be able to develop new ways of providing high quality education, and enhance creation and dissemination of knowledge. Seen from wider perspective, such reforming will have to take place besides at

national, increasingly also at broader European level because knowledge is currently created through cooperation in wide knowledge networks. The second assumption arises from economic concerns. Facing today's stringent economic reality, without compromising the traditional role of primary educational and research institution, may turn out to be a great challenge to universities. Consequently, it is proposed that there is need for novel economically effective solutions that will facilitate provision of high quality education and new innovative ways to create knowledge and generate innovation. As it is widely noted that the current challenges, and the subsequent need for reforms, do not only rise from the economic environment, but also from the rapid technological development, the third assumption of this paper is that new educational methods and novel ways of knowledge production and generation of innovation will have to be based on and supported by effective application of new technologies. Consequently, universities will have to be able to introduce diverse technological applications for providing accurate knowledge and high quality education to a growing number of students and researchers. Furthermore, it is proposed that increasing collaboration between universities and other institutions and organizations as well as cooperation between researchers and experts from different fields, will be needed, because knowledge society is based on complex networks both local and global that facilitate new effective ways of knowledge production (Castells and Cardoso 2005). In consequence, the underlying assumption of this paper is that only by meeting new requirements and fulfilling diverse needs through adopting effective methods and practices, collaborating with varied stakeholders, and above all, by applying new technologies, will universities defend their traditional role of main knowledge producers and primary institutions of higher education in the context of knowledge society.

2. Context and Background

In recent decades, higher education has received heightened policy attention all over the world (Brennan and Naidoo 2007). Multiple changes that have taken place in the economic and technological environment of higher education have given rise to a knowledge society with focus on knowledge creation and continuous generation of innovation. Importantly, it has been noted that such changes may put pressures, imply challenges, and may even threaten the traditional role of universities. Consequently, the legitimacy and future prospects of higher education seem to lie in the center of the academic

discussion. One of the most debated questions seems to be if institutions of higher education and universities in particular, will be able to face the challenges knowledge society poses on them (Välilä, and Hoffman 2008). Knowledge society calls for increasing research, knowledge creation, generation of innovation, and high quality education that produces researchers, experts and knowledge workers (EACEA P9 Eurydice 2012). This being the case, universities will have to meet the multiple demands of knowledge society. In knowledge society, interconnections and interdependencies between higher education, society and economy are being widely acknowledged. Universities are more and more expected to contribute to the economic development and social well-being (e.g., Jongbloed 2007). Accordingly, in addition to providing public good i.e. education and research, higher education is currently also expected to enhance economic growth in collaboration with the private sector, industry and diverse other stakeholders (European Commission 2014), and contribute to the general wellbeing of society. There are also indications that public research may contribute to corporate research and development (R&D) improving the outcome of companies (Stephan 2012). Viewed from a broader perspective, higher education is regarded as important for the development of successful economies, as it provides opportunities for all those willing to participate in knowledge production and allows hence everyone to benefit from a successful economy (Brennan and Naidoo 2007). In consequence, higher education serves the interests of all by providing opportunities to everyone and, subsequently, waste of talent to the detriment of the economy is avoided (UNESCO 2009). Currently, higher education is considered to have a dual mandate as it promotes democracy, tolerance and social cohesion, as well as fuels economic development through the creation of knowledge and skills (OECD 2006). As for other important societal effects, institutions of higher education in general and universities in particular, aim at training experts and professionals, which is regarded as one of the main forms of interaction between higher education institutions and society. Such role is accentuated in knowledge society where particularly experts, professionals and knowledge workers are seen to enhance the economic and social development (Brennan and Naidoo 2007).

It is widely recognized, that while trying to meet the efficiency, research, and innovation-related demands of knowledge economy and knowledge society, public sector institutions have faced serious challenges while having to implement multiple reforms. This applies also to educational systems that are

expected to follow such reform-driven development. On the European level, it has been suggested that Europe should develop and improve higher education in order to become more competitive. One way of improving higher education is enhancing R&D. Through improved and increased R&D, Europe will gain competitive processes, products, and services. Enhancing R&D and improving generation of innovation means that Europe will have to increase the number researchers, and make changes in educational system. It is underscored that future jobs will require people with diversified and better skills. More concretely, if Europe aims at being competitive on the global stage, higher education will have to assume a central role in creating facilities for meeting the demands of knowledge society. It is also essential that Europe pursues a common agenda in order to be able to implement the full range of reforms needed for competing in a global knowledge economy. (EACEA P9 Eurydice 2012)

It is accentuated that while aiming to meet the future demand of highly skilled experts and professionals, Europe needs a growing body of graduates of higher education. Similarly, if the European states want to succeed in the global competition, and strive to build and sustain a competitive knowledge-based economy, well-trained, creative and dynamic researchers are warranted. Official estimates show that an additional one million researchers may be needed in Europe by 2020 to meet the R&D intensity target of 3 per cent of the GDP. Statistics also indicate that the demand for highly qualified people is predicted to rise by almost 16 million in the period up to 2020. (European Commission 2012). These estimates indicate that Europe should create a large pool of skilled researchers in order to facilitate future research, generate innovation, promote a knowledge-based economy, and challenge international competitors (DG Research and Innovation 2014). It is not to be doubted that this is a great challenge for the higher education not only at European, but also at national level.

To safeguard social and economic sustainability, the Commission proposed the Europe 2020 strategy. The strategy is to be conceived as a partnership between the EU and its Member States with the specific objective of launching smart, sustainable and inclusive growth that will improve the competitiveness of the EU while at the same time maintaining its social market economy model and improving significantly its resource efficiency. The strategy focuses on five interrelated headline targets in the areas of employment, research and development, climate change and energy, fight against poverty and social

exclusion, and education. The targets are to be achieved by 2020 (Europe 2020). What comes to enhancing education, the EU made known in 2005 by the Glasgow Declaration that Europe needs strong and creative universities as key actors for shaping the European knowledge society (Glasgow Declaration 2005). The knowledge society was to be achieved through the commitment of universities to wide participation and lifelong learning, and through the promotion of quality and excellence in teaching, learning, research and innovation (Conraths and Trusso 2007). Consequently, the European Commission started to formulate policy to promote innovation. It established a 10 point programme for action at national and European levels to foster innovation as a main asset of the EU economy. Similarly, the Lisbon strategy stated that the EU was by 2010 to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion (Lisbon Strategy 2000-2010). Interestingly, the Lisbon strategy goal for 2010 was articulated at the Lisbon European Council already in 2000 (European Commission 2010) which means that it had been acknowledged early that higher education plays a central role in the promotion of economic development through knowledge creation, innovation, training of professionals. It is maintained that while aiming at generating innovation, and heading towards knowledge society and economic progress, higher education will most probably meet challenges because generating innovation implies increased cooperation between academia and great number of diverse stakeholders. In order to face this kind of new situation, higher education will have to reform its traditional structures and practices (Keeling et al. 2007).

Drawn together, in the context of knowledge-based economy and knowledge society, creative universities that provide quality and excellence in teaching, learning, research and innovation, are called for at national, European and increasingly at global level. Specifically, the multiple rapid changes triggered by knowledge society imply significant reforms that require great adaptation, important modifications in the whole system of higher education, revision and renewal of mission, methods and practices and, particularly, implementation of new technological applications. In short, huge efforts are expected from the part of universities.

3. Knowledge Society

Although the ideas of knowledge society with knowledge-based economy

originate from the 1960s and 1970s, knowledge society became popular as a policy idea as late as at the end of the twentieth century, when both developed and less developed countries more decisively started to move towards a knowledge-based society (Beerkens 2008).

Knowledge society has been defined as an objective towards which both, nation states, regions and the global community should aim (Välimaa and Hoffman 2008) because it is maintained to facilitate economic growth and improve social wellbeing (Beerkens 2008). Consequently, because both developed and less developed countries pursue economic growth, primarily gained through innovation and knowledge, and because they want to increase social wellbeing, knowledge society accounts for the key framework. Such framework is linked to higher education because institutions of higher education have traditionally been regarded as the main producers of knowledge and providers of researchers and specialists. Accordingly, it is noted that higher education assumes an essential role in providing such teaching and research that generate knowledge needed for enhancing and strengthening innovative capacities of economies (Jongbloed et al. 2007). The requirements of knowledge society posed on universities as the primary research producers and educational institutions aimed at enhancing knowledge, generating innovation, and providing high quality teaching, are seen to imply diversified challenges because such role as principal knowledge creators, means reforming current structures, and adopting new processes and practices. Such efforts are, however, considered to be indispensable if universities aim to meet the demands of knowledge society. While previously autonomous and focused on their own sphere, in the context of knowledge society, universities are expected to create new knowledge in multiple and often complex ways as well as generate innovation that adds to economic, social and public value (OECD 2011). For this reason, higher education has to adapt to cooperation with industry and business in diversified joint projects. Such cooperation is seen to lead to improvements in innovation production and bring economic advantages for the whole society. This kind of intertwining development process is called Triple Helix referring to the close cooperation with the three central constituents of the knowledge society; governments, industry, and business (European Science Foundation. 2007). Similarly, knowledge society implies that institutions of higher education collaborate with increasing number and variety of other societal stakeholders. This calls for adoption and implementation of new practices and working methods which, in turn, imply to substantial reforms in

the whole system of higher education. Nevertheless, such reforms are required if the institutions of higher education aim at contributing to knowledge society and the subsequent economic growth and social development (e.g., Jongbloed et al.2007). Consequently, there is no doubt that in knowledge society universities are important as mediums on the way towards global knowledge economies (Välilmaa and Hoffman 2008) that demand to create and disseminate of knowledge, generate innovation, and educate experts, knowledge workers and researchers (Brennan and Naidoo 2007). Importantly, it is noted that universities are needed not only for facilitating knowledge and information, but enhancing continuous flows of technologies, products, financial capital, and people (Marginson 2006 in Välilmaa and Hoffman 2008). It is underscored that in the era of globalization, knowledge is seen to produce wealth and even power (Brinkley, 2006) making knowledge production and dissemination a crucial issue not just in economic, but increasingly also in political and social terms. It is also maintained that globalization means widening, deepening and speeding up of worldwide interconnectedness (Held et al. 2007) achieved mainly through technological development. Novel technological solutions advance joint knowledge production and its rapid diffusion on national as well as on the global level bringing about great advances in research. Importantly hence, research is regarded as an integral contributor in a country's economic competitiveness (OECD, 2008). For this reason, universities will have to strengthen their role as the main research centers with clear focus on knowledge production and generation of innovation. It is contended that while knowledge society has been regarded as multi-dimensional, and often debated and contested topic in the post-modern globalized world (Välilmaa and Hoffman 2008), higher education seems to assume more definite, though changing, role in the development of global information societies. Nevertheless, notwithstanding the multiple dimensions and contested claims, it is widely acknowledged that that knowledge society has crucial impact on the growth of economies and development of societies (Jongbloed et al.2007).

Drawn together, universities seem to be facing great challenges when trying to respond to multiple expectations of knowledge society. In knowledge society governments, industry and business as well as society in general are putting increasing pressures on universities while expecting them to assume a more diverse role in addition to maintaining its focus on research and education. This being the case, it is argued in this paper that higher education will have to strengthen its role as the main educational institution, research center and

knowledge producer in the global knowledge society. Without reforms that enhance knowledge production and facilitate the generation of innovation in collaboration with industry, business, and other societal stakeholders, it may be difficult for universities to meet increasing needs of knowledge society.

Besides of being the prerequisite of knowledge society, knowledge production is increasingly regarded as a benchmark of national performance in developed as well as in less developed countries (Beerkens 2008) accentuating the importance of universities in creating value through knowledge and innovation and education on national level.

4. Challenges

It is generally noted that, in recent decades debates in the field the higher education have to great extent focused on the multiple challenges universities are facing. The greatest challenge seem to be related to the fact that that university as a knowledge institution is currently losing, and will probably increasingly lose, its monopoly in knowledge production. Such change in the role of university is taking place, because knowledge may be produced in diverse institutions and organizations (Meek 2003) outside the academia such as think tanks, commercial labs, consultancy companies, market research organizations, foundations, government bodies, patients' groups, various NGOs, trade associations, interest groups, and because new and even unthinkable actors can launch services that normally belong to the sphere of higher education (Havas 2012, cited in Curaj et al., 2012).

Sector-specific challenges

Higher education has often been categorized as a standalone sector, not directly comparable with other types of organizations (Välilmaa and Hoffman 2008), and was during a long time regarded as a specific sector of state intervention because education and research represented public goods provided by the public sector with public resources. For this reason, implementation of specific policies and application of instruments by public authorities was justified. Nevertheless, as time passed, steering and governance of universities was transferred to academics, reflecting Mertonian sociology of sciences according to which the state ensured the autonomy of higher education and science (Ferlie et al. 2008). Due to such autonomy, higher education has been able to focus on the issues it has held as relevant without significant state intervention. It is maintained, though, that European universities have long been dependent on the state for funding with the consequence that states have been

concerned about the regulation and behavior of the universities. States have also wanted to have a say in the administration of universities because they provide public good and, subsequently, have significant impact on the life chances of all citizens. As a result, universities are more and more characterized as institutions with a mix of professional and bureaucratic elements and operate within strongly structured institutionalized fields. (Ferlie et al. 2008)

In sum, the system of higher education, and universities in particular, have been facing administrative challenges due to varying policies reflecting the changing political and social context. However, not only sector-specific and organizational factors pose challenges on universities but also wider objectives of unification.

Challenges of unification

It is generally acknowledged that the wide development process of higher education on European level has been a great challenge with diversified actors and great body of institutions implied in the process. In recent decades, within such wider process joint European educational programmes enhancing knowledge society have been completed. The Bologna Process initiated joint reforms of higher education on European level (European Commission 2014). It has been considered as the most significant of the Union level educational programmes (Keeling 2006) The Bologna Process can be characterized as an intergovernmental commitment to restructure higher education systems (Keeling 2006). The primary aim of the Bologna Process was to reduce certain differences regarding the systems and institutions of higher education between European countries (Denekens 2003). Such goal has been reached. Thorough the implementation of the Bologna Process, the degree of convergence and unification of the European higher education systems have increased (Veiga 2012). In broader terms, the Bologna Process has provided a common framework for reforming and modernizing higher education systems. Following the Bologna Process, the next important attempt to restructure higher education was the Lisbon Strategy. The Lisbon Strategy is part of the European Union's wider economic platform including apart from higher education also other sectors mentioned in the Strategy The Bologna Process was essential for the development of European higher education because of the changes it has induced in the local, national, and even in the global environment It has contributed to making university qualifications more easily comparable across Europe (Keeling 2006). The European Credit Transfer and Accumulation System (ECTS) (http://ec.europa.eu/education/ects/ects_en.htm) has been a

central element in the process of making European higher education more transparent and understandable. In addition to the ECTS, the other main Bologna tools, the Diploma Supplement, and National Qualification Frameworks (The European Union and the Commission 2006) have increased and improved cooperation of European higher education institutions in essential way. The Bologna Process has also provided an empirical window into the globalization of higher education (Keeling 2006) and a space for the discussion, negotiation and coordination of the common parameters of European higher education. Similarly, the Bologna process has also connected European ministries, higher education institutions and their partners (Zaga 2012 cited in Curaj et al 2012), which, in turn has contributed to the establishment of the European Higher Education Area (EHEA) that was to be achieved by 2010. The EHEA was important because European higher education was facing a rapidly changing context, and because there was great need for addressing the future demands of higher education (The European Union and the Commission 2006). The EHEA provided a common agora both for joint higher education policy development and for higher education analyses and research (Zaga 2012 in Curaj et al. 2012). Thus, not only European but also global higher education discussion was reinforced. In more specific terms, the EHEA accounted for a policy goal defined by national ministers in charge of education (Veiga 2012). By establishing the EHEA, the signatories committed themselves to coordinate their higher education policies with the aim of increasing the international competitiveness of the European higher education system; to enhance cooperation between universities in order to help the universities to develop their potential, and to favor student mobility improving access to various kinds of study programmes (Malan 2004).

The Bologna Process and the following educational policies were mainly triggered by the fact that higher education should adapt to the challenging global context of knowledge economy and knowledge society. In such context, Europe was to assume the legitimate ambition of strengthening and reforming its higher education institutions. The reform process was to facilitate the social and economic development of the European society (EACEA P9 Eurydice 2009) through the Unions pursuit towards knowledge society and knowledge-based economy. The reforms can be understood in terms of a shift from Mode 1 knowledge, namely knowledge produced within autonomous disciplinary context governed mainly by academic interests of a specific community, to Mode 2 knowledge i.e. knowledge that is trans-disciplinary, heterogeneous,

more socially accountable and reflexive, and produced within a context of its application (Välilmaa and Hoffman 2008). In other words, there was a change from theoretical and abstract knowledge generated by autonomous disciplines to collaborative, inter-disciplinary, pragmatic, and socially-aware knowledge (Beerkens 2008) that has more direct impact on economic and social development. Today, universities are also placing more weight upon the commitment to community and on providing such research, investigation, advice and training as well as such services, consultancies, and technology transfers that promote and facilitate continuing education and lifelong learning (Neave 2000).

Communications from the European Commission (EC,2003) as well as the OECD reports (OECD 2008) challenge higher education by accentuating that higher education institutions should function as drivers of economic development. In these reports higher education is also increasingly incited to provide such teaching and research that is nationally and regionally relevant or applicable. In addition, the OECD provides benchmarks, and models for reforming higher education on global scale (Ferlie et al. 2008). According to UNESCO (2005 87) higher education institutions are destined to play a fundamental role in knowledge societies, based on radical changes in the traditional patterns of knowledge production, diffusion and application. Accordingly, the current development starts to reflect changes across several dimensions of university apart from the core functions of education and research. Such functions include ICT, human resource development, funding, and marketing (Middlehurst 2007). It is also noted that today well-trained, creative and dynamic researchers are indispensable for building and sustaining a competitive knowledge society and knowledge-based economy. Similarly, an open and attractive labor market for researchers is seen as key while developing European level higher education. As a consequence of such concerns the common European Research Area (ERA) was established. The aim of the ERA was to provide a common area where knowledge as well as researchers can freely move from one country to another. Statistics show that Europe has many talented and skilled researchers, and that the total head count exceeds that of the US, Japan and China. Unfortunately, though, in Europe researchers account for a significantly lower share of the labor force than in the US and Japan. Researchers in this context are defined as the professionals engaged in the creation of new knowledge, products, processes, methods and systems and also in the management of the projects concerned. (European Commission 2014)

Drawn together, although it has been a great challenge to reform and unify higher education, much has been achieved. Higher education has gained visibility and its importance for economic as well as social development has been recognized which, in turn, has facilitated further reform programmes in the sector. However, it seems that addressing the needs and meeting the requirements of knowledge society, the higher education most probably will continue facing important challenges. The rapid and continuous technological development calls for adoption and implementation of new methods and practices to make the most out of technology in research as well as in teaching, learning and administration of universities. In the same vein, economic concerns challenge universities making them search innovative and cost effective solutions for the provision of high quality education. Conducting research in universities will also meet with serious challenges as knowledge is more and more created in broad global networks between multiple stakeholders with diverse requirements and resources. As a whole then, to meet the expectations of knowledge society, a great number of concerns remain to be addressed at national and European as well as wider global level.

5. Role of University

Traditionally, university represents the primary educational institution. University can be defined as an institution of higher learning that provides facilities for teaching and research, and is authorized to grant academic degrees (Merriam-Webster, 2013). Within the EU, higher education institution, such as university, is defined as any type of higher education institution, in accordance with national legislation or practice, which offers recognized degrees or other recognized tertiary level qualifications, whatever such establishments may be called in the Member States, or alternatively, higher education institution can mean any institution, in accordance with national legislation or practice, which offers vocational education or training at tertiary level (The European Parliament and the Council, 2006). In more specific terms, higher education institutions' standing, prestige and reputation are determined by internal, disciplinary values and scholarly attainment (Jongbloedp 2008). Universities operate in highly institutionalized environments characterized by the proliferation of formal and informal rules and standard operating procedures (e.g. Clark 1983; Olsen 2007, cited in Välimaa and Hoffman 2008), and represent the major actors involved in the production and dissemination of

knowledge (Beerens 2008). Universities are also characterized as pluralistic professional and collegial institutions with multiple, ambiguous and conflicting goals (Fragueiro and Howard 2011). As for management, universities are primarily run by the profession (i.e. the academics) and, subsequently, more often than not, in the profession's own interests rather than in the interest of the clients (Bain 2007). Universities are also perceived as inherently slow-changing, conservative institutions and resistant to change (Abbey 2008).

Summing up, universities provide higher level education, conduct research, concede recognized degrees under national legislation, are mainly run by academics, and operate under regulated institutionalized environment applying formal and informal rules, and standard operating procedures. In consequence, it is not difficult to conclude that such relatively static role with highly specific characteristics triggers challenges in today's rapidly changing environment within the framework of knowledge society focused on effective knowledge production and generation of innovation in broad global collaborative networks.

Role in changing environment

Several clear changes can be perceived in the environment and role of universities during the past decades. The early post Second World War period in many European countries can be characterized by quasi monopolistic relationships between the national authorities and the higher education systems (Ferlie et al. 2008). From the 1940s onwards, when creating welfare state, many of the European countries increased substantially the size of the public sector (de Swann 1988), and expanded, among other sectors, the educational sector. The number of universities and students grew, greater variety programs were offered and the so called massification of higher education started. Education was typically financed by public taxation for which reason higher education could be made free and attracted more and more student (Ferlie et al. 2008). Accordingly, during the growth of the welfare state, higher education had grown bigger, more expensive, politically more visible, less elitist, and above all economically more strategic. However, during the latter part of the 20th century, state intervention in higher education was limited leaving steering and governance of the education to academics. In consequence, the academic community could exercise their academic function freely, almost monopolistically, while the state protected universities from the external influences as long as the academics implemented norms, values and practices that prevented an abusive use of their knowledge. Such tradition highlights the ideology of academic freedom and strong faculty control over key practices

both in teaching and in research. (Enders et al. 2012). From the late 1970s, the political pressures to make the public sector economically more effective led to an overall reduction on the public sector, known as the hollowing out of the nation state, in other words, a situation where the nation state is losing functions, legitimacy and authority. Due to such political and economic actions, there were substantial restrictions of state funding to public sector institutions including universities (Ferlie et al. 2008). Consequently, after having been the primary financier of universities, the state started to restrict funding reducing at the same time its possibilities to influence the decision making in universities. Notwithstanding the reduced influence, governments were concerned about the output of universities because universities were meant to contribute to economic growth and wellbeing of the society as a whole (Naidoo 2008, cited in Ferlie et al. 2008). From the 1980s onwards, efficiency, value for money, and strong management was gaining increasing ground and became important objectives for policy makers in the educational sector. Such policy concerns meant great challenges for universities. Universities had to increase productivity, reduce their operating costs, develop new mission, reduce the drop-out rates, respond to the demands of the labor market, pay attention to societal needs and, most importantly, achieve a leading role in technology transfer and innovation (Dill and Sporn 1995, cited in Ferlie et al. 2008). It is argued that these kinds of actions were essential and timely because it was noted that universities had long been coping with a blurred decision-making structure, limited culture of strategic planning and evaluation, scant reliable internal information management, bureaucratic administration, and poor institutional relations with their stakeholders (Egidi 2007). In addition, the traditional notion of academic freedom was to be redefined. Consequently, there were ideas that teaching and research, traditionally perceived as public good, were to be commoditized. What is more, it was suggested that that the previous command-led control systems should give way to network-based forms of management, and the impact of supra-national actors in higher education was to be enhanced (Ferlie et al. 2008).

Importantly, while in the remote past universities typically only offered education for the church and elites, the later massification of higher education, and the emerging knowledge society have provided equal opportunities for all to study and participate in knowledge production (Ferlie et al. 2008). In the context of knowledge economy and knowledge society the increasing need of knowledge achieved by high quality education and research serves to demonstrate how important education and knowledge generation are for citizens

in the contemporary societies, and accentuate the essential role of universities in knowledge creation and dissemination. Consequently, within the framework of knowledge society, universities are increasingly expected to enhance access to knowledge by steadily raising the number of students and researchers in higher education. Similarly, universities are required to create and provide accurate new knowledge in optimal ways in order to meet the needs of knowledge society. Coping with such requirements and demands is affecting universities, and triggering multiple reforms. Reforms are seen to bring along essential changes, which not only concern the traditional key roles of universities as providers of education and research, but also their contribution to social wellbeing (Naidoo 2008, cited in Ferlie et al. 2008). Accordingly, in the current situation, higher education is inextricably linked to progress not only on individual, increasingly but also, on societal level (Ferlie et al. 2008) how the role of universities is broadening in the development of today's societies.

To sum up, the role of universities have gone through important changes. From having been an institution delivering knowledge only for elites, it is now assuming a broad economic and societal role implying in addition to the basic functions, an implementation of new processes and creative solutions to enhance knowledge creation and generation of innovation (Jongbloed et al. 2007).

Role in the European context

In the European context during the latter part of the 20th century, most countries began to introduce new legal frameworks while striving to transfer the power of management and decision-making in academic issues from the state to individual universities. This kind of development followed the neo-liberal thinking which advocates reforms that improve the management of public sector institutions, universities included, and make them economically more efficient. Consequently, the management was taken away from academics and transferred it to managers (Beerkens 2008). Reforms in the European higher education were also triggered by the growing awareness that in the context of the emerging knowledge society, universities would be the key actors in knowledge production, in education of knowledge-workers, and in the generation of innovation (Felt 2007). Interestingly, at the same time, universities started assume a more social character stemming from the increasing collaboration with multiple social actors. Due to such changes, universities came increasingly to be regarded as key knowledge producing institutions (Felt 2007) and were to establish multiple relationships with industry, business and diverse social actors

in addition to their traditional primary stakeholders, namely, academia, students and government.

It is noted that the European Commission has played an important role in the development of higher education because it has been developing framework programmes in the field of education and funding collaborative research for more than 20 years (Ferlie et al., 2008). During the period of major reforms in the higher education, changes of legal frameworks together with multiple new expectations started to affect universities which, in turn, brought about debates concerning the role of university. The debates focused on questions such as: what it means to be a university, or what is the idea a university. Such enquiries implied rethinking the internal structures, building up new management and decision-making structures, and reconsidering career and reward systems in universities (Felt 2007) The debates reflect the shift that was taking place in the role (Rothblatt 1997, cited in Jongbloed et al. 2007) of university since the post-war years (Geiger 1993, cited in Jongbloed et al.2007). It was accentuated that in the changed context where the society was moving towards knowledge economy, universities should carefully reconsider what kind of role they would assume among multiple stakeholders, and in communities, if they wanted to maintain their traditional role as primary educational and research institutions. Maintaining the role, implied identification of stakeholder and classifying them according to their relative importance, establishing working relationships with the key stakeholders (Jongbloed et al. 2007), and adapting to new ways of producing and disseminating knowledge. In addition to the establishment of new relationships, the development of higher education implied harmonization of standards and practices. Accordingly, important harmonization processes have been going on in universities from the 1980s onwards. In the European sphere, the so-called Sorbonne Declaration, signed in 1988, aimed at harmonizing the architecture of the European system of higher education. The harmonization was later continued under the framework of the Bologna Process that initiated a common system with two main cycles undergraduate and graduate were to be adopted on the European level. The system was to make international comparison possible, increase compatibility, equalize the systems of higher education and, above all, make European higher education more attractive for students from other parts of the world by facilitating intra-European student mobility. (Teichler 2007)

To sum up, with the introduction of comprehensive programmes and processes in the context of knowledge society striving to enhance the

importance of higher education in knowledge production, it seems evident that universities are experiencing significant role change. In addition to their traditional role of main providers of education and producers of knowledge, universities are expected to assume a new economic and social role as they are increasingly expected to contribute both to economic and social development. Consequently, in such changed role, universities are expected continuously to create and diffuse new knowledge and generate innovations in order to contribute to the competitive capacity of the state. This implies that universities not only deliver excellent education and research, but deliver such outputs in such ways, volumes and forms that are relevant for shaping knowledge society (Brennan and Naidoo 2007). In conclusion, it is mainly from the last decades of the 20th century onwards within the framework of knowledge society that the role of university has been changing in most fundamental way (Felt 2007). Such development is specifically perceived, if compared with the previous periods of university education when teaching and conducting research took place within individual universities serving principally the academia's own, and elites' interest (Sadar 2012, cited in Curaj et al. 2012).

6. Future Concerns

It can be concluded from the revision of the literature on the field of higher education that an increasing body of different stakeholders is taking part in knowledge production. Consequently, production and dissemination of knowledge is taking new forms through application of new methods and practices. Similarly, the purpose, application and validation of knowledge are changing which, in turn, implies that revision of norms and methods for legitimating and validating knowledge will also have to be reformulated. Such development is seen to challenge universities as they have to adapt to new validation criteria that in practical terms means that for example the traditionally applied peer-review will no more be the only validation method. (Sadar, cited in EUA 2007). Accordingly, research on higher education provides evidence that if universities aim to maintain and refroze the traditional position as the primary knowledge generator, they will have to accept new forms of knowledge, adopt new ways of creating knowledge, and implement new learning methods and principles, such as knowledge communities, e-learning, virtual delivery. In addition, universities should advance their technologies with increasing applications of digital devises (Andreescu et al 2007). The separation of educational content from its delivery (Williams 2007, cited in Andreescu et al.

2007), is also seen as key factor in future teaching and learning as it facilitates the mass-delivery of customized education. In addition, the scalability of e-learning is regarded as one of the great promises of new technologies in the field of education (Andreescu et al. 2007). Importantly, digitization is expected to affect not only university-level teaching, but the entire system of higher education as it may change the roles and responsibilities of universities, teachers and students. Furthermore, it is predicted that in the future teaching will be delivered, research conducted, and knowledge produced by applying non-traditional modes (Dräger 2014). Similarly, it is noted that teaching and research is likely to assume a strong applied emphasis accentuating a shift from research agendas defined by academics in accordance to their discipline towards research agendas defined by external actors in order to solve multidisciplinary societal needs and problems. (e.g. Gibbons et al. 1994; Novotny et al. 2001, cited in Ferlie et al. 2008). As a result, knowledge creation will increasingly take place through application of novel technologies and in cooperation with multiple actors in new extensive network contexts, and on diverse levels. It is also suggested that the expansion of knowledge leads to creation of new research fields. This, in turn, indicates that there is need for establishment of new chairs and professorships for attending the emerging fields and new disciplines. Likewise, the proliferation of knowledge creates a need to establish new training programmes and new higher education institutions. Overall, the expansion in research-based knowledge towards wider contexts, and the increase in number of experts, students, and staff, will change the social dynamics of universities contributing to the further development of knowledge society (Brennan et al. 2004)

Literature in the field starkly underscores, that higher education institutions are destined to play a fundamental role in knowledge societies, due to radical changes that have to be implemented in the traditional patterns of knowledge production, diffusion and application UNESCO (2005 87). Such radical future changes are giving rise to intensive debate about the privatization of higher education that would turn universities into market-like organization, and about a possible wholesale commercialization of educational services (Välimaa and Hoffmean 2008). The debate is justified as commercialization and marketization is predicted to radically enhance the role of universities. Importantly, however, commercialization, marketization and privatization of higher education tend to be a contested topic because the social responsibility of higher education is currently very high on the agenda of universities. (Jongbloed et al. 2007). The

social responsibility is accentuated because the cultivation of civic virtues, which shapes a democratic and civilized society (UNESCO World Conference 1997), and is increasingly regarded as an important characteristic of universities. The rising concern for the social responsibility of universities stems mainly from the collaboration of universities with multiple stakeholders and increasing integration of universities into the social reality of their environment. The social responsibility is closely connected to the democratizing perspective which implies that everyone should have equal access to knowledge acquisition and creation, independently of financial resources or other restrictive factors (Brennan and Naidoo 2007). Such thinking is obviously not in line with the commercialization, marketization and privatization of institutions of higher education. In consequence, whether universities will be socially responsible and democratic institutions, or whether they prefer to provide commercialized private market-based educational services attainable only to those who can afford such services, will most probably continue being a highly contested issue. The commercialization and privatization of public institutions is also linked to the neo-liberal thinking that favors economic effectiveness and efficiency of the public sector meaning that more should be achieved with fewer resources. Such policy has led to decreased funding for public institutions and reduction of state interference (Välimaa and Hoffman 2007). As a consequence, the strengthened role of the market coupled with reduced governmental power in terms of financing and regulation, implies that in the future the higher education institutions will have to seek funding and support in industry and business. This kind of hollowing out of the state implies that the nation state is losing functions, legitimacy and authority to an increasing range of alternative actors (Ferlie et al. 2007), and that governments are diminishing their funding, and losing their legitimacy in steering of universities. In consequence, significant share of university funding will have to come from contract research and other market-related relationships that will have their stake in universities due to the joint knowledge production (Jongbloed et al. 2007). Accordingly, it is to be supposed that, in the future external steering of universities will increase, which automatically reduces the autonomy and affects the decision making in universities. Importantly, it also seems that the state will be closely related to universities as they are inciting universities to assume a more central economic and social role. Such role would contribute to the economy by improved outcome through effective teaching and research. For this reason governments will continue to participate in the development of universities in a decisive way.

A more active role of universities is in the interest of the state because research, knowledge production and innovation are known to contribute to general economic development and social wellbeing (Jongbloed et al. 2007). Universities are also expected to contribute to culture by enhancing the cultural development of societies, and by and maintain critical discussion within societies (UNESCO 1998). Universities with this kind of missions are expected to widen their scope, and make them important not only as knowledge producers but also as social actors with important societal responsibilities. It is clear, hence, that in the future universities will have to be more and more integrated into the broader society within the framework of knowledge society of they strive for occupying the role as primary knowledge producers and disseminators. This implies implementation of revision of visions, missions and goals. Evidently, a deeper integration to society will brings along changes in the way universities complete their key function. Similarly, the wider and economic integration affect the way universities are managed and how they make decisions because business, industry and other societal stakeholders, while collaborating with universities, have multiple expectations and put external pressures on what kind of research universities conduct and what kind of knowledge they create. Accordingly, the state and other stakeholders are expecting universities to enhance economic growth, and improve social well-being in addition to providing high quality education and research. As a result of the increased collaboration with diverse stakeholder groups more varied representatives are included in boards of trustees, faculty boards, accreditation committees and professional associations which means that such external actors participate in administering and steering of universities (Jongbloed et al. 2007).

Research in the field of higher education indicates that due to the neo-liberally motivated marketization, deregulation and decentralization, external stakeholders not only participate in the management of universities but also cooperate with universities in knowledge production. This kind of cooperative knowledge production is based on trust among the diverse stakeholders which reflects the importance mutual accountability and social responsibility. Consequently, social responsibility of universities is extending beyond the key activates of producing graduates and research outputs implying also active participation in public debates, working in close relationships with private actors, and forming part of multiple networks and alliances with varied actors on several levels (Jongbloed et al. 2007).

In conclusion, in the future universities are expected to occupy broader,

active, more practically oriented, and socially more responsible role within the framework of knowledge society. Such new role implies increased collaboration with different stakeholders in highly complex networks. Importantly, knowledge society and knowledge-based economy are continuously posing new challenges on higher education while on the one hand requiring high level education and research and on the other hand increased integration within society based on wider collaboration in diverse networks both on national and international level. To meet the requirements of knowledge society, universities will have to adjust their methods and practices, and assume a new, more dynamic, inclusive, socially responsible and sustainably role that addresses the needs of the rapidly changing context.

7. Discussion and Conclusions

This paper has strived to shed light on higher education in general and in particular explore the specific challenges and role expectations and changes universities face in knowledge society. The aim was to find answers to two central questions: How will universities meet the needs of knowledge society? Will universities maintain their traditional role as primary institutions providing higher education, and as main knowledge creators? The main assumption was that it may not be guaranteed that universities are able to maintain their traditional role as the main providers of high quality education and research that under the current framework of knowledge society implies continuous knowledge production and generation of innovation contributing to knowledge economy. It was proposed that universities would have to go through significant reforms, while aiming to maintain and enhance their dominant role as knowledge producers and providers of high quality education and research. Based on a revision of literature in the field of higher education, this paper finds strong evidence for such propositions.

The literature in the field of higher education indicates that specifically during the last decades the creation of knowledge and generation of innovation have become the primary objectives of knowledge society (Beerrens 2008.). Since universities are regarded as the main knowledge generators, they have to master the challenges knowledge society poses on them. In consequence, while pursuing such objectives, universities will have to incorporate reforms that support the development of a knowledge society (Neubauer 2012). Research in the field of higher education also indicates that in knowledge-based economy universities will have to contribute to the economic development locally,

nationally and globally which makes them highly important in economic terms. To be economically effective and provide new knowledge, universities are supposed to go through reforms bringing about to new methods and practices that allow more effective performance and improved knowledge production. The literature suggests that such goals may be reached by increased cooperation with diverse stakeholders in wide networks. The research in the field also indicates that within the framework of knowledge society, universities are not only expected to contribute economically but also socially by providing equal opportunities for all citizens to participate in higher education and creation of knowledge (Brennan and Naidoo 2007), and by interacting with diverse community stakeholders. It can also be concluded from the literature of the field that technological progress (Dräger et al. 2014), and particularly advances in IC technology have been triggering considerable transformation in higher education. Similarly, it is shown that extensive digitization, requiring fundamental reforms in processes and practices, when widely implemented may offer solutions to previously unsolved challenges in the field of higher education (Dräger et al. 2014). Accordingly, research and knowledge creation are facilitated by application of new technologies which, in turn, enhances innovation, the essence of economic and social development. Subsequently, knowledge, education and innovation have become the three central drivers, the so called knowledge triangle, of the knowledge economy and knowledge society (Europe 2020) accentuating the importance of universities. Trying to meet the need of knowledge triangle, universities will have to provide such drivers in the best way to the benefit of the whole society. Pursuing knowledge production and innovation, universities will continuously have to incorporate new technologies and apply new technological applications in all their functions. Furthermore, research in the field accentuates that to increase the efficiency and improve their innovative capacity, universities will have to commit themselves to improving their governing structures and leadership competence (Middelhus 2007).

As for the future of higher education, it can be concluded from the literature in the field that the European as well as global debates on the development of higher education are highly related to common overall trade liberalization, to global competition in the educational sector, and to the recent ideas of commodifying and marketization of higher education (OECD 2006). Competition in free global markets is seen to open up multiple opportunities for universities as they are under economic pressures stemming from decreasing

public funding. It is also noted that global competition may increase research, improve education, and incite to innovation (Brennan 2007). It is stressed that higher education in Europe needs to deliver real benefits to students, staff, economy, and to society more widely. Similarly, Europe should continue its strive for steady improvement in quality and stimulate mobility, and most importantly, it is stressed that education should focus on the labor markets and develop opportunities for greater numbers of students to have access to higher education. Such objectives are to be achieved within the framework of the European Union's Europe 2020 Strategy (Bologna Process 2012)

In broad terms, research in the field of higher education suggests that universities should adapt to the demands of the steadily changing environment within the framework of knowledge society and that there is an urgent need of introducing reforms that enable meeting the needs of knowledge society. Importantly also, research strongly indicates that universities should increasingly participate in joint knowledge production in global networks with an ever growing number of stakeholders from diversified research fields, educational institutions, different economic and business areas, and social organizations and institutions.

This paper makes some central conclusions while answering the questions that have been guiding the literature review in the field of higher education. To address the first question, it is concluded that universities may meet the needs of knowledge society if they are capable of reforming their traditional, to great extent, fixed structures through economic, social and technological adaptation that implies increased cooperation with diversified stakeholders locally and globally; through adoption of new business models that allow more flexible and effective methods for providing higher education and research; and through applying new ways for conducting research and generating innovation, and incorporation of novel technologies and in particular IC technologies and digitalizing devices and application. To address the second question, it is concluded that in order to maintain their traditional role as primary educational institution and knowledge creators, universities have to respond to new social and economic expectations by assuming a more varied and active role to complement the previous more static by economically effective and active role. Nevertheless, it is to be noted that the latest debates advocate for socially more responsible role which means enhancing good governance with increased accountability and corporate social responsibility, and creation of trustful relationships and more sustainable value with multiple stakeholders. Drawn

together, universities are facing multiple challenging expectations, but seem to be assuming a new more dynamic role in economy and society, to complete the traditional one, in order to meet the demands of knowledge society.

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