UNIVERSITIES IN THE KNOWLEDGE ECONOMY: STRATEGIES TO INCREASE THEIR COMPETITIVENESS

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Abstract. *The purpose of this paper is to analyze the role of universities in the knowledge economy and the designed strategies to increase their competitiveness. Universities are knowledge intensive organizations characterized by high densities of knowledge and intelligence, whose role in the knowledge economy becomes dominant in society. As a result of this challenge universities should adapt their governance and mission to the new requirements and to increase their competitiveness in the global market of higher education services. This is a conceptual paper, but it is based on a critical analysis of the literature in this domain, a high level of personal experience and expertise in academic management, and a significant research performed in the fields of knowledge management and intellectual capital in organizations. In the knowledge economy, knowledge becomes a strategic resource and universities should be aware of this new development and focus their visions and missions on increasing efficiency in knowledge creation, knowledge transfers toward students and community, and in developing strategic thinking models in the mind of students. That means that students should become active participants in the knowledge processing and develop their skills for strategic thinking and decision making. The paper presents also the problem of evaluating the intellectual capital of universities and shows the shortcomings of many models proposed so far for intellectual capital measuring and reporting. The main shortcomings come from the metaphorical approaches used for explaining the concept of knowledge and that of intellectual capital. The paper presents the organizational knowledge dynamics and the intellectual capital dynamics frameworks. Based on understanding these frameworks, the paper discusses three main strategies designed by universities to increase their competitiveness: introducing new knowledge management programs and degrees, increasing knowledge creation and transfer toward the business environment, and intergenerational learning. For each strategy the paper presents its purpose and specific way of implementation.*

Keywords: *knowledge; knowledge economy; knowledge management; intellectual capital; university; learning organization; knowledge strategy.*

Introduction

Universities are knowledge intensive organizations, with high densities of knowledge and intelligence (Bratianu, 2010a; Bratianu & Bejinaru, 2017; Duderstadt, 2000; Secundo et al., 2015). Universities are among the oldest institutions, solving creatively the paradox of continuity for many centuries. The paradox is generated by the mission

of the university which integrates conflicting tasks ranging from knowledge preservation to knowledge creation: "Their survival, often in the same locations, even in the same buildings, with many of the same activities, may on one level be proof of their conservatism. I believe that on another level it is also proof of the ability of the university to anticipate, to generate or incorporate new knowledge and new ways of thinking – sometimes hesitantly, sometimes slowly, but always with its essential intellectual values and mission intact" (Mayor, 1997, p.143).

In the knowledge economy, universities face new challenges and they have to adapt to the new contexts. First, knowledge life cycle is decreasing and the focus of teaching and learning processes should shift from knowledge transfer to the students toward developing thinking skills (Bratianu & Vătămănescu, 2016), which will increase the employability of graduating students. In the same time, knowledge consumption increases exponentially and universities should generate new knowledge and transfer it to the community (Secundo et al., 2017). Knowledge is a strategic resource and companies need new knowledge to achieve competitive advantage (Bratianu & Bolisani, 2015, Bolisani & Bratianu, 2017). Third, knowledge economy and knowledge management should become new subjects in the university curriculum to prepare students for new jobs in the future. Having in mind these issues, the research question for the present paper is the following:

RQ: What are the main strategies designed by universities to increase their competitiveness in the knowledge economy?

The next section of the paper presents a critical review of the organizational knowledge dynamics aiming at understanding the main knowledge processes within a university. Then, we discuss the knowledge strategies designed to increase the university's competitiveness in the global market of higher education services.

Organizational knowledge dynamics

Knowledge is an abstract concept which can be understood by using metaphors. As Andriessen and Boom (2007, p.3) remark, "Knowledge is not a concept that has a clearly delineated structure. Whatever structure it has it gets through metaphor. Different people from different cultures use different metaphors to conceptualize knowledge. They may be using the same word; however, this word can refer to totally different understandings of the concept of knowledge". Different meanings and interpretations come also from people working in different fields of activity and using the concepts of *information* and *knowledge*. For instance, people working in the information technology consider the concept of *information* of being fundamental and the concept of *knowledge* as an extension of it. People working in knowledge management consider *knowledge* as a result of processing *information*, which is a result of processing *data* (Becerra-Fernandez & Sabherwal, 2010; Choo, 2006; Davenport & Prusak, 2000; Tiwana, 2002).

Pinker (2008, p.241) posits that "Conceptual metaphors point to an obvious way in which people could learn to reason about new, abstract concepts. They would notice, or have pointed out to them, a parallel between a physical realm they already understand and a conceptual realm they don't yet understand". In the beginning, many

authors consider that *knowledge* is like *objects* or *stocks*: "The idea of dealing with knowledge as an object has been already exploited in a variety of areas across KM and information technology" (Borgo & Pozza, 2012, p.229). That means that knowledge gets attributes of physical objects (Andriessen, 2008). For instance, knowledge is conceived as being in pieces which can be accumulated, stocked, added, packaged and processes like finite tangible entities. Although it is easy to conceive knowledge as such an entity, the metaphor induces the idea of a linear logic which is completely erroneously because knowledge is an intangible nonlinear entity (Bratianu, 2009). The process of objectification of knowledge based on the *knowledge as an object* metaphor comes mainly from authors working with information systems where data and information can be processed by computers, stored in databases, retrieved from these databases, incorporated into computer codes, distributed through communication channels, and used to solve production and managerial problems.

A special case of this category of metaphors is the *knowledge as an iceberg* metaphor. It is special because it allows the representation of both *explicit* and *tacit* knowledge (Nonaka & Takeuchi, 1995). *Explicit knowledge* is that which can be expressed using a natural or artificial language, while *tacit knowledge* is that which cannot be expressed in words (Davenport & Prusak, 2000). According to this metaphor, explicit knowledge is represented by the visible part of the iceberg, and the tacit knowledge is represented by the hidden part of the iceberg which is under the water. The iceberg metaphor has been frequently used by Nonaka (1991, 1994), Nonaka and Takeuchi (1995), and many other authors although it limits the understanding of knowledge (Bratianu, 2010b).

An advanced metaphor is a *knowledge as flows* or *knowledge as stocks-and-flows* (Nissen, 2006; Nonaka, Toyama & Hirata, 2008). Knowledge as flows introduces the idea of motion of knowledge throughout a company, replacing a static metaphor with a dynamic one. Nissen (2006, p.XX) explains the need for such a view "To the extent that organizational knowledge does not exist in the form needed for application or at the place required to enable work performance, then it must flow from how it exists and where it is located to how and where it is needed. This is the concept *knowledge flows*". The metaphor enlarges the semantic field of the knowledge concept and it allows a better interpretation of the knowledge motion through the organization. However, *knowledge as flows* or *stocks-and-flows* metaphors keep the tangible and linear attributes of the physical objects.

Bratianu and Andriessen (2008) introduced the *energy metaphor* which places knowledge in a non-substantial realm. Thus, the concept is not limited anymore by the tangibility and linearity attributes of the physical objects. The metaphor places *energy* in the source domain as being known and *knowledge* in the target domain, as being unknown. Attributes of energy are analyzed and mapped to the target domain, enriching this way the semantic domain of knowledge. The most important attribute is that energy is a field and not a substantial body. That approaches knowledge to its understanding as an intangible entity which is nonlinear. The metaphor is not based anymore on the Newtonian logic but on the thermodynamics logic (Bratianu, 2011). The key attributes taken from the energy domain and mapped to the knowledge domain are presented in Table 1.

Table 1. Key attributes transferred from energy to knowledge

No.	Attributes of energy	Attributes transferred to knowledge
1	Energy is a field (non-substance)	Knowledge is a field
2	The field is a continuum in space and time	The knowledge field is a continuum throughout the organization
2	Energy manifests in different forms (e.g. mechanical energy, thermal energy, electrical energy)	Knowledge manifests in three basic forms: rational knowledge, emotional knowledge, and spiritual knowledge
3	One form of energy can be transformed into another form of energy	One form of knowledge can be transformed into another form of knowledge

These attributes are valid for both personal and organizational knowledge. Although knowledge can be created only by people, we can use the concept of *organizational knowledge* as a construct to indicate the resulting process of integrating all the employees' knowledge during their work and the intangibles created at the organizational level like organizational culture, regulations, intellectual properties products and the working spirituality (Bratianu, 2015; Nonaka & Takeuchi, 1995). In the knowledge economy, most of the firms are knowledge organizations since knowledge represents the most important resource in creating the competitive advantage.

The key attributes presented in Table 1 are the pillars of the new multifield theory of knowledge developed by Bratianu (2013). This theory defines three fundamental fields of knowledge at the level of any organization: the rational knowledge field, the emotional knowledge field, and the spiritual knowledge field. These fields constitute together the generic triple helix of any organization. Each knowledge field can be transformed into another field of knowledge contributing the managerial decision making and to the production process. The *rational knowledge field* contains all the explicit and tacit personal knowledge embedded in collective forms of knowledge. It is the most important field of knowledge, especially in companies based on high technologies. For a long time, this field of knowledge was considered the only one, rational knowledge being equated to knowledge. That is true especially about universities, where knowledge creation is focused on scientific and technological knowledge. Unfortunately, even today evaluating the intellectual capital of universities is based most on evaluating rational knowledge field and the artifacts related to it (Bratianu & Bejinaru, 2017; Bratianu, Iordache-Platis & Prelipcean, 2016).

The *emotional knowledge field* emerged in the knowledge management especially with the works of Nonaka and his colleagues, based on the Japanese oneness philosophy about knowledge. Working together, people communicate through their emotions using the nonverbal languages. According to Nonaka and Takeuchi (1995, p.9), "Highly subjective insights, intuitions, and hunches are an integral part of knowledge. Knowledge also embraces ideals, values, and emotions as well as images and symbols". Emotional knowledge constitutes the key factor in motivating people to work and to create new knowledge. Also, students' motivation to learn is based on emotional knowledge and their aspirations. It is the hidden part of the knowledge iceberg

(Bratianu & Orzea, 2013). Emotional knowledge contributes directly to the formation and change of the organizational culture.

The *spiritual knowledge field* integrates values and beliefs about life and about our own existence (Zohar & Marshall, 2000, Zohar & Marshall, 2004). Spiritual knowledge is embedded in the vision and mission of any organization and constitutes the main driving force of the strategic thinking. The field of spiritual knowledge is the genesis of the spiritual capital of any organization. According to Zohar and Marshall (2004, p.27), "Our spiritual capital is our shared meaning, our shared purpose, our shared vision of what most deeply matters in life – and how these are implemented in our lives and in our behavioral strategies. It is the capital that is increased by drawing on the resources of human spirit". Universities have always demonstrated a high level of spiritual knowledge by comparison with any other type of organization because of their vision built on value creation for society and not on profit making.

Organizational knowledge dynamics can be approached by two convergent ways: knowledge transformation from one field into another field, and analyzing the balance between knowledge generation and knowledge loss. The first approach has been already discussed. The second approach can be formulated like an equation for the variation of the organizational knowledge level (ΔOK):

$$\Delta OK = \text{knowledge creation} + \text{knowledge acquisition} - \text{knowledge loss}$$

Although knowledge sharing does not appear in this equation, it is an important factor in organizational knowledge dynamics, especially in universities in stimulating knowledge creation and reducing knowledge loss (Bratianu, Agapie & Orzea, 2011; Bejinaru & Hapenciuc, 2016). All the knowledge strategies we shall present in the next section are rooted in this equation.

Knowledge strategies

Knowledge creation in universities

In the knowledge economy, knowledge creation becomes a pressing problem because the knowledge life cycle is shortening (Davenport & Prusak, 2000; Nonaka & Takeuchi, 1995; Vătămănescu et al., 2016). Knowledge is created by people and then embedded in new products and services through innovation. Universities play an important role in knowledge creation, especially the fundamental knowledge for science and technology according to the Humboldtian paradigm (Duderstadt, 2000). The most challenging ranking of world universities – Academic Ranking of World Universities (ARWU) performed since 2009 by the Shanghai Ranking Consultancy established performance indicators based on knowledge creation and results in publication in top international journals. The ranking system considers: number of alumni and staff winning Nobel Prizes and Field Medals, number of highly cited researchers selected by Thomson Reuters, number of articles published by *Nature* and *Science*, and number of articles indexed in Science Citation Index. More than 1200 universities from all over the world compete to be included in the top 500 universities in the world. For 2016, the top 10 universities are presented in Table 2.

Table 2. Top 10 Universities in the world in 2016 according to ARWU

Rank	Universities (Country)
1	Harvard University (USA)
2	Stanford University (USA)
3	University of California at Berkeley (USA)
4	University of Cambridge (UK)
5	Massachusetts Institute of Technology (USA)
6	Princeton University (USA)
7	University of Oxford (UK)
8	California Institute of Technology (USA)
9	Columbia University (USA)
10	University of Chicago (USA)

However, more and more universities create knowledge for solving practical problems of their communities in concordance with so called the third mission, which is related to the generation, use, application and exploitation of knowledge with external stakeholders and society in general (Secundo et al., 2017). The strategy of knowledge creation contributes directly to the increasing competitiveness of the university and toward a better integration in its community. As remarked by Secundo, De Beer et al. (2017, p.4), "Knowledge produced in universities can spur business innovation, foster competitiveness, and promote economic and social development through the creation of academic entrepreneurship". It is important to underline the fact that knowledge creation depends essentially on the motivational system built in the university, which is designed in concordance with the emotional and spiritual knowledge fields. If these fields have a low profile, the motivational system is based on financial rewards. However, a powerful motivation comes from a rewarding system based on emotional and spiritual knowledge.

Promoting new academic programs in Knowledge Management

The knowledge economy demands new university programs for students to prepare them for new jobs dealing with knowledge management and intellectual capital. Thus, many universities around the world introduced new courses in the Management curriculum dealing specifically with *Knowledge Management*. The most dynamic universities developed new Master programs of *Knowledge Management*, and some of them opened Ph.D. research for this new domain. However, in some countries where universities are not fully autonomous in their curriculum decisions, these changes are very slowly. By introduces, new degrees for *Knowledge Management* universities prepare their students for new jobs requesting knowledge and skills in information and knowledge management. Table 3 presents top 10 American universities offering Master degrees in *Knowledge Management* and Table 4 presents top 10 UK universities offering master degrees in *Knowledge Management*. The universities are presented in a random order, without any ranking so far. Most of these universities offer also doctoral degrees in *Knowledge Management*. Due to the flexibility of choosing the major and minor fields of studies, in many western universities students can get a lot of courses dedicated to *Knowledge Management* even if the degree is in Management, Business Administration or Industrial Engineering. The Hong Kong Polytechnic University offers a MOOC – Massive Open Online Course in *Information and Knowledge Management* which attracts each year thousands of students from all over the world.

Table 3. Top 10 American universities offering degrees in Knowledge Management

No.	Universities
1	George Washington University
2	California State University – Northridge
3	University of Massachusetts – Boston
4	University of Texas – San Antonio
5	George Masson University
6	Kent state Universities
7	Illinois Institute of Technology
8	University of Connecticut
9	University of Michigan – Dearborn
10	Dominican University

Table 4. Top 10 UK universities offering degrees in Knowledge Management

No.	Universities
1	Oxford University
2	University of Warwick
3	Cranfield University
4	University College London
5	Manchester University
6	University of Bristol
7	University of Reading
8	University of Brighton
9	Edinburgh Napier University
10	De Montfort University

In Canada, University of Toronto and McGill University offer degrees in Knowledge Management, and in Europe University of Lappeenranta (Finland), University of Amsterdam (The Netherlands), and University of Lyon (France) among others offer degrees in Knowledge Management. In Romania, only three universities offer one semester courses in *Knowledge Management*, a situation that shows the difficulty of introducing new topics when there is a strong curriculum standardization imposed by the accreditation agency and there is limited university autonomy. It is necessary for all stakeholders of the Romanian universities to become aware of the new requirements imposed by the knowledge economy and to find adequate policies and strategies for satisfying them.

Knowledge sharing and intergenerational learning

This is a strategy designed to increase the average level of knowledge in a university and its organizational entropy. The direct result of this phenomenon is increasing research activity and knowledge creation. Universities are knowledge intensive organizations which are structured on age layers. This nested structure stimulates intergenerational learning (IGL) through knowledge sharing. It is a process which contributes also to the decrease of knowledge loss due to professors' retirement (Bratianu, 2014; Lefter et al., 2011). Evidence-based research shows that there are three important ways of developing IGL in a university: intergenerational mentoring, intergenerational training and workshops, and intergenerational teams. All of these approaches depend heavily on the emotional and spiritual knowledge existing in the

university, and on their transformation into rational knowledge. *Mentoring* is a well-known phenomenon in a university since professors work with their younger colleagues in designing and delivering courses and applications. The key success factors in implementing intergenerational mentoring in a university are the following: a high level of awareness of all internal stakeholders of the need for implementing mentoring, elaborating policies at the university level aiming at stimulating IGL, elaborating a rewarding system for all professors who accept to be mentors for their younger colleagues, elaborating a long term vision for academic carriers of the young faculty staff, such that the relationship mentor-mentee to be a lasting one.

Intergenerational training and workshops represent a quite common practice in the academic environment. During these events, professors can share their experience in research to the younger participants and stimulate debates to focus attention on some specific topics. For instance, in the European Conference on Knowledge Management, an annual event organized by Academic Conferences and Publishing International together with a certain university, there are workshops organized before the main conference for stimulating IGL, and doctoral sessions during the conference for helping doctoral students to advance their research in the field of knowledge management. These are excellent opportunities for IGL.

Intergenerational teams represent excellent means for assuring critical organizational knowledge retention in universities, stimulating and developing sustainable innovation, and increasing older professors' employability. Intergenerational teams are created especially for research projects, where knowledge exchange between generations is needed. The motivation of creating and working in intergenerational teams comes from the need of younger faculty staff to be integrated into research teams by their professors. Otherwise, their chances for learning and participation in performing research grants, in writing papers for international journals and conferences are rather small. Bratianu et al. (2011) performed an analysis using Analytic Hierarchy Process (AHP) in the Bucharest University of Economic Studies, Bucharest, Romania, in order to determine what activities are mostly preferred by the academics in creating and working in intergenerational teams. They considered three main activities: research grants, elaborating papers for international journals, and writing textbooks for students. The conclusion is that most preferred intergenerational teams are for performing research.

Conclusions

The purpose of this paper is to search for policies and strategies developed by universities in adapting to the new business dynamics of the knowledge economy. The research approach we used is based on a critical literature review, on metaphorical thinking, on personal valuable experience in academic management and governance, and on the evidence-based logic. Our research focused on two key issues: understanding organizational knowledge, and identifying the best strategies to adapt universities to the knowledge economy demand.

The first part of this paper discusses knowledge metaphors and presents three generations of such metaphors: knowledge as objects or stocks, knowledge as flows or stocks-and-flows, and knowledge as energy. Metaphors from the first two generations

induce tangible attributes to the knowledge concept and linear metrics in its evaluation, directly or through the intellectual capital. Only the energy metaphor overcomes these limitations and associates to the knowledge concept intangible attributes. The metaphor suggests considering three basic knowledge fields: rational, emotional, and spiritual. Each knowledge field can be transformed into another one contributing this way to the whole organizational knowledge dynamics.

The second part of this paper presents three main knowledge strategies universities can develop in alignment to the knowledge economy requirements: knowledge creation through research, promoting new academic programs in *Knowledge Management*, and intergenerational learning. All these strategies are based on the integrated dynamics of the organizational knowledge and depend on an adequate governance and academic leadership of universities. Knowledge creation and knowledge sharing are strongly dependent on the rewarding system for the faculty staff, which implies powerful fields of emotional and spiritual knowledge. Best world universities have always been characterized by challenging visions and missions which integrate rational, emotional, and spiritual knowledge.

References

Andriessen, D. (2008). Stuff or love? How metaphors direct our efforts to manage knowledge in organizations. *Knowledge Management Research & Practice*, 6(1), 5-12.

Andriessen, D., & Boom, M.d. (2007). Asian and Western intellectual capital encounter. Paper presented at IC-Congress 2007, Inholland University of Applied Sciences, Haarlem, The Netherlands.

ARWU (2016). Academic Ranking of World Universities. Retrieved from www.shangahiranking.com/ARWU2016.html.

Becerra-Fernandez, I., & Sabherwal, R. (2010). *Knowledge management: Systems and processes*. New York, NY: M.E. Sharpe.

Bejinaru, R., & Hapenciuc, C.V. (2016). Valorization of the learning organization's principles in the business higher educational systems (HES). In Bratianu, C., Zbuchea, A., Pinzaru, F., Vatamanescu, M.E., & Leon, R. (Eds.), *Proceedings of the 4th International Academic Conference Strategica* (pp.600-611). Bucharest: Tritonic.

Bolisani, E., & Bratianu, C. (2017). Knowledge strategy planning: An integrated approach to manage uncertainty, turbulence, and dynamics. *Journal of Knowledge Management*, 21(2), 233-253.

Borgo, S., & Pozza, G. (2012). Knowledge objects: A formal construct for material, information and role dependence. *Knowledge Management Research & Practice*, 10(3), 227-236.

Bratianu, C. (2009). The frontier of linearity in the intellectual capital metaphor. In Stam, C. (Ed.), *Proceedings of the European Conference on Intellectual Capital,* (pp.97-103). Reading, UK: Academic Conferences and Publishing International.

Bratianu, C. (2010a). Knowledge dynamics in organizations. In Bratianu, C., Lixandroiu, D., & Pop, N.A. (Eds.), *Proceedings of the 5th International Conference on Business Excellence* (Vol.1, pp.79-82). Brasov: Infomarket Publishing House.

Bratianu, C. (2010b). A critical analysis of Nonaka's model of knowledge dynamics. In Rodrigues, S. (Ed.), *Proceedings of the 2nd European Conference on Intellectual*

Capital (pp.115-120). Reading, UK: Academic Conferences and Publishing International.

Bratianu, C. (2011). Changing the paradigm for knowledge metaphors from dynamics to thermodynamics. *Systems Research and Behavioral Science*, 28(2), 160-169.

Bratianu, C. (2013). The triple helix of organizational knowledge. *Management Dynamics in the Knowledge Economy*, 1(2), 207-220.

Bratianu, C. (2014). Strategies to enhance intergenerational learning in universities. In Rooney, J., & Murthy, V. (Eds.), *Proceedings of the 11th International Conference on Intellectual Capital, Knowledge Management and Organizational Learning* (pp.83-90). Reading, UK: Academic Conferences and Publishing International.

Bratianu, C. (2015). *Organizational knowledge dynamics: Managing knowledge creativity, acquisition, sharing and transformation*. Hershey, PA: IGI Global.

Bratianu, C., Agapie, A., & Orzea, I. (2011). Knowledge dynamics modeling using Analytic Hierarchy Process. In Turner, G., & Minnone, C. (Eds.), *Proceedings of the 3rd Intellectual Conference on Intellectual Capital* (pp.94-102). Reading, UK: Academic Conferences and Publishing International.

Bratianu, C., Agapie, A., Orzea, I., & Agoston, S. (2011). Intergenerational learning dynamics in universities. *Electronic Journal of Knowledge Management*, 9(1), 10-18.

Bratianu, C. & Andriessen, D. (2008). Knowledge as energy: A metaphorical analysis. In Harorimana, D., & Watkins, D. (Eds.), *Proceedings of the 9th European Conference on Knowledge Management* (pp.75-82). Reading, UK: Academic Conferences and Publishing International.

Bratianu, C., & Bejinaru, R. (2017). Knowledge strategies to increase IC of universities. In Lopes, I.T., & Serrasqueiro, R. (Eds.), *Proceedings of the 9th European Conference on Intellectual Capital* (pp.34-41). Reading: Academic Conferences and Publishing International.

Bratianu, C., & Bolisani, E. (2015). Knowledge strategy: An integrated approach for managing uncertainty. In Massaro, M., & Garlatti, A. (Eds.), *Proceedings of the 16th European Conference on Knowledge Management* (pp.169-177). Reading: Academic Conferences and Publishing International Conferences.

Bratianu, C., Iordache-Platis, M., & Prelipcean, G. (2016). The role of legislation and organizational culture in shaping academic leadership. In Pinzaru, F., & Bratianu, C. (Eds.), *Proceedings of the 12th European Conference on Management, Leadership, and Governance* (pp.17-23). Reading, UK: Academic Conferences and Publishing International.

Bratianu, C., & Orzea, I. (2013). Emotional knowledge: The hidden part of the knowledge iceberg. In Janiunaite, B., & Petraite, M. (Eds.), *Proceedings of the European Conference on Knowledge Management* (Vol. 1, pp.82-90). Reading, UK: Academic Conferences and Publishing International.

Bratianu, C., & Vătămănescu, E.M. (2016). Studentsţ perception on developing conceptual generic skills for business. In Moffett, S., & Galbraith, B. (Eds.), *Proceedings of the 17th European Conference on Knowledge Management* (pp.101-108). Reading: Academic Conferences and Publishing International.

Choo, C.W. (2006). *The knowing organization: How organizations use information to construct meaning, create knowledge, and make decisions*, 2nd ed. Oxford, UK: Oxford University Press.

Davenport, T.H., & Prusak, L. (2000). *Working knowledge: How organizations manage what they know*. Boston, MA: Harvard Business School Press.

Duderstadt, J.J. (2000). *A university for the 21st century*. Ann Arbor, MI: The University of Michgan Press.

Lefter, V., et al. (2011). Intergenerational knowledge transfer in the academic environment of knowledge-based economy. *Amfiteatru Economic*, 13(30), 392-403.

Mayor, F. (1997). The universal university: The university – the crucible of Europe. *CRE-CEPES UNESCO Papers on Higher Education*, 111, 143-151.

Nissen, M.E. (2006). *Harnessing knowledge dynamics: Principled organizational knowing & learning*. London, UK: IRM Press.

Nonaka, I. (1991). The knowledge creating company. *Harvard Business R*eview, 69(6), 96-104.

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*, 5(1), 14-37.

Nonaka, I., & Takeuchi, H. (1995). *The knowledge creating company: How Japanese companies create the dynamics of innovation*. Oxford, UK: Oxford University Press.

Nonaka, I., Toyama, R., & Hirata, T. (2008). *Managing flow: A process theory of the knowledge-based firm.* Houndmills, UK: Palgrave Macmillan.

Secundo, G., Elena Perez, S., Martinaitis, Z., & Leitner, K.H. (2015). An intellectual capital maturity model (ICMM) to improve strategic management in European universities. *Journal of Intellectual Capital*, 16(2), 419-442.

Secundo, G., Elena Perez, S., Martinaitis, Z., & Leitner, K.H. (2017). An intellectual capital framework to measure universities' third mission activities. *Technological Forecasting & Social Change*. Article in press.

Secundo, G., De Beer, C., schutte, C.S.L., & Passiante, G. (2017). Mobilising intellectual capital to improve European universities' competitiveness: The technology transfer offices' role. *Journal of Intellectual Capital*, 18(3), 1-21.

Tiwana, A. (2002). *The knowledge management toolkit: Orchestrating IT, strategy, and knowledge platforms*, 2nd ed. Upper Saddle River, NJ: Prentice Hall.

Vătămănescu, E.M., Gorgos, E.A., Andrei, A.G., & Alexandru, V.A. (2016). The technological advent and dynamics of the network society. The "Middle-Aged Approach". *Brain-Broad Research in Artificial Intelligence and Neuroscience*, 7(3), 16-30.

Zohar, D., & Marshall, I. (2000). *SQ: Spiritual intelligence. The ultimate intelligence.* London, UK: Bloomsbury.

Zohar, D., & Marshall, I. (2004). *Spiritual capital. Wealth we can live by*. San Francisco, CA: Berrtett-Koehler.