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Selecting A Suitable Approach To Analyze The Future Of Higher Education

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Abstract

How are higher education organizations going to cope with the challenges of a society that is continuously changing? Although the education sector needs to adapt to technological and socioeconomic changes, methodologies on which we have relied in the past will not be adequate in the future. In fact, the past represents just one of an infinite number of possible outcomes and the future may involve a completely different framework. As a consequence, we should attempt to identify an appropriate technique for analyzing higher education in the future.

This paper aims to identify the advances and new trends that will allow the definition of a new model for higher education. A crucial paradox is also outlined: whether the witnessed never-before-seen democratization in the accessibility to higher education is going to co-exist in the future with a possible scenario that might restrict its access because of increasing competition and concentration of higher education organizations.

We posit that the quantum approach to time and change (QATC) is a suitable approach that helps to set out the future scenario where the current educational model will be called into question; it is also a key tool for studying the relationship between higher education and society.

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1. Introduction

The society in which we live is changing rapidly and these changes are characterized by the leading role played by innovation and its diffusion, the emphasis on information and the importance of knowledge (Hitt, 1998). Accordingly, the educational system and, in particular, higher education must also change. Universities and other higher education organizations must be prepared for the challenges to the way in which they create and transmit knowledge and information arising from such innovation. This is one of the reasons why change and innovation have become issues of major interest in recent years.

As with other fields of the reality around us, the education sector is aware of new technologies and needs to adapt to technological and socioeconomic changes. But will higher education completely adapt to this progress? The terms e-learning, MOOCs (Massive Open Online Courses), competences, etc. are commonly used nowadays but not so long ago they were largely unknown or nonexistent. We know what the higher education model looks like, but will we continue to see this model in the future? We hypothesize that new generations' understanding of higher education will differ from that of the current generation and, as a consequence, we should attempt to identify a suitable approach for analyzing higher education in the future. Thus, the present paper aims to identify the advances and new trends that will allow the definition of a new model for higher education.

We argue that a more complex environment, mainly due to globalization and the Digital Revolution, calls for more sophisticated techniques. The quantum theory applied to social sciences will help us to set out the future scenario where the current educational model will be called into question. Along the lines of Pallas (2011), who states that "most school reform efforts are destined to fail because they are unable to address the increasing power of markets and consumer demand in the shaping of how schools and colleges work", we believe that if we are not able to understand the future of higher education and its organizations, future education reforms will fail. Doing so requires a new framework.

Zohar (1998) applies quantum physics to organizations, while Erçetin and Kamacı (2008) reflected quantum theory in leadership by defining a new paradigm. More recently, Lord et al. (2015) illustrate how principles of quantum physics can be applied to organizational issues. Their article has many applications and, in our view, has important practical and policy implications for the field of higher education. The quantum approach is a powerful framework, as it allows us to create a number of futures that may require the enactment of different sets of constraints from those being used in the present. This perspective presents advantages in comparison with the traditional models. Then, ours is an original and innovative approach with respect to both education and society.

The rest of the paper is organized as follows. Firstly, we discuss the challenges faced by both society and higher education organizations. Secondly, we analyze whether the quantum approach might be considered a suitable approach for studying the future of these organizations and, eventually, of higher education. Finally, the last section concludes.

2. Higher Education Organizations: Past, Present And Future

There were two papers in the second half of the 90s that predicted some of the changes that we are currently experiencing. First, Ernest Pascarella and Patrick Terenzini (1998) discussed the implications of the changing undergraduate student population, the shrinking financial support for higher education (and the relevance of considering the benefits as well as the costs) and the rise of information technology. These authors pointed out that "the research questions, designs, and methodologies on which we have relied in the past will not be adequate in the future. We must look to adapt them to the changing conditions and to develop new designs and methods" (p. 163). Second, Michael Hitt (1998) noted that new technologies affect how we teach and research. As predicted by this author, the way we teach students in 2016 is dramatically different from the way we did so in 1997: the global emphasis on higher education and on e-learning has played an important role in this regard.

Here we have a key element in our society: the speed of change. In fact, even as we are still getting used to electronic means of learning (e-learning), we see the emergence and spread of new realities such as b-learning (blended learning), m-learning (using mobile devices) and even a transition to u-learning (using any technological resource). Take, for instance, the use of virtual platforms or the meteoric rise of on-line courses and MOOCs.

In line with the previous reasoning, it can be argued that the way in which education will be understood by the future generations will change in the next few years. On the one hand, we observe a trend towards a democratization of culture made possible by the expansion of the internet and mobile devices, which can be compared to the expansion of the goods trade enabled by the railway systems more than two centuries ago. As with the railway, the increasing number of technology users will affect the way in which societies behave with science playing a special role in future developments. On the other hand, new generations of students are born with a "smartphone under the arm"; they are sometimes referred to as "digital natives", as they have grown up as part of the Information Age (Schmidt, 2014).

The main concern in this paper is about the future of higher education in light of the increasing popularity of b-e-m-u-learning (henceforth, we use the term b-e-m-u-learning for grouping the most recent types of learning, i.e., non-traditional learning: b-learning, e-learning, m-learning and u-learning). The future is more unpredictable than the present or the past, and it may not be possible to generalize from expectations based on the past to a potentially very different future in a context where innovation in connectivity plays an increasingly crucial role in local outcomes. In the Schmidt (2014) work on leadership, the author stresses that younger individuals are more adept at working in virtual teams, as they are more familiar with virtual relations; he predicts that as these individuals become more numerous in the workforce, the way in which work is done will change, new potentialities will be created and the nature of virtual leadership processes will change.

The previous paragraph brings up an important sociological factor: the future is created by young people. This fact underlines our selection of the quantum theory, as the problem with referring to the past in order to predict the future is that the generation under consideration is not the one that will predominate in the future (Lord et al., 2015). In the same vein, we cannot forget another influential element: the current demographic crisis. The young people cohort is increasingly exiguous; how is this going to affect the higher education model?

The growing role of social communication networks should be highlighted; these new technologies are radically changing the ways of communication. This situation endows the internet with an important educational potential. The potential of the professional (see LinkedIn), academic (see ResearchGate) or social (see Facebook, Twitter or WhatsApp) networks is overwhelming, and we must take into account that new generations have grown up with them.

These days we are accustomed to the concept of b-learning. We have a clear example in Europe: the creation of the European Higher Education Area entails a new educational model where students take a leading role and work autonomously, while the teacher acts as a "manager" and catalyst for knowledge. This context encourages the adoption of educational strategies that do not require students and teachers to be physically present in the same place; it is possible to pass a subject, and even achieve an academic degree, without attending classes. A crucial question immediately arises: are internet and mobile devices new complementary tools or substitutes for traditional higher education?

The most outstanding universities offer very high-quality specialization courses that can be completed in a fully virtual setting (for example, Edx or Coursera). Furthermore, we are already experiencing a reality that would have been hard to imagine in earlier times: the completion of full academic degrees exclusively via the internet. Although as it stands e-learning may be seen as a merchandising strategy and a way to bolster the image of programs of highly-esteemed educational organizations (see Bremer, 2014), it is clear that e-learning can make sense in many cases (see Best, 2015).

We focus our attention on b-e-m-u-learning. Although it is not a general fact, at present the educational organizations that are able to support these new types of learning are frequently the most prestigious ones. Consequently, while it may be possible to study a full degree via b-e-m-u-learning in this type of institutions, it could also be very expensive. Nonetheless, the cost of moving away from the family home to live in a different town, as well as tuition fees, are also high enough. So, it might be sensible, especially in the case of poor and middle-income families, to opt for a b-e-m-u-learning academic degree offered by a well-known institution.

If the future educational system was characterized by a coexistence of traditional and new types of teaching-learning, what would students choose? An academic degree from a well-known but expensive institution? Or a more affordable degree from a "local" institution (closer to home)? Here we appreciate some kind of paradox. While we have witnessed a democratization in the accessibility to higher education (thanks to globalization and technology), it

is precisely this new scenario that might restrict access due to higher costs. This is a crucial question for our discussion.

The previous issues point to the consideration of a new dimension: the socio-economic impact. Future developments in the higher education model will affect the competition, competitiveness and concentration of higher education organizations. We will need new competitive strategy models, as the framework that supports the universities must be sustainable both in the economic sense and regarding a human perspective. This new scenario will have further effects at the macroeconomic level, among others, and on the decision-making process. At this point, the dual nature of our proposal is noted: we believe that it is necessary to find a framework that allows us to determine how societal changes will affect higher education and, at the same time, how higher education will affect society.

In short, we raise the possibility of a future scenario where the educational model will be completely different from the present one. In order to study the future of educational organizations, we think that the quantum approach is a suitable one, as it provides the tools for analyzing the dynamic change the institutions are undergoing.

3. The Future Of Higher Education And The Quantum Approach

How is higher education going to change in the near future? There is no a certain answer to this question, but we believe that the quantum theory can be a powerful approach. Quantum theory is a physics theory based on the concept "quantic unit", used to describe the dynamic properties of subatomic particles and the interactions between matter and radiation. A key contribution is the "uncertainty principle", which states that it is not possible to specify in an exact way the position and linear moment of a subatomic particle. An additional quantum principle is that observing a system alters its course; it is necessary to interact with the observed system in order to make an observation (Hawking and Mlodinow, 2010).

Lord et al. (2015) propose the integration of the quantum theory with a vision of the future as a flow to the present in order to gain a better understanding of future issues, as well as notably improving the understanding of change processes. They name this combined approach the "quantum approach to time and change" (QATC). The QATC has at least three advantages over traditional feed-forward models (FFMs). First, a QATC provides a new perspective by emphasizing that the future is often qualitatively different from the present or past. Second, a QATC is grounded in quantum physics, which offers a diverse set of research tools and concepts that could supplement existing tools for studying dynamic change in organizations. Third, many of the ideas addressed challenge fundamental assumptions regarding the nature of change.

As highlighted by Lord et al. (2015), while humans tend to view future events as intrinsically based on past events, it is also true that phenomena do not emerge from the past in a simple way. Quantum physics refers to the "superpotentiality" state as that in which many possibilities are in an indefinite state but have the potential to occur when influenced by a certain context. Accordingly, a present event is the result of the convergence of multiple occurrences and processes that take place at different levels in individual, group and organizational systems.

An idea that we would like to emphasize in this paper is that the future is not just a continuation of the past: the latter represents just one of an infinite number of possible outcomes and we should bear in mind that the future may involve a different framework. In fact, these ideas borrowed from quantum physics and combined with recent technological advances have already been expressed in our society thanks to the culture sector; for a review of the implications of scientific developments in the 20th century for arts and culture, see Henderson (2008).

Therefore, we think that one of the advantages of the QATC for studying the future of higher education institutions is that it does not start with the assumption that organizational processes are predictable or consistent. By taking a QATC perspective, we see that there are always multiple paths to the future, and some are associated with pasts that did not occur but may characterize future situations better than the actual past. In this context, it not occurred in the 1980s that the future generations of students were born with continuous access to digital information. Thus, in the 80s and 90s, parents tended to worry about face-to-face dangers to their children, present mainly during the school day and with a small audience (for example, bullying). For children born in the 2000s, cyberbullying coexists with traditional bullying; children face an anonymous enemy and can be bullied not only at school, but also at home, all day and with a wider audience. This example illustrates how the environment of future generations of students has changed in relation to the previous ones.

In comparison to other methodologies that we could use to study the future of education, the quantum theory presents another advantage (Lord et al., 2015): probability waves develop over time while still in an indefinite state, whilst other specifications based on classical probability theory (switching regime models, for example) are only able to reflect the evolution in terms of a change from one definite state to another definite state.

The previous considerations are key ones, as they mean a reassessment of the manner in which we habitually examine and address the future. Nevertheless, phenomena change and we cannot expect a model based on the past to work perfectly when applied to the future. As noted by Lord et al. (2015), most classical models are unable to account for emergent phenomena because they did not exist in the past (although there have been many advances at this respect). Why should the past-based method be the most appropriate? It may not be suitable for certain (or even many) issues.

The perspective based on the past has the particular disadvantage that it does not usually take into account the high uncertainty and the nonlinear nature of any economic, social or human event. This omission, added to the failure to account for alternative possibilities, has important consequences, such as forecast errors and biases, and their (predictable) effects on the decision-making process. Thus, we find that the quantum approach is a key tool for the study of the relationship between higher education and society.

4. Concluding Remarks

How will the current context of globalization along with the Digital Revolution affect higher education? What will the higher education model look like in the near future? Obviously, there are no certain answers to these questions but the future scenario will represent a radical departure from the one existing today and that has existed for centuries. And this change is much more likely than unlikely.

We live in an age where information and communication technologies have a massive presence. For the youngest generations, the use of new technologies will be as natural to them as it has become in our daily lives and they may feel more comfortable in a virtual rather than a face-to-face environment.

How are universities and other higher education organizations going to cope with the challenges of a society that is continuously changing? In further analysis, we want to analyze the impact on several dimensions including the teaching-learning process and its quality and efficiency, the competition and competitiveness in the education sector, social effects (equality, location) and the final effect on economic development. The future viability of poorly-resourced higher education organizations that face difficulties attracting the top scholars should be emphasized too.

Two of the specific concerns arising in this paper are related to increasing competition and, eventually, concentration of higher education organizations: 1) Is e-learning with those organizations that are able to attract the top scholars a substitute for what new generations of students perceive that other higher education organizations are offering?; and 2) Regardless of language barriers, is b-e-m-u-learning with the most prestigious universities within a particular country (or region) a substitute for traditional education in "local" universities?

We have posited that QATC is a suitable approach for studying the future of higher education. With the QATC suggesting that failing to consider alternative possibilities may lead to decision-making fallacies, we should reconsider the role of teaching staff in higher education organizations. They should be able to specialize and to transmit something not offered in, for example, a MOOC. However, in light of the evolution of new technologies over the last years, it would seem a very challenging task.

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