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Article in *Business Horizons* · March 2016

DOI: 10.1016/j.bushor.2016.01.003

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Competition and strategy in higher education: Managing complexity and uncertainty



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KEYWORDS

Academia;
Alumni;
Business schools;
Higher education;
Public service;
Research;
Strategy;
Teaching;
University
management

Abstract Like several other nonprofit and for-profit industries, the higher education sector has been subject to a series of fundamental challenges in the past decade. Education used to be considered a public good, provided by nonprofit organizations that were unexposed to market pressure and had clear societal missions. Now, education is becoming a global service delivered by quasi-companies in an ever-more complex and competitive knowledge marketplace. To cope with these challenges, higher education institutions need an appropriate strategy, a necessity reflected in numerous calls for research on strategy in the higher education sector. This article's purpose is to contribute to this discussion by providing prescriptive guidance to higher education managers and policy makers. To this end, it proposes a SWOT (strengths, weaknesses, opportunities, threats) analysis illustrating eight key trends that will impact higher education and academia in the short-to-medium term. Drawing from these trends, three core challenges are identified that higher education institutions will face and that have fundamental implications for research and practice: (1) the need to enhance prestige and market share; (2) the need to embrace an entrepreneurial mindset; and (3) the need to expand interactions and value co-creation with key stakeholders.

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1. Higher education: Between business reality and societal aspiration

Higher education (HE) has become a crowded global marketplace and, as such, is not immune to changes

affecting 21st century society—an increasingly global, digital, and dynamic environment. Scholars, opinion leaders, and institutional decision makers, who actively shape the academic landscape, have attempted to predict how the field of HE will be influenced by environmental trends. There is a general consensus that the future of academia is and will be complicated, challenging, and uncertain; some authors view this future with optimism, whereas others foresee doomsday scenarios.

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Most analyses of the current and future states of HE converge on several conclusions. One such conclusion is that business ethos and practices are becoming acceptable in HE. Indeed, some authors have emphasized the need to adapt pure market and marketing logics to the university setting (Gibbs & Murphy, 2009). Another common claim is that HE institutions need to develop competitive strategies to assess drivers of change, to devise adequate responses to such change, and to develop policies and strategic guidelines that allow for evolution (or even revolution) to happen.

Universities have three basic missions: teaching, research, and public service. These missions have always been in conflict with one another (Altbach, Reisberg, & Rumbley, 2009). This has become even more salient in recent years, as the environment of the HE sector has become increasingly marketized. On the one hand, to survive, HE institutions must behave like for-profit organizations, prioritizing revenue creation. On the other hand, they must also serve as nonprofit organizations, prioritizing the public good and serving as providers of knowledge and a path for educational development (Council of the European Union, 2014). Similar challenges are faced by other not-for-profit players and public entities—in the health care sector, for example—which must continue to work for public welfare while maintaining profitability and cutting costs. In fact, even for-profit companies are increasingly facing such tensions, as corporate social responsibility and societal value have gained prominence in the public eye.

Herein, we adopt the premise that the societal nature of HE (i.e., its role as a public good) is one of its core characteristics (Nedbalová, Greenacre, & Schulz, 2014), despite observations that some institutions have been tempted to neglect societal aspects in the rush for income and prestige. Thus, we suggest that any discussion of strategy in this sector should carefully consider the societal scope and nature of the organizations involved. This means that in working to develop a path for its future, a given HE institution must focus on both the organizational level (i.e., sustain its ability to compete in the market; Friga, Bettis, & Sullivan, 2003) and on the sector level (i.e., maintain its capacity to provide value for society through knowledge creation and dissemination; Healey, 2008).

The increasing complexity and uncertainty characterizing today's society are phenomena that businesses have to cope with on a daily basis. Yet, in its role as a provider of public services, the HE sector has, until recently, been spared the need to deal with these developments. Over the past

decade, however, the field of education—most notably in Europe, but also elsewhere in the world—has undergone substantial deregulation, and as a result, the sector currently faces a stronger need to react to the competitive environment. This process is very similar to what the telecommunications and utilities industry underwent some 10–15 years earlier.

Despite deregulation, governments and other supranational entities are contributing—and are likely to continue contributing—to the rethinking of academia through various sectorial interventions ranging from regulations, policies, and recommendations to quality assurance procedures and standards, and public resource allocation (Altbach et al., 2009; Kaplan, 2014). Yet academic institutions cannot suffice with these interventions and must still develop adequate strategies that will enable them to address the new environment of an ever-more competitive educational market.

This article contributes to the debate on the future of HE by providing an updated picture of key trends that decision makers in the sector should consider, in addition to an outline of three strategic recommendations that may assist decision makers in responding to these trends.

2. An analysis of key trends and developments affecting HE

Using previous literature, such as the work carried out by de Boer et al. (2002), as a starting point, we identify key trends affecting today's HE sector. Table 1 presents a high-level synthesis of eight trends that we observe, categorized within the format of a classic SWOT analysis.¹ In presenting this categorization, we aim to help university managers and policy makers to prepare themselves and to be able to act quickly to prevent potential future crises.

Our analysis highlights the fact that while many trends faced by the sector are currently well acknowledged and have straightforward strategic implications (e.g., the need to preserve the principle of the public good as an essential component of the university's mission, the need to adopt a private fundraising strategy to balance decreases in public funding), several other trends have multifaceted influences on HE and warrant further discussion. For example, the process of deregulation that the sector has undergone over the past decade has decreased protections afforded to established public

¹ SWOT: strengths, weaknesses, opportunities, threats

Table 1. SWOT analysis of current key trends impacting higher education

Strengths	Weaknesses
<ul style="list-style-type: none"> ● Essential source for a society’s talent and innovativeness <ul style="list-style-type: none"> - Institutionalized public service with a societal mission - Important provider of knowledge and innovation ● National driver and global ambassadors <ul style="list-style-type: none"> - HE as domestic resource, engine of growth and economic recovery - International expansion and global knowledge dissemination 	<ul style="list-style-type: none"> ● Substantial delay in entrance of business practices into HE <ul style="list-style-type: none"> - Tradition of being a public service financed and protected by the State - Resistance of faculty, who are often organized in strong public sector unions ● Low responsiveness to changes within the corporate world <ul style="list-style-type: none"> - Little adaptation of programs and curricula to recruiters’ needs and job expectations - Myopic ‘publish-or-perish’ research strategies leading to purely academic publications without consideration of other stakeholders
Opportunities	Threats
<ul style="list-style-type: none"> ● Fast-evolving HE environment through ICT <ul style="list-style-type: none"> - Development of new markets, potential productivity gains, and branding possibilities - Advancement of both general knowledge and network society ● Rapid transformation encouraged by socio-demographics <ul style="list-style-type: none"> - Millennials seeking augmented educational experience - Growing and changing student population 	<ul style="list-style-type: none"> ● Continuous decrease in public funding <ul style="list-style-type: none"> - Necessity for external fundraising and increased self-financing - Need for marketization of HE, potentially lowering academic standards and quality ● Increasingly competitive environment <ul style="list-style-type: none"> - Domestic deregulation leading to new market entrants - Globalization broadening competition to an international scale

institutions, thereby permitting the entrance of new private players. At the same time, however, deregulation has increased the autonomy of those same institutions in choosing their competitive strategies and allocating their resources.

Another example relates to the increasing degree to which HE institutions are becoming international. On the one hand, such internationalization provides universities with access to a large pool of talents (and other types of resources). Yet, on the other hand, it exposes universities to other competitors who seek to capture the same resources. In effect, internationalization forces universities to compete not only in a national arena but also in a global arena; these two competitive arenas are distinct but feed into each other (Marginson, 2006). What follows is a detailed discussion of the SWOT analysis summarized in Table 1.

2.1. Strengths: Importance for a nation’s development and global reputation

Education has been, and still is, largely considered a public good (Nedbalová et al., 2014), the purpose of which is to disseminate knowledge and contribute to the development of society (Council of the European

Union, 2014). In practice, HE’s contributions to society stem from providing education and nurturing talent, and from the advancement of research to produce applicable knowledge as a strategic resource (de Boer et al., 2002).

In a globalized world, knowledge, research, and innovation are becoming increasingly important resources, and these developments are influencing the societal role of universities (Välilä & Hoffman, 2008). Specifically, the capacity to commercialize knowledge has become crucial toward ensuring the future growth of individual universities (e.g., commercialization drives universities’ ability to secure funds and to strengthen relationships and collaborative partnerships with key stakeholders, such as an institution’s alumni; Altbach et al., 2009). These considerations influence the manner in which knowledge is generated and the assessment of the value of knowledge.

Furthermore, in a global market in which national economies compete with one another, HE institutions are key players in enhancing the positions and reputations of their respective countries by fostering innovation (de Boer et al., 2002). This role implies that HE institutions maintain strong national affiliations and can be considered national resources, an

engine of growth and economic recovery (European Commission, 2012). This can be compared to key industries in specific countries, such as the automotive industry in Germany or the luxury industry in France, with the slight difference that HE serves a national resource in virtually all countries around the world.

Despite their national orientation, HE institutions strive for internationalization—in terms of faculty, students, and curriculum—as a source of opportunities and resources (Altbach et al., 2009). Moreover, for countries importing foreign students, international HE is a lucrative business (Altbach, 2004; Lee, 2014). HE institutions are eager to become global providers by serving new geographies (e.g., by entering foreign countries with satellite campuses or through alliances with universities and other organizations abroad; Friga et al., 2003) or simply by expanding the scope of international recruitment for their home campuses (Altbach, 2004). This trend of internationalization suggests that we will observe increasing competition at institutional, national, and international levels in which each geographical region becomes more crowded with institutions: established universities, new institutions, and private providers (Schofield, Cotton, Gresty, Kneale, & Winter, 2013).

2.2. Weaknesses: Delay in adopting business practices and an entrepreneurial approach

To compete in the marketplace, HE organizations are required to engage in increasingly complex marketing activities, encompassing multiple targets, media, and geographies (Gibbs & Murphy, 2009). As a result of such marketization of the HE sector, management approaches and practices that are typical to private sectors are increasingly being applied to universities. Several studies have sought to observe how broad marketing concepts can be applied in the context of HE, such as service and relationship marketing, scope, adaptation needed, and limits (Kaplan & Haenlein, 2009). Notably, the HE sector's attempts to catch up with other, more commercial sectors in terms of marketing and other managerial practices are associated with serious risks to the quality of education and research, as these areas may be neglected in the pursuit of recruitment (Nicolescu, 2009).

HE institutions have been slow to adjust to the need for a more business-oriented approach. For example, Friga and colleagues (2003) state that although business schools have adopted a renewed strategic emphasis, their strategies and structures remain fairly similar to those set out in the 1950s.

Part of this delay is explained by structural sectorial factors: For centuries, education has been considered a public good, shaped by many entities at both supranational and national levels, with the consequence that concepts such as autonomy and accountability are relatively new for the individual university. Moreover, faculty members—the core of any university—are not necessarily likely to be market-oriented, and may potentially be organized in strong public sector unions, thus further hindering the capacities of HE institutions to adapt to the changing marketplace.

There are numerous manifestations of the rather limited capacity of HE institutions to respond to the developing demands of society. For example, in today's job market, an increasing number of workplaces require an HE degree, yet the skill sets and competencies that students must acquire to enter the job market differ from those required in the past (European Commission, 2012). Numerous calls for redesigned curricula have been put forward by scholars, practitioners, and governments alike, often without adequate response (European Commission, 2013).

A second example regards knowledge creation. Universities have often drawn criticism for adopting myopic publishing strategies: too often they encourage publications written from a purely academic perspective, focusing on scientific research that is publishable in top academic journals read mainly by other academics. Along the lines of the 'publish-or-perish' dogma, such publications are often the sole determinants of a professor's promotion or successful tenure application. This approach to knowledge completely neglects other stakeholders—practitioners and students *in primis*—whose support is crucial for the acquisition of resources (Cotton & Stewart, 2013).

2.3. Opportunities: ICT and socio-demographic trends encourage rapid transformation

Information and communication technology (ICT) is disintermediating and changing the rules of the game in literally all sectors, HE included. The media industry in general, and the music industry in particular, experienced the consequences of the ICT revolution the hard way several years ago, and some foresee similar scenarios for the HE sector. Yet, the advancement of ICT could be an enormous opportunity for those HE institutions able to leverage Web 2.0 solutions for their own benefit. ICT solutions provide new channels for growth (e.g., through borderless, virtual education), which can enable HE institutions to address the increasing demand

for education worldwide, a demand that cannot be fully met solely through offline channels (Friga et al., 2003). ICT can also contribute toward cost reduction, as the transition from physical to digital solutions can improve efficiency and save costs (EPRS, 2014). Finally, innovative technological solutions can enable universities to improve their own positioning by offering a response to the quest of tech-savvy millennials for an augmented educational experience (McHaney, 2011).

More generally, ICT developments have substantially enhanced the potential of universities for knowledge creation and dissemination. On one hand, the digital environment has vastly increased the number of sources of knowledge available, as well as the ease and immediacy of accessing such sources (McHaney, 2011), bringing substantial benefits to many HE stakeholders. From a researcher's perspective, for example, online resources, such as scholarly databases, enable research to be rapid, comprehensive in scope, and efficient; likewise, the same infrastructures make the researcher's own work visible and accessible, potentially enhancing its impact. On the other hand, ICT has facilitated the creation of a network society, giving rise to an expansion and reconfiguration of collaboration inside institutions and among organizations, overcoming the limitations of traditional forms of cooperation (Castells, 2011). The network society thus encourages HE institutions to strengthen their relationships with core stakeholders and to engage in interactions with partners, including other universities and industry partners (e.g., technology firms; Friga et al., 2003).

Another opportunity faced by the HE sector relates to sociocultural and demographic trends, including an influx of tech-savvy students, and general growth in HE demand and diversity in student populations. The strategies of HE institutions should address these developments.

Current university candidates are digital natives who act as rational and informed customers when selecting universities (Temple & Shattock, 2007). Moreover, when these digital natives commence their studies, the influence of their tech-savviness is reflected in their approach to the educational process, beginning with their basic interactions with their professors (McHaney, 2011). In particular, digital natives seek to approach learning through social networking and other forms of convenient, digitally based and multimedia-based delivery systems, offering immediate and personalized interaction (Budde-Sung, 2011).

Demographic and sociocultural trends have influenced not only student behavior, but also the composition of the student body itself. HE institutions

are facing greater demand from a more diverse set of candidates. University classes are currently composed of students from a multitude of social, religious, ethnic, and geographical backgrounds. This trend is driving reforms in the educational system (Altbach et al., 2009; Friga et al., 2003) and has led to corresponding drastic shifts in students' expectations regarding the classroom experience. In particular, students are currently looking for high exposure to diversity (Budde-Sung, 2011).

2.4. Threats: Scarce resources within an ever-more competitive and global HE market

Public funding for universities has generally decreased (Altbach, 2004), which threatens the development potential of these institutions and increases the importance of designing fundraising activities that target companies and alumni, and of developing executive education activities. The deregulation of the HE sector, most prominently in Europe but in other regions as well, has increased universities' autonomy, self-organization, and accountability (Hoecht, 2006), yet it has also facilitated some level of privatization of the sector and entrance of new players. This trend, coupled with the massification of education (as reflected, for example, in the availability of massive open online courses [MOOCs]), has made competition in the HE sector even more stringent (Schofield et al., 2013).

Universities need to compete in a crowded, global marketplace (Schofield et al., 2013), and the consequent need to market themselves (Friga et al., 2003) to attract students, and thus to maximize revenues, has led many HE institutions to adopt a more consumerist approach, catering more to students' wishes (Brown, 2011). This trend, however, has negatively impacted academic standards (Altbach et al., 2009) and threatens future academic quality.

3. Strategic recommendations and guidelines for contemporary higher education

A detailed examination of the strengths, weaknesses, opportunities, and threats overviewed above suggests that the HE sector must respond to the following three core challenges, which we call the Three E's for Education:

1. Core challenge 1: Enhance HE institutions' prestige and market share in a consolidating global educational market.

2. Core challenge 2: Embrace a deeper entrepreneurial mindset, with corresponding modus operandi and decision-making approaches.
3. Core challenge 3: Expand links, interactions, and value co-creation with key stakeholders.

In Table 2, we propose a set of strategic guidelines that HE institutions might follow to address these challenges.

3.1. Core challenge 1: Enhance HE institutions' prestige and market share

Competition in academia has always been a force, and universities are used to competing for status and ranking, talent, and funding, either from public or

private sources. We suggest that HE institutions' primary focus of sustaining institutional reputation and serving society can be enriched by a sharp look at how markets assess these institutions, and at how market standing can be leveraged to gain resources for future growth, especially in light of reductions in direct and indirect public funding. In particular, a university's market standing has the potential to become the definitive indicator of the institution's quality for a multitude of stakeholders. To improve their market standing, we propose that HE institutions address the core challenge of enhancing their prestige as well as their market share.

Increased competition and the massification of education have encouraged universities to increase their market share by expanding and diversifying their offerings (in terms of educational levels and

Table 2. Strategic recommendations for contemporary higher education

Moving from going toward
<ul style="list-style-type: none"> ● HE institutional prestige and value for society <ul style="list-style-type: none"> - Focus on public good, education, and research excellence - Decrease in direct and indirect public funds encourages HE institutions to search for private streams of resources and funding 	<ul style="list-style-type: none"> ● Guarantee resources for sustaining growth <ul style="list-style-type: none"> - Additional performance metrics to measure universities' excellence, and ultimately enable them to access resources for future development; Market will assess which universities deserve to be part of the top leagues - More advanced stage of private fundraising, leveraging university reputation to become preferred partner of choice of key stakeholders (notably alumni, but also students, professors, corporations, etc.) and new forms of collaboration between the university and the rest of the world
<ul style="list-style-type: none"> ● New managerialism in Public sector <ul style="list-style-type: none"> - Renewed attention to strategic emphasis, marketing objectives, and curriculum - Pivotal role of academics in contributing to HE institutions' quality and reputation - Substantial investment of resources for research activities and limited autonomy in investment strategies (reliance on public funds and investment guidelines) 	<ul style="list-style-type: none"> ● Entrepreneurial leadership at all levels of HE institutions <ul style="list-style-type: none"> - Defined and formalized mission and strategy able to guide an entrepreneurial approach at all levels of HE's institution - Pivotal role of academic-managers in contributing to HE institutions' quality and reputation and participating actively in management and decision making - Increased autonomy and accountability permit more control over resources and freedom to choose investment strategies. Management of HE has to encompass more complex and urgent business decisions (e.g., the ICT infrastructure)
<ul style="list-style-type: none"> ● Traditional relationships with key stakeholders using traditional media <ul style="list-style-type: none"> - Tech-savvy students and industry interlocutors versus heterogeneous ICT competencies among academics - Knowledge production using a limited set of web solutions - Traditional learning process and heterogeneous adoption of participant-centered pedagogies, mostly in class - Service marketing strongly relying on traditional media and one-way communication (from HE to rest of the world) 	<ul style="list-style-type: none"> ● Increased connections, interactions, and value co-creation with a larger set of key stakeholders <ul style="list-style-type: none"> - Learn to navigate the new technology-oriented and multimedia environment, with HE institutions supporting academics as they acquire necessary skills - Deeper integration of Web 2.0 and networking in research - New design of learning processes and infrastructures, aiming at co-learning through highly interactive and responsive pedagogies - Dialogue and participative communication, leveraging new media (and in particular Web 2.0 and social media) to address HE's different audiences with customized messages

curricula) and the scope of their recruitment to attract and serve new subgroups that have not yet been tapped. This mass market logic has led some universities to fight for market share at the expense of lowering their academic standards. At the other extreme of the competitive arena, some top universities attempt to cope with the increase in rivalry for resources by building and trading on their strong reputations (e.g., by increasing the difficulty of the admission process to ensure access to only the most talented students). The latter approach is based on the premise that a university's prestige is crucial in determining access to resources in the form of students who seek to enroll, private and public fundraising capability, alumni commitment toward the institution, and desirability as a partner in research collaborations, applied projects, and executive education by corporations.

Strategies deployed by the top league of internationally established HE institutions reflect the idea that to address the challenge of enhancing the prestige of HE institutions, decision makers must focus not only on the quality of education and research produced but also on their institutions' positioning in external accreditations and rankings (including league tables) and in stakeholders' minds. A key stakeholder group to be considered in this context is alumni, who are becoming ever more crucial. This strategic focus has a salient impact on the methods and criteria used to assess HE institutions' success and, in particular, the performance metrics used to measure universities' excellence. This focus also carries important implications for each university's strategy in terms of resource allocation—which must prioritize activities valued highly by the market—and in terms of criteria for awarding promotions and academic recognition.

Supranational entities and national governments will have pivotal roles in rethinking the education assessment model and adjusting it to comply with market requirements while preserving the societal scope of HE institutions. In particular, public authorities in charge should ensure the existence of a sustainable, well-funded framework to support the efforts of higher education institutions. Indeed, in many countries, topics such as quality assurance and improvement, accountability, and qualification frameworks in the HE sector have risen to the top of national policy agendas.

In Europe, for example, the 1999 Bologna Process has fundamentally changed the higher education arena by ensuring a more comparable, compatible, and coherent system of HE within Europe. One of its main achievements has been the creation of a quasi-homogeneous three-cycle system (i.e., bachelor/

master/doctorate) across Europe. Another is the facilitation of student mobility across European countries. This mobility system is based on the introduction of the European Credit Transfer System, a standard for comparing students' study performance and attainment with the possibility to transfer obtained credits from one European university to another. While the Bologna Process proposes broad guidelines for convergence in the European HE sphere, it leaves sufficient room for keeping national specificities. Especially in Europe, which embraces "maximum cultural diversity at minimal geographical distances" (Kaplan, 2014, p. 532), maintaining cultural independence is key for limiting resistance to such a unifying mechanism and guaranteeing its success.

University management and scholars, in turn, should take on a central role in the design of a new assessment framework, promoting bottom-up initiatives and think tanks to bring concrete proposals to political and institutional decision makers, which take into account the learner-centric and knowledge-centric focus of HE. Moreover, they should also proactively become champions of change in their own HE institutions to ensure that these new logics are fully understood and implemented by all levels of the organization. Managers in academic institutions must act as leaders, able to balance prestige-driven and market-driven logics in their decisions. Notably, considering that official initiatives to reshape the assessment of HE might be slow to take effect, institutions might attempt to influence their own reputations more quickly through new modes of communication. In our current era of social media and viral marketing, word-of-mouth communications by alumni will play an increasingly important role in promoting HE institutions.

An alternative strategic focus that academic managers might adopt when attempting to enhance the market standing of their institutions relates to the capacity of university curricula to respond to the evolving requirements of the job market. By adopting a focus on candidates' employability, HE institutions will gain better visibility—particularly in light of rankings that consider, among other aspects, the career progression of graduates—and ultimately contribute to the greater social good by supporting economic recovery. Alumni have shown to be excellent sparring partners in this context. Universities that do not respond to corporate demand by adapting their curricula to the needs of the job market will find it difficult to compete with rapidly emerging corporate universities (i.e., educational entities that are sponsored by corporations or even operated in-house and whose educational

goals are entirely aligned with the corporations' objectives).

The practical aspects of updating and expanding their competence bases are expected to pose a challenge to HE institutions. Broadly, universities should support their academic staff and encourage them to develop skills for new pedagogical approaches that have been opened up by digital technologies and that are relevant to companies. Such skills are expected to provide opportunities to improve the quality of teaching and learning (Altbach et al., 2009; Council of the European Union, 2014). Indeed, the European Commission—for example, as part of its Europe 2020 initiative—has issued recommendations on salient curricula and competencies that universities should foster to better prepare students for the job market of the future (European Commission, 2012). The European Commission suggests that to promote relevant curriculum development, universities initiate a participative dialogue and partnerships among teaching staff, students, graduates, and labor market actors (European Commission, 2013).

A third aspect of enhancing the market standings of HE institutions relates to the capacity to keep up with ICT developments. Such developments have reduced and even eliminated barriers to the entry of new education providers—such as the need for a physical campus. Thus, traditional universities must now compete with full-fledged private online universities, small private online courses, and MOOCs, which are gaining market share. University managers should take this competitive aspect into account when considering the objectives and potential returns of digitization, and when planning the implementation of the digitization process, including development of faculty competencies, curricula and pedagogies, and infrastructures and processes. Notably, failure to stay up to date on such ICT developments represents a serious threat of obsolescence for HE organizations. Continuous professional education of professors and staff is an urgent issue to be addressed, on a par with the modernization of the overall institutional infrastructure and key processes. Recommendations on how to modernize HE in terms of the sector's digital agenda have been issued by the European Commission as part of its Europe 2020 initiative (European Commission, 2013). Some institutions are leveraging ICT in their knowledge production to a substantial degree (e.g., online databases and virtual video conferences), but much remains to be done in this regard, including deepening the integration of Web 2.0 and usage of social media (e.g., forums and groups in dedicated platforms) and social networks.

3.2. Core challenge 2: Embrace a deeper entrepreneurial mindset

Universities should continue to attribute top priority to promoting a learner-centric and knowledge-centric focus. However, to cope with a changing world characterized by limited resources (i.e., to adapt to market conditions as discussed above), academic institutions should become entrepreneurial with managers who adopt a business-oriented *modus operandi*, act as leaders, and balance prestige-driven and market-driven logics in their decisions.

Thus, to address the second core challenge (i.e., to embrace managerialism in HE institutions such that institutional managers act as entrepreneurial leaders), HE institutions must undergo a major shift in terms of their managerial approach. Each university's management should commit to a complete rethinking of its strategy, starting with redefinition of the institution's mission, vision, values, and strategic guidelines.

Embracing an entrepreneurial approach implies that academics must become academic managers, meaning that although they will continue to contribute to the quality and reputation of their respective HE institutions through teaching and research—which will remain the key components of their roles—they will also be asked to show deeper commitment to the management of their institutions. The latter entails participating in the decision-making process and actively marketing themselves and their projects to attract resources and strengthen links with other academic and non-academic institutions and with industry partners and alumni.

The ability of HE managers to adopt an entrepreneurial mindset is strengthened by the increasing autonomy of HE institutions, a product of the gradual deregulation and privatization of the sector, in addition to contemporary governments strongly encouraging universities to adopt self-organizing, decision-making models (Sam & van der Sijde, 2014; Schofield et al., 2013). This autonomy goes hand in hand with increased accountability on the part of heads of HE institutions regarding their use of public funds. On the one hand, such accountability may provide benefits, such as greater control over resources, and freedom to choose investment strategies. On the other hand, such accountability may be a hindrance, particularly as HE institutional managers must make larger numbers of decisions of increasing complexity, including decisions regarding the ICT infrastructure and level of digitization.

HE boards should ask themselves to which extent professors (and staff) should undergo professionalization to enhance their capacity to act as

academic-managers who launch and facilitate organizational reforms in educational systems (Deem & Brehony, 2005). Furthermore, heads of institutions and institutional leaders should further think about supporting mechanisms that can contribute to enacting desired managerial initiatives. For example, to enhance the quality of teaching and learning, universities might choose to recognize and reward (e.g., through fellowships or awards) teachers who make significant contributions toward achieving this objective, either through their teaching or through their research.

3.3. Core challenge 3: Expand links and interactions, and value co-creation

Addressing the third core challenge (i.e., expanding links and interactions, and valuing co-creation with key stakeholders with a specific focus on alumni) implies complete renewal and reshaping of relationships with various partners and expansion of the number of touch points in these relationships. Indeed, the European Commission (2013) recommends that HE institutions should strengthen network relationships as a means of increasing universities' access to resources and fostering the linkage between universities and industry entities and their ability to co-create knowledge or to offer joint programs and opportunities for interdisciplinary research.

We suggest that the capacity of an HE institution to address this challenge is highly dependent on the extent to which it incorporates current information technologies into its relationships with various stakeholders. Web 2.0 and social media platforms (Kaplan, 2012; Kaplan & Haenlein, 2010) have been widely adopted by the public. These technologies have become highly influential in the selection processes of prospective students seeking universities and of corporations looking for strategic partners.

Moreover, students expect the university experience to reflect the environment to which they are accustomed—an environment that is currently characterized by a high degree of participative collaboration. Accordingly, as public service organizations, HE institutions should adopt a student-centric perspective and ensure that they respond to these expectations, not only by adding technologies to current pedagogies and practice (indeed, some professors have begun to timidly incorporate video and other media in their lectures) but also by completely reshaping current practices to incorporate interaction and co-learning.

To achieve these objectives, both HE managers and academics must be willing to embrace new digital solutions and ensure adequate use of technology and new emerging platforms in daily

educational processes (e.g., see EPRS, 2014). Managers of HE institutions will have to determine which initiatives and mechanisms should be put in place for facilitating this major shift, starting with investing in supporting academics as they learn to navigate today's digital environment.

Ultimately, the shift to increase interactions and value co-creation with multiple stakeholders will lead to a revolution at the marketing level in line with the worldwide shift away from one-way communication between organizations and consumers—in our case, universities and students—toward dialogue and participative communication. Currently, universities can and should further leverage their Internet and social media presences as a means of reaching tech-savvy candidates during the individual's university selection process, and also as a basis for interaction and dialogue among students, alumni, managers, and university faculty in the educational and knowledge-sharing processes.

4. The future of HE to be shaped by market mechanisms in a globalized world

The acknowledgement of being part of a crowded and global marketplace and the incredible speed of change over the past two decades have pushed HE into a debate on the future sustainability of the sector as we know it today, similar to several other nonprofit and for-profit industries. As in the business world, there is no clear answer as to how HE institutions should react to increasing complexity and uncertainty; there are only processes to be put in place as potential coping mechanisms. Herein we have attempted to identify some of these processes, drawing from insights based in academic literature. HE decision makers and key stakeholders attempting to formulate strategies should discuss, examine, and validate the guidelines we propose to obtain a detailed roadmap that will enable their specific institutions to maneuver through the challenges of 21st century HE. In particular, HE managers should define to what extent their institutions are able to incorporate business practices and digital solutions as a means of adapting to the changing nature of education while preserving the university's societal role. Public authorities, in turn, should understand their roles in the changing HE sector as regulators, investors, facilitators, or a mix thereof, to promote the public good and encourage institutional accountability, responsiveness, and innovation.

In some rather rare cases, it might be possible and sensible to perform a radical culture change by

replacing the existing staff with new recruits who possess the previously mentioned qualifications. Job performance and behavior could be measured to incentivize desired outcomes. However, in many university systems, particularly in Europe, HE academic and administrative staff members are usually tenured, which makes a revolutionary approach an unfeasible option. Instead, changes will need to be implemented more gradually by training, motivating, and persuading current administrators.

Because of reluctance among faculty members and alumni, not all HE institutions will respond to current changes in a timely manner. Some institutions, namely those lucky few that have a solid basis of public funding, will not need to respond immediately. However, for the majority of institutions, classical market mechanisms will most likely ultimately determine which universities deserve to be part of the top league.

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