



Higher education at the crossroads: What it takes to lead in an era of disruption

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Abstract

This is the era of the industrial revolution; an era where disruptive technologies reign. Challenges within higher education have come to a crossroads due to disruptive technologies, 21st-century skills, globalization, and global competition. Thus, higher education needs to be redeveloped to improve the educational system in the era of disruption. The method used in this research is a qualitative method that consists of the study of literature in the field. The purpose of this research is to identify and analyze the disruptive technologies, such as artificial intelligence and virtual reality, that are challenging education and to rethink the way to design educational products, satisfy customers, and generate revenue for higher education to reap bottom-line benefits. To reinvent higher education, this research suggests that the management and the educators at higher education embrace a culture that promotes constant transformation, invest in manpower that will play a strategic role in managing disruption, and design workspaces that inspire creativity for the educators and the students as well as lead their innovation. This research incorporates the triple bottom line theory, introduced to measure performance. The theory's idea is to promote sustainability as well as gain profits from business ventures. Thus, higher education is to be viewed as a business venture, and its human capital (manpower and students) needs to be sustained in a sustainable environment. This research outlines how we should manage and utilize disruptive technologies against human capital to reap benefits in higher education and achieve bottom-line benefits.

Keywords: Bottom line, Creativity, Crossroads, Disruptive technologies, Higher education, Sustainability.

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Contribution of this paper to the literature

This paper is a critical analysis of literature on higher education and the triple bottom line theory. It is novel because it addresses the role of disruptive technologies in higher education and applies a business theory and model on higher education to promote it as a business venture.

1. Introduction

This is the era of the industrial revolution; an era where disruptive technologies reign. Challenges within higher education have come to a crossroads due to disruptive technologies, 21st-century skills, globalization, and global competition. Thus, higher education needs to be redeveloped to improve the educational system in the era of disruption. The method used in this research is a qualitative method that consists of the study of literature in the field. The purpose of this research is to identify and analyze the disruptive technologies such as artificial intelligence and virtual reality that are challenging education and to rethink the way to design educational products, satisfy customers, and generate revenue for higher education to reap bottom-line benefits. To reinvent higher education, this research suggests that the management and the educators at higher education embrace a culture that promotes constant transformation, invest in manpower that will play a strategic role in managing disruption, and design workspaces that inspire creativity for the educators and the students as well as lead their innovation. This research will incorporate the triple bottom line theory introduced by [Elkington \(1997\)](#) to measure performance. His idea was to promote sustainability as well as gain profits from business ventures. Higher education is to be viewed as a business venture, and its human capital (manpower and students) needs to be sustained in a sustainable environment. It will outline how we should manage and utilize disruptive technologies against human capital to reap benefits in higher education and achieve bottom-line benefits.

1.1. Literature Review

[Marginson and Van der Wende \(2007\)](#) state that globalization, economics, and culture have instigated a new era in higher education. Higher education has always been more international than other fields and sectors, and its immersion in knowledge has never known boundaries.

Higher education institutions have become more important than ever in global knowledge economies. Thus, higher education and its policies are being reinvented. Every research university is part of a single worldwide network, and it lends power to world leaders at a global level in their respective fields. This research explores the issues for national policy for individual institutions. It discusses, amongst other things, globalization, policy, Europeanization, rankings, typologies, and cross-border mobility. However, it does not have a business framework that can support its ideas to expand education as an industry, as this current research has.

[Yang, Shen, and Fan's \(2024\)](#) essay titled "Global Aspirations of Chinese Universities: Towards a World-Centered Tianxia (All Under Heaven) Imaginary of Global Higher Education?" explores the global aspirations of Chinese universities by examining the Chinese scholarly conceptualization of *guoji yingxiangli* (literally meaning international influence) and its connection to the world-centered idea of *tianxia*. In addition to conducting a documentary study of pertinent Chinese academic papers, the researchers spoke with 22 Chinese education specialists. The results indicate that the Chinese term *guoji yingxiangli* of universities, which refers to both the internal capabilities of universities as well as their external reputation and relationships, has no English equivalent. The agential pursuit of *guoji yingxiangli* by Chinese colleges reflects their dedication to the common welfare of the world as well as their national aspirations. The paper then makes the case that methodological globalism or nationalism is less successful than the world-centered *tianxia* imaginary, which is defined by interdependency, reciprocity, and variety, in understanding higher education practices and relations in China and around the world. It also calls for diversified and mutually beneficial cooperation while highlighting the need for more investigation and critical analysis of the *tianxia* imaginary. Although this research is on Chinese universities and the idea of internationalization, it does not discuss the influence of technologies on higher education. Neither does it offer a business plan to reap economic benefits from higher education.

[Kallo and Välimaa \(2024\)](#), in their special issue essay, "Higher Education in Nordic Countries: Analyzing the Construction of Policy Futures," examine how civilizations around the world have dealt with and are still dealing with the reality that the future is and has always been uncertain and unpredictable. The understanding that the existing and prospective global difficulties have made the international situation more complex than ever before serves as the foundation for this research. Natural disasters, climatic crises, and habitat degradation are the most severe of these dangers and difficulties. Societies worldwide are placing more demands on research and higher education in order to handle the growing uncertainties brought on by these issues. They are also taking proactive steps, such as using various foresight methodologies, to increase their readiness and long-term resilience. Their goal in this special issue is to offer new perspectives. However, their view of higher education is not holistic, as this current research is.

[Santos \(2012\)](#) addresses the issue discussed in this paper by posing questions. The author presents a set of twelve "strong questions" regarding the modern university within the framework of the European Bologna Process, which was named after the Bologna Declaration, recognizing that the university as a whole is at a critical historical and global crossroads.

Go to the roots of the historical identity and vocation of the university in order to question whether the university, as we know it, indeed has a future. The author describes the questions that are explored. The questions seek to ascertain, among other things, whether the university can successfully reimagine itself as a center of knowledge in a globalizing society with numerous other centers; whether the university of the future will have space for "critical, heterodox, non-marketable knowledge," respectful of cultural diversity; whether the situation of a widening gap between "central" and "peripheral" universities can be avoided; and whether market imperatives can be relativized as a criterion for successful research, while the needs of society, especially those that cannot be reduced

to market needs, are sufficiently taken into consideration. The European Higher Education Area (EHEA) was established in 1999 with the goal of revamping higher education throughout (Santos, 2012). However, this research does not address higher education and disruptive technologies. It provides a good grounding for the problems faced by higher education and sets the tone for this current research.

Scarlat, 2021 in *Today's Higher Education At A Crossroads: The Critical Point And Paradigm Shift In The Educator's Role in Education* argues that we are currently witnessing a true paradigm shift in education by observing the varying rates of advancement of the available data, information, and knowledge (on the one hand) and the human capacity to process this available data, information, and knowledge (on the other). The author becomes aware of the higher pace of the first, amid the impetus of new communication and information technologies. The education system is at a turning point (also known as the critical point in education, or CPE) where the role of the educator must shift from being a repository of knowledge to being a skilled, expert knowledge explorer and identifier. This means that instead of teaching the subject, educators must now teach students how to choose the pertinent and appropriate information about the subject from the vast amount of information. According to the author, this question was made more pressing by the ongoing coronavirus crisis, which had begun by the time the concepts for this chapter were developed. He calls for a reconsideration of the educational system and the role of educators. The paradigm shift in education is introduced in this chapter regarding the role of the educator in the foreseeable future, to spark debate and pave the way for future research for academics, policymakers, educators, and higher education strategists. (Scarlat, 2021). However, Cezar's research does not analyze higher education from a business point of view and does not use a business model like the current research does.

Liu and Gao (2022) in their paper titled "Higher Education Internationalization at the Crossroads: Effects of the Coronavirus Pandemic" argue that nearly every element of people's lives has been impacted by the COVID-19 pandemic, which has also created new circumstances for how universities conduct their internationalization initiatives. The global environment is changing quickly, and the internationalization of higher education has reached a turning point. This study examines experts' opinions regarding the impact of the coronavirus crisis on the internationalization of higher education and its future course, taking into consideration various national and regional contexts, using a constructivist grounded theory design. According to interviews with twenty of the world's top experts in the field, COVID-19 has had complicated effects on university internationalization, and these effects should be considered in addition to the obvious differences between opportunities and challenges. While the logic of capitalism is still strong, new ways of conceptualizing and implementing internationalization are crucial. The coronavirus is not the only factor that will have an impact in the future. To keep internationalization relevant and sustainable, new knowledge is required because new circumstances have created new demands for it (Liu and Gao, 2022). While this research analyzes higher education and COVID-19 and its effects, this current research is aware of the impact of COVID-19 and goes further to show how this kind of emergency can be handled using disruptive technologies.

Yadav (2019), in her essay "Disruptive Innovative Technologies in Higher Education," argues that the rapid development of information and communication technology has changed education and the structures of colleges and universities in several ways. According to Yadav, the educational system is changing rapidly. The theory of disruptive innovation, which essentially explains that established organizations are driven out of their industries due to their resistance to embracing new innovations, can be used to explain these dynamic changes. The goal of this study is to help readers, especially practitioners in the education sector, understand the characteristics of disruptive innovation and how it is changing the educational landscape. The function of "disruptive" innovative technologies in higher education is examined in this paper. Higher education institutions (HEIs) have made large investments in learning technologies in most countries, but staff and students have not always embraced and utilized these technologies. Rather, learning and teaching are supported by a wide range of technologies that are not owned or controlled by HEIs. These disruptive technologies have educational potential but are not specifically designed to support teaching and learning in higher education, according to Christensen's theory of disruptive innovation. This study analyzes data about the effects of disruptive technologies using Expansive Learning and Activity Theory. This study finds a discrepancy between the learning technologies that HEIs provide and the technologies used in practice (Yadav, 2019). While Yadav's research analyzes and criticizes disruptive technologies in higher education, this current research explains what disruptive technologies are and their importance to higher education.

Flavin (2021) in "Disruptive Innovation, the Episteme, and Technology-Enhanced Learning in Higher Education" looks at disruptive technologies from a Foucauldian point of view. To analyze how much the incorporation of Foucauldian analysis clarifies understandings of disruptive innovation, the process by which innovation occurs, and its applications in higher education, this paper combines the theory of disruptive innovation with Foucault's concept of the episteme. A summary of the disruptive innovation theory, the episteme, and the idea of skeuomorphic design is used to link disruptive innovation and the episteme, showing how innovation can happen. By connecting disruptive innovation and the episteme, the concept of skeuomorphic design demonstrates how innovation can occur. Three distinct technologies, Second Life, massive open online courses, and virtual learning environments, are subjected to disruptive innovation (Flavin, 2021). While this research uses Foucauldian philosophy to make sense of and explain the importance of disruptive technologies, the current research uses a business model to highlight the impact of disruptive technologies in higher education and the need for it, especially during emergencies like COVID-19.

Rossouw (2022) states that in most, if not all, facets of life, including education, a new era for humanity has begun. Whether or not the new era that began with the start of the COVID-19 pandemic, often referred to as the "new normal," is and will be marked by less favorable educational conditions is the question that needs to be addressed. This essay examines several external disturbances, some linked to the pandemic, as potential drivers of a better system of higher education. The role and necessity of internal disruption for sustained innovation and student mobility are taken into consideration simultaneously. Even though disruption is frequently hostile, it can result in long-awaited or much-needed innovation. The mobility of international students and alternative methods of delivering university programs are the two disruptive forces that are being discussed. Thirdly, policymakers must adopt a new perspective due to the importance of micro-credentialing as a disruptive force for traditional universities.

Notwithstanding the strength of the external force, it is reasonable to assume that all three of these potential innovations will encounter some degree of opposition within the framework of a higher education institution (216-223). While Rossouw concentrates on the pandemic, this current research mentions it, is aware of the effects of the pandemic, and suggests ways and means for a better contemporary higher education system in the wake of the pandemic and post-pandemic.

Purcărea (2023) argues that fast-growing higher education institutions use digital transformation strategies to manage the transition to a more resilient and sustainable future, improve overall efficiency and value, develop and manage financially sustainable business models, and overcome financial challenges. Universities are crucial in creating a more ambitious digital agenda by incorporating disruptive technologies into their operations. This allows students to reach their objectives and increase their opportunities while also rethinking and reprioritizing budgets in the knowledge-intensive sector. Higher education institutions must remain relevant in a rapidly evolving digital environment, implement new innovations to engage, support, and train students, and more effectively deliver flexible and accessible tailored products and services to educational consumers in the face of rapidly accelerating technological advancements, potential crises, and opportunities. In this case, e-commerce takes place at the convenience of both the university and the students, enhancing and broadening the ways in which expectations are fulfilled and pinpointing important elements that contribute to student retention and satisfaction (Purcărea, 2023). Purcărea emphasizes the importance of digital transformation in higher education and also the value of students at higher education institutions. However, the current research emphasizes four main factors: business, technology, students, and lecturers. The research outlines that lecturers are the most important assets in higher education, more important than technology and students.

Putri, Yuhana, and Siahaan (2024) discuss the possible effects of disruptive technologies on higher education. They examine that idea in this essay, focusing on the question of whether technology will eventually replace lecturers. Two brief experimental sessions were carried out. In the first session, traditional in-person lectures were given in a classroom setting. Using an LMS (Learning Management System) and digital content that students could access at any time, the second session was self-paced learning. The findings demonstrate that both interventions significantly improved post-test scores, demonstrating the effectiveness of both conventional lecturing and the use of technology to deliver instructional strategies. In contrast, the self-paced learning approach produced a statistically significant increase in post-test scores over pre-test scores when comparing the two approaches. This study's initial findings support the idea that lecturers can be replaced by technology. However, when choosing learning approaches, it's also critical to consider elements like learner preference, digital literacy, and institutional resources. The long-term retention of knowledge, efficacy across a range of academic disciplines, and the influence of individual differences on technology-mediated learning experiences should all be investigated further. In higher education, these findings support improving instructional strategies and maximizing student learning (Putri et al., 2024). The current research emphasizes the importance of disruptive technologies, but at the same time, it highlights the role of lecturers in higher education, their significance, and their roles at the tertiary level. This research puts to rest Putri's doubts about the issue of disruptive technologies taking over human roles as educators in higher education.

Valavanidis (2020) Athanasios, in the essay titled "Universities as Innovation Drivers for Major Disruptive Technological Transformations and Economic Development," argues that the world has seen globalization and the unstoppable development of disruptive technologies (or innovations) in recent decades. Examples include the democratization of knowledge, the rapid digitization of information and data access, the explosion of automation and robotics applications, and the acceleration of the digital revolution. From healthcare to transportation to energy to advanced materials and beyond, all these developments bring with them new economic, societal, and technological challenges that are revolutionizing every aspect of the global economy and daily life. The most disruptive innovations are described in this review: the Internet of Things (IoT), blockchain technology, 3D printing, and artificial intelligence (AI), to name a few. The human talent that generates disruptive innovations, revolutions, and new methods of economic development is one of the ways that university research labs and institutes spread new knowledge. In an effort to support disruptive technologies, new research initiatives, graduate-led start-ups, and recently funded technological enterprises, renowned universities in the most developed nations—the United States, the United Kingdom, Germany, China, India, and France—present the most recent developments in their fields. World-class science research innovation programs, high-tech startups, and leading hubs for disruptive technological companies are being spun out by numerous universities (Valavanidis, 2020). Valavanidis' research outlines the types of disruptive technologies, their use in higher education, and their contribution towards education. The current research concentrates on the impact of disruptive technologies on the economy of higher education and how disruptive technologies can be employed for economic gain in higher education.

1.2. Theory

This research will incorporate the triple bottom line theory introduced by Elkington (1997) to measure performance. His idea was to promote sustainability as well as gain profits from business ventures.

The triple bottom line theory believes that social and environmental factors are as important as profits, i.e., profit, people, and the planet. TBL postulates a corporation's commitment towards society and its impact on the environment. It argues that if a company only concentrates on profits while ignoring humans and the planet, it will not earn as much as it could if it uses the triple bottom line concept (Kenton, 2021).

In business terms bottom line means profits. According to Kenton, "Elkington's TBL framework advances the goal of sustainability in business practices, in which companies look beyond profits to include social and environmental issues to measure the full cost of doing business" (Kenton, 2021).

TBL can easily be interpreted as People + Planet = Social + Environmental Responsibility. It argues that companies should work on three aspects simultaneously: profit, people, and planet. Profit refers to how much the company earns, its net earnings; people encompasses the manpower, clients, and society; and planet signifies the environment. All three aspects work hand in hand for a company to become successful. The triple-bottom-line theory

states that companies should focus as much attention on social and environmental issues as they do on financial issues (Kenton, 2021).

There are challenges in applying the Triple Bottom Line and measuring the TBL for a company. Elkington states that the major challenge is measuring the social and environmental bottom lines. Profits are easy to measure because they involve financial figures and are quantitative. Social and environmental responsibilities are subjective (Kenton, 2021).

A business has to maximize financial returns without mixing inverse elements. TBL advocates this philosophy. There has to be a balance between the three TBL elements. If TBL is ignored, then profits might suffer. Consumers might choose companies that respect the climate and manpower over those that do not. According to Kenton:

Consumers want companies to be transparent about their practices and to be considerate of all stakeholders.

Many consumers are willing to pay more for clothing and other products if it means that workers are paid a living wage and that the environment is respected in the production process (Kenton, 2021).

The examples of companies that subscribe to TBL or similar concepts are Axion Structural Innovations LLC (Limited Liability Company), Ben & Jerry, The LEGO (leg godt) Group, Mars, Incorporated, and Starbucks Corporation. Most of these companies respect the environment and sustain it, as well as treat their manpower according to the law and give them their legal rights as labor.

Hubbard (2009) argues that TBL is based on stakeholder theory. Hubbard states that TBL emerged in 1997 as a new tool to measure performance (179). According to Hubbard (2009).

It is based on the idea that a firm should measure its performance in relation to stakeholders, including local communities and governments, not just those stakeholders with whom it has direct, transactional relationships (such as employees, suppliers, and customers). The TBL is an unsettling concept for many organizations because it implies that the firm's responsibilities are much wider than simply those related to the economic aspects of producing products and services that customers want, to regulatory standards, at a profit. The TBL adds social and environmental measures of performance to the economic measures typically used in most organizations.

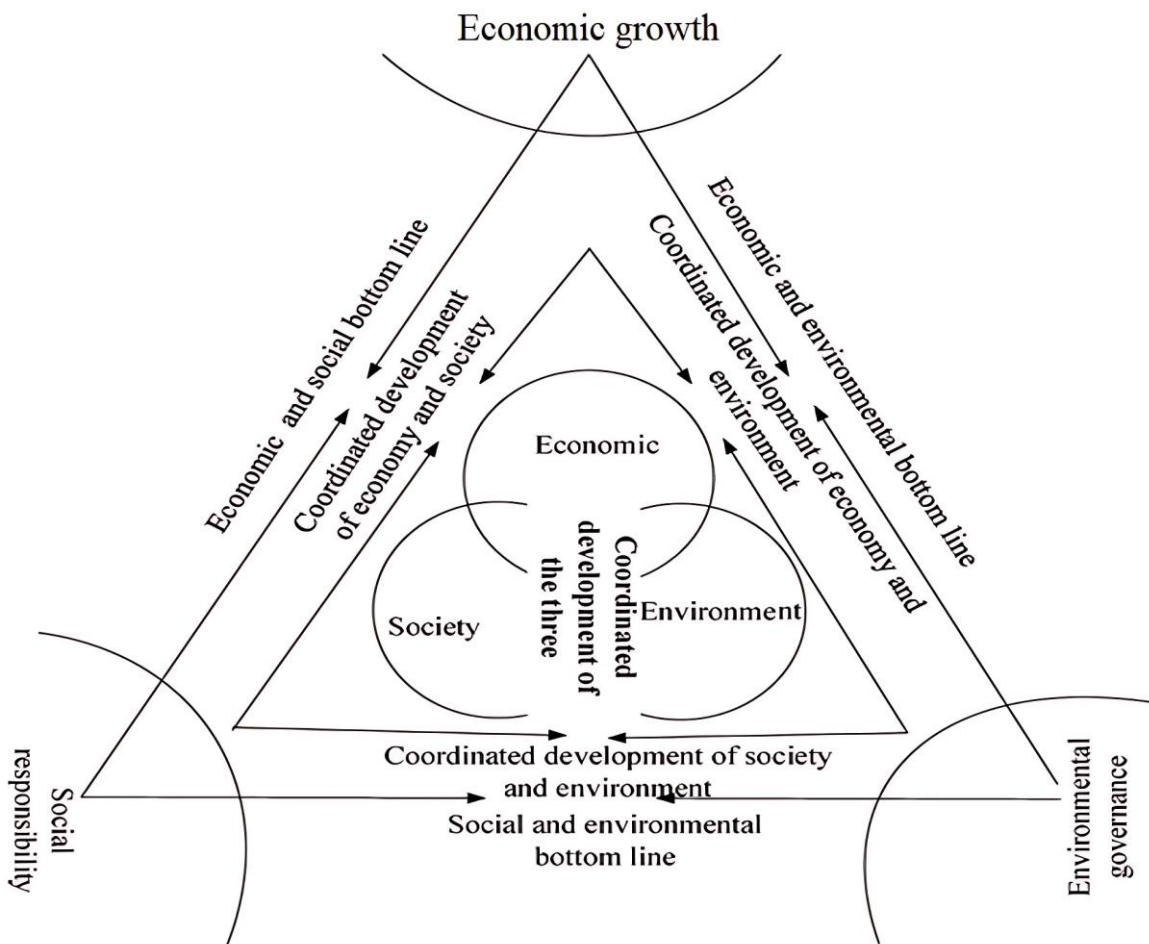


Figure 1. Hubbard's.

Hubbard's Figure 1. Hubbard explains his Figure 1 as follows,

Environmental performance generally refers to the amount of resources a firm uses in its operations (e.g., energy, land, water) and the by-products its activities create (e.g., waste, air emissions, chemical residues, etc.). Social performance generally refers to the impact a firm (and its suppliers) has on the communities in which it works. Measuring performance against these measures is not a straightforward task. Shareholder value, market share, customer satisfaction, and even employee well-being are relatively easy to quantify, and measures developed by one organization are readily transferable to others. However, social and environmental performance are almost certainly unique to each organization, or at least each industry, and they are often very difficult to quantify. Unlike the BSC, the TBL has not been successful in penetrating organizational performance systems. It has been seen as too complex and perhaps too confronting for managers mired in economically dominated ways of thinking (Hubbard, 2009).

First, we have to explain what BSC (Balanced Scorecard) is. BSC, according to Junior, De Oliveira, and Helleno (2018) in their essay titled "Sustainability Evaluation Model for Manufacturing Systems Based on the Correlation Between Triple Bottom Line Dimensions and Balanced Scorecard Perspectives" (2018, pp. 84-93), is the balanced scorecard. They argue that BSC is a matrix that can be used for a comprehensive and detailed evaluation since it involves the TBL. Thus, there is a correlation between the TBL and BSC, and they support each other in measuring

performance; both are performance indicators. They are models that can be used for sustainability assessments to improve an organization's performance and sustainability. These sustainability assessment models can be integrated into multi-criteria decision methods to improve organizational sustainability and performance. Hubbard's model is appropriate to be used in Higher Education for us to lead in the era of disruption. It is easier to use this model in Higher Education because, unlike most fields or firms, Higher Education does not create harmful by-products or residues like waste, air emissions, or chemical residues. It is argued that social and environmental performance are unique to each organization or each industry, and they are difficult to quantify. However, if we look at Higher Education, which is an educational organization, as an industry, it is easier to measure its social performance. A university that represents Higher Education supplies human capital to the industry; thus, Higher Education emits the least waste and residue. The human capital produced by Higher Education is easily transferable to other fields.

Higher education does not only produces human capital; it also produces research. The research that a university produces is often easily transferable to industry, just like human capital. Normally, one research project can be applied in many fields, which involves multitasking, an area in which a university's research group excels. Thus, we can straddle many fields with one research project if there is ingenuity in higher education.

TBL is a good model for measuring achievement and for production. However, TBL has its weaknesses and limitations. According to Pava (2007), a response to "Getting to the Bottom of 'Triple Bottom Line,'" its major limitation is its "inability to measure and track social and environmental performance in a meaningful, consistent, and comparable way" (p. 108). That is why the model created by Hubbard, which blends TBL and BSC, helps in solving the problem mentioned by Pava that is present in TBL.

Higher education needs TBL and BSC to manage multiple dimensions, i.e., environmental, social, and economic. According to Ozanne et al. (2016), "Companies are increasingly evaluated within the public sphere, and within their own organizations, according to the degree to which they are perceived to simultaneously promote this nexus of virtues" (p. 249).

Ozanne et al. (2016) also argue that certain tensions arise in organizations that TBL is equipped to solve. One of these is labeled as belonging to tensions. These tensions refer to identity issues and the need to appease multiple stakeholders, i.e., the stakeholders in a university. Tensions exist at both the individual and group levels due to the competing objectives of stakeholders and conflicts of priorities between and among themselves. There are also performing tensions, which involve an institution's or a company's need to meet competing strategies and goals.

There are also paradoxical tensions that are unique to TBL firms. Firms that practice TBL have to accept the fact that paradoxical tensions exist, and they have to learn to understand and accept them. The advantage of the paradox lens is that it provides opportunities for innovation because the lens highlights opportunities to manage paradoxes across the TBL. This lens accepts low performers on lower-priority goals; however, one or two goals have to be prioritized over the others, and management has to accept paradoxical tensions and manage them effectively. The tensions are for an institution to comply with set pressures and practices, and call for innovation and sustainable business practices. These businesses normally resist change but produce innovation against challenges that confront established business practices, which Higher Education needs to emulate, since there are some practices in Higher Education that cannot be changed (Ozanne et al., 2016).

2. Discussion

This is the era of the Industrial Revolution; an era where disruptive technologies reign. Challenges within higher education have come to a crossroads due to disruptive technologies, 21st-century skills, globalization, and global competition. What are these, and how are they connected to each other?

First, let us understand disruptive technologies. Disruptive technologies produce products such as the Internet. According to Danneels (2004).

The products based on disruptive technology initially only satisfy a niche market segment, which values dimensions of performance on which the disruptive technology excels. Over time, as research and development (R&D) investments are made and the technology matures, the performance provided by the disruptive technology improves to the point where it can also satisfy the requirements of the mainstream market. Incumbent firms, which focused R&D attention on improvements to existing technologies (i.e., sustaining technologies), have a hard time catching up with the lead of the entrants that emerged based on disruptive technologies. Therefore, disruptive technologies tend to be associated with the replacement of incumbents by entrants. (p. 247)

The Internet was initially only for a niche market. It was used mostly by academics and young people. Today, the market has expanded. This technology has caught up and taken over incumbents like the post office and the telephone.

Danneels (2004) gives a core definition of disruptive technologies. According to him, A disruptive technology is a technology that changes the basis of competition by altering the performance metrics along which firms compete. Customer needs drive customers to seek certain benefits in the products they use and form the basis for customer choices between competing products. Benefits sought by customers determine which product attributes they value, and different customer groups (i.e., market segments) may value different attributes (McGrath & MacMillan, 2000). Competing products (or, more broadly, offerings, which are constituted by physical goods and/or services) offer differing levels of performance on varying dimensions. These performance levels of the product, or attribute sets (McGrath & MacMillan, 2000), are possible because of the technology embedded in the product. Customer needs determine which performance dimensions form relevant bases of competition—i.e., differentiate meaningfully between competing offerings. However, the performance that technology enables increases over time, and eventually, the performance levels offered by a disruptive technology meet or exceed the minimum levels demanded by the mainstream market. Disruptive technologies change the basis of competition because they introduce a dimension of performance along which products did not compete previously. (p. 249).

Thus, the example given above of the Internet against the post office and the telephone can be used to explain and support the above statement. The Internet introduced to the world and the field of communication technology a dimension of performance that was unimaginable. The inventors of the Internet and later social media that transpired

from it thought outside the box, like the man who created the telephone, Graham Bell. The Internet, a disruptive technology, has taken over the cell phone, which was at one time thought to be a technological ingenuity, which was also disruptive technology.

Kostoff, Boylan, and Simons (2004) explains disruptive technologies well. Their explanation supports the above definitions. According to them,

Disruptive technologies can be either a new combination of existing technologies or new technologies whose application to problem areas or new commercialization challenges (e.g., systems or operations) can cause major technology product paradigm shifts or create entirely new ones. Management researchers have studied the commercial potential for disruptive technologies for nearly a century. Kondratieff and Schumpeter were among the early researchers in the field, suggesting "Long waves of technological change and the process of creative destruction caused by new technologies and new skill sets either creating or redefining firms and existing markets" (p. 142).

Thus, disruptive technologies influence the business markets. When applied to higher education, it enhances the value of higher education due to its innovative factors and creates new niches for the industry.

Foreword

XV

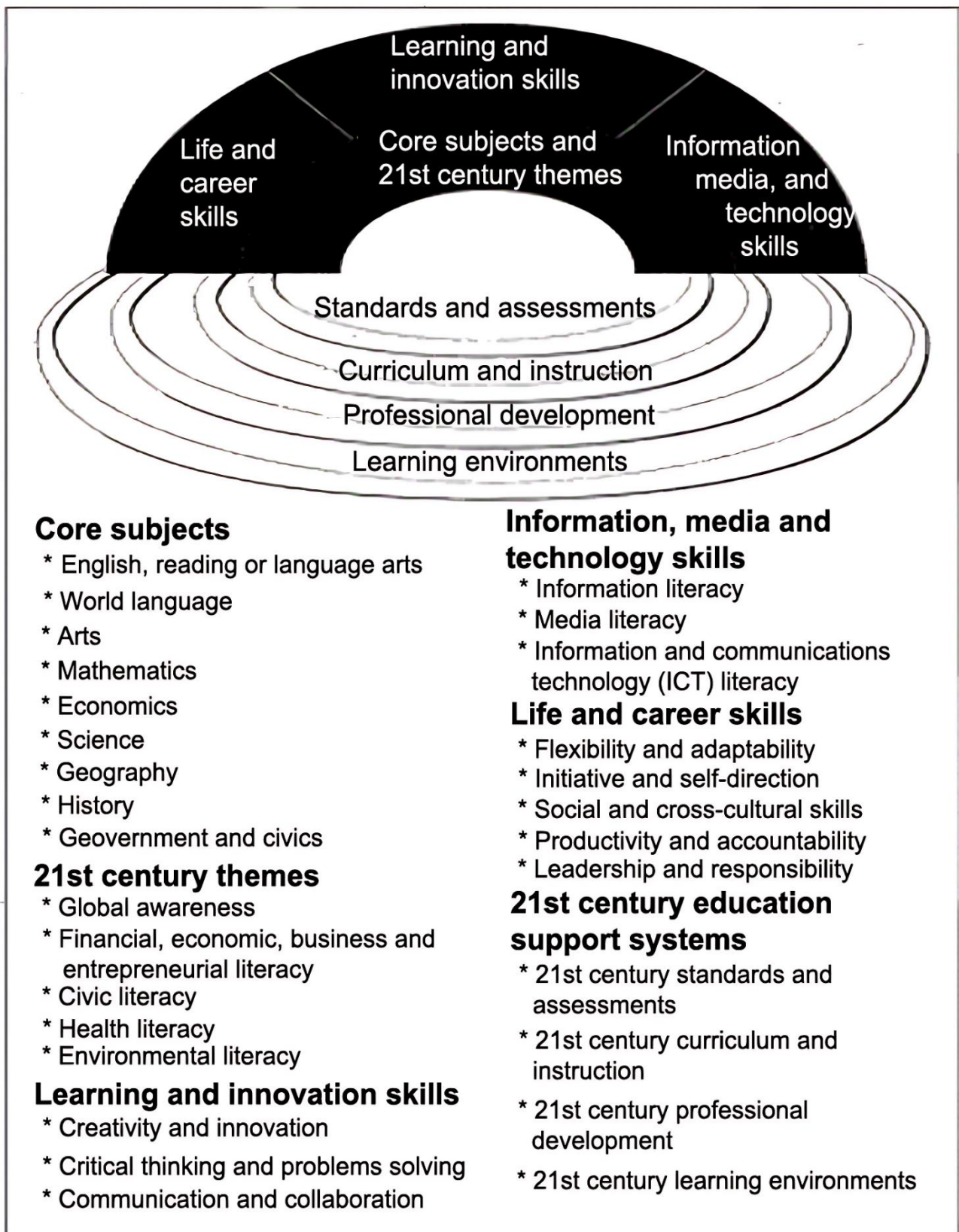


Figure 2. The partnership for 21st century skills framework for 21st century learning.

Source: Partnership for 21st century skills, 2009 reprinted with permission. Figure 2 Kay (2010).

Figure 2 in Kay's work shows the framework of 21st-century learning. Kay defines 21st-century skills as opposed to other definitions. He states,

We aren't rigid about the language used to describe 21st-century skills, either. We say adaptability, for instance, while others prefer resiliency. We say critical thinking; others say systems thinking. No matter—we're all talking about the same concepts. On the other hand, the term 21st-century skills is not a vague and squishy catchword that can mean anything. Every element of our model has been defined, developed, and vetted by leading experts, scholars, educators, businesspeople, parents, and community members (p. xvi).

Thus, the model of the skills that Kay and his team have put forward is relevant for many purposes and fields. It has been created by a team of people from various fields and can be applied to education and business. Therefore, Higher Education can use this model to enhance its niche in the business arena in the 21st century, since Higher Education has always been a commodity in the field of education and the nation.

21st-century skills cannot survive without Globalization. It has been defined by Robertson and White (2007). According to them,

This more general view of globalization had its roots in a different set of premises. In the background of the rise of globalization theory was the relatively simple observation that the world was increasingly becoming a 'single place'. This emphasis upon the world as becoming singular, as characterized by unicity (Robertson & White, 2007), was to have important ramifications in the development of various social sciences. In one way or another, it has greatly affected the intellectual trajectory of the disciplines of sociology, political science, and anthropology. For example, the idea of the world as a single place has brought into great question the sociological tendency to conceive of the basic and largest unit of sociology as being society (Mann, 1986; Urry, 2000). In political science and international relations, the rapid growth of interest in globalization has led to an increasing questioning of such heretofore central themes as sovereignty and territory (Robertson & White, 2007).

The idea that the world is becoming a single space is important in Higher Education. We have faced tremendous challenges during the era of Covid-19 since 2020. Higher Education had to become the testing ground for education. Without disruptive technologies, Higher Education, the business world, and humanity in general could never have survived the problems created by the killer pandemic that has caused millions of deaths worldwide. The world indeed became a single space. There has been rapid growth with the help of disruptive technologies and globalization in the medical field, especially to combat the virus. Higher Education and the medical field worked hand in hand and have benefited in these trying times from disruptive technologies. We managed to find a vaccine in record time. It is hoped that the disruptive technologies that we used in Higher Education and research, as well as in medicine, will help us to solve other medical problems and innovate Higher Education. A composite definition, therefore, might be that, "Globalization is an accelerating set of processes involving flows that encompass ever-greater numbers of the world's spaces and that lead to increasing integration and interconnectivity among those spaces" (p. 1).

If the need to define globalization indicated a lack of consensus, most of the definitions proffered used similar ideas and demonstrated more consensus than is usually assumed (including by the authors represented here). Among the terms usually included in the definitions offered were, in order of frequency, speed and time (accelerating, rapidly developing, etc.), processes and flows, space (encompassing ever greater amounts of it), and increasing integration and interconnectivity. Thus, Robertson and White's (2007) ideas on globalization can be used to explain the situation. According to them, "A composite definition, therefore, might be: Globalization is an accelerating set of processes involving flows that encompass ever-greater numbers of the world's spaces and that lead to increasing integration and interconnectivity among those spaces" (p. 1). Higher education, due to COVID-19 and globalization with the use of disruptive technologies, has integrated and interconnected with many spaces [fields], i.e., the medical field, the business field, research and development, and education, to name a few. The destruction that has been created by the pandemic is unbelievable. We have to be thankful for disruptive technologies and globalization for handling the destruction in the myriad fields in this country and globally. Disruptive technologies and globalization worked hand in hand and constructively to solve the inadequacies created by the destructive virus. Globalization initially was created to deal with the economic world. However, the boom of globalization has helped us in higher education to handle the emergencies created by the pandemic and has given disruptive technologies niches in many domains and spaces.

George Ritzer, in his Introduction to the book *The Blackwell Companion to Globalization* (Ritzer, 2007), argues that globalization has generated dramatic changes to the social world and social structures. However, he argues that the global is a difficult world to master due to the fact that our intellectuality is inadequate to handle the innovations in globalization. Globalization seems ephemeral because technologies like the Internet are beyond an average person's normal thinking capability. Thus, it is difficult to comprehend the power of globalization and to handle it. However, due to the emergencies created by COVID-19, the world has had to grapple with globalization and use disruptive technologies to master it, and thus far, it has helped us handle the pandemic and save millions of lives.

There are inequalities within higher education that need to be addressed. The tool to measure these inequalities is TBL with the help of BSC. Higher education cannot be handled like the state is handled. It has to be broken into a smaller entity than the state or the nation-state and be measured as a distinct unit. Higher education, then has to be broken down into smaller entities, i.e., the universities that exist in this country. These will then have to be separated into public universities and private universities before TBL and BSC are employed on them to enhance productivity with the use of disruptive technologies. Disruptive technologies have triggered a paradigm shift; the shift is from higher education to globalization. However, it becomes global. Thus, the emphasis is on both a local education system and a globalized education system. Malaysian higher education has to work on the praxis of reflecting or characterizing education with both local and global considerations. Ritzer (2007) argues that,

Related to, but more general than the various global-local issues, is the idea that globalization is a contingent phenomenon. In the case of the global/local relationship, the contingency is, in effect, the local (although it is also possible to see the global in contingent terms). That is, the nature of the impact of the global depends on, and is contingent upon, the nature of the local (and the agents involved, see below), as well as the ways in which the global and local interact. Since no two local settings are exactly alike, the impact of globalization

will vary from one local setting to another. However, this is far from the only contingency of interest and importance in globalization in general and in the global-local relationship in particular (p. 7).

Taking up Ritzer's argument that no two local settings are exactly alike, we have to handle the different universities and institutions in higher education in different ways because each is unique within its own aspect, with its own tradition, style, customs, and disciplines. However, we cannot deny the fact that globalization is connected to Americanization and involves perennial issues, as discussed by Ritzer (2007). Thus, these two elements will also have to be handled by TBL with the aid of SBC to enhance productivity in higher education. We should not ignore the fact that higher productivity normally yields more economic and financial benefits by way of student enrollment and research and development.

In order to understand globalization better, we have to discuss global competition. This essay incorporates ideas from Simon Marginson (2006). Marginson argues, "Higher education is now situated in an open information environment in which national borders are routinely crossed and identities are continually made and self-made in encounters with diverse others" (p. 1). Higher education is seen by him as a complex system, a flow of networks and ideas at a global level. The national education system is shaped by the systems in a country as well as finances, and institutions function at three levels – the local, the national, and the global. Cooperation and competition structure and influence relationships between higher education institutes and countries, as well as governments. Higher education is competitive and has a hierarchy, especially a hierarchy of power. It is controlled by certain rules and regulations. Thus, in the era of disruptive technologies, it is important for us to employ regulators like TBL and SBC to help manage and discipline, as well as help higher education to produce and run more effectively without going out of bounds or being derailed from the mission of education and the policies that have been set by the state.

The dynamics of Higher Education have to be explored, with national competition and global competition in view. What kind of goods does Higher Education offer to the market? This is a relevant and most pertinent question to ask when we use TBL as a tool to promote Higher Education and BSC as a measuring tool. How do we maximize productivity with the help of TBL and BSC at the national and global levels and remain competitive at both levels to attract as much revenue as possible into our universities? This is another question that needs to be confronted. Our research capacity controls our performance in Higher Education. We should use this expertise to the maximum level to solve problems in Higher Education with the help of TBL and BSC. What dominates Higher Education are the Western markets, i.e., the United Kingdom and the United States, as well as English as a lingua franca. This is argued and discussed by Marginson in detail. Thus, Higher Education has to have comprehensiveness in its research universities and should be framed by a teaching-research nexus that integrates the missions of the university and shapes its institutional culture as well as leadership.

Global Higher Education exists within the praxis of a worldwide university hierarchy that is part of Higher Education globally and between nations. What is important in Higher Education is not only disruptive technologies but also human capital. Without human capital, a university will cease to exist. The most important human capital consists of the educators in an institution, followed by the students. There will not be enough student enrollment or enough research produced by a university without the existence of good educators and researchers. By 'good,' it is meant well-educated and well-trained lecturers and researchers. Only then will Higher Education have a niche, be competitive at any level, and lead.

3. Summation of Ideas, Concepts and Perceptions

Thus, higher education needs to be redeveloped to improve the educational system in the era of disruption. The method used in this research is a qualitative method, which consists of the study and analysis of literature in the field. The purpose of this research has been to identify and analyze the disruptive technologies, such as artificial intelligence and virtual reality, that have been mentioned generally as the Internet, which are challenging education and prompting a rethinking of how to design educational products, satisfy customers, and generate revenue for higher education to reap bottom-line benefits in order to lead.

To reinvent Higher Education, this research suggests that the management and the educators at Higher Education embrace a culture that promotes constant transformation, invests in manpower that will play a strategic role in managing disruption, and designs workspaces that inspire creativity for both educators and students, as well as lead their innovation. This research has incorporated the TBL theory introduced by Elkington (1997) to measure performance. His idea was to promote sustainability as well as gain profits from business ventures, which Higher Education should aim to benefit from. Higher Education is to be viewed as a business venture, and its human capital (manpower and students) needs to be sustained in a sustainable environment. This essay has outlined how we should manage and utilize disruptive technologies against human capital to reap benefits in Higher Education and achieve bottom-line benefits. It has also included ideas on how organizational performance should be measured by the use of BSC for the purpose of reaping maximum revenues from the market and the human capital in order to lead.

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