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The Virtual University – Models and Experiences

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Abstract---Amidst the modern technological revolution, which offers myriad benefits, a multitude of nations globally have adopted advanced technological tools to augment the efficacy of various policies and systems, particularly in the realm of higher education.

The virtual university, an institution marked by both inherent advantages and significant challenges, has been the focus of several international endeavors aimed at refining its performance. This aligns with the pressing demands for efficient outcomes in higher education and the necessities of contemporary job markets. A prime example of such innovative educational strategies is the approach adopted by Harvard Business School.

Keywords---Technological Revolution, Higher Education System, Virtual University, Harvard Business School Experience.

Introduction

The contemporary era is characterized by a qualitative transformation across numerous sectors, transitioning from conventional methods to those heavily reliant on the fruits of modern technological advancements. The sector of higher education, with its distinctive attributes, has greatly benefited from this paradigm shift, culminating in the development of novel educational concepts such as e-learning, virtual education, and the establishment of virtual universities.

Despite facing substantial challenges, the virtual university presents a plethora of benefits, notably the assurance of continuous and consistent educational processes across various times and locations for all participants (teachers and students), predominantly facilitated by diverse electronic media via the internet.

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This positions the virtual university as a strategic, supplementary, or even alternative option to the traditional educational framework.

Recognizing the critical role of this innovative educational model in global higher education systems, various functional and strategic models have been devised to ensure the most effective and efficient operation of virtual universities.

Among the forefront of institutions to acknowledge and embrace the potential of virtual education was Harvard Business School. It seamlessly integrated virtual modalities alongside its traditional educational offerings, yielding exceptionally satisfactory outcomes as reported by its diverse student body from around the globe. Building on the foregoing, we pose the following main question:

- **How can virtual universities achieve effective performance within the framework of strategic and functional models?**

To explore this question, the study employs a descriptive analytical methodology to delve into the following dimensions:

- **First Axis: Concepts Surrounding the Virtual University**
- **Second Axis: Models of the Virtual University**
- **Third Axis: Harvard Business School's Experience in Virtual Education**

First Axis: Concepts Surrounding the Virtual University

Recent technological breakthroughs, compounded by pressing health and economic needs, have propelled numerous countries, including Algeria, to embrace distance learning within higher education. This shift has fostered the emergence of several new educational concepts, most notably that of the virtual university.

First: Concept of the Virtual University

Before exploring the notion of the virtual university, it is imperative to elucidate the related concepts of distance education and virtual education. Distance education is defined as "the organized use of various media, meticulously prepared, to bridge communication gaps and deliver academic material between teachers and learners who are geographically separated" (El-Khanak, 2008, p. 30).

In contrast, virtual education is described as "the adoption of the latest educational innovations, primarily leveraging the internet and the principles of E-Learning" (El-Khanak, 2008, p. 30). Alternatively, it is perceived as "the process of transforming traditional (face-to-face) education into a digital format, facilitating remote accessibility" (Rajem & Dadan, 2015, p. 88).

Virtual education, a subset of distance education, fundamentally employs modern technological and electronic means to facilitate the transmission of educational content from teachers to learners. The concept of virtual education evolved significantly starting in 1996, marked by a pivotal shift from merely transmitting information to actively facilitating a comprehensive learning experience.

This shift rests on three principal components: educational programs highlighting the teacher's role, self-learning emphasizing the learner's involvement in the educational process, and collaboration underscoring the role of group interactions within the learning framework. The integral role of technology in augmenting this educational strategy across its various facets is unmistakable. The virtual university, a derivative of these educational advancements, relies extensively on diverse information and communication technologies to deliver its educational services.

This model offers enhanced convenience and flexibility for learners, embodying the operational philosophy that universities should provide services enabling students to find adaptable study methodologies while assisting university staff in maximizing the use of new educational technologies. Furthermore, these technologies are utilized to bolster communication nationally across different subject areas and collaborative projects (Sajzi & Other, 2012, p. 565).

The virtual university can thus be defined as: "That university which fundamentally and predominantly bases its educational role on the internet" (El-Khanak, 2008, p. 30), or as "an academic institution aimed at providing the highest levels of higher education to students at their residences via the internet, through creating an integrated electronic educational environment" (Al-Zarzah & Farah, 2018, p. 772).

From these definitions, it is evident that the virtual university is an institutional paradigm born from the implementation of a virtual higher education system within an all-encompassing virtual educational environment. This system is constructed on several key pillars including individuals (teachers and students), electronic media, and curricula. The genesis of the virtual university concept is attributed to several factors:

- Economic shifts towards budget reductions and constrained financial resources;
- Societal inclinations towards convenient, mobile, and flexible learning modalities;
- Employment trends demanding flexible, versatile, and computer-literate workforces;
- The widespread integration of computers into daily community life, profoundly influencing every facet of personal and professional existence (Sajzi & Other, 2012, p. 566).

Second: Importance of the Virtual University

The virtual university represents a horizon of modernization in the field of higher education within the context of contemporary civilization's challenges. It can be seen as a modern approach to meet the evolving demands of today's educational consumers. These demands primarily include the ability to access educational services (using modern technological means remotely) conveniently, creatively, innovatively, and interactively, while enhancing future job opportunities, thereby fostering an environment conducive to lifelong learning.

In essence, the virtual university responds to the requirements of modern civilization, creates a new type of information domain, and encourages learners to

independently seek out information, understand it critically, and be aware of their own motivations for result-oriented learning.

Unlike the classic university model, the virtual university offers the opportunity to evolve in accordance with the dynamic pace of societal development, creating a fully mobile space where all a student needs are a laptop and an internet connection.

The virtual university sets the stage for the formation of intellectual personalities, enhancing the ability to independently seek and acquire knowledge, make decisions, and apply learned concepts in practice, with easy access. Thus, this learning model can guarantee widespread individual participation in knowledge acquisition and application for their benefit and for the benefit of the state and society as a whole.

Overall, the virtual university is an educational phenomenon whose primary goal is the production and dissemination of knowledge and information for educational, training, and professional purposes, through information and communication technologies, within the framework of the modern, dynamic age and the innovations introduced by informatics in society.

The virtual university is not merely an institution under transformational pressure to evolve technology, but rather a discovery designed to ensure the inherent human rights to education. (Bellin & Other, 2020, p. 399)

Third: Types of Virtual Universities

Drawing from the analysis by Wolf and Sally (1999), the primary types of virtual universities, based on their engagement with virtual education, are categorized as follows (Saleh, 2007, p. 25):

1. **Complete Virtual University:** This model mirrors traditional universities in structure, offering faculties, academic programs, scholarships, and degrees, with the key distinction being the absence of physical campuses or university buildings, as all studies are conducted online. This category is further divided into:
 - **Single-mode Virtual University:** Here, the institution is established exclusively as a virtual entity. Such universities may be governmental or private, and operate on a profit or non-profit basis.
 - **Dual-mode Virtual University:** This model is employed by traditional universities that have expanded to include virtual educational programs linked to the parent university.
2. **Consortium Virtual University:** This model involves a consortium of several universities that agree to offer academic programs and confer accredited degrees through a unified electronic portal. It can be subdivided into:
 - **Nationally Consortium Virtual Universities:** This coalition comprises universities from a single country, targeting students within that country's geographical boundaries.

- **Regionally Consortium Virtual Universities:** This group includes accredited virtual universities and colleges primarily serving learners at a regional level, within specific states or provinces.
 - **Internationally Consortium Virtual Universities:** This international coalition consists of accredited virtual universities across multiple countries, such as the African Virtual University, or the Global Virtual University established by the World Bank in 2003 to offer a Master's degree in Environmental Protection.
3. **Intermediary University:** This model represents an agreement between one or more accredited universities and accredited virtual universities, offering programs and degrees through the intermediary university's portal.
 4. **Traditional University Offering Virtual Courses:** These are traditional institutions that provide virtual courses via the internet.

From the analysis presented, it is evident that the most prominent universities globally today are those that seamlessly integrate both traditional and virtual systems to deliver comprehensive higher education programs.

Second Axis: Models of the Virtual University

Given the complex environment and the significant challenges faced by virtual universities, it is imperative to develop operational models, notably the strategic and functional models.

First: The Strategic Model of the Virtual University

The strategic model for constructing a virtual university posits four fundamental phases that must be followed: (Planning, Designing, Performing, Evaluating) (Somay & Others, 2011, p. 913), as detailed in the following diagram:

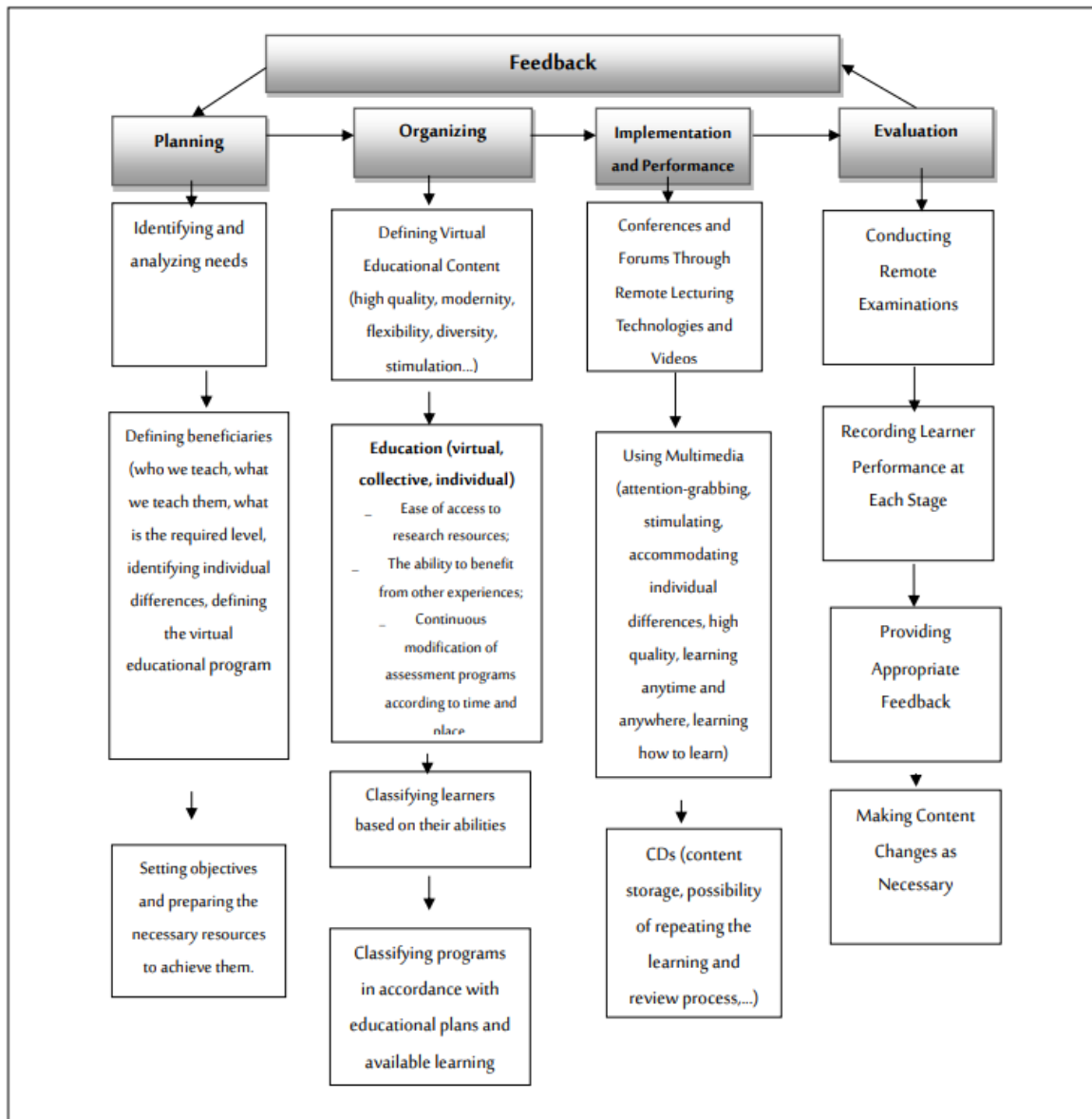


Figure (01): The Strategic Model of the Virtual University

Through this model, the key stages of building a virtual university are explained as follows:

- **Planning Stage:** During this phase, the needs of the virtual learning process are identified and analyzed in terms of resources and competencies, along with defining the beneficiaries and the required conditions for them, always within the precise framework of the goals set for this process.
- **Organization Stage:** This phase involves defining the content of the virtual program, which must be characterized by quality, modernity,

flexibility, diversity, and suitability for time and place. Additionally, methods and ways of learning are defined (virtually via videos and remote lectures, collectively through online chats using multimedia, or individually through CDs...), based on the characteristics and capabilities of the learners and also according to the educational programs which are supposed to be compatible with the set educational plans and available learning resources.

- **Implementation and Performance Stage:** During this phase, one or more of the previously mentioned virtual learning methods, each with its unique characteristics, is selected.
- **Evaluation Stage:** In this phase, the performance of learners is measured at each stage of the virtual learning process through remote examinations, then their actual performance is evaluated against what was planned, and feedback is provided based on the results of this evaluation, which may sometimes necessitate changes to the content of the virtual learning programs.

This model outlines the various strategic stages that must be adopted to build a performance-enhanced virtual university that achieves the outlined results.

Second: The Functional Model of the Virtual University

The proposed functional model of the virtual university includes a set of units that vary in terms of functions and tasks, which are integrated to construct an effective virtual educational system for universities. This model can be illustrated by the following diagram:

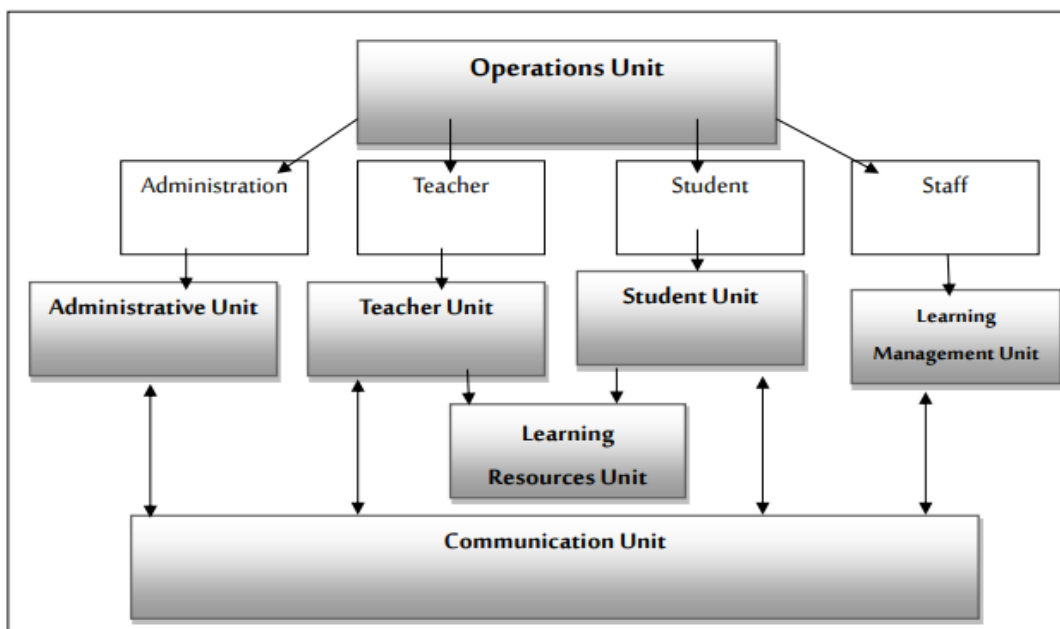


Figure (02): The Functional Model of the Virtual University

Source: G.Georgieva et al, "A Model of a Virtual University – some problems during its development", International Conference on Computer Systems and Technologies - CompSysTech'2003, p05.

This figure illustrates the functional model of the virtual university, which consists of seven core units as follows (Geogieva & Others, 2003, p. 5):

1. **Information Unit:** The Information Unit provides the following:
 - General information about the university;
 - Details about academic disciplines, professional fields, educational levels, and degree programs;
 - Upcoming news and events;
 - Help and support information;
 - Information about faculty members including personal data and contact details;
 - Admission requirements (tuition fees, exams, duration of study).
2. **Learning Resources Unit:** For teachers, this unit can serve as a virtual hub for creating and developing courses and topics. For students, it acts as a virtual library containing educational materials (summaries, syllabi, lectures, exercises, tests, assignments, timetables, diagrams, discussion forums...).
3. **Communication Unit:** This unit facilitates both synchronous and asynchronous communication among various groups: teacher to student, teacher to a group of students, administration to students, administration to teachers, and among students themselves. This unit enhances opportunities for education, assessment, communication, and discussions in various educational fields.
4. **Student Unit:** After registering on the university portal and paying tuition fees using a virtual payment system, each student gains access to the Student Unit. This personal unit manages their information and educational needs and provides services such as submitting feedback, uploading work files, accessing grades, as well as direct access to the "Communication" and "Educational Materials" units...
5. **Teacher Unit:** Teachers are registered by the system administrator, who also manages their personal profiles for regular interaction with learners and topics. Key services provided to teachers in this unit include: a database with full statistics on student results and activities in their subjects listed in the "Learning Resources" module, opportunities to submit requests for new topics to the system administrator, a specialized interface for direct communication with students, spaces for targeted announcements about the assessment system and exams, publishing news about upcoming events, online chats for consultation, messaging, etc.
6. **Learning Management Unit:** This unit resembles the administrative organization found in traditional universities. Its primary functions include: blocking and activating student accounts, supporting student profiles, continuous assessment and exams, issuing student certificates, storing documents about specialties, responding to student inquiries, and maintaining the system for fee payments and virtual services.
7. **Administrative Unit:** The Administrative Unit is the core of the entire virtual university system and is the most complex unit. It provides the capability for many administrators to work collaboratively on functions such as synchronizing system management between units, confirmation requests, user registration, and database archives that monitor security and ethics within the virtual university system. Moreover, in the

Administrative Unit, the regular performance of all other units is controlled.

All the units mentioned above build a functional model for the virtual university, which operates in full synchronization through complex interrelated relationships in the database.

Third Axis: Harvard Business School's Experience in Virtual Education

Harvard University, with its various branches and schools, is one of the foremost institutions that have embraced virtual education in its academic system, achieving highly effective results through successful strategies.

First: Introducing Harvard University

Harvard University is a private, nonprofit institution located in Cambridge, Massachusetts, USA, and conducts its courses in English. Harvard enjoys a prestigious academic level and is consistently ranked among the top universities globally. It was also ranked first in the Times Higher Education list of the top 25 universities among a hundred universities, and according to the QS ranking of 2019, Harvard University was placed third among the best universities in the world.

Harvard combines over 350 years of experience in traditional education with expertise in virtual education. Among the most important areas and specialties of distance study at Harvard are: Harvard Online in Arts and Sciences, Business Administration, Computer Science, Educational Teaching, Medicine and Public Health, Humanities, Mathematics, Programming, Science, and Social Sciences. It also offers a number of free online courses in fields such as architectural imagination, entrepreneurship in startup economies, and the effects of health on climate change. (<https://www.for9a.com/learn>.)

Under the motto "Learning is a lifelong journey," Harvard Online strives to build competence and confidence among learners from all over the nation. (<https://www.harvardonline.harvard.edu/about>)

This study will focus on the virtual education strategy of one of Harvard University's most important schools, the Harvard Business School.

Second: The Strategic Model for Harvard Business School

The virtual education experiment at Harvard Business School was launched in 2014 under the name Harvard Business School Online to deepen the school's impact and broaden its reach. Since then, HBS Online has taught over 100,000 learners from more than 175 countries through its innovative online platform. (<https://pll.harvard.edu>)

Thus, Harvard Business School belongs to the category of traditional universities that offer virtual courses. Its virtual side delivers a range of content remotely, either for free or at a specific price, for varying durations depending on the content and program. It relies on two main strategies:

- **Remote Communication Strategy (online):** This strategy includes a larger number of programs and contents such as Flexible Leadership, Technological Entrepreneurship, Organizational Design, Identifying Competitive Risks, Managing Happiness, Revolutionizing Remote Work for

Everyone, Entrepreneurship in Emerging Economies, Understanding Customer Needs, Investing in Private Equity, Pricing Strategy, and others.

- **Direct Remote Communication Strategy (online live):** Based on this strategy, the university offers programs like Strategic Agility, Preparing to Be a Corporate Manager, Competing in the Age of Artificial Intelligence, Purpose and Profit: Establishing Shared Value, Rising to the Top: Finding the Leader Within, Managing Risks for Corporate Leaders, Developing Yourself as a Leader. (<https://pll.harvard.edu>)

At the end of each online training course, an online education certificate is awarded to learners. Participation in the university's virtual programs requires learners to have a computer or laptop equipped with a video camera and audio access, with a recommendation to use a wired network connection over cellular networks for the best learning experience.

To make the learning experience more accessible and effective, HBS Executive Education virtual programs are delivered through Zoom applications or in an HBS Live Classroom online. The recommended electronic media for the best virtual learning experience are Google Chrome, Safari, and Firefox. (<https://www.exed.hbs.edu/hbs-experience/virtual-experience>)

Conclusion

The virtual university, with its distinctive attributes, has emerged as a highly effective option for nations seeking to enhance the performance and outcomes of their higher education sectors. This effectiveness is particularly notable when the development of such institutions is grounded in meticulously crafted strategic and functional models.

The strategic model focuses on delineating the critical phases in adopting a virtual approach within the higher education system, while the functional model emphasizes establishing the essential functions and infrastructures at the core of the virtual education system. These models aim to foster integration and interaction within the activities of the educational system, tailored to the specific demands of the virtual environment.

Recognizing the significance of virtual education in the realm of higher education, Harvard Business School has been a pioneer in this field since 2004, adopting this system alongside its traditional educational offerings. By implementing a clear and deliberate strategy, Harvard Business School has positioned itself as a leader in the domain, achieving impactful results on a global scale. Based on these insights, several recommendations are proposed:

- The necessity of adopting the correct strategic and functional approach when deciding to move towards a virtual university;
- The necessity of preparing the basic infrastructure for virtual education, starting from qualified human resources consisting of administrative teachers and students, to the necessary physical and technological resources;

- The necessity of preparing a virtual educational environment that keeps up with modern technological developments on one hand and is suitable for virtual educational curricula on the other;
- The necessity of working hard to build an organizational and societal culture supportive of the virtual direction for higher education.

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