

A virtual university: A proposed model

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Abstract: - Goddard and Cornford noted that the virtual university has emerged as a potent vision for the future of higher education, utilising new ICTs radically to restructure higher educational provision [1]. This vision was driven in addition to the rapid advancement of ICTs, particularly Internet-based technology, by other factors such as the growth of knowledge, the increasing demand for higher education, the expectation of higher education decision-makers to reduce cost, the provision of equal access, high-quality education, limitless educational opportunities and so on to all prospective students. The purpose of this paper are defining the concept of virtual university from a variety of perspectives, analysing the available literature in relation to virtual university model; and identifying the main components of the proposed virtual university model

Key-words:- Internet-based education, virtual university model, Internet-based technology, virtual education

1 Introduction

One of the most astonishing aspects of the twentieth century is the overwhelming advancement of information and communication technologies in the world today. This ICT revolution is acknowledged by modern societies as a persistent force that is continually remodelling their life styles. All predictions suggest that this pace of change is not going to slow down, but will expand to include most nations of the world. Education in general, and distance education in particular, has been dramatically affected by this transformation which, at the same time, offers a striking opportunity to expand its geographical reach.

Utilising ICT, such as the Internet and related technologies, according to French [2] has the potential to affect radical change, not just for the design and delivery of online courses, but also in the way that conventional institutions are structured. Indisputably, the advent of the Internet, and more accurately the WWW, means that higher education is no longer confined to a conventional classroom. Instead, learners who are enthusiastic about proceeding with their education may study for academic degrees while at home or at work, and whether they come from an

urban or a rural area. Education via the Internet and its resources has demolished any such constraint of time or location and provides a new means of high quality distance teaching and learning.

Baker and Gloster noted that [3]

“A paradigm shift is taking place in higher education instruction, from a mode of faculty-student interaction occurring in fixed locations at specific times to one in which students can access the same instructional resources in a variety of forms, regardless of location, at their convenience. This is possible because several technologies have matured, supporting major changes in how instruction can be delivered to students, in their homes, or in their work places”.

The outcome of this paradigm shift as Helmi [4] pointed out will result in a networked society with equal access to knowledge and information; communities and individuals in charge of their learning environment; government, educators, and the private sector working in partnership; and an education and training system delivering the skills and knowledge needed for a free and prosperous society in the 21st century.

Indeed, today Internet-based technology can be seen as a major driving force in a technological sense for

this paradigm shift. This presents higher education institutions with one of four options: firstly, life as usual, with no substantial changes to the university in general; secondly, a reengineering of the major processes of the university with the retention of the existing overall design; thirdly, the reinvention of the university organisational model; and fourthly, the elimination of the university due to obsolescence [5]. Incontrovertibly, in the information age, higher education systems world wide have been shaped by decreases in traditional funding, greater demand for business faculties, increased competition to attract consumers and the funding they bring with them, and pressure to reduce cost. Demand for advanced education is growing and yet this demand is often unmet, while new ICT media are altering the educational landscape [6].

In today's mobile society, all higher education providers, whether public or private, in order to survive in a competitive environment, must construct an effective education system. This must have the ability to adjust to rapid social, economic and technological changes, and to improve the opportunities for education access to all citizens of all ages, in a variety of environments. The new developments in information technology present higher education institutions with marvellous opportunities to contain the rapidly increasing cost and expand their geographical reach by flexible means. The Internet, for example, opens a new revolutionary era through sophisticated tools which can be utilized to disseminate global information and allow free access to unlimited resources for mankind's knowledge. All together, this will facilitate the distribution of learning to learners in diverse environments.

Halliwell [7] justified why higher education institutions should consider integrating the Internet and its associated technologies into their learning processes.

"Instead of having to be content with the cost and limitations of discrete experimental infrastructure, developers of network learning have been presented with a ready-made means of translating theory very rapidly into practice and of realizing their goal of new, potential global teaching and learning environments based on accessibility, flexibility, empowerment, alternative modes of communication and so on".

Such aspirations have been realized by numerous traditional institutions, which began to adapt these

futuristic technologies in their educational operations both on and off campus. At the same time, other so-called 'virtual universities' have been born to initiate a new era of modernistic institutions and to rival the traditional institutions through expanding learning access to every potential learner with Internet connection on the globe. It is not surprising, therefore, that the first and foremost target group of such educational missions are learners who have been deflected from their learning opportunities for reasons such as personal or social circumstances, institutional regulations, work responsibilities, transportation or geographical difficulties, economic and cultural barriers.

Farrell et al. [8] emphasised that the emergence of the virtual university phenomenon has been forcefully driven by the following factors:

§ The increasing capacity, flexibility, and suitability of information and communication technologies to educational applications, together with a continuing decrease in hardware.

§ The enabling capacity of the technologies to "unbundle" functions that have traditionally been provided by one institution.

§ The growth of knowledge, with its attendant consequence of the obsolescence of much of what was previously learned, is placing an ever-increasing pressure on conventional models of education. People are seeking opportunities for lifelong learning, and with diverse personal circumstances, they require flexible access-to-learning opportunities and avenues such as the home, the workplace, the community learning centre, as well as the traditional campus-based education.

§ The realisation that the quality of the learning experience can be enhanced by applying information and communication technologies. In the conventional classroom there has been increasing use of the Internet to access information which enriches the learning experience. Further, in the conventional distance education environment, technologies are being adopted to improve the learning process through interactive and collaborative learning to reduce the learner's sense of isolation.

§ The increasing demand from isolated learners for more equitable access and services.

§ The perception of many institutions, particularly in Europe and North America, that the application of information and communication technologies will enable them to increase their market share in an environment that is increasingly competitive.

§ The need to be seen to be “keeping up with the competition.” Administrators worry that student recruitment, donations, and grants may decline if this expectation is not met.

§ The expectation by policy makers and administrators that the development of virtual delivery models will reduce costs, increase productivity, and enable expansion without cost increase.

Unquestionably, a virtual university will come into existence and this fact has begun to be clear to various nations worldwide regardless of the status of their technological development. It is now necessary to respond effectively to the ever increasing demand from diverse learners for better access to education, cheaper fees and courses, the content of which is directly applicable to their learning interests.

2 Aims of the Study:

The aims of the study are:

- ✓ To define the concept of virtual university;
- ✓ To analyse the available literature in relation to virtual university model; and
- ✓ To identify the main components of the proposed virtual university model.

2 Definition of a Virtual University

The term “virtual university” is relatively new and has emerged in the field of distance education literature to indicate the rapid growth of the use of ICT in delivering education on and off campus. It is a new form of organisational structure which is assumed to be similar in its basic functions, such as teaching, administration, support and research, to its counterpart, the conventional institution. The difference is that it offers courses and instructional programmes through the Internet and related technologies to allow prospective learners to have the opportunity to learn at their own pace, space and place.

In the literature, several authors attempt to define the concept of the virtual university. Wilson [9] described the virtual university as “one which loses much or its entire geographical locus (geographical virtuality)...and (it) makes the best use of virtual capability.” Wilson further noted that the geographical virtuality represents the consequence of the application of technology and its obvious uses; and the virtual capability represents the most effective use

of this technology in building higher levels of capability in a university. According to Cornford [10], the virtual university (VU) is a university without walls which is seen as “an institution that has torn itself free from the geographical confines of the campus, using the new communications technologies to connect learners, potential learners, teachers, researchers, alumni, employers, research funders and administrators in a flexible ever-changing network organisation.” Whittington [11] defined the virtual university as anything that delivers higher education to students via the World Wide Web. He further stated that this encompasses new but fully-fledged degree-awarding institutions offering distance education initiatives within existing traditional institutions. Davies [12] pointed out that “a virtual university must be a real university offering learning opportunities otherwise denied. It must be, above all, a network for life-long learning that meets the new learning needs of a new century.”

It is evident from the above definitions that the term “virtual university” has been described and defined in a variety of ways, which reflects the wide disagreement between specialists in establishing a unified definition. Nevertheless, it can be observed that the concept of a virtual university implies the following common characteristics:

§ The use of sophisticated ICT will have a major impact on the concept of the virtual university.

§ The virtual university is not a traditional institution and it does not have an existing campus, offices, instructors and locus libraries. Instead, it has an electronic network which is capable of performing the same functions as a conventional university but in more democratic and flexible way.

§ The emergence of the virtual university is derived from the urgent need to acquire knowledge and skills.

§ Co-operation, collaboration and communication are significant elements of the virtual university.

§ The mission of a virtual university is to increase educational opportunities, reaching widely dispersed learners who were barred from taking traditional university classes.

§ The organisational structures of a virtual university can be represented in various models.

3. Virtual University Models

The current state of ICT has a major influence on the recent development of virtual universities. However, while the literature has embraced much writing about virtual education as a new paradigm providing learning to on/off-campus learners and the empirical initiatives of forming virtual universities in many developing countries, there is a paucity of valid and systematic studies dealing with the issue of virtual university models. In this respect, the literature can be classified into two main categories regarding this issue. The first has a greater focus on the overall organisational structure of the virtual universities, while the second is more concerned with the components that comprise the virtual university.

One of the major and most comprehensive studies of virtual education models in general is that of Farrell et al. [13] who differentiated between two dimensions that have a substantial impact on the development of virtual education models worldwide. The first is the tendency to introduce ICT into teaching and learning processes causing the creation of new forms of virtual educational institution models, though Farrell further notes, "these models are not mutually exclusive and undoubtedly others will develop quickly." Based on this dimension, he divided the current examples of virtual education into five main categories:

§ Traditional multi-institutions that are offering virtual programmes as well as on-campus programmes. (e.g. the University of Phoenix Online).

§ Single-mode distance teaching organisations using print-based delivery and created originally with relatively clear and exclusive mandates. They have had to reinvent themselves by using ICT to support their distance programmes.

§ Broker-type organisations established to obtain and deliver programmes from other institutions. Adding value through flexibility of access and transferring of credits are the main advantages of this type of organisation.

§ Information and facility provider-type organisations such as the University for Industry in the UK. This type was founded to support learners and institutional needs.

§ Institutions created with no intention to supplement learners with direct instructions; instead they have authority to award credentials and provide other services. One example is the Western Governors University in the United States.

The second dimension that has fostered the emergence of new virtual education models is the meteoric

growth of the private sector. This has created three distinct models:

§ For-profit institutions such as The University of Phoenix and Jones International University that were created to deliver direct instruction to a more focused target niche market.

§ Corporate organisations that established network training for internal training needs are now attracting outside training opportunities and are striving to gain official recognition. One example is South Africa Telecom.

§ For-fee service organisations that concentrate on providing certain kinds of service such as consulting, project management, technical support and so on.

Farrell concludes that, although these models are not yet having a concrete impact on education at primary and secondary level, they promise to develop quickly. Similarly, Baer [14] presented a variety of virtual university models that are being affected by the integration of the Internet in delivering distance education courses and programmes. The most noticeable models are:

§ Traditional (non-profit) colleges and universities.

§ Non-profit open universities.

§ Non-profit virtual universities.

§ For-profit universities.

§ Internet software and networking firms.

§ Content and training firms.

He believes that collaboration between non-profit and for-profit organisations is essential for the success of any of these models in delivering distance learning courses or programmes to learners in different locations. Certainly, this sort of mutual partnership project, whether it is direct or a third party alliance, is considered to be crucial and inevitable for the success and achievement of the vision of a virtual university. Through mutual development projects with IT vendors and other institutions and organisations whether public or private, the overall cost of operating and maintaining the IT infrastructure may be partially met. This reduction in cost can be used to enhance the quality of the educational programmes, the development of faculty technological skills, advancing and upgrading the existing IT to promote the quality of online courses, or conducting scientific research to name a few. Another aspect of major interest in partnership would be in the area of developing, designing and delivering Internet-based courses and programmes with a variety of like-minded institutions and companies that had sufficient skills and knowledge, as well as joint research projects and the

development of technologies with potentially wide applications.

Similarly, Khakhar [15] identified four main types of virtual university:

§ Single-mode institutions, where the main focus is to design and deliver courses to distance learners. This means that all management functions and responsibilities such as planning, funding, staffing and other resources are dedicated to achieve this goal.

§ Dual-mode institutions which, besides delivering on-campus classes, also deliver virtual education to non-traditional students.

§ Mixed-mode institutions where both conventional and distance education is designed, delivered and supervised by the same academic members.

§ Consortia, in which a number of institutions within a state or nation engage in partnerships to provide distance teaching under a single management unit.

Khakhar further emphasised that in all these diverse types, procedures will be needed for defining and reviewing the institutional mission; for allocating human and financial resources among competing student demands and markets; for selecting, appointing, training and monitoring teachers; for recruiting, registering and supervising students; for selecting and controlling the use of technologies; for controlling materials production systems; and for managing budgets and finance.

These evolving new organisational structures of a virtual university have been influenced and stimulated by the advancement of digital communication and learning technologies. This comes together with the growing demand of learners, instructors and institutions for more cost-effective and anytime, anywhere high-quality education. Every model has its own conceptual basis and thus incorporates particular features which have been developed and designed specifically to compete with other models on the one hand and with its parent 'traditional university' on the other. Furthermore, each organisational model is produced to comply with a variety of new educational opportunities. In practice, some of these models are still in their infancy but others are highly complex and well organised.

Stallings [16] examined in detail the pros and cons of adapting either for-profit or non-profit models for the virtual university. He noted that "the dominant model must successfully cope with many issues concerning the status of the faculty, the role of government, the priority of technologies, the costs of resources, and of course, how effectively and efficiently that model

promotes the preparation of the student for career and society." After an exhaustive examination of both the for-profit and non-profit models he argues that the for-profit model is the only model that could meet the needs of a changing society. He encourages other virtual institutions to take into account this model as a primary option if they are going to survive and compete in the changing world of the future. This view is supported by another study by Sperling and Tucker [17]. They emphasised that institutions that aimed at providing education to adult learners should be started up as for-profit institutions because the following factors:

§ For-profit universities are labour but not capital intensive.

§ The primary goals are growth and profit.

§ They have a responsibility for providing high quality education to adults at the learners' convenience.

§ They have accountability for operational efficiency.

§ They respond to national educational change with less cost and in less time.

§ There is greater focus on achieving learners' goals.

§ They incorporate quality management and a faculty governance system to ensure that a quality product is being delivered.

In the for-profit institution, setting, a number of issues must be resolved before carrying out such a project. First, maximising revenue is considered to be a critical factor in progress and success. This can be achieved through a feasibility study or meetings between the academic communities of the university (academic staff and decision-makers) and the corporate enterprise. These must find proper ways to increase revenue through increases in student enrolment, by providing on-demand training programmes tailored to a particular company, conducting for-fees workshops or seminars related to technical or vocational training courses, or providing other additional educational services. The value of this process is to give an estimate of potential revenue prior to the inception of the whole programme. Another crucial feature of a for-profit virtual university is the time available to market its courses and programmes to the potential recipients. This is usually constrained by the rapid advancement of technologies which must be taken into account in setting it up. Furthermore, a systematic approach to course development and implementation, as well as standardisation of the curriculum, is of great importance in the overall measurement of its

educational outcomes. However, despite all of these fundamental elements which can be denoted in the successful implementation of for-profit virtual university institutions, a majority of educational authorities view for-profit institutions as a means of delivery of education, that is, as a commodity not as a service; this may reduce the quality of the provision of education in general.

Davies and Stacey [18] evaluated the performance and experience of the Open University in the UK as a single-mode example, and Deakin University in Australia and Florida State University in the USA as dual-mode models. These institutions highlighted the major reasons behind their success and outlined their roles in delivering a high quality education at university level in those countries. The effectiveness and success of a single or a dual-mode depends heavily on the availability of political and community commitment and an effective student support system. The study concludes that while both modes are effective and successful,

“The advantage of the dual-mode approach is that it can be applied to an existing institution...such a model may well be a way of helping to deal with the problems that higher education institutions face in meeting the increasing demand for student places, for life-long learning and for affordable professional development.”

Whittington and Sclater [19] started their study by distinguishing four virtual university models currently offering education and training courses and programmes via the Internet. These are:

§ Virtual front ends for single, existing institutions. In this model, an existing university founds a separate virtual faculty or department that is responsible for delivering online courses to off-campus learners.

§ A collaborative venture between existing institutions. This is a model where the participant universities work together as a unit. They agree to establish a new institution to deliver accredited online courses.

§ A virtual university model that is specifically created to respond to the increasing demand of adult learners for virtual educational courses.

§ Commercial enterprises which build their own websites to meet the training needs of a single company. These institutions do not offer accredited degree courses.

They then propose a three-layer model for a virtual university. These are: the organisational layer which defines the structure of the organisation and addresses

issues such as copyright and quality assurance; the infrastructure layer that is involved in issues related to the technological infrastructure required for the delivery of Internet-based courses and assessment; and the content layer that is concerned with the kind of learning formats being offered. They suggest that these issues and others that will emerge as the virtual university develops need to be carefully addressed if they are to prove effective.

Another perspective, presented by Carswell [20], argued that understanding the concept of a virtual university that can be realised using Internet-based technology, requires ample knowledge of the core components of distance education: teaching and learning. These elements include content (teaching materials) assessment, socialisation, participation tutoring and student administration which can be generalised and intrinsic in programmes, whether conventional or distance. However, an evaluation of the experience of the Open University in this regard has been used as an example of a virtual university that utilised the Internet in delivering virtual education. Carswell further commented that failing to be acquainted with these factors will unquestionably end with a failed project. Similarly, Elena Barber [21] outlined the key elements that structured the University Oberta De Catalunya which is an entirely virtual university that was founded by the regional government of Catalonia to offer degree programmes in business administration, educational psychology, law, humanities, computer science and philology leading to an official university certificate. The framework consists of various areas: management (registration, records, academic standards, etc.); communication between members of the university (letters, cafeteria, announcements, and so on); university services (virtual store, computer assistance, cultural activities); and other resources (virtual library and Internet access). In addition to the above-mentioned areas, the virtual campus enables students to interact with their peers and with their instructors through three main areas: debates in which the students discuss a particular topic with colleagues and with the instructor (the forum has the capacity to facilitate the process of transferring knowledge between students themselves or between students and their instructor in an informal manner); the instructors' bulletin board which provides space for the academic staff to introduce their teaching subject, learning and any additional activities that the instructors regard as integral to comprehend the study

materials; and responding personally on the overall course assessments or questions posed by students. Likewise, Aoki and Pogroszewski [22] aimed to present a Virtual University Reference Model (VURM) that can be used by colleges and universities as a framework or guideline when they plan to utilise Internet-based technology to deliver instruction and support services or to create a new virtual university project. This can be achieved through identifying its necessary elements and the mechanisms for offering online distance education courses or programmes. The model consists of four major components: administrative services, student services, resource services and faculty services. In order to illustrate their model using a real situation, they describe two case studies: the Western Governors University and the University of Phoenix. These institutions were chosen mainly due to their wide publicity in the U.S. Both institutions are called virtual universities as they offer degree programmes completely online. The four components of the VURM are discussed for each of the two institutions.

Bothun [23] argued that for a virtual university to be effective and viable as an educational medium, it has to deal with seven issues. These are access, accreditation, curriculum development, evaluation, marketing, mentoring and pricing. Bothun further pointed that these issues should be weighted equally in evaluating the probability of success. Each issue, according to the author, represented an obstacle or point of failure that could prevent the university from duplicating the on-campus experience and hence impact on the quality of its educational products.

These studies come as a result of the increasing interest and rapid involvement in virtual education among higher education institutions worldwide and call for a new paradigm, not only in terms of the organisational structure of higher education institutions, but also in the mechanism of delivering instructional courses and services to students. They suggest that new higher education institutions, which in essence exist only in cyberspace, must cope with the changing roles of administration, faculties and students, and adopt new techniques in designing, developing and delivering courses and programmes. These alterations in structure and functions provided by the creation of this novel institution must be carefully planned and constructed in a way that suits student learning needs and at the same time aids the institution in carrying out its educational mission successfully in a competitive world. These studies

reveal that there is no ideal virtual university model. This may due to the underlying philosophy of the institution itself which may be established to meet only the needs of a particular segment of learners or trainers within a specific company, society or country, or may be extended to provide educational services globally. However, despite all of these different points of views about the basic infrastructure required for the creation of a virtual university, there is a common concept behind their enthusiastic efforts which relate to their aim to offer high-quality educational and support services to clients parallel to what one would find in geographical educational institutions.

4. Components of the proposed virtual university model

4.1 Setting up Mission Statement

In the construction of any new project, whether public or private, profit or non-profit, small or large, a mission statement has to be set up which expresses the underlying beliefs, values or philosophy which essentially capture the nature of organisation. The rationale behind formulating a mission statement by any institution is to differentiate clearly between this institution and others in term of goals, objectives, function, activities and so forth. It can be used as a tool for the organisation both internally and externally. At the internal level, a well-formulated mission statement will ensure the systematic definition of its goals and objectives. Externally, a mission statement gives an organisation the opportunity to expose and transmit its ideology to the outside world and to such people as politicians, the general public and other institutions [24]. In this respect, the proposed Saudi virtual university is not exceptional; it has to formulate a reflective mission statement that conveys and will disseminate unambiguously its basic philosophy to the minds of the potential target audience. The following mission statement of the envisaged virtual university is proposed as below:

[The proposed virtual university is assumed to be a joint venture, created by the government and the private sector as a for-profit single-mode higher education institution which aims to advance and disseminate knowledge via Internet-based technology in an attempt to extend equal provision of higher education studies to the largest possible segment of the population. It will function across barriers of

space and time to promote and improve the quality of education through efficient staff recruitment and by offering wide-ranging and effective course production; it will coordinate and collaborate with other institutions, determine the standards in the overall university system and award undergraduate degrees that are credible to both government and the private sector].

4.2 Allocating Sufficient Funds and all the Necessary Financial Support

Indisputably, in order to create the For-profit Virtual University, procuring the required funds and financial support is one of the most critical issues; this must be addressed in the first phase. As a starting point for the virtual university to decide what funding is necessary to carry out its mission appropriately and efficiently, a viability study is required. This will allow an approximate projection of the financial support needed to create and sustain the project. To facilitate the process of budgeting, to identify the commitment to expenditure as it occurs and in advance of the formal resolution of the budget, the proposed university needs to develop a financial model that will identify the costs of its projected activities and programmes. However, there are a number of obvious cost factors which must be borne in mind when setting the budget for this project.

§ Capital and recurrent cost: capital costs take account of building the necessary IT infrastructure including the purchase and acquisition of equipment (hardware and software), and buildings to house the administrative and technical personnel. Recurrent costs, on the other hand, refer to all funds that are needed continuously (for salaries, revising and maintenance).

§ Management costs: the management costs will cover the on-going management procedures for course development, presentation, review and evaluation.

§ Course production and delivery costs.

§ Clerical and staff development costs.

§ Student cost per year.

§ Contingency costs.

Other common sources of finance for the virtual university include:

§ Charging fees for delivered courses or programmes. This can be applied to all students except those who are disadvantaged and who cannot afford education because of an inability to support themselves financially.

§ Receiving grants or endowments from outside partners who have been convinced of the value and worthiness of the courses and programmes offered by the virtual university.

§ Increasing the number of students in each class. This, of course, depends heavily on the kind of technology being used. However, increasing the number of students in this way should not affect the overall quality of teaching and learning.

§ Minimising the overall cost of delivering courses. A virtual university should decide what, when and how many courses should be offered within a given time frame. Also, it should determine the type of technology that should be used to deliver each course. These elements have to be considered analytically in order to deliver high-quality education with the least possible expenditure.

Additional funding approaches may develop at a later stage, such as carrying out special training programmes, providing specific courses for particular individuals or groups, conducting workshops and seminars on a specific topic or subject, and offering continuing education programmes.

4.3 Establishing Effective Staff Recruitment Procedures

§ Unlike a traditional institution in which teaching members direct course instruction, lead the lessons, determine students' responses and the pace of the class, it will be assumed that faculty working in an Internet-based learning environment will be qualified to fulfil a number of roles at the same time. They will function as course tutors, facilitators, mentors and consultants for learning. These changing roles make the process of selecting qualified teaching members in a virtual learning environment a complex and labour-intensive process which must be thoroughly planned in advance by the university. In view of this, there are certain criteria which faculty must meet. These include:

§ Prospective faculty have to comprehend the nature and philosophy of virtual education. Members must possess theoretical knowledge and professional experience in the subject of his/her interest.

§ Prospective staff should possess specialist knowledge to enable them to work as instructional designers, providers of advice and learning, monitors of students, facilitators of the learning process, course managers and academic mentors.

§ Faculty must show enthusiasm and an interest in working with students at a distance.

§ Staff have to be capable of organising instructional materials consistent with the delivery mechanism, of providing the necessary instructional and psychological support whenever needed by learners, and of carrying out adequate evaluation procedures.

§ Faculty have to cultivate certain skills in developing and distributing Internet-based materials in addition to facilitating, managing and supporting an Internet-based learning environment.

Those who meet these requirements and who are then accepted as members of the academic teaching staff must participate in a process to determine the quality of their former academic knowledge and professional experience in working with students in a virtual learning environment.

4.4 Determining Student Admission Requirements

The central theme of the proposed Virtual University is to incorporate into higher education those who have not been able to join the existing university system. Thus, establishing and implementing a practical, efficient, flexible and suitable admission policy in this new institution is important in order to promote wider access for potential learners. Hence, the admission policy or requirements can be outlined as below:

§ The proposed virtual university should admit any potential applicant who holds Secondary School Certificate or equivalent, regardless of the GPA. The purpose of the university, as stated earlier, is to expand and extend higher education opportunities to every potential learner anytime and anywhere.

§ Prospective students should be admitted to the virtual university based on their ability to pass a pre-admission examination. This selection process will be aimed at measuring learners' capacity to work in the Internet-based learning environment. If a student fails to comply with this condition, he/she will be recommended to join a basic training course to qualify him/her to work in a virtual environment.

§ A student graduation date is not essential for admitting potential students. This requirement will enable recently graduated students, as well as adult workers, to pursue higher education.

Generally speaking, it is virtually an open admission policy that the Virtual University will implement which expected to ease educational access and facilitate student recruitment procedures.

4.5 Deciding the Types of Courses and Programmes to be offered

In principal, every educational course can be presented and taught via Internet-based technology as long as the institution is willing to invest a great deal of money in developing and producing a variety of well-designed courses. Unquestionably, some of these courses require highly interactive technology (animation, simulation and visualisation) in order to fulfil the needs of learners. Others will require lower interactivity using static Web and email technologies. In both cases, the quality of the course or programme depends on a number of factors including content and presentation, delivery mechanisms, teaching approach, the knowledge, skills and experience of the tutor, support services, and students' willingness to learn.

4.6 Ensuring Effective Copyright and Ownership Procedures for Course Materials

The type of course materials in a virtual university are identical to those in traditional institutions but in a digital format. Materials may come in the form of books, syllabi, lectures, notes, overhead transparencies and so forth, in addition to other tools such as Web pages, multimedia (video, audio, CD-ROM), and educational software. Faculty, institutions and educational software developers will have to invest a huge amount of time, money and energy to provide the necessary equipment and expertise to produce and develop any of these course materials in their electronic shape to be adopted as supplementary sources for teaching and learning. However, once the information contained in these materials becomes available electronically, it is almost impossible to prevent any individual or institution from acquiring, downloading, transmitting and transforming all or a portion of these materials. Thus, these materials and their ownership must be protected from such infringement whether by individuals or organisations. This is the purpose of copyright law. For a virtual university it is vital to address clearly and unambiguously the issues of copyright, ownership and the fair use of electronic materials. This can be achieved by devising a new policy if there is none, or revising an existing policy used by other institutions and then implementing these measures and procedures. It is assumed that these policies will specify the property rights of the author or producers of Internet course materials to avoid any potential

dispute over materials with other individuals or institutions. The policy has to define and answer adequately a number of issues including, but not restricted to, the following: What exactly is meant by copyright or intellectual property and the ownership of such work? Who holds the copyright of course materials? What are the rights concerning course materials which are developed by academic staff? How will faculty be compensated for developing courses for online delivery? Who will monitor or control the copyright and ownership policies adopted by such an institution? What are the limitations of fair use of electronic sources? These and any future issues must be considered in order to ensure that intellectual integrity is respected, revenue is shared and possible conflict of interest among individuals or institutions is prevented. Furthermore, these policies must be published by the virtual university so that they are clearly understood internally, by both faculty and students, and externally, by other individuals and institutions.

4.7 Planning and Carrying out Marketing and Advertisement

As the virtual university is for-profit, it is imperative to set up a thorough and wide-ranging marketing and advertising plan. This must reach as many prospective learners as possible. The aim of this planning phase is to bring to the attention of potential learners that this new institution is offering competitive and outstanding virtual education programmes and courses. In developing such a plan, the institution needs to acquire a highly qualified professional marketing team. Initially, the team has to conduct market research the first objective of which is to become acquainted with the target audience in order to determine who will be potential learners. Secondly, the team must stipulate the form of media and language to be used which will be most influential in conveying the advertisement message to the outside world. Once these components have been outlined and analysed, the advertising team should build its marketing strategies on these findings. The team can place information on the website of the proposed university. This will ease any possible future modifications or promotion regarding courses or programmes. The website should be linked with other sites, encourage interaction, be visually appealing, customisable and easy to navigate, have a friendly search engine, and be rich in content. E-mail,

newsgroups and electronic bulletin boards can be developed for advertising purposes. Television and radio programmes are excellent transmission media that will enable the advertising team to grasp the attention of a wider audience concerning announcements on imminent events related to courses and programmes, the types of innovative technology which are used to deliver courses, and reports on progress made by the institution in the area of satisfying the needs of its learners and in serving society as a whole.

In fact, there are various ways for the envisaged university to publicise its programmes, courses and key activities: for example, by seminars, printed publications, interviews and so forth.

4.8 Maintaining and Monitoring Effectiveness

The proposed university should prepare a comprehensive and systematic evaluation system that continuously measures every detail of academic input, performance, processes and outcome. The primary objective of this system is to maintain the provision of a high standard of education on the one hand, and to know precisely how to maintain this quality to meet the needs of both society as whole and of prospective learners. The output of this assessment mechanism will generate information that will assist decision-makers to ensure continuous improvements to the entire university system. The proposed Virtual University can maintain and monitor its operational effectiveness by implementing a variety of assessment techniques. These will run in conjunction with the university input and output which will be described below:

§ Assessment of students: This can be achieved through a number of approaches. First, student registration assessment is a technique which can be executed during the course of students' registration and graduation processes. The registration assessment is intended to comprehend, from students' points of view, why they prefer to be part of this institution. It asks why they want to be registered on this particular course or programme; what sort of instructional approaches they like most in learning and what special services, needs or assistance (financial or physical) they require. It also seeks to discover what they aim to achieve after completion of their studies; how effective the overall registration process is and what difficulties are associated with it; and finally, how they heard about the university. The graduation

assessment should allow students who have graduated to share their opinions on a variety of issues, such as how they perceive the quality of courses, programmes and associated support offered to them by the university through their learning study years; what features, if any, distinguish the virtual university from other traditional institutions in terms of instructional methods and the effectiveness of support services; whether the knowledge that they have gained has met their educational or professional goals; what negative or positive perceptions they have of studying at the virtual university; and based on this, would they recommend studying at the university to others. Instructor-student assessment places the responsibility of measuring student performance throughout the courses in the hands of the course instructor. He/she has to evaluate and grade students according to their progress and accomplishments. (This method will be discussed in more detail in the relevant systems for content section). Monitoring student performance (the number of assignments, research projects and papers normally completed by the student, plus the average grade received) throughout his/her period of study, together with annual reports provided by instructors to students for each course are alternative tools for monitoring progress.

§ Assessment of faculty: As in the case of students, faculty members should be required, when they apply for a teaching position at the proposed university, to identify their academic and professional goals, previous experience, skills and other qualifications. A student-instructor assessment is another technique normally organised by the institution to be undertaken by students who have completed a particular course. The aim of this technique is to allow students to provide their instructors with some feedback related to the overall course production, content, delivery mechanisms, support and management. The information provided by students about their perception of the course and its instructor undoubtedly helps faculty and decision-makers in the institution to bring about constant improvement. Moreover, the institution has a responsibility to monitor teaching performance (teaching style, knowledge and skills' improvement) to identify any possible problems with the intention of taking appropriate action on this matter.

§ Assessment of courses and programmes: Course and programme assessment refers to the overall quality of education. Students and faculty should be encouraged by the institution continuously to engage

in evaluating the kind of instructional delivery media being used. The criteria include: How effective is this medium in conveying knowledge and concepts? How much time do students spend in understanding what has been disseminated through this particular type of delivery mechanism and do they encounter any difficulties regarding this? How simple and straightforward is this medium for use by both student and instructor?

Furthermore, measuring the quality of the university should coincide with the following issues: How can the quality of the programme output be measured by the outside world? Is the institution recognised by other higher education agencies? Is the awarded certificate acceptable professionally to other public or private organisations for employment and promotion? Does the institution meet the higher education standards in order to be accredited by local or international professionally endorsed associations? Do other higher education institutions accept the transfer of graduate students from this virtual university? Is the university affiliated to any national or international higher education league?

These questions give the institution a chance to analyse itself critically. The intention is to improve the quality of learning and teaching so that the university can meet its objectives. Additionally, students may be requested to provide their views regarding the programmes being presented, whether there is any need to improve their quality, and whether these programmes have satisfied their educational and professional needs. They need to be asked if they would recommend or suggest other programmes which are not part of the virtual university's curricula that should be established.

In addition, the bench-marking technique can be used by the proposed virtual university as another form of monitoring and maintaining effectiveness to measure and improve educational activities and services.

4.9 Maintaining Course Quality

Ensuring the provision of high-quality education must be given the highest priority in the short and long-term agenda of the university. Undoubtedly, this necessitates investing considerable amounts of finance, time, technical expertise, commitment and dedication by the faculty and the institution. The virtual university must have quality standards for content development and production. Careful planning is essential for the institution to design superior

Internet courses that meet instructional objectives. Because of the distance between students and instructors, the content must be designed in a way that will clarify ideas, provoke learners' thinking, encourage individual and/or group involvement and active participation, provide unambiguous instructions, and meet the educational characteristics and attitudes of the learners. In practical terms, Internet-based technology, with its vast capacity, gives the course designer an opportunity to develop and produce high standard courses which in essence could meet diverse learning needs of both individuals and groups. There are some integral features which can be used by course content designers as guidelines in Internet-based course development with the aim of generating optimal course content design. These can be summarised as follows:

§ **Learning theory:** The online course designer should be able to accommodate and adopt a variety of learning styles that meet the diverse needs of distance learners.

§ **The goal(s) and objective(s) of the course:** These must be given a high-priority and are inherent in each step of designing Internet-based courses. They include the characteristics of the target individual and/or group, as well as the aims, needs and interests of learners, and the anticipated outcomes of the course.

§ **The introduction and orientation to the course:** The aim of this process is to familiarise distance learners who come from different backgrounds with the online environment and to offer advice on the best way of solving any problems that they may encounter.

§ **The course study guide:** The online study guide is designed to give distance learners advance knowledge of the main activities of the course, such as course topics, assignments, papers, projects, evaluation procedures, class timetable and so on that they may be undertaking during the course.

§ **The content of the course:** In an online class, the content of the course comes in a variety of formats including case studies, problem-solving exercises, questions to be answered, issues for discussion, topics for analysis and so on. Generally, the content contains the body of information which the instructor is going to convey to learners at their own pace. The transmission of this message must be accompanied with exhaustive illustrations and explanations.

§ **Course publicity:** This is a way of informing distance learners about immediate change whether it is related to the online course or to do with any other related matters.

§ **Online course support:** The online course should provide distance learners with some kind of support such as a list of the addresses of information resources, advice and counselling, technical assistance and so on in order to facilitate their learning experience.

§ **Interactivity and feedback:** The online course designer should promote learner interaction with peers and the instructor, as well as allowing him/her to ask questions, discuss ideas and concepts, and gain instantaneous feedback from the course tutor.

§ **Collaboration:** This is an invitation to learners on the same course to work together collaboratively on a certain project or task in order to share thoughts and provide group insight.

§ **The management of the online course:** Effective management of Internet-based courses is imperative to ensure order. To achieve this, many software packages are now available for educators.

§ **An evaluation of the online course:** This can be seen from two dimensions: first, an evaluation of the progress of the learner by examining his/her comprehension of the knowledge provided on the course and secondly, assessing the overall strengths and weaknesses of the online course for future improvement.

Broadly speaking, Internet courses should be carefully designed to ensure the direct engagement and total involvement of the learner in the virtual learning environment.

4.10 Determining the Study Language of Courses

It is essential for the proposed university to determine the language of instructional materials that will be used by the institution for passing on teaching and learning processes. The final decision must be derived from the needs of the learners, the course content requirements, the teaching strategy and whether or not the university plans to extend its educational reach to other cultural contexts.

4.11 Defining Effective Teaching and Learning Approaches

Providing education via Internet-based technology must be rooted in specific learning models. Although there are numerous teaching and learning strategies, there is no single approach that can be adapted as a

panacea for all instructional problems, whether in FTF (face-to-face) or a virtual learning environment. Each technique has its own advantages and limitations which will affect the learning situation and may possibly achieve the opposite of its usual application. However, selecting the most appropriate teaching strategy relies heavily on the ability of the instructor or course designer to identify accurately the learning style of the student and the most appropriate delivery medium before embarking on the design process. To determine the best learning approach entails an exhaustive learner-needs analysis by the course tutor in collaboration with technical personnel to plan an effective course design that will respond to the learner's needs and will eventually generate the desired learning outcomes. This operation should be supported by the institution in terms of financial incentives and professional recognition for the course designer.

4. 12 Establishing an Efficient Assessment Mechanism

Assessment and evaluation in any educational environment, whether FTF or virtual, must test the knowledge and understanding gained by the learner. It is the idea of who learns, what they learn, how they learn, and why they learn which will ensure whether or not students have assimilated the desired knowledge provided by the course instructor. Generally, assessment methods should track students' course participation, their engagement in discussion, project accomplishment, their involvement in activities and their final achievement. For this reason, the university needs to consider various assessment mechanisms such as formative and Summative evaluations in the initial stages as a guideline for faculty to evaluate the whole learning performance of students.

These assessment approaches should be practical, easy to follow and highly secure. Summative evaluation, for instance, can be completed via the Internet using assessments such as on-line standard tests and multiple-choice format tests. Other summative techniques, such as group projects and short papers can also be submitted online in the form of e-mail, or standard Web. In this instance, the CGI scripts can be used to gather information relevant to students' learning assessments. It allows this information to be compared with established criteria stored in the database files to assign test grades and/

or provide students with feedback in relation to the course being taught. Formative assessment can be accomplished in diverse ways including questionnaires, interviews, focus groups, observation and so forth.

In brief, the evaluation procedures, whether formative or summative, must be thoroughly planned and well-suited to the course's instructional design, content and objectives.

4. 13 Specifying Tools for Content Delivery

Internet-based technology embodies a range of technological options that can be used independently or in conjunction with others with the purpose of delivering instructional materials in the proposed university. They play a key role in the delivery of teaching and learning to non-traditional students at a distance. However, the appropriateness of selecting any of these media in virtual education must be derived from answering the following questions:

§ What are the actual educational needs of the target learners?

§ What are the requirements of the course content to be delivered?

§ What types of constraint exist in the medium itself?

§ What kind of technical support is available?

§ What sort of IT infrastructure exists?

§ What funds are available to support such a tool?

§ What kind of skills are required by both students and tutors to perform specific tasks in relation to these media?

In addition, several considerations should be taken into account in selecting an instructional delivery medium for delivering virtual education. These include the ease of use, flexibility, versatility, accessibility, interactivity, confidentiality, availability and practicality of the media.

The importance of setting up careful planning before selecting any particular Internet medium for virtual course delivery should be emphasised. The developer or producer of Internet course materials should be able to evaluate these media based on their potential strengths and weaknesses in order to determine exactly the suitability and the reliability of any of the selected tools.

4.14 Defining Learners' System Requirements

The proposed university has to classify the main characteristics of the learners' system requirements

and the types of equipment required by remote students actively to engage in the learning process and to achieve successfully the aims and objectives of the virtual learning environment. It is fundamental for the university to determine in the early stages of its development the minimum level of IT equipment prospective students are required to obtain. This is in spite of the fact that different courses or programmes may require different types of software or hardware. As a general rule, however, it is generally recommended that the following technology is acquired by students.

Minimum Hardware Requirements	Minimum Software Requirements
Pentium Processor with at least 500 MHZ or faster 128 MB of RAM 15" Inch SVGA Monitor 65K Modem	Microsoft Word 98 Netscape Communicator 4.51 Internet Explorer 4.01 Web camera

Table 1 Minimum system requirements

These requirements will enable access to all text-based information, chat areas, newsgroups, audio-conferencing and video-conferencing. Furthermore, depending on the type of course being offered, students may need to obtain additional software. Hence, the university should facilitate the free download of the following software:

I-Chat (www.ichat.com)

Adobe Acrobat Reader (www.adobe.com)

RealPlayer G2 (www.real.com)

4.15 Maintaining Learners' Privacy and System Security

Learners' privacy and system security are considered as interrelated issues which must not be overlooked. These issues are related to both the individual learner and the institution. The main concern comes from a potential hacker who may be able to gain access to confidential information stored on the system. Protecting student privacy and the institution's network system is critical in virtual education programmes to ensure confidentiality and overall security. There are a number of techniques that can be used to ensure the total privacy of learners' email.

These include the public and private encryption programmes. They have become increasingly important and now many electronic mail programmes automatically encrypt their messages. Another commonly security approach is a firewall which is a highly secure computer that acts as a link between the Internet and the institution's network. The most noticeable advantage of the firewall is that it limits outside access and restricts internal access to external services. Other security applications which are available for the proposed university to take advantage of include password, voice recognition, call-back, challenge-response system, SmartDisk, Kevlar smart card and so on.

4.16 Monitoring the Efficiency of Communication Technology

It is fundamental for the envisaged university to understand its major activities and the type of equipment being used in order to identify any potential barrier that may hinder the free flow of academic services to its beneficiaries. This should be undertaken by a professional technical team who should set up a comprehensive plan to monitor and sustain the efficiency of the system and to ensure the provision of back-up methods in case of abrupt technical problems. Moreover, the team should meet regularly to discuss issues in relation to the system's overall performance such as accessibility, ease of use, flexibility, reliability, functionality, interoperability of the system and to suggest upgrading, changing or improving any of its components. The team will have to handle properly and promptly any possible malfunction or prevent downtimes of the system. Additionally, it will be responsible for providing regular maintenance of the system's hardware and software.

4.17 Facilitating Students' Administrative Services

Learners at the proposed Virtual University will require academic support services that will assist both the institution and the students in facilitating the overall learning environment. These services should be developed and planned thoroughly in order to provide students with 24 hours/ 7days a week free and direct access to the information they need. The following paragraph will explain briefly each mandatory service:

Course catalogue: courses and programmes need to be organised and listed with their general overview descriptions. The information, provided through the online catalogue for each course, should be designed objectively to allow students to select the courses that meet their needs.

Student enrolment: For students to be part of an Internet-based course or programme it is compulsory to fill in an online enrolment application in order to be officially registered. This application may contain information about learners' personal and demographic details, contact addresses and telephone numbers, course or programme to be studied, background information about their educational history and so on.

Scheduling: The system should enable students at the university to know what courses are available and their time-tabling because they may need to consult their academic advisors. Thus, the system should be designed to provide students with updated lists of courses that are being planned by the institution as well as their scheduling.

Payment methods: In an Internet-based learning environment, learners need a secure payment mechanism into which they can pay their course fees online through, for example, credit or debit cards; they need to obtain related billing information simultaneously.

Financial aid: Some students, whether normal students or students with special needs, may come across particular financial difficulties prior to or during their studies. Therefore, this system should be designed to provide them with an efficient and secure system to allow them the chance to apply for financial assistance.

Scholarship: This system should give students equal opportunities to obtain current information concerning scholarship availability and all their requirements.

Students' academic records: The system should give learners an opportunity to view frequently and securely their academic records, such as grades, to obtain a transcript copy or to transfer credits.

Bookshop: The system should allow students to purchase books online through a virtual bookstore or any online publishing house.

There are several Web-enabled administrative systems which combine all or most of these services. The proposed university may select any of them or simply invent its own academic support system that meets its own needs and requirements. In either circumstance, the system design must be freely accessible to any

authorised individual and, at the same time, be flexible to allow the updating of information easily.

4.18 Providing Training Programmes

Tutors, as well as students, require training programmes. These training sessions must be systematically organised and precisely controlled. They must be based on educational and professional needs and goals with the purpose of enhancing and promoting skills, attitudes and overall performance in the institution. For instructors' training activities, the university should plan these at two major levels, each level satisfying particular needs and objectives which will be in accordance with the institution's goals as a whole. These levels can be described as follows:

Pre-appointment-training: In this kind of training, it is essential for an Internet-based course tutor to maintain and master certain types of IT skills including, for example:

- § Ability to access and post messages via E-mail, bulletin boards, newsgroups and list servers.

- § Ability to download files, transfer protocol, install software, and use search engines.

- § Ability to participate in newsgroup discussions.

- § Ability to use various Internet-based tools and be familiar with each one. They must also be able to understand their strengths, capabilities and limitations within teaching and learning frameworks.

- § Ability to present, modify, facilitate and transmit online courses to distance learners.

- § Ability to make use of particular Internet facilities to promote and improve interaction and a sense of community among students and their peers and between students and their tutors.

- § Ability to exploit tools that assist in evaluating learners and provide them with feedback.

- § Ability to develop, or at least participate in, Internet-based course design and production.

- § Ability to evaluate and determine the quality of instructional delivery mechanisms.

- § Ability to be aware of some of the basic applications of multimedia techniques relating to their presentation methods, sound files, graphic applications, video animations, file compression and streaming media.

Continuing training support: At this level of staff development, the intention is to give instructors a chance to acquire particular types of training that meet the objectives of specific courses or programmes of study. They may need to be trained on operating

particular equipment that requires a comprehensive understanding of how to make a course delivery mechanism more effective and how to communicate with students positively, improving their active participation. Moreover, faculty members need training programmes more frequently to retain their existing skills and to acquire additional expertise in relation to IT in general and the Internet-based environment in particular.

When these training sessions are planned, developed and delivered, they must be generated primarily from two main sources: the needs of the job and the individual, and group preferences and interests. The university must take into account these factors and allocate the necessary funds, time and support in order to maximise their effectiveness.

Distance learners need to obtain specific kinds of Internet skills, such as navigation through the Internet network, logging on and off the network, posting and sending e-mail messages, uploading and downloading files and software, using various Internet technology tools, and participating in online discussions. These skills can be gained by students' own efforts prior to their enrolment on the Internet-based programmes or as part of the orientation course which should be planned, developed and provided by the university to all students as part of the overall programme.

4.19 Forming and Promoting an Online Community

Due to the distance between faculty and learners, it is important for the proposed university not to underestimate the potential psychological side-effects of this kind of isolation and to provide support to encourage students to interact and collaborate with each other at every possible opportunity with the aim of developing and maintaining a rich learning environment. This type of social interaction can be initiated through the utilisation of email, online bulletin boards, video conferencing, interactive Web pages or chat modes and so on. In order for the virtual university to build an online community, it must consider the advantages and limitations of each mode of Internet-based technology to design a system that efficiently and effectively accomplishes this goal. Accordingly, creating a virtual students' union, for instance, will allow distance students to carry out virtual meetings with their fellow learners and to interact with each other synchronously via chat rooms and video conferencing. This can also take place

asynchronously through online discussion groups; these can be established as another technique to enhance interactivity between distance students to discuss specific or general topics and issues. A virtual café can be created to give distance learners and teaching members an opportunity for private and/or general conversation in relation to subjects of particular interest.

4.20 Running Counselling Services

As in a traditional institution, any counselling services provided to students should be highly valued by the university. Students most often referring themselves to counselling services seek assistance or guidance in relation to issues related to difficulties in selecting the appropriate course that will fulfil their learning needs, problems encountered through course study or examination, and lack of human interaction and feelings of isolation. This is in addition to possible problems which may face learners with special needs, including older students and those with disabilities. The proposed virtual university must provide, organise and plan this service thoughtfully to promote the active engagement of students in the course or programme, as well as assisting them in the progress of their studies. Thus, this new institution has to employ initially two full-time qualified staff to carry out this function; they will retain certain characteristics which will include:

- § A specialised degree in sociology or psychology and previous work experience in this respect.
- § Ability to communicate openly and easily with students, whether individually or in groups.
- § Ability to eliminate distance with students to encourage them to express themselves deeply and freely in terms of their concerns, expectations, perceptions, views and so forth.
- § Ability to listen carefully and analytically.
- § Ability to treat requests for counselling services equitably.
- § Ability to respond to learner counselling requests instantly.
- § Ability to provide clear guidance and practical advice.

The envisaged university has to design a website dedicated entirely to students' counselling services. The site should contain up-to-date information pertaining to issues of concern to students. This information should be specific, well-developed and tailored to the students' personal needs. It has to

advance their social and learning skills in a constructive way. Furthermore, the website should facilitate interaction and provide learners with email addresses and Web Links to connect them with others.

4.21 Operating Career Advisory Services

The proposed virtual university should provide prospective graduates with the necessary information concerning employment opportunities and particular jobs that are being accorded high precedence. In addition, it should provide other information and guidance about the postgraduate education and training programmes available to them. Students may want to obtain up-to-date information about organisations that provide placement programmes for prospective graduates, funds for further higher education studies, or other alternatives that will assist students in taking a suitable course of action. This kind of support service complements what the individual learner had identified previously in the registration assessment as his/her professional and/or academic goals. Hence, the university has to appoint two or three part-time specialist advisers. This team has to undertake the responsibility of both planning and carrying out careers service programmes at the proposed university. Their main duties will include:

- § Conducting extensive and exhaustive interviews with students in the final year of their study to describe as accurately as possible their careers goals;

- § Analysing all types of data generated through the interview process and using these data in providing students with unambiguous careers advice;

- § Contacting both public and private organisations to locate particular occupational opportunities which may be available for potential graduates;

- § Providing careers education.

It is imperative for the careers advisory team to produce a comprehensive report about the main findings from analysing interviews in relation to graduate students' objectives. It is assumed that this report will be submitted to the top-management of the proposed university for review and action; this can then be used as an operational guide and an overseeing device for both the programme and the institution.

4.22 Providing Library Services

The proposed Virtual University must recognise the information needs of its students and faculty members and provide every means to meet these needs. It has to make arrangements and plans to provide them with economical, easy and flexible access to consult, research and retrieve a variety of resources (reference books, journals, books, CD-ROMs, databases and so on).

The university should employ professional librarians who are able to collect, organise and disseminate information effectively. Students, as well as faculty members, can request information via Email or by filling in a Web-based reference form to request materials.

4.23 Providing Technical Support Services

Providing technical support services is crucial for the overall success of the proposed university in its online educational provision. Students and the faculty will utilise Internet-based technology in their learning and teaching processes. Because they have to access a variety of Internet resources, including instructional courses, they will need to be knowledgeable about how to access and navigate the Internet, install software and so forth. This can be accomplished via well organised programmes. However, there are other technical problems related to the capacity of the network itself and which are beyond the capacity of these individuals to resolve. For example: the server is down, frequent interruptions, long downloading, wait time, the bandwidth availability, network disconnection and so on. For these reasons, technical support services become essential and have to be planned and maintained efficiently in order to avoid any potential system turbulence or failure. Several steps can be taken to ensure that the technology will not become an impediment in the students' and the faculty's virtual learning environment. These include:

- § Providing routine server maintenance for courses delivered on the Web and using e-mail, a low-cost video-conferencing system or any other client server mode.

- § Establishing an online helpdesk to provide students and the faculty with the necessary technical services whenever they are needed.

- § A list of frequently asked questions (FAQ) should be available for common technical questions.

4.24 Maintaining and Monitoring Effectiveness

Due to the physical separation of the student from his/her instructor, support services become an integral tool that has to be effectively maintained and monitored. The responsibility of this resides in the hands of all members of the academic community. A comments analysis approach is seen as a vital technique in evaluating the extent to which support services have been adequately maintained. Students, as well as faculty members, should have the opportunity to assess freely the kind of services provided by the institution. Their negative or positive comments on particular services can be sent via e-mail to the top-management who should take these comments seriously and make whatever arrangements are necessary.

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5. Conclusion

The current state of ICT particularly the Internet has a major influence on the recent development of virtual universities. The literature suggested that no ideal virtual university model has been come into existing yet. This may due to the underlying philosophy of the institution itself which may be established to meet only the needs of a particular segment of learners or trainers within a specific company, society or country, or may be extended to provide educational services globally. This paper proposed a virtual university model which consists of twenty four components that must work in harmony in order to provide high-quality higher education studies.

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