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Research paper

Information Communication Technology (ICT) in Educational Institutions and Strategic Initiatives

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Abstract

Information Communication Technology (ICT) has impacted educational institutions not only with the communication equipment and software and hardware devices, a satellite system for video conferencing as a distance learning support system but also it has changed the inter personal relationships between teachers and students and also the role of the educational institutions. If through the application of ICT, the education sector has witnessed growth in terms of student enrollments in programs like distance learning, e-learning, and open learning, ICT has also proved a useful strategic tool to drive the core business of the educational institution as an organization. The ICT strategy of an educational institution consists of three strategic programmers namely the knowledge management programme, the resource management programme and the infrastructure management programme. At the policy levels, in some higher educational institutions, strategic planning and policy development are a priority and a series of ICT strategic initiatives are taken in matters related to business, operations, technology and human resources. This paper explores all these strategies in the light of ICT and its various applications in higher educational institutions.

Keywords: *LMS, Knowledge Management, ICT Strategies, Infrastructure*.

1. Introduction

The field of ICT has witnesses several strategic initiatives in recent times. The rationale behind taking such strategic initiatives is to align the strategic management principles with the ICT strategies. No organization today can survive without aligning and integrating its business strategies with its other business units. In the education sector too, the alignment of strategic management can be seen in various fields. According to Youssef (1), the use of ICT in higher education is applied in various ways. They include developing course material, sharing content and delivery of information, communication between learners, outside world and teachers, and academic research. It is also used in the creation and delivery of lectures and presentation, student enrollment, as well as administrative support. An example is the e-learning program that depends on the transformation of information from one source to another. With the strategic initiatives taken in the usage of ICT, it has underpinned the success of the 21st-century learning and permeated the school environment. The strategic element has made the process of learning more aligned to the vision and mission of the university. It has also proved a tool driving innovation in curriculum development and teaching strategies to suit the industry requirements.

Many of the ICT systems in use in the public sector have been in place for many years and while they have been developed and updated over the years they are fundamentally not well suited to modern ways of working which call for systems to be web-based, able to share data, and available on a variety of devices. One of the major challenges being faced is how to manage the change from these legacy systems to newer systems whilst protecting both the data itself and the investment which has already been made in these systems.

2. ICT and Strategic Management

This article explores conceptually the essential strategic elements in a strategic ICT plan for an educational institution. These strategies include (a) adoption or creation of a Learning management system (LMS), (b) adoption of a certain knowledge management plan enabling an environment to manage the institutional information assets; and (c) infrastructural practices that are often critical elements in the creation and implementation of the ICT strategic plan of a university.

2.1 Learning Management System (LMS)

A Learning Management System (LMS) is a tool used by business organizations, schools and universities to create, deliver and manage e-learning content, track user progress and create reports, it exists as an integrated tool of an ICT strategy and the overall learning strategy either in a corporate or educational context. In the educational context, a LMS allows to manage every aspect of a course, from the registration of students to the storage of results, keeping a track of teaching and home assignments digitally and communicate with students. In a corporate environment, a LMS is used to monitor staff, and keep records of appraisals and training. It helps an organization track the training schedules, assess employee performance in training, help to conduct skill assessments and store the training content. It works in an ICT environment and is capable of consolidating the strategic

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coordination between teacher and student in a classroom situation and between business units of an organization. A learning management system also promotes access to content, facilitates delivery of content, tracks interaction with content, and assists in evaluating outcomes; In short, it has been utilized by many institutions more as a strategy rather than a tool.

2.2 Knowledge Management

Knowledge is defined as information combined with experience; hence knowledge becomes a tacit component of any ICT infrastructure. The ICT encompasses the amount of technical knowledge comprising elements such as computer systems, software and their application in educational institution or business organizations. In such applications, knowledge management emerges as a strategy to be developed in the form of both content and function in the use of the information to improve the organization's functioning. Information Technology is also an Enabler of Knowledge; therefore, Knowledge management has emerged as a discrete area in both educational institutions and business organizations. An evidence of knowledge management as a strategic component of ICT can also be seen in studying the effects of ICT on economic-financial variables of an institution. Strategically, IT competency and knowledge management are twofold: both direct and indirect. Information systems can directly influence the knowledge management processes. It can also indirectly influence knowledge management by affecting contextual factors such as structure, content, design and delivery of the ICT material.

Moreover, knowledge management covers such areas that have emerged as key components for a ICT plan that also aligns itself with the country's development. This includes not only research and innovation at the institutional level but also contributing in the e-governance, e-commerce, and preparing an appropriate knowledge management framework to guide and transform the human resources in general. For instance, under R&D, there are tests, experiments and investigations that might result in patents and innovative products. Similarly, under e-governance, a specific development can be made in strategic public areas such as e-services, health, security, tourism, agriculture and labor, including the concept of telework, tele presence and video conferencing, as ICT tools.

2.3 Infrastructure Development

Strategically speaking Infrastructure development and universal access to computer hardware and broadband services are other critical areas which are included in the ICT plan of a university. The universities have felt the need for extension of the ICT network across their institutions for maximum outreach in the form of computer networks, and broadband services at affordable costs. Each institution or the university works on the strategy of using cost effective and innovative technology solutions which should be reliable and appropriate. Therefore, a robust, high speed broadband infrastructure makes it possible to many institutions to work on ICT platforms. It is often known as digital infrastructure that delivers digital connectivity across the institution. This digital infrastructure allows access to the internet, enabling staff and students to transact their academic and professional requirements.

Hence, the overall objective of taking such strategic initiatives in the form of LMS, Knowledge management and digital infrastructure, educational institutions continue benefiting themselves from ICT technologies in the delivery of educational services, in both theory and practice. With the need felt of such strategic initiatives, several universities have started re-writing their ICT strategic plans, in order to enhance their institutional development as well as the development of the community.

3. Literature Review

According to Jager (2), there is the general improvement of the outlook of company image, increased stake holder's confidence, enhanced job interest of employees and interoffice link. ICT has the power to market different businesses in the global because of the easy access to information and the high level of accuracy which is enhanced by the use of devices like the computer (Assemblies of the Member States of WIPO (3). Today, most of the countries use ICT to solve different problems. According to Shukre (4), ICT has positive impacts on student achievement. Although some of these benefits of ICT use in education are not clarified, there are a thousand impacts of ICT on student achievement. Computer Aided Instruction is linked to a slight improvement of performance of students on standardized tests in some area, and multiple choices. It refers to self-student study or tutorials on the PC that many students use in the learning process as a strategic initiative of ICT application . They have increased the test score on math skills and reading (5). Besides, the use ICT is associated with improvement in math and science. The application ICT in the two subjects has significantly produced the best results because of the enhancement of student language and understanding.

In the field of academics, there is a faster adaptation of the computer than other audio-visual media (6). It is because of the power of a computer to manipulate symbols and words. ICT has impacted the eLearning and long distance education. In eLearning, it has reduced the barriers to enrollment in higher education. It has enhanced teaching and research both from constructivism and constructivist theories of learning. The application of online pedagogy within the management institution and universities is on the increase. The introduction of the Wi-Fi system has led to the rise of the hi-tech education system, where accountability and accessibility of the subject material are made readily available to learners. Application of ICT has enhanced research as there is a steady increase in computing power and bandwidth which has made it easy to carry complex calculations (6). Through communication channels, it is possible to spread out research teams across the global rather than a concentration in a single institution. Besides, it has enabled people to enrich research possibilities for smaller institutions through equalizing access to academic material from digital libraries.

ICT has also facilitated the increased growth of education (6). Today there is a higher enrollment of students in class. In the early stages, it was hard to manage a large class by a teacher due to interactive teaching methods or gaining insight of the difficulties experienced by learners. ICT has provided opportunities for educational technologies. Learners can access reserved educational capital (5). With the invention of the World Wide Web and the Internet, it is possible to get access to unlimited amount of educational materials and data. With the ability of the ICT to go beyond time and space it allows the achievement of learning. It has enhanced student and teacher motivation. Both students and teachers have felt the impact of ICT as it has contributed significantly to motivation to learn. The integration of ICT by the teachers in a particular lesson brings interests to learn from the experience. It captures the attention of the learners as it breaks monotony and boredom in a classroom. Besides, ICT impacts learner autonomy. Information technology increases student autonomy as they can be self-governed without supervision from anyone.

ICT has also impacted higher learning in the following manner. According to Youssef & Dahmani (7), ICT has improved self-pacing with enhanced capacities to handle personal learning methods as students can learn at the pace suitable to their needs. It means that today's students can learn at their pace and time. In the field of education, should take into account that there are those students who are faster learners and slow learners. With the advancement of ICT, a student can be learner based on their abilities and understanding.

Moreover, ICT has encouraged collaborative learning (7), with the minimum indication of the isolated students. Today with ICT students are in the position of working together in achieving a common goal. Students can cooperate and handle assignment that may involve online research with less difficulty. Through collaborative learning, there is less isolation of students as there is a free searching of resource material from one source to another. It has also facilitated information accuracy and reliability, adding to the authenticity of learning the task. ICT has impacted education sector by the provision of information that is accurate without errors which have boosted learning. The information from ICT is also reliable as it gives the actual event of data required. At the same time, this information is not copied from any other source. The information contained by the ICT is of high-quality information from the source.

The use of ICT has enhanced achievement among students across the globe due to the practices and reinforcement it has introduced. Many innovations done by the students are attributed to the ICT. It has enabled learners to access materials for training and also gives a platform for reinforcement of the knowledge gained. It has improved students' quality of work is given to them and build confidence through undertaking practices. At the same time, students have produced high-quality multimedia products through the use of ICT.

A complete alignment between the information technology (ICT) portfolio and the business strategy (strategic management) is usually non-sustainable firstly, because strategic context constantly changes according to the global and market situations; secondly, because information technology portfolios are assets that take a long time and significant investment and expertise to develop. Alignment of the two strategies is however dynamic—its goal is to go in the right direction and maximize the value of such investments in ICT for the business. (8)

Above all, ICT has enhanced teachers' practices, planning tools, and assessment methods (7). Many teachers across the globe can carry out the teaching process by application of different teaching methods as they can use of projectors and video link among others. A teacher today can conduct an online examination to students with minimum difficulties. The application of this device has made it easy for those students undertaking eLearning and long distance learning. Students can follow teachers on social media through the use computers and personal mobile devices. Through ICT a teacher can be able to communicate with students all over the world with ease. At the same time, it is easy to teach a large class for the teachers for example uses of projectors to illustrate key points through the provision of models. The application of this device has made it easy for those students undertaking eLearning and long distance learning. The student can be able to follow teachers on social media through the use computers and personal mobile devices. Through ICT a teacher can be able to communicate to his or her students all over the world with ease. At the same time it is easy to teach a large class for the teachers for example uses of projectors to illustrate key points through the provision of models.

4. Challenges

The following challenges are faced by ICT applications in taking steps towards strategic initiatives:

- driving change and generating performance efficiency in students and other stakeholders
- financial pressures and expenses incurred on the ICT applications and introducing new strategic initiatives
- increasing need of students and other users to avail ICT application and the availability of IT services through online methods on wide range of devices including personal devices like tablets, laptops and smart phones;
- sharing of data, infrastructure and services cross functionally in an institution while at the same time complying with statutory obligations with regard to information security
- supporting learners and teachers in expanding the use of ICT in education;
- Developing a sustainable model for providing 1:1 access to devices in schools and for updating hardware regularly to keep in line with emerging technologies.
- Training the ICT staff to ensure that strategic initiatives are adopted without distrubvin gthe ICT applications that are beneficial for the institution..

5. Conclusion

In conclusion, therefore though ICT has redefined and revolutionized all aspects of human interaction in education and social business; it has turned the world into a global village whereby location and limits of time no more apply, there is still a need to take a few strategic initiatives in the form of LMS, Knowledge management and infrastructure development. Higher learning institutions have adopted ICT to improve efficiency and effectiveness. The application of ICT has also grown at an alarming rate over the past years. It symbolizes a new era in the education sector. However, its efficiency depends on a strategic implementation of the such initiatives that would enhance the ICT impact on students' performance too. There are however a few challenges encountered in the implementation of ICT as well as in taking strategic initiatives, there are still many positive impacts associated with it in the area of education. It has profound effects on learning in higher education by giving new alternatives to the teachers and students.

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