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E-learning Adoption Process in Higher Learning Institutions in Rwanda: A Case of University of Tourism, Technology and Business Studies, Rwanda

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Abstract: *Effective exchange of experiences and skills is not guaranteed by the enormous potentials of internetworking systems and devices. E-learning technologies represent a good opportunity to reduce the digital divide and to ensure faster and higher development trends. The study focused on the following objectives: 1) To identify the adoption process of E-learning platform in UTB, 2) to identify students' perception of E-learning platform in UTB, 3) to identify the possible challenges faced during adoption process. The research design of the study was descriptive and both quantitative and qualitative approaches were used. Primary data and secondary data were collected through questionnaires, Interviews and documentation. The study revealed and analyzed the following stages taken to adopt E-learning system: 1) knowledge, 2) persuasion, 3) decision, 4) implementation, and 5) confirmation. One of the most relevant barriers to the effective diffusion of e-learning concerns the cultural and personal attitudes of both teachers and students towards e-learning. The following challenges were indicated: 1) lower Internet access, 2) reluctance of students towards E-learning, 3) non-familiarity of students with ICT related facilities. Researchers recommend the following: University should raise students' awareness of E-learning and motivate them to use available learning services provided by the university on E-learning platform. The university should cease providing paper-based learning materials to students by encouraging them to access them from E-learning platform. Students should be motivated and trained on ICT-related courses.*

Key words: E-learning, Platform, Adoption Process, Tourism, Technology, Business Studies

1. Introduction

E-learning refers to the use of ICTs to enhance and support teaching and learning processes. It is the instructional content or learning experiences delivered or enabled by electronic technologies and it incorporates a wide variety of learning strategies and technologies. E-learning ranges from the way students use e-mail and accessing course work online while following a course on campus to programmes offered entirely online (OECD, 2005)).

Continuous technology development, particularly information technology revolution in the last two decades of the 20th century has forced the academia to embrace e-learning as a strategy for their sustainable growth in an expanded competitive environment. The internet has changed the operations of many institutions, and has been a powerful channel for business marketing and communication. In fact, open source software development can provide the necessary flexibility to combine languages, scripts, learning objects and lesson plans, effectively, without the cost and rigidity of proprietary packages (R., 2003). E-learning has improved the quality of learning experience and also increased the availability and accessibility of learning materials.

E-learning is an Internet-based learning process, using Internet technology to design, implement, select, manage, support and extend learning. E-learning does not replace traditional education methods, but greatly improve the efficiency of education. As e-learning has a lot of advantages like flexibility, diversity, measurement, opening and so on, it has become a primary way for

learning in this century (Méndez & González, 2011)
Blended learning denotes a solution that combines several different delivery methods, such as collaboration software, web-based courses, and computer communication practices with traditional face-to-face instructions (Mortera-Gutierrez, 2005). On the other hand, distance learning is conducted solely online where interaction may be synchronous or asynchronous ((OSU), 2007). Synchronous learning requires the teachers and students to interact at the same time though they may be dispersed geographically. On the other hand, asynchronous learning allows teachers and students to interact and participate in the educational process at different time irrespective of their locations (Chen N.-S., 2004). World Wide Web (WWW) is set of software tools and standards that allow users to obtain and distribute information stored on a server and connected to Internet. WWW is a decentralized information system, in which anyone can add new information whenever he/she wants. Lecture notes and other teaching materials are placed on the WWW and linking useful websites to these resources for students to access. In the recent years, web and Internet technologies have matured significantly by providing a uniform access media for both asynchronous and synchronous learning. This phenomenon has significantly increased the popularity of on-line learning (Chen, 2004).

2. Literature Review

2.1 Technology adoption process Models

2.11 The process of adoption over time

The technology adoption lifecycle model describes the adoption or acceptance of a new product or innovation, according to the demographic and psychological characteristics of defined adopter groups. The process of adoption over time is typically illustrated as a classical normal distribution or "bell curve." The model indicates that the first group of people to use a new product is called "innovators," followed by "early adopters." Next come the early and late majority, and the last group to eventually adopt a product are called "laggards". One way to model product adoption is to understand that people's behaviors are influenced by their peers and how widespread they think a particular action is (Bohlen & Beal, 1957).

Adoption could also be seen as the process by which an innovation is adopted or accepted by members of a certain community for instance by educational institution. There are four factors that influence adoption of an innovation. These include: the innovation itself, the communication channels used to spread information about the innovation, time, and the nature of the society to whom it is introduced (Rogers, 1995). (Bohlen & Beal, 1957), described how people within on organization accept new ideas or product (for instance: E-learning system) as follows:

2.2 Stages of Adoption Process

2.21 The Awareness stage

At this stage an individual becomes aware of some new idea, such as E-learning platform. He knows about the existence of the product, but he lacks details concerning it (Bohlen & Beal, 1957).

2.22 The Interest stage

At Interest stage, an individual wants more information about the product or idea. He wants to know what it is, how it works and what its potentialities are. He may say to himself that this might help him increase his income, or help him control interests or to improve productivity (Bohlen & Beal, 1957). There is consensus that IT has significant effects on the productivity of firms. E-learning enable students at a higher educational level to obtain their education in parallel with pursing their personal goals and maintaining their own careers, without a need to attend classes and be subjected to a rigid schedule (Borstorff, 2007). When users believe that a particular system would improve their performance, this will encourage them to adopt it (Hosein, 2010).

2.23 The evaluation Stage

The individual makes a mental trial of the product or idea. He applies the information obtained in the previous stage to his own situation. He asks himself, "can I do it; and if I do it, will it be better than what I am doing now; will it increase my income, or will it help maximize any other values which I hold important? (Bohlen & Beal, 1957). It is essential to understand the determinants of IT adoption (Oliveira, 2011). If the community intends to evaluate a new internet-based technology, this will encourage them to adopt it.

2.24 The trial stage

If he decides that the product or idea has possibilities for him, he will try it. The trial stage is characterized by small-scale experimental use, and by the need for specific information which deals with: "How will I do it; how much do I use; when do I do it; how can I make it work best for me?" (Bohlen & Beal, 1957). Apparently individuals need to test a new idea or product even though they have thought about it for a long time and have gathered information concerning it. The rate of use, time spent on use and confidence in computer use affect acceptance of the e-learning environment positively (Liu, 2009). A key predictor of technology use is the amount of technology training. Training typically focuses on basic skills instead of targeting the integration of technology in instruction.

2.25 The Adoption Stage

This stage is characterized by a large-scale, continued use of the idea, and most of all, by satisfaction with the idea. This does not mean that a person who has accepted an idea or product must use it constantly. It simply means that he has accepted the idea as good and that he intends to include it in his on-going program (Bohlen & Beal, 1957). These, then, are the stages in the mental process of accepting new ideas or products and practices. Incentive like the company reward method was found to have positive effect on colleague and manager to use e-learning behavior, although the company's incentive had no direct impact on behavioral intention, but through the manager

influence including lead by example, recommendations of employees to use e-learning was reported to be providing a moderating effect on the behavioral intention to use E-learning system (PeiWen, 2011).

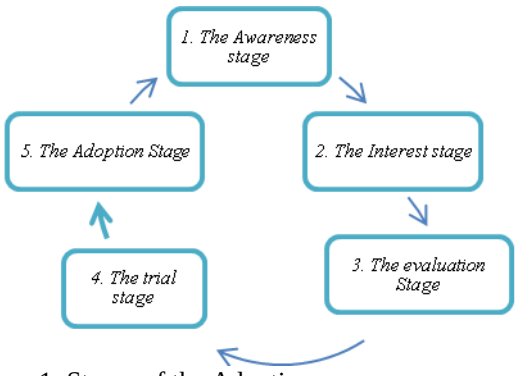


Figure 1: Stages of the Adoption process

2.3 The innovation-decision process

An alternative explanation of the diffusion process is provided by (Rogers, 2003). The innovation-decision process was described as "an information-seeking and information-processing activity, where an individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation" (Rogers E. , 2003). For Rogers E. (2003), the innovation-decision process involves five Stages: knowledge, persuasion, decision, implementation, and confirmation.

2.31 The Knowledge Stage

The innovation-decision process starts with the knowledge stage. In this Stage, an individual learns about the existence of innovation and seeks information about the innovation. "What?," "how?," and "why?" are the critical questions in the knowledge phase. During this phase, the individual attempts to determine "what the innovation is and how and why it works" (Rogers E. , 2003).

2.32 The Persuasion Stage

The persuasion Stage occurs when the individual has a negative or positive attitude toward the innovation, but "the formation of a favorable or unfavorable attitude toward an innovation does not always lead directly or indirectly to an adoption or rejection" (Rogers E. , 2003). The individual shapes his or her attitude after he or she knows about the innovation, so the persuasion stage follows the knowledge stage in the innovation-decision process.

2.33 The Decision Stage

At the decision stage in the innovation-decision process, the individual chooses to adopt or reject the innovation. While adoption refers to "full use of an innovation as the best course of action available," rejection means "not to adopt an innovation" (Rogers E. , 2003). If an innovation has a partial trial basis, it is usually adopted more quickly, since most individuals first want to try the innovation in their own situation and then come to an adoption decision. The vicarious trial can speed up the innovation-decision process.

2.34 The Implementation Stage

At the implementation stage, an innovation is put into practice. However, an innovation brings the newness in which "some degree of uncertainty is involved in diffusion". Uncertainty about the outcomes of the innovation still can be a problem at this stage. Thus, the implementer may need technical assistance from change agents and others to reduce the degree of uncertainty about the consequences. Moreover, the innovation-decision process will end, since "the innovation loses its distinctive quality as the separate identity of the new idea disappears" (Rogers, 2003).

2.35 The Confirmation Stage

The innovation-decision already has been made, but at the confirmation stage the individual looks for support for his or her decision. According to Roger (2003), this decision can be reversed if the individual is "exposed to conflicting messages about the innovation". However, the individual tends to stay away from these messages and seeks supportive messages that confirm his or her decision. Thus, attitudes become more crucial at the confirmation stage

Depending on the support for adoption of the innovation and the attitude of the individual, later adoption or discontinuance happens during this stage. (Rogers, 1995) Hence, it appears that Rogers (2003) 'confirmation stage' is another term for the 'adoption stage' in (Bohlen & Beal, 1957).

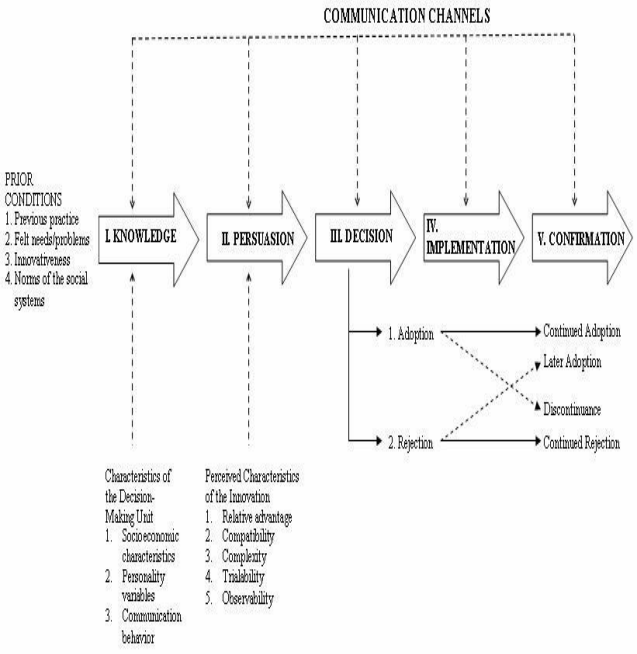


Figure 2: The Innovation-Decision Process

3. Methodology

The research design of the study was descriptive and both quantitative and qualitative approaches were used. Both primary data and secondary data were collected through questionnaires, Interviews and documentation. Members of staff and students were targeted where the total number of respondents was three hundred. Questions were categorized into three categories: the first category composed of questions intended to establish the stages through which E-learning was adopted and these questions were prepared based on innovation-decision process model described above.

4. Results and Discussion

Table 1: Stages of adoption of E-learning platform

Stage	Questions	Percent
Knowledge	Students understand E-learning	55%
	Students are aware that UTB has E-learning platform	80%
	Students intend to know what E-learning is and how it works	90%
Persuasion	After they are aware of E-learning platform, they see it more beneficial	68%
	E-learning platform helps students in learning process	64%
Decision	Students intend to use E-learning platform in their learning process	77%
	Students are aware of E-learning platform but don't want to use it in their learning activities	33%
	Students want to try E-learning platform	45%
Implementation and Confirmation	Students use E-learning platform in their studies	68%
	If the university doesn't enforce students to use E-learning, they will continue using it.	45%
	Students find difficulties while using E-learning platform	74%
	Students wish the university should change or modify E-learning platform for them to work well with it.	69%
	Students require assistance while using E-learning platform	62%

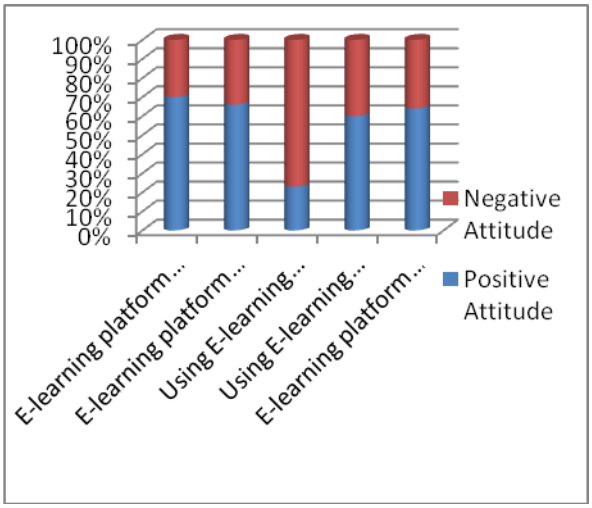
The second category contained questions intended to identify students' perceptions towards E-learning platform. The last category contained of information on how to overcome the identified challenges. All questions concerning students' perceptions were on a 5-point Likert-scale (1= strongly disagree, 2= disagree, 3= agree and 4= strongly agree).

As it was indicated by the study, 80% of respondents were aware that UTB has E-learning platform but 55% of respondents do not understand well E-learning platform and they indicated that they intend to know what E-learning is and how it works(90%). It was indicated that those who understand E-learning platform found it more helpful (56%) and said that it can help in learning process (64%). The majority are aware of the existence of E-learning platform and indicated that they intend to use it in their learning process (77%) where 45% need to try it but there are others who are aware of it and do not want to use it. These are those who showed difficulties while using it. The majority of students use E-learning platform but the study revealed that more students use it because the University enforced them to use it. Big number of respondents as it is indicated in the table above got difficulties while using E-learning platform and they wish the university should change or modify it for them to use it perfectly because they always ask assistance when using it.

4.1 Students' perception of E-learning platform in UTB

The data on E-learning platform usefulness were collected and analyzed from respondents using five point likert scale and descriptive statistics (mean) to represent and interpret them.

Figure 3: Students' perception of E-learning platform in UTB



According to the findings shown above, respondents positively agree that Using E-learning platform increased their way of scoring marks and enhanced their efficiency as students. They also positively agree that E-learning platform provided flexibility of studying the topic anytime at any place and enabled them to accomplish tasks more quickly. Also respondents disagree that Using E-learning platform reduced their study load considerably.

4.2 Challenges faced during adoption process

Different universities in Rwanda have started offering learning services through E-learning platforms but there are challenges being faced during adoption process. One of the most relevant barriers to the effective diffusion of e-learning concerns the cultural and personal attitudes of teachers and students towards e-learning. The following challenges were identified:

Lower Internet access: The University has three computer labs and they all have internet connectivity which means students have chance to use Internet when they are within UTB campus. But students only access Internet when they are at the University and this prevented them from enjoying the materials posted on E-learning platform. In a research study on framework of e-learning implementation in developing countries (Collins, 2012), found out that cost and poor Internet infrastructure considerably affect acceptance of e-learning in higher institutions of education. Barriers like lack of equipment, unreliability of equipment, lack of technical support and other resource-related issues affected adoption of e-learning management system (Shahadat, 2012).
Reluctance of students towards E-learning: negative attitude of students towards E-learning platform prevented them from using learning materials provided by the university through E-learning platform.

Lack of familiarity of students in ICT related Technologies: the use of technology is still a problem for Africans as it was reentry observed by researchers. The study revealed difficulties of students while using E-learning platform. Compatibility and relative advantage were found to be the most frequently identified factors for adoption and diffusion of Internet-based technologies (Lin, 2010). Literacy levels of learners affect their willingness and ability to adopt e-learning services. It plays a major role with regard to their attitude toward technology use. Consumers with higher education such as university graduates are more comfortable in using technology, like the internet and other forms of Internet-based technologies (Al-Somali, 2010).

5. Conclusions and Recommendations

The study discussed the Adoption process of E-learning in higher learning institutions taking reference to the University of Tourism, Technology and Business Studies. The study revealed four stages in the adoption and identifies how UTB went through these stages. It was found that students are aware of E-learning platform and that the University provides learning on the platform but some students do not use it and among those who use it was due that the university force them to use it. This was linked to the identified challenges that non-familiarity of students toward ICT related facilities, inefficient Internet access. It was found that students are aware that UTB has E-learning platform but more do not understand it well, some know that E-learning is basically about posting notes on Website. But those who understood it have enjoyed and use it and found it more beneficial.

Researchers recommend that university should raise students' awareness of E-learning and motivate them to use available learning services provided by the university on E-learning platform. To encourage students to use E-learning platform, the university should cease providing paper-based learning materials to students by encouraging them to access them from E-learning platform. Students should be motivated and trained on ICT-related courses to improve their skills.

Other researchers are recommended to work on the following areas: i) To identify the status of E-learning adoption among universities in Rwanda. ii) To assess the possible factors that affect E-learning adoption in Rwanda.

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