

Delivering E-Learning in Project Management: Determining Participants' Infrastructure Priorities and Constraints

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Abstract

Powered by the advent of the computer and the Internet, e-learning has become a globally accepted mode of knowledge management, sharing and transfer arising from its numerous benefits especially in distance and conference learning in virtual environments. However, several indices including those of the World Development Report suggest that most developing countries seem unable to key into, and benefit from this development. This paper reports the result of a study of e-learning stakeholders/participants perception of infrastructure priorities and constraints affecting the delivery of e-learning in project management. A self-designed questionnaire was administered using the multi stage technique in a typical developing country institutional environment and posits feasible solutions to the lacked critical constraints as basis for national planning. The questionnaire was analyzed using statistical package for social scientist whose results showed that attributes of teachers positively influences delivery of e-learning. Our findings also revealed that hardware infrastructural challenge negatively influences the delivery of e-learning.

Keywords-e-learning, synchronous, asynchronous, infrastructure, project management.

1. Introduction

Teaching and learning methods have changed from the traditional face-face mode of delivery to a more advanced means using modern forms of distance education supported and driven by information communication technology (ICT) and is characterized by 'any-where any-time' learning called e-learning. The reasons for this change include that people change careers and relocate several times throughout their lives, increasing demand for educational opportunities, technological advancement especially that of ICT and the Internet. The above position is supported by [22] who found that traditional education does not fit well with the new world of lifelong learning, in which the roles of instructor, students, and curriculum are changing while [13] rightly opined that teaching and learning are no longer restricted within traditional classrooms. Instead, learning methods need to become more portable and flexible.

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E-Learning which refers to any type of learning situation in which instructional content is delivered electronically via the Internet where and when people need it has been essential in meeting this new challenge. The concept of e-learning has emerged from distance learning and offers new methods for distance education based on ICTs. It needs to be noted at this point that, in practice, project management simply entails to focus the responsibility and authority for the attainment of project goals on a small group of persons (the project management team) or an individual (project manager) [16].

Teaching project management therefore simply means transmitting the knowledge of the principles and practice relevant to the functions (explicit/implicit) of the project manager with planning, integrating, interfacing, and controlling [4], using specific tools, as significant functions.

It is in the above regards that this paper attempts to determine the infrastructure priorities/constraints associated with teaching project management as part of the on-going e-learning programme development of Babcock University in Nigeria as a typical developing country in the 21st century.

2. Theoretical framework

The expansion in education opportunities today can be attributed substantially to the advancement of ICT [1]. This is evident in the advances in computing, networking technologies and the World Wide Web. The amalgamation of telecommunication and computer technologies has enabled academic institutions in several parts of the world to provide flexible open learning environments for students, through online distance learning [1]. This had given rise to concepts such as Electronic Universities or Virtual Universities, where evolutionary trends to indicate that distance learning as a means of providing higher education would continue to grow with more significance in developing countries. Online education via the web (e-learning) as a means of providing distance learning in Nigeria for instance comes with some advantages lower cost of training, eradicate risks involved in traveling to campuses, individuals ability to exercise their skills among others [1].

E-learning had been used as an all-encompassing term that referred to training done with a computer over a network, including an organization's intranet, local area network and the internet. E-learning is referred to as any technology-based learning usually linked to a computer or net-based training. Studies indicated that varying levels of sophistication existed in e-learning that could extend from a basic online learning program that includes text and graphics of the course, exercises, testing and record keeping, such as test scores and book marks to an even more sophisticated online learning program. Sophistication would include animations, simulations, audio and video sequences peer and expert discussion groups, controlled social forum, online mentoring, links to electronic information resources on corporate intranet or the web, and communications with corporate education records [2]

Online education has been described as being inclusive of and synonymous with all computer-related applications, tools and processes that have been strategically aligned to value-added learning and teaching processes. This includes the delivery of content via all electronic media, including the internet, intranet, extranets, satellite broadcast, audio/video tape, interactive TV and CD-ROM. However, e-learning was defined more narrowly than distance learning, which would be including text-based learning and courses conducted via written correspondence. E-learning covers a wide set of applications and processes, including computer-based learning, web-based learning, virtual classrooms, digital collaborations [6]; [20].

E-learning involves a variety of basic use of technology in or around the conventional physical classroom to wholly online delivery. This involves the art of using internet; electronic information resources, computer and other technologies to enhance teaching process or learning process. Online education requires tools such as computer and the internet example of such is a course management system to distribute electronic information resources and track grades to be used creatively for collaborative learning at anytime and anywhere.

[19] pointed out that e-learning would be useful for information resources provision, developing capacity to support a range of communication strategies and cost effectiveness. We also believed this would enable the sharing of knowledge, lesson plan, research project and notes; these benefits would not be limited to teachers and students, e-learning would involve parents, field experts, international students, teachers and society via the internet.

E-Learning supports learning through information technology, thereby creating new interaction and communication possibilities, by offering an increased independence of both time and space. An e-learning project deals with design,

implementation, and utilisation of a social and information technology system [8]. At the centre of such a system is an e-learning application, often called a Content Management System as reported by [12], which is focused on supporting one or more sub-processes of the educational value chain, including educational planning, content production or acquisition, content delivery, assessment/evaluation and certification.

On the other hand, project management process has mixed definitions in the project management literature. Research carried out by [3] refers to [4], [16] and others as they define the project management process as controlling project costs, time, and measures of profitability to gain market share through efficiency.

The dynamism of project management process can be found in project management literature [9]; [5]; [21]; and [18]. These authors asserted that culture, organisation, and other factors are additional dimensions which influence project success. They view project members and teams more from an action oriented, interactive perspective in which process is part of and linked to product outcomes, a view with which this paper associates.

3. Methodology

The study population are the teachers and students who are involved in the e-learning pilot project management programme in Babcock University (BU), Nigeria. A questionnaire was used to randomly collect data from respondents systematically identified from a participants' list. The instrument was subjected to a reliability test whose result shows that ($\alpha = 0.78$) using the Cronbach-Alpha reliability coefficient, an indication of good reliability. A total sample of 100 questionnaires was distributed with only 81 returned questionnaires found to be useful and which showed a response rate of 81 percent. The questionnaire content revolved around three core aspects: attributes, and e-learning software and hardware as constraints/challenges, and as approximating soft and hard infrastructure. Data collected (appendix I) was analysed using variance, and regression models and the SPSS version 17.

3.1 Objectives of the Study

This study aims at achieving the following objectives:

- To ascertain whether personal attributes influence e-learning in project management.
- To determine whether challenges of software influence e-learning in project management.
- To investigate if challenges of hardware influence e-learning in project management.

3.2 Hypothesis

- H_{01} Users' personal attributes do not significantly influence e-learning in project management.
- H_{02} Challenges of software do not significantly influence e-learning in project management.
- H_{03} Challenges of hardware do not significantly influence e-learning in project management.

Table 1: 2-Way ANOVA showing interaction between the awareness and Regression output of software and hardware challenges.

Model	Sum of Square	df	Mean Square	F	Sig.
Regression	299.700	3	99.900	10.927	.000 ^a
Residual	703.955	77	9.142		
Total	1003.654	80			

Source: Filed Survey, 2013

Table 2: Showing the regression output of coefficients of dependent variables

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	15.077	2.329		6.473	.000
	ATTRIBUTES_XTER	.228	.091	.272	2.518	.014
	SOFTWARE_CHALLENGE	.428	.135	.337	3.170	.002
	HARDWARE_INFRA	-.483	.175	-.268	-2.757	.007

Source: Filed Survey, 2013

Table 3: Regression output of the determinants of e-learning in project management

Variables	Coefficients	t-value
Constants	15.07 ***	6.47
Attributes of e-learning	0.23 **	2.52
Software as a challenge	0.43 ***	3.17
Hardware as a challenge	-0.48 ***	-2.76

Legends: *** 1%, ** 5%, and * 10% significant respectively

Source: Filed Survey, 2013

3.3 Discussions

Table 3 shows that attributes of e-learning such as social control of class, availability of resources, profile management, ease of collaboration amongst others positively and significantly influences delivery of e-learning which is in line with previous studies. This shows a positive relationship between awareness and attributes ($p < 0.05$). On the other hand, the value of -2.76 in table 3 shows a negative effect on the awareness of e-learning meaning that hardware as a challenge which include epileptic power supply, lack of adequate Internet facilities and low bandwidth connectivity as itemised in the instrument are contributing negatively, to delivery of e-learning.

3.4 Diagnostic Statistics

F-statistics = 10.93 *** meaning that the model is of great fit. (table 1)

$R^2 = 0.27$ Adjusted R2 which is the determinant of variation. The result shows that 27% of the variation in the dependent variable is determined by the variation in the dependent variable.

4. Summary and conclusion

This paper reports the result of a study of e-learning stakeholders/participants' perception of infrastructure priorities and constraints in a typical developing country institutional environment. The paper reviewed the concepts of e-learning and project management with a view to determining the effect of infrastructure on project management e-learning delivery. The attributes of e-learning such as social control of class, availability of resources, profile management, ease of collaboration

amongst others positively and significantly influence awareness of e-learning delivery which is in line with previous studies. This shows a positive relationship between awareness and attributes ($p < 0.05$). In contrast, the value of -2.76 in table 3 shows a negative effect on the awareness of e-learning meaning that hardware as a challenge which includes epileptic power supply, lack of adequate Internet facility, and low bandwidth connectivity as itemised in the instrument are contributing negatively to awareness of e-learning.

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