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Dr. Abdulhameed Kayode Agboola
International Islamic University
Malaysia

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Dr. Abdulhameed Kayode Agboola
International Islamic University Malaysia

Abstract

This study investigated the preparedness of the academic lecturers for the introduction of e-learning at the International Islamic University Malaysia. The response rate was 98% totaling 324 respondents. Initial findings revealed that *e-learning training* and *e-learning confidence* were statistically significant predictors of both *e-learning adoption* and *e-learning readiness*. These variables have practical importance for the study and these results were replicated in the cross-validation analyses. Phase two showed that the academic staff was making progress, but more efforts would be worthwhile to overcome some hindrances, which were related to infrastructure and lack of personal capability. Finally, the amount of variance explained was above 30 percent and the expected error rate for any prediction is approximately ±9 percent. The results showed two strong influences of *e-learning confidence* and *e-learning training* on both *e-learning adoption* and *e-learning readiness*, and a somewhat lesser influence of gender on *e-learning adoption and e-learning readiness.*

Key Words: E-Learning Implementation, Using E-Learning Tools, E-Learning Instructional Delivery, Assessing E-learning Awareness, E-Learning Perceptual Survey

Introduction

According to John Chambers (in Rosenberg, 2001: xv), "the biggest growth in the Internet, and the area that will prove to be one of the biggest agents of change, will be in e-learning." The demand for a well-educated workforce has driven many countries to rethink their education systems. An education system has to be suited to the demands of the technological age so that a competitive edge can be maintained. Such demand for a technology savvy workforce is reflected in Alvin Toffler's declaration (in Rosenberg, 2001: 3), that "the illiterate of the 21st century will not be those, who cannot read and write but those who cannot learn, unlearn, and relearn." An ancient proverb says: "if we don't change our direction, we'll end up exactly where we are headed" (in Rosenberg 2001: 41). This indicates that learning institutions will have to constantly change and adapt in their environments if they are not to lag behind.

According to Schank (in Galagan, 2002: 76), "classrooms could not possibly work today, but centuries ago, they made sense: one literate person reading to the illiterate from what might have been the town's only book, but technology and times have changed." The advantages that technology provides to training and learning include not only the possibility of one-on-one interaction for every learner, the ability to simulate new ideas, the chance to try things out at one's own pace and to fail in private without the fear of ridicule from other students (Galagan, 2002). The Internet has also become an important instructional tool to facilitate the transfer of many types of information from one computer to another, and is rapidly becoming an effective means of communication in schools and colleges. Internet-based instruction has been manifested in one-to-one (tutor-to-student), one-to-many (tutor-to-group) and many-to-many (group-to-group)

approaches to instruction. The forms of communication may be synchronous with all parties communicating within the same time frame; or it may be asynchronous, where there may be a time delay between the communicators when sending, receiving and replying to any given communicative event (Webb et al, 2004).

The use of classroom computers and the Internet is often considered together broadly within the concept of e-learning. As stated in Expression of Interest (2003: 3), "e-learning is where the knowledge is delivered via electronic media (the Internet, intranets, extranets, satellite broadcast, audio/video tape, interactive TV, CD-ROM)."

According to Murphy and Greenwood (1998: 415), "research findings suggest that Information and Communication Technology is significantly under-used by students and teachers. The problem is worldwide and many explanations were offered for it," among them being the unavailability and/or inaccessibility of resources in schools (Veen, 1993; Byard, 1995; Wild, 1996; Dearing, 1997). The scarcity of opportunity to use computers has been cited as reasons why students and teachers were slow in the ICT uptake (Blackmore et al 1992); Dunn and Ridgway, 1991), teacher early year school pressure (Wild, 1996), and the lack of experience and training at the pre-service level in using ICT (Oliver, 1994; Wild, 1995). Also, the lack of teacher or teacher trainers' encouragement to students on using ICT in schools and the lack of confidence on the part of student teachers and their trainers in computing skills were cited as reasons for the low ICT use (Dunn and Ridgway, 1991; Downes, 1993; McDonald, 1993a; Collison and Murray, 1994).

Murphy and Greenwood (1998) added that conflicting reports have hinted that age and gender effects could be the factors in determining the extent of the low student teacher ICT uptake (Woodrow, 1991; Blackmore et al 1992; Lienard, 1995). Some reports from Summer (1990) and McMahon and Gardner (1995) have suggested that male students experience less anxiety about ICT and make more frequent use of it. Other studies have underscored that female students have shown lower confidence or knowledge ability than males about using computers (Oliver, 1993; Van Braak, 2001). Many other studies, however, have agreed with the claim that there are no significant differences between the attitudes of male and female students regarding ICT use (Koohang, 1989; Kay, 1989; Hunt and Bohlin, 1993; Marshall and Bannon, 1986; Woodrow, 1991).

The age phase for which students are being trained to teach has been implicated as significant in ICT uptake because studies have shown that the students trained to teach in primary schools demonstrated more anxiety and used computers less than the students trained for secondary schools (Blackmore et al 1992; Oliver, 1994). Also, the students' area of specialization has been pinpointed as having a strong influence on their ICT use. For example, Summers and Easdown (1996) mentioned subject specialization of student teachers, and also the lecturers' area of discipline as factors that may influence their extent of ICT use. Therefore, Sorenson and Reiner (2003: 16) declared that "to initiate the change to an online system of course delivery, it is important to assess the readiness of the various stakeholders," among whom are students, teachers and administrative staff. The reason is that "where tutors express interest in the development and use of on-line resources it is possible to identify a range of interest, motives and readiness to be involved" (Calverley and Shephard, 2003: 218). Thus, the nature and the range of interest varies according to the type of on-line activity and the extent of skills, equipment and infrastructure that are involved, which eventually determine the difficulty of the

innovation. Also, ascertaining the broad needs of potential users of on-line will ensure the precision of assigning the needed resources (Calverley and Shephard, 2003).

This study aimed to survey the perceptions of academic staff of the International Islamic University Malaysia (IIUM) to assess their opinions, readiness and sustainability, and explored the level of existing relationships between the respondents' demographic characteristics, the influences of the two strata groups, and it identified the predictors for the lecturers' perceptions of *e-learning adoption* and *e-learning readiness* in the university. Finally, the study highlighted on the most reported reasons for the lecturers' perceptions of *e-learning sustainability* in this university.

Methodology

The study employed two types of instruments. The first was "Lecturer E-learning Perceptual Survey Questionnaire (LEPSQ)" with 35 items on a 7-point Likert scale ranging from "very strongly disagree" to "very strongly agreed", used for collecting data from a proportional stratified random sample of 324 academic staff of the International Islamic University Malaysia. Another was the "E-Learning Readiness Survey" questionnaire, adapted from Marc Rosenberg (2000) with 20 items based on short answers that were designed to collect data from 26 Deans or Heads of department in each Kulliyyah of the University. This data was analyzed qualitatively based on the analytic procedures provided by the author, Marc Rosenberg (2000).

The researcher applied correlation analysis, ANOVA and linear regression to test for the interactions among the variables of the study. Content validation and construct validity of items were established for adequacy. And Alpha Chronbach reliability was 0.8. The Principal component analysis (PCA) showed that Bartlett test of sphericity was significant and the Kaiser-Meyer-Olkin measure of sampling adequacy was 0.912, while the anti–image correlation matrix revealed that measures of sampling adequacy ranged between 0.630 and 0.957. Further still, five factors were extracted with eigenvalues greater than 1, and they accounted for 66% of the total variance, but the Scree plot suggested that a two-factor solution would have been most appropriate, but five factors were used for this present study. The factor transformation matrix indicates that relatively acceptable correlations exist between the factors.

Findings

As revealed by the findings, the majority of the respondents were males, whose age range was within 25-44 years old. The majority of the respondents have a high level of teaching experience that ranges between one and ten years, and many of them were majoring in human sciences and pure science. The majority of the respondents were skilled in the required computer software skills such as: word processor, spreadsheets or excel, databases, statistics package, presentation software, copy and transferring of files, document scanning and creating PDF files. Regarding the respondents' abilities in various Internet tools, the findings were quite encouraging. Respondents have indicated that they acquired their computer and Internet training through formal training. Lastly, the majority of the respondents indicated that they accessed the Internet for 10 hours or more per week.

As for the results of correlation analyses, there were generally linear relationships between age and experience and *e-learning adoption;* software skills and *e-learning confidence; e-learning training* and *e-learning adoption;* Internet skills and *e-learning confidence* and *e-learning adoption*. Also, the results indicated that there were statistically significant linear relationships between age, experience, software skills and Internet skills.

The ANOVA test revealed that gender was significant for the perceptions of *e-learning confidence* [F(2, 304) = 4.266, p = 0.015, MSE = 15.114]. The post-hoc analysis confirmed that there was actually significant interaction between gender and e-learning confidence, F(2, 307) = .973, p = 0.379, MSE = 15.107. The Newman-Keuls test further showed that the mean for the male respondents (19.62%), $p < 0.05$ was higher compared to the mean of the female respondents (18.37%), $p > 0.05$.

For areas of specialization and *e-learning confidence*, there were no statistically significant effects [F(1, 304) = 1.107, p = 0.294, MSE = 15.144], while gender and areas of specialization had no interactive effects on *e-learning confidence* [F(1, 304) = 0.818, p = 0.367, MSE = 15.144]. Also, gender and areas of specialization had no influence on *e-learning training* [F(2, 313) = 0.737, p = 0.479, MSE = 36.066]. Finally, the respondents' gender and areas of specialization had no interactive effects on *e-learning consequences, e-learning readiness* and *e-learning adoption [*F(1, 313) = 0.595, p = 0.441, MSE = 36.066*]*.

In terms of the regression analyses for *e-learning adoption*, the summary of the analysis of variance (ANOVA) revealed that the overall model was statistically significant, and the set of independent variables explained 34 percent of the total variance in *e-learning adoption*. For the predictive power, two predictors were statistically significant, namely; *e-learning confidence* and *e-learning training,* but *e-learning training* was the best predictor of *e-learning adoption* with the highest Beta value (0.47).

As for *e-learning readiness*, the overall model was statistically significant; 32 per cent of the total variance was explained by the independent variables in *e-learning readiness.* The predictive power of the individual predictors indicated that only three predictors were statistically significant; namely, gender, *e-learning confidence* and *e-learning training*. They were significantly related to *e-learning readiness,* but *e-learning training* was the best predictor of *e-learning readiness* with the highest Beta value (0.47).

However, regression analyses have shown no effects of multicollinearity, as revealed by the tolerance and variance inflation factors (VIF) values, which were within the acceptable levels (1.05 to 2.41), and the computerized values of the threshold indicated that the statistically significant predictors of *e-learning adoption* and *e-learning readiness* had threshold values that were lower than the values of the confidence interval in their lower and upper bounds. Therefore, for *e-learning adoption*, both of the significant predictors; *e-learning confidence* and *e-learning training* were of practical importance, while age, *e-learning confidence* and *e-learning training* were of practical importance to *e-learning readiness*, based on their threshold values.

Finally, the cross-validation analysis indicated that *e-learning confidence* and *e-learning training* were significantly related with *e-learning adoption* and both were of practical

importance in the cross-validation analysis. while *e-learning training* was still the best predictor for both *e-learning adoption* and *e-learning readiness*.

The comments, views, opinions and suggestions can be summarized in three important themes: (1) e-learning will not take over conventional learning; (2) users needed to be well-educated through the provision of adequate professional development plans; (3) the provision of appropriate infrastructure, administrative, technical and mental supports to all users were very crucial for a successful implementation of e-learning in the University, IIUM.

Moreover, Murphy and Greenwood (1998) reported that younger lecturers showed a significantly higher level of confidence than older ones in the use of computers in teaching; but, contrarily, Muse (2003) found that computer confidence had no effect on the criterion variables of his study on ICT use. Osborn's study (in Muse, 2003) reported that, if users of ICT strongly valued the tools, they would develop confidence in their use. Wigfield (in Schunk, 2000) mentioned that valuing a task can lead to greater self-regulatory efforts. Therefore, to improve the perceptions towards e-learning implementation, it was suggested that users should be encouraged to increase their confidence in computing skills. Lack of confidence was reported as a reason for low ICT uptake (Murphy and Greenwood, 1998).

Furthermore, Veen (1993) suggested that the lack of initial training of teachers was a serious obstacle to ICT use and implementation. In a study conducted by Murphy and Greenwood (1998), it was reported that the lecturers felt that, compared to their students, they were not well-trained and adequately exposed to ICT tools. Thus, these findings suggested that more ICT training and confidence building in the area would be worthwhile in enhancing their abilities to teach with e-learning tools. Also, Jonassen (1996) mentioned that educators need to experience the personal value embedded in the technology as both productivity tools to increase efficiency and as mind tools for providing learning opportunities to students. On this note, Fabry and Higgs (1997) insisted that educators must experience the power of technology to implement it, while training is considered to be a critical factor in the successful implementation and integration of technology.

Additionally, Ertmer et al (2002) highlighted that efforts to provide professional development for teachers were increasing. Flynn (in Education Week, 2001) related that conversation around professional development has gained more attention and focus recently as compared to talks about hardware and infrastructure. Funding for professional development has experienced manifold increases, and several surveys have proven that teachers were now participating in a variety of professional development activities that were available; but, despite these enhancements in resources and training opportunities, teachers were still struggling to achieve high levels of integration (Becker, 2000; NCES, 2000).

Although some have argued that the use of computers is incompatible with the traditional requirements of teaching, others claim that placement of computers within the reach of teachers and within supportive school cultures was very important so that teachers can improve their ICT potential (Cuban, 1993). But Anderson and Dexter (2000) contend otherwise; they have argued that unrestricted access and training would not amount to effective use of computers if teachers were not encouraged, or expected to use computer

technology in meaningful ways. In this regard, they suggested that strong leadership is critical to computer integration and ICT implementation in general.

With respect to the importance of leadership, Ertmer et. al (2002) stated that few educators today would disagree with the premise that the principal plays an important role in facilitating technology use in the schools. Crystal (2001) added that encouraging administrators for technology leadership is the nexus through which all issues flow. Since, however, many of the faculty leaders and administrators were novice technology users, who use the computers only for the basic functions, such as word processing and power-point presentations, they had gained little experience or training in the knowledge and skills needed to be effective technology leaders.

According to Schmelzer (2001), a broad experience is important for administrators (Deans and Heads of departments), who could be considered as the technology leaders. Increased experience will help them to develop an understanding of how technology can improve instructional practices and provide a repertoire of strategies for supporting teachers' efforts to use technology in the classroom. Leaders' vision and adequate planning are crucial necessities to embark on this objective. Contrarily though, research has documented that strategies that promote the status or image of teachers who were advanced in their use of ICT were not likely to have an effect on the adoption behaviours of other teachers (Jebeile and Reeve, 2003). Nevertheless, it is strongly suggested that addressing the factors that were found to be significant in this study would be worthwhile for the e-learning implementation this University.

For the second phase of the study, which is the *E-learning Sustainability* survey, the overall descriptive analysis revealed that the majority of the respondents answered that initiatives for e-learning implementation were still underway with some apparent e-learning sustainable success, while only a small number answered that they could see little substantive evidence of progress. This means that there were potentially visible opportunities that e-learning will be supported and sustained, if it is finally implemented in the University.

However, comparing the results from both of the instruments (self-developed and the adapted sustainability survey questionnaire), the researcher concluded that the results were quite congruent with one another, though they were designed and followed different analytical methods. Also, it has been evidently substantiated that the results corresponded well with each other. For example, the regression analyses, where *e-learning confidence* and *e-learning training* were concluded as statistically significant and replicated predictors for *e-learning readiness* and *e-learning adoption* were in consonance and reflective of the thematic deductions from the views, comments and opinions of the Dean, Head and Acting Heads of various faculties and departments in the University. This means that there was a strong indication from the regression analyses that the respondents, who were academic staff, would implement e-learning for instructional delivery in their teaching activities providing they were equipped with necessary skills through professional training and other support. In the thematic deductions, the theme that users needed to be well-educated through the provision of adequate professional development plans, and the theme that the provision of appropriate infrastructure, administrative, technical and mental supports to all users were very crucial for a successful implementation of e-learning indicated the needs for training and other supports from the IIUM authority for the academic staff and faculty administrators.

Implications of the Study

The study made theoretical and practical contributions generally to the literature on ICT implementation and specifically on users' perceptions of e-learning implementation in IIUM. The empirical results showed that most of the factors that were extracted from the data were genuinely significant and successful in predicting the criterion variable. In both regression analyses for *e-learning adoption* and *e-learning readiness*, only two predictors emerged consistently as significant and replicated in the analyses. While gender was statistically significant for *e-learning readiness*, it was not replicated in the estimation and cross-validation analyses.

This study could have practical importance for any postsecondary institutions and educators as a genuine reference when planning to implement e-learning. More specifically, *e-learning confidence* and *e-learning training* were consistent and statistically significant predictors and they were of practical importance to *e-learning adoption* and *e-learning readiness*. These factors should be considered essential in the process of implementation of e-learning at this University.

In this study, factors that were not statistically significant should be given consideration in the process of e-learning implementation plans. This is because they could be relevant in implementation process, though if not significant in some of the previous studies. Probably, researchers should test for their implications separately in a different research construct.

In addition, *e-learning consequences* should not be perceived as hindrance or curtailment to the implementation of e-learning, as shown in this study, because it was not statistically significant. This could be interpreted to mean that the issue of consequences should be left alone now until e-learning has been implemented and in full use by the lecturers. As well, if users hope to increase the rate of adoption of e-learning by the academic lecturers, it would be advisable to concentrate on implementation strategies that address the variables that were found to be statistically significant in this study and then check for consequences later on.

Conclusion

In summary, the regression analyses for *e-learning adoption and e-learning readiness* showed that *e-learning confidence* and *e-learning training* were their statistically significant predictors, but *e-learning training* was their best predictor. There were no effects of multicollinearity, the tolerance and variance inflation factors (VIF) values were within the acceptable levels. The threshold values indicated that the threshold values were within the acceptable range. Both *e-learning confidence* and *e-learning training* were of practical importance in predicting *e-learning adoption* and *e-learning readiness*.

In addition, the cross-validation regression analyses revealed that *e-learning confidence* and *e-learning training* were statistically significantly related with *e-learning adoption* and e-learning readiness, and both were replicated and were of practical importance for

the predictors of *e-learning adoption* and *e-learning readiness*. And *e-learning training* remained as the best predictor for both *e-learning adoption* and *e-learning readiness*.

For *E-learning Sustainability* survey, the respondents thought that initiatives for e-learning implementation were still underway with relatively apparent e-learning sustainable success, but some of them thought that they could see few substantive evidence, which they hoped would be sustained, should the University implement e-learning at the long run.

About the Author

Abdulhameed Kayode Agboola obtained his bachelor and masters degrees in mass communication and his doctorate in instructional technology at the Institute of Education of the International Islamic University Malaysia (IIUM). He is currently a lecturer in corporate communications at the Kuala Lumpur Infrastructure University College (KLIUC). His doctoral dissertation focused on the implementation of e-learning in tertiary institutions. His area of interest is in designing, implementation and evaluation of educational technology for instructional delivery. He can be contacted at: kayode68@hotmail.com

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