Pertanika J. Sci. & Technol. 27 (2): 897 - 910 (2019)

PERTANIKA JOURNALS

SCIENCE & TECHNOLOGY

Journal homepage: http://www.pertanika.upm.edu.my/

The Influence of Change Management and E-Learning in Malaysian Private Higher Education Institutions

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ABSTRACT

The purpose of this research is to analyse the influence of change management and e-learning in Malaysian private higher education institutions focusing on educators' perspectives. The conceptual framework was modified in combination of various theories from Systemic Change Models and E-learning Cycle Models. A self-administered questionnaire adapted from Siebel 4.0-2 Survey Questionnaires (SSQ) by Hambling, 2010 was the data collection instrument. The sample consisted of educators from private higher education institutions with visions or missions based on e-learning implementation in Malaysia. As per findings, through review of the visions and missions, the selected private higher education institutions integrated teaching and learning with Stepwise Multiple regression analysis, has a significant relationship on independent variables that contribute to e-learning implementation.

Keywords: Change management, e-learning implementation, mission, private higher education, vision

INTRODUCTION

Information and Communication Technology (ICT) is key to value the education in higher education institutions globally (National Information Technology Council, 2008). In 6th Malaysia Plan, ICT was broadly emphasised as an enabler in Malaysia's education system. In 7th Malaysia Plan, the National Institute for Trial Advocacy (NITA) aimed of developing education as profitable industry in Malaysia (National Information Technology Council, 2008). Ravet and Layte (2008) concluded that educators in higher education institutions were managing educational transformation to monitor the efficacy of the learning resources. They also stated that there were many courses conducted through e-learning, like Problem Based Learning (PBL), Self-Directed Learning (SDL), Process Oriented

ARTICLE INFO

Article history:
Received: 30 March 18
Accepted: 04 February 2019
Published: 25 April 2019

E-mail address:
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ISSN: 0128-7680
e-ISSN: 2231-8526

Guided Inquiry Learning (POGIL), and Distance Learning. The Centre of Educational Technology (2005) stated that students preferred usage of e-learning as the core approach to learning. "Three decades from the present moment only the large university campuses would be left, universities would not endure" (Clayton, 2000).

Change management is an approach taken to make a smoother transition of individuals, teams, and organizations to the desired future state (Bresnahan et al., 2002). It is a structured approach to ensure that the achievement would benefit the education industry (Brusilovsky, & Millan, 2007). Prime Minister of Malaysia, Tun Dr. Mahathir emphasised that people were our ultimate resource (Mohamad, 2007). Malaysia needs to contribute to the improvement of human resources programmes to support the changes needed to achieve vision 2020, especially in core areas such as education, training and managerial skills (Mohamad, 2007).

Problem Statement

Supyan (2011) stated that the main problem with education today was that people did not understand, nor come to a consensus on why changes were needed and how to proceed with the change. This causes many difficulties and failures in the change management process (Jeremi et al., 2012). Most studies in the field of change management have only focused on who plays the major role in change management. Therefore, this research analyses and provides a clear picture of how change management needs to be done, and who is going to face the implications. These aspects exposed a gap in the practice on implementing and sustaining e-learning in the Malaysian education system (Embi, 2011).

Noraini and Nor (2010) found that effectiveness of change management in the implementation of e-learning in universities within Malaysia. Adding to that, Embi (2011) and Alhabshi (2006) finding showed that there were gaps in practicing e-learning implementation. Based on a real life example, a private higher education institution in Malaysia that had a vision and mission on the implementation of e-learning, found the adoption part of e-learning was not a smooth and pleasant process because majority of educators in this institution were unable to adapt to the new e-learning environment, which led to several resignations.

There has been no comprehensive study involving educators group on the implementation of e-learning within private higher education institutions in Malaysia (Jowati, 2011). Therefore, a comprehensive study is to focus on the educators' perspective on change management and bridge the identified gaps in the concepts, theories, methodology and practices. This research will focus on the educators in institutions that have vision or mission towards e-learning implementation.

Research Question

The research question is to find out which change management variables that is the most influential in e-learning implementation in private higher education institutions within Malaysia from the perspective of educators.

Research Objective

The objective of this research is to identify which change management variables most influence e- learning implementation in private higher education institutions within Malaysia from the perspective of educators.

Research Hypotheses

H0: All change management variables have the same degree of influence in e-learning implementation in private higher education institutions within Malaysia from the perspective of educators.

METHODS

The research instruments were modified according to the conceptual framework based on theoretical framework. In this research the survey method, cross sectional study and exploratory method were used as the research strategy to conduct this research in Malaysia's private higher education institutions. This survey method was used because the data obtained was standardized, facilitated comparison and analyzed using quantitative means. A self-administered questionnaire was chosen as the data collection instrument for the quantitative method and interviews were conducted as the qualitative method. The samples were educators from private higher education institutions with visions or missions based on e-learning implementation in Malaysia. The questionnaire was adapted from the Siebel 4.0-2 Survey Questionnaire (SSQ) by Hambling (2010).

The rationale for adapting the ideas of the SSQ was because the research that Hambling conducted used the Systemic Change Model in implementation of the Siebel 4.0-2, an e-learning platform from the perspective of the 'people' who were the users. SSQ was cited by 14 research articles that used Systemic Change Model from the year 2010-2012 (MS Academia, 2013). Besides that, this research questionnaire used the ideas of SSQ with modified variables to suit the conceptual framework and answer the research questions. For this study, the researcher selected participants from institutions with university status situated in Kuala Lumpur that incorporate e-learning implementation in their vision and mission. Private higher education institutions in Kuala Lumpur were selected as the sample because the majority of the university status private higher education institutions with visions and missions on e-learning were situated in Kuala Lumpur. In line with government

ambition to make Malaysia a regional hub for education, higher education in Kuala Lumpur aims at attracting top world institutions with innovative teaching and learning (Ministry of Education, 2013).

Besides that higher education institutions in Kuala Lumpur are envisioned as leading in teaching and learning facilities with a major contribution to the education sector of the country. There are 37 private universities in Malaysia with total 282928 students studying in Malaysia (Ministry of Education, 2013). Universities in Malaysia have been shaped with conducive monitoring from the Universities and University Colleges Act 1971 (Ministry of Higher Education Report, 2012). The number of students and educators was determined by the ratio of 1:13 which means that in total there were 21763 of educators in the year of 2014 (Ministry of Education, 2014). There were nine private higher education institutions with university status that were qualified to participate in this research after analyzing the vision and mission of the institutions. However, only private higher education institutions in Kuala Lumpur with university status that included e-learning implementation in their institute's vision and mission statement were selected. Educators in this research consist of teachers, tutors, instructors and lecturers in the selected private higher education institutions based on their qualifications. Besides that, Krejcie and Morgan's (1970) model was used because it was an appropriate model to get the sample size and this model had been cited in 394 studies.

RESULTS AND DISCUSSIONS

Content Validity

Content validity was determined through using scales which were adopted from established empirical studies (Narver et al., 1993; Jaworski & Coupland, 2014). The questionnaire validity and reliability was ascertained by conducting Cronbach alpha. Even though validity and reliability of SSQ were mentioned, the researcher were still conduct a pilot test to determine the actual validity in the context of this research. Convenience sampling consisted of 50 educators from private universities that had vision and mission on implementation of e-learning in their institutions were included in pilot study. The test was not used for statistical purposes and responses from the pilot test were not included in the research findings.

In fact, only a preliminary reliability evaluation was carried out with Cronbach's Coefficient Alpha Reliability Analysis. The researcher did not carry out the factor analysis due to small sample size. Tabanchnick and Fidell (2007) reviewed this subject with the purpose of reassuring to encompass the smallest amount of 300 cases for factor analysis (Saunders & Thornhill, 2003).Therefore, factor analysis was not needed in the pilot test (Saunders & Thornhill, 2003). While recommended by Nunnally (1979) in the initial point of the research reliability in the range of 0.8 to 0.9 was adequate. The summary results of Cronbach's Alpha stated in Table 1.

Table 1
Summary results of Cronbach's Alpha

	Construct	No. of items	Means	Std-deviation	Cronbach's Alpha
1	Stakeholders involvement	2	75.39	14.76	0.8002
2	Systems view	8	45.89	4.67	0.9001
3	Evolving mindset	4	59.56	7.87	0.8395
4.	Understanding transition	3	64.56	9.87	0.8279
5.	System design	8	80.70	14.87	0.8007
6.	System evaluation	2	80.66	14.89	0.8021
7.	Academic transform	6	53.86	11.54	0.7910
8.	Service and satisfaction	10	64.63	9.32	0.8153
9.	Ownership control	10	62.83	11.28	0.8522

Additionally, participants were encouraged make suggestions for improvement. Comments were solicited on the clarity of the questions and the editing was done in order to simplify the questions. The pilot test results identified ambiguities in the questionnaire items. Problems concerning instructions given for completing the questionnaire were also solved. A final version of the questionnaire was prepared for use in the actual research.

Reliability Assessment

In order to ensure that the developed scales and factors measured consistently intended to measure, the Cronbach's Alpha Coefficient (Nunnally, 1967) was employed to test their reliability. A post test of the reliability of the survey instrument used in this study was measured by internal consistency approach (Churchill, 1979). The Cronbach's Alpha was computed on each of the Likert scale items that were factor loaded into the nine factors mentioned earlier. The internal consistency reliability scores ranged from 0.641 to 0.854 as in Table 2 after removing some items with low corrected item-total correlations value

Table 2
Reliability for each variable

Variables	Final no. of items	Final internal reliability (Cronbach's Alpha)
Evolving mindset	4	0.641
Academic transform	6	0.742
Understanding transition	3	0.652
System evaluation	2	0.704
Service and satisfaction	10	0.732
System view	8	0.712
Stakeholders involvement	2	0.668
Ownership control	10	0.790
System design	8	0.854

Number of Questionnaires Distributed, Returned and Usable

In order to capture the targeted sample size of 381 respondents, 550 survey questionnaires were distributed to private higher education institutions in Kuala Lumpur that have visions and missions on e-learning implementation. A total 493 were returned, representing a response rate of 89.6%. Out of the 493 returned, 487 were found to be usable (98.8%) and 6 questionnaires were rejected due to incomplete responses (1.21%). From this feedback, it was concluded that respondents were willing to give their cooperation in answering the survey questions at their convenience. This provides evidence that if a survey is monitored and administered properly, much information can be gathered from the respondents.

Means and Standard Deviation of Study Variables

All variables were measured on five points Likert type scale. The mean scores for all the variables range between 20.23 and 67.54. This indicates that change management variables and e-learning variables are in moderate level. The standard deviation scores range from 6.03 to 22.67 (Table 3).

Table 3
Means and standard deviation for study variables

Variables	Mean	Standard Deviation
Stakeholders involvement	36.67	20.54
Systems view	46.22	19.53
Evolving mindset	33.47	8.24
Understanding transition	26.98	17.24
System design	59.81	11.18
System evaluation	42.13	22.67
Academic transform	20.23	6.03
Service and satisfaction	52.19	16.28
Ownership control	67.54	22.11

Skewness and Kurtosis of Study Variables

All variables were measured on a five points Likert type scale. The mean scores for all the variables range between 20.23 and 67.54. This indicates that change management variables and e-learning variables are at a moderate level. The standard deviation scores range from 6.03 to 22.67. The normality distribution of the data, the skewness and kurtosis of each variable were examined. The critical value for both measures of normality has drawn the distribution. The skewness and kurtosis for the nine main variables of this study were examined. By applying the above criteria to the skewness values for each of the study variables, it is shown that none of the variables fall outside the more and less 2.58 range

of skewness. Thus, the data for this study is normal with regards to skewness. Univariate skewness and univariate kurtosis values range from -0.501 to 0.062 and -0.402 to 0.564 respectively.

The relatively large value of Mardia's normalized multivariate estimate kurtosis (23.623) shows evidence that the data are slightly not multivariate normal. In order to address the issue of multivariate non-normality, bootstrapping is conducted to assess the stability of parameter estimates and report them more accurately. Within the context of the Structural Equation Model, bootstrapping provides a mechanism for addressing situations where the statistical assumptions of large samples and multivariate normality may not hold (Boon, 2003). In this study the Bollen-Stein bootstrap procedure (Bollen & Scott, 1993) was employed. It is a modified bootstrap method for the $\chi 2$ goodness of fit statistic which provides means to test if the specified model is correct. In particular, it can be used to correct for the standard error and fit statistic bias that occurs due to non-normal data. It tests the adequacy of the hypothesized model based on the transformation of the sample data such that the model is made to fit the data perfectly.

In this study, 1000 bootstrap samples were drawn with replacement from this transformed sample. The Bollen-Stein bootstrap p-value is 0.356 (>.05) indicating that there is sufficient evidence to reject the hypothesized model. Considering the feasibility and statistical significance of all parameter estimates, the substantially good fit of the final model and the lack of any substantial evidence of model misfit, the author concludes that the nine dimensions (ownership control, academic transform, service and satisfaction, stakeholders involvement, system view, evolving mindset, understanding transition, system design and system evaluation) can represent an adequate description of educators' perspectives of change management due to e-learning implementation in private higher education institutions. The Cronbach's alpha was computed on each of the Likert scale items that were factor loaded into the nine factors. The internal consistency reliability scores ranged from .641 to .854 after removing some items with low corrected item-total correlations value. Reliability is also an indicator of convergent validity (Hair et al., 2006). According to Hair et al., (2006) coefficient alpha is generally an internal measure of reliability as in most practical cases it is only the lower bound on reliability.

Correlation Analysis

The present researcher would like to clarify that the main objective of exploratory factor analysis is data reduction and exploration of the factors loaded in the present study. As mentioned earlier Exploratory Factor Analysis was carried out, using the Varimax Orthogonal. The results in forms of rotation were almost identical. However, the orthogonal rotation has the strong likelihood that correlated factors and theoretically justified. Thus, Orthogonal Varimax Factor Analyses are used for further analysis.

To identify the underlying dimensions of independent variables (ownership control, academic transform, and service and satisfaction) the principal component factor analysis with orthogonal rotation was conducted. A total of nine constructs (60 items) namely stakeholders' involvement, system view, evolving mindset, understanding transition, system design, system evaluation, ownership control, academic transform, service and satisfaction were the factors that analysed to identify the number of dimensions derived. As suggested by Aaker (1971), factors with eigenvalues greater than 1.00 were retained.

Besides that, an exploratory factor analysis (EFA) was performed to reduce the large number of variables (items) to a smaller set of underlying factors that summarize the essential information contained in the variables. The detailed explanation of the analysis and its interpretation are presented in the following section. To determine the underlying factors, principal axis analysis was employed as an indicative test to determine if the 53 items were tapping onto the same construct. The nine factors have eigenvalues greater than 1.0 as referred to appendix P. To ensure that only very significant loadings are considered the variables for a factor are selected only when the absolute size of their factor loadings is 0.5 or more (Hair et al., 2006). The Bartlett's test of sphericity was significant (Approx. $x^2 = 21265.198$, d.f = 2145, p=0.00) , Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.896, far greater than 0.6 which is acceptable and conformed to the multivariate normality of the data as refer to appendix O. An inspection of the anti-image correlation matrix revealed that all the measures of sampling adequacy were well above the acceptable level of 0.5.

The communalities of the items range from 0.327 to 0.753 and these were acceptable. A communality represents the variance in that variable accounted for all the factors and was calculated by summing the squared of all factors loadings for a variable. Low communality indicates that the factor model was not effective and the variable should be omitted from the model. On the other hand, low communalities across the set of variables indicated that the variables were weakly related to each other. Usually, a communality of 0.75 was considered high and a communality of 0.25 was considered low. However, it was vital that communalities were construed with the interpretability of the factors. A communality value greater than one signals cause spurious solution due to insufficient sample size or the number of factors was either big or small. The principal components analysis extracted nine factors having eigenvalues greater than 1.0. The nine factors accounted for 54.4% of total variance. Factor 1 was loaded with four items from evolving mindset scales (EM_26_1, EM_26_2, EM_26_3, EM_26_4), explaining 14.3% of the variance. Factor 2 comprised six loaded items from academic transform scales (AT_26_5, AT_26_6, AT_27_4, AT_ 27_5, AT_27_6, AT_27_7) explaining 9.3% of the variance. Factor 3 comprised three loaded items from understanding transition (UT_27_1, UT_27_2, UT_27_3) explaining 5.6% of variance. Factor 4 from system evaluation (SE_28_1 and

SE_28_2) explaining 2.9% and factor 8 comprised 2 items from stakeholders' involvement (SI_30_1 and RECODE_SI_30_3) and 4.3% of total variance. RECODE_SI_30_3 was reversed scored for further analysis to increase the alpha value in the range of 0.508 to 0.802. Factor 5 and 7 comprised 10 items explaining 4.4% and 5.6% of total variance. Factor 5 was from service and satisfaction scale (SS_28_2, SS_28_4, SS_31_2, SS_31_5, SS_31_6, SS_31_7, SS_31_12, SS_31_13, SS_31_14) and factor 7 was from ownership and control scales (OC_29_4, OC_29_5, OC_29_6, OC_29_7, OC_29_10, OC_29_11, OC_29_13, OC_29_16, OC_30_2, OC_30_4). Factor 6 and 9 were comprised 8 items explaining 4.6% and 2.9% of total variance respectively. Factor 6 comprised of system view (SV_29_1, SV_29_2, SV_29_3, SV_29_8, SV_29_9, SV_29_12, SV_29_14, SV_29_15) and factor 9 comprise of system design (SD_31_1, SD_31_3, SD_31_4, SD_31_8, SD_31_11, SD_31_4, SD_31_15). The results show that educators need to focus on these nine dimensions to influence change management due to e-learning implementation. For further analysis, only these nine dimensions were used on the reliability and the number of items loaded.

Change Management Variables Influencing E-Learning Implementation

This section reports on the findings that address on independent variables (ownership control, academic transform, and service and satisfaction) most influences the dependent variables of stakeholders' involvement, system view, evolving mindset, understanding transition, system design, and system evaluation. For the purpose of that stepwise multiple regressions were performed. In order to determine which variables contributed to independent variables were regressed against dependent variables. Table 4 displays the summary of Stepwise Multiple Regression analysis for independent variables that were predicted to contribute to the dependent variables.

According to the analysis, there are change management variables that influence e-learning implementations. For stakeholders involvement, with all variables entered into the equation, OC yield an adjusted R^2 of 0.074 ($F(1, 486) = 31.54$, $p<0.005$). AT produced an adjusted R^2 of 0.096 ($F(2, 486) = 18.78$, $p<0.005$). No other variables entered the equation. For stakeholders' involvement, OC was the primary predictor accounting 7.4% of the variance. Other independent variable did not achieve significance. For system view, with all variables entered into the equation, OC yield an adjusted R^2 of 0.058 ($F(1, 486) = 15.24$, $p<0.005$). AT produced an adjusted R^2 of 0.063 ($F(2, 486) = 9.48$, $p<0.005$). No other variables entered the equation. For system view, OC was the primary predictor accounting 5.8% of the variance. Other independent variable did not achieve significance.

For evolving mindset, with all variables entered into the equation, AT yield an adjusted R^2 of .217 ($F(1, 486) = 9.23$, $p<0.005$). SS produced an adjusted R^2 of 0.184 ($F(2, 486) = 12.53$, $p<0.005$). No other variables entered the equation. For evolving mindset, AT was

Table 4
Summary of Stepwise Multiple regression analysis for variables predicting dependent variables

IV	Model Summary		ANOVA		Coefficients		
	R^2	Adjusted R^2	F-value	p	Beta	t	p
(Stakeholders' involvement)							
OC	0.078	0.074	31.54	0.000*	0.257	5.02	0.000*
OC+AT	0.102	0.096	18.78	0.000*	0.127	2.47	0.002*
(System view)							
OC	0.064	0.058	15.24	0.000*	0.632	3.63	0.000*
OC+AT	0.074	0.063	9.48	0.000*	0.452	2.52	0.003*
(Evolving mindset)							
AT	0.234	0.217	9.23	0.000*	0.342	3.63	0.001*
AT+SS	0.192	0.184	12.53	0.000*	0.213	3.51	0.000*
(understanding transition)							
AT	0.022	0.013	10.24	0.000*	0.234	3.52	0.003*
AT+SS	0.159	0.146	9.21	0.000*	0.523	4.12	0.000*
(System design)							
SS	0.324	0.321	9.64	0.000*	0.654	2.34	0.000*
SS+AT	0.214	0.205	16.45	0.000*	0.353	2.64	0.001*
(System evaluation)							
SS	0.188	0.182	12.63	0.000*	0.742	3.46	0.000*
SS+AT	0.236	0.224	9.32	0.000*	0.453	2.32	0.000*

*significant mean effect

the primary predictor accounting 2.17% of the variance. Other independent variable did not achieve significance. For understanding transition, with all variables entered into the equation, AT yield an adjusted R^2 of 0.013 (F (1, 486) = 10.24, p<0.005). SS produced an adjusted R^2 of 0.146 (F (2, 486) = 9.21, p<0.005). No other variables entered the equation. For system view, AT was the primary predictor accounting 1.3% of the variance. Other independent variable did not achieve significance.

For system design, with all variables entered into the equation, SS yield an adjusted R^2 of 0.321 (F (1, 486) = 9.64, p<0.005). AT produced an adjusted R^2 of 0.205 (F (2, 486) = 16.45, p<0.005). No other variables entered the equation. For system design, SS was the primary predictor accounting 32.1% of the variance. Other independent variable did not achieve significance. For system evaluation, with all variables entered into the equation, SS yield an adjusted R^2 of 0.182 (F (1, 486) = 12.63, p<0.005). AT produced an adjusted R^2 of 0.224 (F (2, 486) = 9.32, p<0.005). No other variables entered the equation. For system evaluation, SS was the primary predictor accounting 18.2% of the variance. Other independent variable did not achieve significance. Thus, there are some findings in response to the research question on identifying the independent variables that significantly

contributed to e-learning implementation. Therefore, the null hypothesis is rejected. In general, it could be concluded that the contribution of independent variables decreases from OC and SS between 31.54% to 9.23%.

CONCLUSION

The findings revealed that there were change management variables that influenced the e-learning implementation. It was revealed that in general, it could be concluded that the ownership control most influenced stakeholders' involvement. The finding also showed that ownership control was also a predictor for the system view. The findings were consistent with related studies done by Ding and Wermers (2012), that system view had a significant effect on the system of governance and ownership control. With regards to the factor of change such as stakeholders involvement reacts as crucial factors for ownership control (Garrison, 2011). Furthermore, this finding also disclosed that the e-learning variables that most influenced evolving mindset and understanding transition, were only academic transform, service and satisfaction. Academic transform was the primary predictors for both evolving mindset, and the system view. A related study conducted by Suktrisul (2004) examined the phenomenon of resistance to change. They argued that changes were dependent on peer groups, their values, and patterns of behavior typical of people's attitude towards academic transforms service and satisfaction. A similar study done by Sirinaruemitr (2004) who discussed service and satisfaction was needed to understand transition especially in a group of people who work in same job scope. It was to comprehend that progress in change management is measured by the time taken by small teams led by a process facilitator (Caine & Jenlink, 1997). Therefore, the researcher concluded that in order to have high relevance of evolving mindset and understanding transition for e-learning implementation, academic transforms, service and satisfaction were important factors. The key efforts of the process teams are to cultivate an in-depth understanding of the change management, develop individual thinking and support the private higher education community to progress through dialogue, design, and active participation to help implement an ideal educational system.

This study showed that e-learning variables that most influenced system design and system evaluation, with all variables entered into the equation were only service and satisfaction and academic transform. Service and satisfaction was the primary predictor for system design, and system evaluation. These findings were consistent with related studies done by Wang (2011).The study found that system design and system evaluation proposed in developing a Web-Based assessment system, the Peer-Driven Assessment Module as a way to compromise on service and satisfaction to evaluate the system. Some scholars also highlighted the use and usability of educational design patterns for designing and evaluating the system, and enhance service and satisfaction as part of an e-learning framework approach (Derntl & Calvo, 2011).

As a concluding remark, the researcher would like to state that change management due to e-learning from the perspective of educators needed concerted efforts and support from stakeholders, educators and the management team of the institution itself. The fullest cooperation and support from the university administration, all concerned departments, and continuous training to update lecturers on e-learning skills can help in improving the change management adaptation and assist in enhancing the e-learning utilisation among educators in private higher education institutions that have vision and mission on e-learning implementation.

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