Individual Readiness for Change in the Pre-Implementation Phase of Campus Enterprise Resource Planning (ERP) Project in Malaysian Public University

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***Abstract*—In recent years, the current globalization has revolutionized transformed the landscape and ecosystem of the institution of higher education were demanding that the university transition from legacy system to Enterprise Resource Planning (ERP) system on enhancing university competitiveness. This shift requires the entire organization to be ready for change as early as the pre-implementation phase to ensure the successful implementation of ERP and resistance among staff is reduced. Past studies related to readiness for change are more focused on the ERP implementation phase for Human Resources, Finance and Manufacturing. However, studies on the individual readiness for change (IRFC) among public university staff in the pre-implementation phase are limited especially in Malaysian. Therefore, this study aims to analyze the IRFC factor among public university staff by combining the theoretical and empirical results of the study. Data analysis was obtained from a questionnaire from 117 public university staff who were in the pre-implementation phase of the Campus ERP project. The findings show that appropriateness, management support, change-specific efficacy and personal valence as contributing IRFC public university staff in on pre-implementation phase of Campus ERP project. Besides that, there are 24 items representing that four factors in measuring IRFC. In the future, studies can be done in a variety of perception such as students and other ERP systems such as Human Resource System and Financial System which are also a core system for the university. Additionally, this study leads for further study in implementation and post-implementation phase of the Campus ERP project.**

***Keywords*—Campus ERP; ERP pre-implementation phase; individual readiness for change; IRFC**

I. INTRODUCTION

Globalization has demanded the landscapes and ecosystems of institutions of higher learning to revolutionize rather than focusing solely on teaching and learning solely to research, publication, ranking, and global recognition. Although most universities are facing constraints budget, at the same time the need for technology and business services also increased [1]. Therefore, more organizations shift from functional information technology infrastructure to Enterprise Resource Planning (ERP) processes and systems into one of the most extensive information technology solutions now even though ERP has a reputation for high cost and low benefit because users do not know how to use the functionality provided [2].

ERP implementation has been popular in many organizations to make application development strategy in the organization more manageable [3]. However, these efforts are often regarded as a failure, in part because of potential users that resistance to change [4][5]. According to [3], the implementation of ERP recorded a failure rate and the inability to achieve a benefit between 60-90% and the main reason was the resistance from the user. There are two fundamental sources of resistance when implementing ERP in the organization which is the habit and risks concern [6]. According to [7], there are users who resist using ERP because they fear that their personal information will be accessible to other users even to users outside the university.

The study found that readiness for change plays an active role in reducing the resistance that occurs and raising the individual's desire to use ERP [5]. This opinion is also supported by [8] which states that organizations need activities related to the readiness to ensure the successful implementation of ERP. At the university level, the organization's readiness significantly and positively influence the effectiveness of the Campus ERP project implementation at Albaha University and university management should examine the organizational readiness to measure the capabilities of technology, human resources and infrastructure in planning and implementing ERP.

However, identifying an individual readiness for change (IRFC) among university staff has its own challenges and there is evidence that there is a need to study them specifically because of the unique characteristics of universities compared to other organizations such as corporate. A study conducted by [9] shows the structure and culture of the Massachusetts Institute of Technology (MIT) as an university have caused limited capacity with a limited degree of staff readiness to implement the ERP compared corporate organization like ENGCO that has more appropriate organizational structure There are efforts to make the university's organizational structure to be a multinational company structure in order to

enable best business practices created in the ERP but this raises pressure on staff [10].

In the Malaysian context, studies conducted on the Campus ERP project implementation are limited and mostly focused on private universities. A study by [11] has stated that in change management, the university needs to implement a strategic analysis to assess the risk, resistance level and the establishment of a special tactic to minimize resistance during the Campus ERP project implementation. Further study by [12] has identified the level of readiness for change in Malaysian private universities is absence or lack of top management, lack of understanding about the importance of Campus ERP system and resistance to change among staffs.

From previous studies as mentioned above, research findings from private university respondents are unlikely to apply to public universities as there is a difference between these two institutions of higher learning. The most significant difference is that private universities are owned by individuals or companies whose principles focus on higher education components that are to produce skilled manpower to meet the needs of skilled and professional workforce while public universities are government-owned, focusing on fundamental research for more scholars (scientists) and applied development research to empower the nation's high technology advancement [13]. Therefore, this study will fill the study gap by focusing on the IRFC among public university staff in the pre-implementation phase of the Campus ERP project in Malaysia.

This paper consists of 5 sections. Section I discuss the background of this study including the issues and problems of Campus ERP implementation. Section II discusses the ERP, ERP implementation phase and individual readiness for change (IRFC). Section III elucidates the methodology used in the study. Section IV presents the findings of the work and discussion. Lastly, Section V concludes the paper with a summary of the findings and recommended future work.

II. Literature Review

A. Overview of Campus Enterprise Resource Planning (ERP)

Implementation of the ERP System at universities around the world has increased significantly over the past decade [14],[15]. This is in response to growing global competition in higher education environments and acts as a way of replacing the existing management and administration system [4]. Previously, the university relied on the student information system to improve their service efficiency [16]. However, there is a call by the government to universities around the world to improve their performance and efficiency and as a result, universities have shifted to the ERP system to address environmental changes and overcome the limitations of the legacy system as a means of integration and performance improvement [17]. The main reason for ERP implementation in the university is to meet changing university needs and to facing global education changes and increasing competition. This integrated information solution provides competitive advantages to universities and universities that do not shift to integrated information solutions, will have difficulty in maintaining marketing to students and students either sooner or later to request the services offered by other universities [14]. This opinion is supported by [4] which states that universities are facing growing global competition for attracting and retaining students as students expect ease of access to information, self-service transactions, fast processing and learning especially since the cost of study and other fees increases at a rate that does not never happened before.

In addition, a study by [10] shows the purpose of the implementation of ERP by renowned universities because the university is already in a multinational environment such as a large organization where the role of top management is to oversee the overall business, making strategic decisions, etc. Furthermore, among other purposes that influence the decisions in using ERP are due to current changes, weak integration of information between departments and negative perceptions of civil [18]. Besides that, the ERP system is believed to help organizations share information, reduce costs and enhance business process management [6]. This opinion is supported by [15] which list the advantages of implementing ERP system as below:

- Better information access for planning and managing the institutions.
- Improved service for the university, students and staffs.
- Increased income and decreased expenses due to improved efficiency
- Unlimited access to authorized users.
- Maintainability of the system.
- High performance and reliability.
- Scalability/adaptability.
- Unifying information and processes related to students, faculty and staff.
- Better decision making.
- Meeting compliance and governance.
- Promoting relationships.
- Providing greater flexibility to users.
- Easier and quicker access to data for reporting and decision making.

B. ERP Implementation Phase

According to [19] there are six phases of implementation namely pre-adoption, adoption, pre-implementation, pilot study, implementation and post-implementation. Pre-implementation is a period of time before the physical exercise and can shape the individual attitudes involved with the implementation [19],[20]. In this phase, the organization will prepare itself and develop a plan to implement innovation initiatives [21]. Among the activities that took place was to study and evaluate, to provide awareness and preparation to the staff [3]. There is a need to anticipate potential conflicts and resistance from staff in pre-implementation phases that may cause project failure to occur [22].

C. Individual Readiness for Change (IRFC)

In the pre-implementation phase, [23] has presented seven strategies to support the change management and one of them is related to readiness for change strategy. This opinion is supported by [24] which proposed an organization's readiness assessment as the first phase of performance evaluation and improvement measures of ERP implementation. According to [25], the implementation of ERP is not merely a result of technological change, but changes in the task, structure and staff. It is often seen that individuals generally do not like the changes and the ERP system involves changes in work processes that evoke resistance to changing among staff. This can explain why resistance to change is very common in the ERP implementation [12].

Therefore, [26] proposed a readiness for change assessment is one of the mechanisms in the change management models to increase motivation to learn and use the ERP system effectively. By assessing that, change agents, managers, human resource management professional and organizational development consultant can identify the gaps that exist between their own expectations about business changes and other staffs [27]. If a significant gap is observed and no action is taken to close the gap, the resistance will be expected, and the implementation will be threatened. Basically, organizational readiness for change assessment can be a guide as a strategy for implementing organizational change developed [28].

III. Research Model and Research Questions

The objective of this study is to identify the contributing factors IRFC among public university staff in the pre-implementation phase of Campus ERP project in Malaysia. Therefore, based on the conceptual study and the research literature, a model based on the study by [28] has been developed. The model contains appropriateness, management support, change efficacy and personal valence as the factors affecting the readiness for Campus ERP implementation. The associated factors are explained as follows.

A. Appropriateness

To ensure that organizations are ready to change, [29] emphasized the importance of appropriateness and discovered a total of 18 articles from the organization's management publication to supporting such a factor since 1965. Moreover, [30] stated that if the staff supports the change, they must also believe that the proposed changes would be appropriate to deal with conflict.

B. Management Support

A study by [5] states that management commitment and support are factors that influence readiness for change. In addition, organizational support is geared towards reducing opposition to changes, increasing readiness for changes and intentions to use the ERP system due to staff readiness to implement the ERP system [31].

C. Change Efficacy

The study conducted by [32] suggests that the belief of the change efficacy among staffs should not be ignored by the organization when assessing organizational readiness for change. In addition, a study by [33] has shown a high consistency between individual and change efficacy. The opinion was supported by [34] which also found the change efficacy and personal benefits influenced by organizational culture.

D. Personal Valence

Personal valence is also associated with the staff's readiness to accept the changes implemented in the organization [34]. Moreover, stressed that staff who believe that the changes that take place will benefit personally will make them appreciate the changes and encourage them to be involved in the implementation [32]. This opinion supported by the evidence that there is a correlation between pre-change and work attitude and individual readiness for change [35]. It is common for staffs to hear about what will happen to their job, position and so on, not how the ERP will change the organization's strategy or competitiveness [36].

The case for this study comprises the selected Malaysian public university that in the pre-implementation phase of Campus ERP project. In general, the study aims to answer the following research questions.

1) RQ1: What are the contributing factors IRFC among public university staff in the pre-implementation phase of Campus ERP project in Malaysia?

2) RQ2: What are the items measures the identified factors?

IV. Methods: Participants and Data Collection

The participants of the study were 117 staffs from the various department which is Vice Chancellor Office, Deputy Vice-Chancellor (Academic & International) Provost, Deputy Vice-Chancellor (Student Affairs & Alumni), Deputy Vice-Chancellor (Development), Bursar, Registrar and Academic Faculty Centre. According to the results, 28.21% of the respondents were men and 71.79% were women.

In terms of education, 0.85% had a PMR (the lowers), 15.38% had a SPM, 21.37% had a diploma, 49% had a bachelor's degree, 12.82% had master's degree and 8.55% had a Ph.D. Moreover, 88.03% of respondent were the non-academic staff and 11.97% were academic staff; also 48.72%% of them had worked experience between 11-20 years and 26.50% with 6–10 years working experience. Besides that, 60.68% of the respondent from administrative service classification and 23.08% from information technology service classification. In term of position level, 32.48% of respondent was an executive/ officer, 18.80% of respondent was a manager/ senior officer, 24.79% of respondent was an assistant officer and 19.66% of respondent was a clerk.

For validity and reliability of instrument, four (4) test have been conducted which is a) person-item reliability and separation, b) validity and polarity of items to measure constructs based on the value of Point Measure Correlation (PTMEA CORR) value, c) fit of items to measure constructs and d) determine the correlation value by Standardized Residual Correlations.

V. Results and Discussion

The questionnaire developed by [28] was used for gathering the required data. The table below (Table 1) listed the factors and the items used in this study.

The reliability and validity of the questionnaire using Cronbach's Alpha (CA) score are 0.94 for the person and 0.90 for the item. Besides that, the separation score is 3.38 for the person and 3.01 for the item. Therefore, this shows the item's reliability value is at an excellent level above the minimum level of 0.70 set and the item separation value is at a good level of more than 2.0 [37],[38].

TABLE I. Factors for Staff Readiness for Change in Pre-Implementation Phase for Campus ERP Project

Factor	Item
Appropriateness	S1_Organization benefit
	S2_Sense to initiate the change
	S3_Legitimate reasons S1_Organization benefit
	S4_Improve organization's overall efficiency
	S5_Rational reasons
	S6_Worthwhile in the long run
	S7_Change makes the job easier
	S8_ There is anything to gain
	S9_The time be spent on something else
	S10_Change matches with organization's priorities
Management Support	P1_Encouraged to embrace this change
	P2_ Put all support behind this change effort
	P3_Stressed the importance of this change
	P4_Committed to this change
	P5_Don't even want it implemented
	P6_Sent a clear signal this organization is going to change
Change Efficacy	B1_ Do not anticipate any problems adjusting to the work
	B2_Don't think can do well some tasks
	B3_Can handle it with ease
	B4_Have the skills that are needed
	B5_Can learn everything that will be required
	B6_ Past experiences make confident
Personally Beneficial	M1_Will lose some of the statuses
	M2_Will disrupt many of the personal relationships
	M3_The future will be limited

CORREL-ATION	ENTRY NUMBER	IT	ENTRY NUMBER	ITE
.69	12	P2	14	P4
.67	23	M1	25	M3
.60	11	P1	12	P2
.59	4	S4	10	S10
.57	24	M2	25	M3
.54	13	P3	14	P4
.51	11	P1	14	P4
.51	12	P2	13	P3
.48	7	S7	10	S10
.47	23	M1	24	M2

Fig. 1. Top Item with High Correlation.

The standardized residual correlations analysis found that all items had a low correlation value and not more than 0.7 as prescribed (Fig. 1). This shows that all the items are different and do not measure the same thing or merge several other dimensions that are shared. Therefore, all items used in the questionnaire are maintained [38].

Besides that, there is no negative value for PTMEA CORR and the score between 0.41 and 0.74. Next, analysis has shown acceptable value for Infit MNSQ between 0.64 to 1.36. There are 9 out of 25 items that are outside of the Infit MNSQ range and also beyond the ZSTD predictability range which is between - 2.00 to 2.00.

The S1 item aims to obtain staff feedback on the benefits the organization receives as well as the personal benefits received by staffs. The findings provide an overview of staff readiness for change as well as staffing perspectives on the importance of implementing ERP as a whole and not just for the benefit of individuals. This item was considered disproportionate because it was the most easily answered item at -0.78 logit because no respondent stated disagreed / strongly disagreed and only 18.80% stated unsure. The distribution indicates that the staff gave positive feedback in the assessment of this item. This finding shows this item is relevant and needs to be in the assessment of staff readiness.

S3 item aims to get staff feedback on the notion of changes to be implemented is valid. This S3 is blurry because there are two other similar items that are S2 and S5. Feedback from Professor during the content verification process has shown that there is ambiguity for this item. In addition, according to [28] the item has a contradiction with the factor it represents because it is not referred to the organization and requires further testing to ensure its relevance. In addition, during the validation of questionnaires, these items also received feedback as confusing.

Next, S9 item aims to get feedback on the time being used for the changes being made. The findings of this item will give an overview of the staff's readiness relation to change with time suitability for implementation of change. The analysis found that Item S9 is the most difficult item to answer at +1.07 logit. According to [33], such timing factors have a significant influence on the effectiveness of change among staff. In addition, the statements used in this item are negative

to examine the attention and diligence of respondents while filling out the feedback form.

While S10 item aims to get feedback on the suitability of changes made with the organization's priorities. The findings of this item will give an overview of the staff's readiness to change with organizational priorities for the implementation of change. A study conducted by [35] proves that when staff sees organizational priorities are high in line with the objectives of change, staffing ability to change also increases and consequently contributes to organizational capacity to change.

P2 item aims to get staff feedback on support provided by the highest management of the changes being made. The findings provide an overview of the staff's readiness for change as well as the full support provided by the top management behind the changes made.

Next, P4 item aims to get staff feedback on the commitment given by the top management to the changes being made. Obtain from this item will give an overview of the staff's readiness relation to change with the commitment shown by the highest management. According to [12] the ERP project must receive approval and support from top management before it can be implemented. In addition, leadership behaviors such as good participation, support and direction by management have a positive and significant relationship with staff commitment [39]. This opinion is also supported by [31] which prove that management commitment has a correlation with staff readiness for changes in the implementation of ERP.

B1 item aims to get feedback on staff abilities to adapt to the changes being implemented. The findings of this item will provide an overview of the staff's readiness correlation for changes with the level of ability to adapt to the work to be done after the change is implemented.

Whereas B2 item is intended to obtain feedback on the staff's ability to perform tasks when changes are made. The findings of this item will give an overview of the staff's readiness to change with the ability to perform the assignment after the change is implemented. Item B2 is the most difficult item to answer at +1.07 logit. The majority of respondents were positive for both and less than 13% of 11.97 for item B1 and 14.53% for item B2 gave negative feedback. According to the study of [40], the positive nature of the new item shows that staff is ready to change.

Lastly, M1 item aims to get feedback on the loss of benefits faced by staff when changes are made. The findings provide an overview of the staff's willingness to change with threats to existing advantages owned within the organization. According to [41], losing advantage in organizations is one of the most important factors for individual opposition to the implementation of ERP in the organization. This opinion was also supported by [35] stating that staff readiness for change had a relationship with the positive effect brought about by the change. Therefore, these items are retained in Personal Benefit Factors.

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PT-MEASURE CORR.	PT-MEASURE EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	ITEM
9	393	117	1.07	.14	1.91	5.4	2.32	7.0	A .46	.66	43.6	56.1	S9
17	414	117	.64	.15	1.62	3.8	1.94	5.1	B .41	.64	56.4	59.4	B1
18	399	117	.95	.14	1.52	3.3	1.81	4.7	C .48	.65	57.3	56.9	B2
23	443	117	-.03	.16	1.47	2.8	1.37	2.2	D .56	.61	64.1	64.1	M1
25	462	117	-.53	.17	1.31	2.0	1.17	1.0	E .58	.59	63.2	66.1	M3
24	458	117	-.42	.16	1.30	1.9	1.20	1.2	F .56	.60	63.2	65.9	M2
20	416	117	.60	.15	1.08	.6	1.30	1.9	G .55	.64	67.5	59.6	B4
2	457	117	-.39	.16	1.21	1.3	1.14	.9	H .68	.60	67.5	65.8	S2
6	465	117	-.61	.17	1.16	1.1	1.08	.5	I .59	.59	75.2	66.3	S6
8	449	117	-.18	.16	1.13	.9	1.13	.8	J .72	.61	62.4	64.7	S8
15	406	117	.81	.14	.99	.0	1.12	.8	K .67	.65	68.4	58.4	P5
5	460	117	-.47	.17	1.05	.4	1.01	.1	L .62	.60	77.8	66.1	S5
16	424	117	.42	.15	.75	-1.9	.94	-.3	M .62	.63	67.5	60.3	P6
21	456	117	-.36	.16	.90	-.6	.84	-.9	l .61	.60	80.3	65.6	B5
7	446	117	-.10	.16	.89	-.7	.85	-.9	k .64	.61	68.4	64.4	S7
13	418	117	.56	.15	.81	-1.4	.89	-.7	j .62	.64	65.0	59.8	P3
19	427	117	.36	.15	.79	-1.5	.78	-1.5	i .64	.63	77.8	60.9	B3
11	435	117	.17	.15	.77	-1.7	.72	-1.9	h .69	.62	70.9	62.7	P1
22	455	117	-.34	.16	.74	-1.8	.74	-1.7	g .65	.60	73.5	65.5	B6
4	466	117	-.64	.17	.73	-2.0	.69	-1.9	f .72	.59	74.4	66.3	S4
10	462	117	-.53	.17	.62	-3.0	.57	-3.0	e .72	.59	82.1	66.1	S10
3	458	117	-.42	.16	.62	-3.0	.61	-2.7	d .71	.60	79.5	65.9	S3
12	442	117	.00	.16	.60	-3.1	.59	-2.9	c .70	.62	73.5	63.7	P2
14	433	117	.22	.15	.56	-3.5	.55	-3.4	b .72	.62	67.5	61.8	P4
1	471	117	-.78	.17	.56	-3.5	.53	-3.1	a .74	.58	78.6	66.1	S1
MEAN	440.6	117.0	.00	.16	1.00	-.2	1.03	.0			69.0	63.2	
S.D.	22.3	.0	.53	.01	.36	2.4	.44	2.6			8.6	3.2	

Fig. 2. Misfit Order.

After re-assessment, 8 of the items are retained namely S1_Organization benefit, S9_The time be spent on something else, S10_Change matches with organization's priorities, P2_ Put all support behind this change effort, P4_Committed to this change, B1_Do not anticipate any problems adjusting to the work, B2_Don't think can do well some tasks and M1_Will lose some of the statuses. However, S3_Legitimate has been dropped by considering the suggestion from [28] which states that the item has more valence of the organization than it is a discrepancy. In addition, during the questionnaire content verification, the expert stated this item was ambiguous and confusing. Therefore, only 24 out of 25 items that are identified to measure factors for IRFC. Fig. 2 below shows the values of infit MNSQ, Infit ZSTD and PTMEA CORR for each item.

Base on the survey, 23 items have more than 50% positive response from respondents which the top 3 highest percentage are S6_Worthwhile in long run (82.92%), S5_Rational reasons (82.05%) and S1_Organization benefit (81.20%). Besides, only 2 items have less 50% but still, more than 47% positive response from respondents which is S9_The time be spent on something else (47.84%) and B2_Don't think can do well some tasks (49.58%). Therefore, all four factors are identified as contributed to public university staff's readiness for change in the pre-implementation phase of Campus ERP project.

VI. Conclusion

This study was designed to identified factors and items that measures IRFC among public university in pre-implementation phase for Campus ERP project in Malaysia. This analysis confirmed that appropriateness, management support, change-specific efficacy and personal valence are factors for IRFC in the pre-implementation phase for Campus ERP project. In addition, this study also found that only 24 out of 25 items fit to measure those four factors. In the future, further studies can be conducted on factors and items of staff readiness for changes in the implementation and post-implementation phase of the ERP Campus project. In addition, studies can also be conducted on students who are the largest stakeholder in the university as well as on other major systems in the university.

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References

[1] Raja Mohd Tariqi Raja Lope Ahmad, Zalinda Othman & Muriati Mukhtar. 2013. Integrating CSF and Change Management for Implementing Campus ERP System. *International Journal of Information Management & Change Management* 6(3): 189–204.

[2] Motwani, J., Subramanian, R. & Gopalakrishna, P. 2005. Critical Factors for Successful ERP Implementation : Exploratory Findings from Four Case Studies. *Computers in Industry* 56: 529–544.

[3] Al-Shamlan, H.M. & Al-Mudimigh, A.S. 2014. The Chang Management Strategies and Processes for Successful ERP Implementation : A Case Study of MADAR. *International Journal of Computer Science (IJCSI)* 8(March 2011): 399–407.

[4] Abdellatif, H.J. 2014. ERP in Higher Education : A Deeper Look on Developing Countries. *International Conference on Education Technologies and Computers (ICETC)*, hlm. 73–78.

[5] Kwahk, K. & Lee, J. 2008. Information & Management The Role of Readiness for Change in ERP Implementation : Theoretical Bases and Empirical Validation. *Information & Management* 45 474–481.

[6] Aladwani, A.M. 2001. Change Management Strategies for Successful ERP Implementation. *Business Process Management Journal* 7(3) 266–275.

[7] Dhafari, Z. Al & Li, M 2014. Exploring Factors Causing Disparity between Desired and Experienced Effects of Campus ERP Systems. Lund University.

[8] Ahmadi, S., Papageorgiou, E., Yeh, C. & Martin, R. 2015. Computers in Industry Managing readiness-Relevant Activities for the Organizational Dimension of ERP Implementation. *Computers in Industry* 68(April 2015): 89–104.

[9] Seo, G. 2013. Challenges in Implementing Enterprise Resource Planning (ERP) System in Large Organizations: Similarities and Differences Between Corporate and University Environment. *MIT SLOAN School of Management*.

[10] Pollock, N. & Cornford, J. 2004. ERP Systems and the University as a "Unique" Organisation. *Information Technology and People* 17(1) 31–52.

[11] Raja Mohd Tariqi Raja Lope Ahmad, Zalinda Othman & Muriati Mukhtar. 2011. Campus ERP Implementation Framework for Private Institution of Higher Learning Environment in Malaysia. *WSEAS Transactions on Advances in Engineering Education* 8(1) 1–12.

[12] Raja Mohd Tariqi Raja Lope Ahmad, Zalinda Othman, Muriati Mukhtar, Mohd Fahmi Mohamad Amran, Wan Azlan Wan Hassan Wan Harun, Azhar Hamid & Suziyanti Marjudi. 2016. Awareness, Perception & Barrier: An Empirical Study of Campus ERP Implementation. *Journal of Theoretical and Applied Information Technology* 91(2): 424–432.

[13] Ibrahim Komoo. 2017. Antara Universiti Awam dan Swasta. *Utusan Malaysia*, http://www.utusan.com.my/rencana/antara-universiti-awam-dan-swasta-1.432915.

[14] Rabaa'i, A.A., Bandara, W. & Gable, G.G. 2009. ERP Systems in the Higher Education Sector : A Descriptive Case Study. *20th Australian Conference on Information Systems*, hlm. 456–470. Melbourne.

[15] Mohamed Soliman & Noorliza Karia. 2015. Enterprise Resource Planning (ERP) System as an Innovative Technology in Higher Education Context in Egypt. *International Journal of Computing Academic Research (IJCAR)* 4(5) 265–269.

[16] Kalema, B.M.B., Olugbara, O.O. & Kekwaletswe, R.M. 2014. Identifying Critical Success Factors: the Case of ERP Systems in Higher Education. *The African Journal of Information Systems* 6(3): 68–70.

[17] Abugabah, A., Sansogni, L. & Alfarraj, O.A. 2013. The Phenomenon of Enterprise Systems in Higher Education : Insights From Users. *International Journal of Advanced Computer Science and Applications* 4(12): 79–85.

[18] Aljohani, A., Peng, A. & Nunes, M. 2015. Critical Factors Leading to ERP Replacement in Higher Education Institutions in Saudi Arabia A Case Study. *iConference 2015 Proceeding*.

[19] Herold, D.M., Farmer, S.M. & Mobley, M.I. 1995. Pre-Implementation Attitudes Toward the Introduction of Robots in a Unionized Environment. *Journal of Engineering and Technology Management (JET-M)* 12: 155–173.

[20] Abdinnour-Helm, S., Lengnick-Hall, M.L. & Lengnick-Hall, C.A. 2003. Pre-implementation Attitudes and Organizational Readiness for Implementing an Enterprise Resource Planning System. *European Journal of Operational Research* 146(2): 258–273.

[21] Javahernia, A. & Sunmola, F. 2017. A Simulation Approach to Innovation Deployment Readiness Assessment in Manufacturing. *Production & Manufacturing Research* 3277(August) 1–9.

[22] Al-Shamlan, H.M. & Al-Mudimigh, A.S. 2014. The Chang Management Strategies and Processes for Successful ERP Implementation : A Case Study of MADAR. *International Journal of Computer Science (IJCSI)* 8(March 2011): 399–407.

[23] Al-ghamdi, A.S.A. 2013. Change management Strategies and Processes for the Successful ERP System Implementation : A Proposed Model. *International Journal of Computer Science and Information Security* 11(2): 36–41.

[24] Sun, H., Ni, W. & Lam, R. 2015. A Step-by-Step Performance Assessment and Improvement Method for ERP Implementation: Action Case Studies in Chinese Companies. *Computers in Industry* 68: 40–52.

[25] Stewart, G 2000. Organisational Readiness for ERP Implementation. *AMCIS Proceedings*(January): 966–971.

[26] Calvert, C 2006. A Change-Management Model for the Implementation and Upgrade of ERP Systems. *ACIS 2006 Proceedings*.

[27] Abdel-ghany, M.M.M. 2014. Readiness for Change, Change Beliefs and Resistance to Change of Extension Personnel in the New Valley Governorate about Mobile Extension. *Annals of Agricultural Science* 59(2): 297–303.

[28] Holt, D.T, Armenakis, A.A., Feild, H.S. & Harris, S.G. 2007. Readiness for Organizational Change: The Systematic Development of a Scale. *The Journal of Applied Behavioral Science* 43(2): 232–255.

[29] Armenakis, A.A., Bernerth, J.B., Pitts, J.P & Walker, H.J 2007. Organizational Change Recipients' Beliefs Scale: Development of an Assessment Instrument. *The Journal of Applied Behavioral Science* 43(4): 481–505.

[30] Paré, G, Sicotte, C, Poba-nzaou, P. & Balouzakis, G. 2011. Clinicians Perceptions of Organizational Readiness for Change in the Context of Clinical Information System Projects : Insights from Two Cross-Sectional Surveys. *Implementation Science* 6(15) 1–14.

[31] Yaghoubi, N.M. & Hojatizade, M. 2015. The Effects of Employees Trust on Organizational Commitment in Order to Implementation ERP System. *International Journal of Review in Life Sciences* 5(5): 175–181.

[32] Weiner, B.J. 2009. A Theory of Organizational Readiness for Change. *Implementation Science* 4(67) 1–9.

[33] Shea, C.M., Jacobs, S.R., Esserman, D.A., Bruce, K. & Weiner, B.J. 2014. Organizational Readiness for Implementing Change a Psychometric Assessment of a New Measure. *Implementation Science* 9(7) 1–15.

[34] Haffar, M., Al-Karaghouli, W. & Ghoneim, A. 2014. An Empirical Investigation of the Influence of Organizational Culture on Individual Readiness for Change in Syrian Manufacturing Organizations. *Journal of Organizational Change Management* 27(1) 5–22.

[35] Vakola, M. 2014. What's in there for Me ? Individual Readiness to Change and The Perceived Impact of Organizational Change. *Leadership & Organization Development Journal* 35(3) 195–209.

[36] Skok, W., Hill, K. & Legge, M. 2001. Evaluating Enterprise Resource Planning (ERP) Systems using an Interpretive Approach. *ACM SIGCPR Conferenceon Computer Personel Research*, hlm. 189–197.

[37] Gliem, J.A. & Gliem, R.R. 2003. Calculating, Interpreting, And Reporting Cronbach's Alpha Reliability Coefficient For Likert-Type Scales. *2003 Midwest Research to Practice Conference in Adult, Continuing, and Community Education*, hlm. 82–88.

[38] Linacre, J.M. 2012. *Winsteps Help for Rasch Analysis*. t.tp t.pt.

[39] Huey Yiing, L. & Kamarul Zaman Bin Ahmad. 2009. The Moderating Effects of Organizational Culture on The Relationships Between Leadership Behaviour and Organizational Commitment and Between Organizational Commitment and Job Satisfaction and Performance. *Leadership & Organization Development Journal*, 30(1), 53–86.

[40] Ruhaya Atan & Faziyatun Mohamed Yahya. 2015. Accrual Accounting Change: Malaysian Public Sector Readiness. *Journal of Management Research*, 7(2), 459.

[41] Mahdavian, M., Wattanapongsakorn, N., Azadeh, M., Ayati, A., Mahdavian, M., Jabbari, M. & Bahadory, S. 2012. Identifying Main Resistance Factors in ERP Implementation : A Case Study. *Institute of Electrical and Electronics Engineers*.