Journal of Theoretical and Applied Information Technology
15th November 2020. Vol.98. No 21

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

MODEL FOR BUSINESS-IT ALIGNMENT: A CASE OF MALAYSIAN PUBLIC UNIVERSITIES

[1] ESMADI ABU ABU SEMAN, [1] TAMRIN AMBOALA, [1] IZA AZURA AHMAD BAHAR, [2] NOR AZIATI ABDUL HAMID, [3] MOHAMMAD SHARF AL-QDAH

[1] Faculty of Computing and Informatics, Universiti Malaysia Sabah-Labuan International Campus, 87000 Jalan Sungai Pagar, Labuan, Malaysia.
[2] Faculty of Technology Management and Business, Universiti Tun Hussein Onn Malaysia, 86400 Parit Raja, Batu Pahat, Malaysia
[3] Prince Abdullah Ben Ghazi Faculty of Information Technology, Al-Balqa' Applied University Al-Salt, Jordan
E-mail: [1] esmadi@ums.edu.my, [1] tamrin@ums.edu.my, [1] izabahar@ums.edu.my, [2] aziati@uthm.edu.my, [3] mohd_sharaf@bau.edu.jo

ABSTRACT

Business and Information Technology (IT) alignment is defined as applying IT in an appropriate and timely way, in harmony with business strategies, goals and needs. One important issue in business–IT alignment study is the absence of alignment. Findings indicate that there are many factors/variables that consistently enhance business-IT alignment. By identifying factors to achieve business-IT alignment, the problem on the absence of alignment could be addressed. Due to the complexity of business-IT alignment, there is possibility that successful alignment focuses on managing specific alignment dimension by investigating factors that encourage particular dimension. Literature on alignment discovered that there seems to be confusion in clarifying the business-IT alignment concept. Based on this gap, this research examined problem, issues on alignment, identified, analyzed, and discussed factors affecting alignment, then categorized the constructs identified into dimensions and proposed a model on factors influencing alignment in universities. The model developed is based on Resource Based View, Knowledge Based View, Uncertainty Reduction and Contingency theory and business-IT alignment models which were developed in prior studies in order to examine the influence of strategic, structural, social and cultural on business-IT alignment in public universities in Malaysia. 18 hypotheses have been developed framed on three research questions. The data for analysis was collected via a structured questionnaire survey that yielded 148 usable questionnaires from IT managers/executives and top administrators in 20 public universities who are involved in IT strategic planning. Data were analyzed using SPSS for descriptive and demographic analysis, while the model that was developed was validated using Structural Equation Modeling analysis (SEM). The result of the goodness of fit index satisfies the recommended value while 18 hypotheses were supported. The validation of results revealed that the entire model fit is appropriate and indicated the stability of the theory used in building the Business IT alignment model. The findings showed business-IT alignment is significantly affected by the four sets of factors: strategic, structural, social and cultural. Findings from this study provide insights to enable university's top administrators to develop more comprehensive action plans for achieving greater business-IT strategic alignment, and for translating alignment into enhanced IT effects on university's performance.

Keywords: *Alignment, Business-IT alignment, Strategic planning, Alignment model, IT strategy.*

1. INTRODUCTION

In today's competitive business environment, the effective and innovative use of Information and communication technology may have enormous implications for the operation, structure, and strategy of organizations. On the other hand, poorly managed IT investment and badly implemented IT projects can cause value erosion and competitive disadvantage [1][2]. A number of organizational and company level studies and analysis show how IT contribute substantially to company's productivity and this contribution is strong when IT strategy is aligned with business strategy [1]. Business and Information Technology (IT) alignment is defined as applying IT in an appropriate and timely way, in harmony with business strategies, goals and needs. This definition

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

is extended to cover the situation where business executive and IT executive comprehended and are committed towards achieving the mission, objective, and plan for both business and IT. Business-IT alignment (hereafter called alignment) has been identified to permit IT investment to enhance organizational performance. However, organizations seem to find it difficult or impossible to harness the power of IT for their own long-term benefit, even though there is worldwide evidence [3][4][5][6][7]. Among the reasons for failure to generate return from IT investment is the absence of business-IT alignment in organization. Findings indicate that there are many factors/variables that consistently enhance business-IT alignment. By identifying factors to achieve business-IT alignment, the problem on the absence of alignment could be addressed. Due to the complexity of business-IT alignment, there is possibility that successful alignment focuses on managing specific alignment dimension by investigating factors that encourage particular dimension. Based on review of the literature, there is little research-based alignment theory. Therefore, this study was undertaken to fill gaps in business-IT alignment research that have been identified as follows:

i. Lack of alignment measurements involving quantitative assessment that includes strategic, structure, social and cultural dimension.

ii. Alignment of the existing methodology are found to be suitable for certain types of firm. No consideration has been given to business-IT alignment perspective at universities.

Based on the gaps, this study examined the problems and issues regarding alignment; identify, analyze, and discuss the factors that affect alignment, then categorize constructs that have been identified in dimension and suggest model for alignment at public universities in Malaysia. Categorizing factors based on the dimensions of business-IT alignment is a major difference in this study than in all previous studies

The main goal of this study is to contribute to the theoretical model of antecedent factors in the strategic dimension, structural, social, and cultural components that affect business-IT alignment, specifically in public universities. To achieve the goal, this study has analyzed a number of models including the Strategic Alignment Model, Unified model and Integrated Architecture Model and the Strategic Planning for Information System Model in order to develop the Model for Business-IT alignment in Universities in Malaysia (BIAUM). The BIAUM Model is also developed based on the following theories: Knowledge Based View, Resource Based View, Uncertainty Theory, Contingency (Leadership) and Contingency (Structure) Theory to study the effect of strategic, structural, social, and culture on business-IT alignment of public universities in Malaysia.

2. RESEARCH OBJECTIVES & QUESTIONS

In response to the research goals, 3 research objectives and 3 research questions were outlined. The research objectives are as follows:

i. To identify the antecedent factors that influence the strategic, structural, social and cultural dimensions.
ii. To identify the dimensions that can predict business-IT alignment.
iii. To propose and validate Business-IT Alignment Model in universities based on RBV, KBV, CT and UR theories.

Hence, the study seeks to answer the following research questions:

i. What are the antecedent factors that determine the strategic, structural, social and cultural dimensions?
ii. Which dimensions predict business-IT alignment?
iii. Can a business-IT alignment in universities model based on RBV, KBV, CT leadership and CT structure and UR be proposed and validated?

3. REVIEW OF RELEVANT LITERATURE

This study reviewed previous studies related to the under-pinning theories on which the constructs in this study are based on; empirical studies on the dimensions and factors affecting the alignment and alignment at the university. In the study of business-IT alignment, several theories have been adapted to explain the antecedent factors that affect alignment. RBV, KBV and UR theories that have been studied are theoretical studies on how knowledge sharing can reveal IT-based opportunities and generate business-IT strategy; as well as interactions between business and IT managers/executives to reduce uncertainty through interpersonal communication. The Contingency theories explained the use of IT for competitive advantage and the behavior of leaders in ensuring

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

the task is done to achieve the goals of the organization.

Table 2 shows several empirical researches that examined how the impact of the alignment factors helps to explain why earlier studies on business-IT alignment have reported different findings, some even contradictory. Most of the business-IT alignment factors indicated by Luftman [8] referred to the necessary management resources that enhance IT values in organization. These management resources include top management support towards IT initiative [6] and IT leadership in business. Alignment improved when top management encouraged business involvement in IT planning and the opposite happened if discouraged [9-10]. Business-IT alignment is also influenced by factors outside the organization's control. In the academic environment, indicators towards environmental instability, such as changes in courses' demand, competitors' innovation and government policy have strong influence on alignment [11]. Since IT enables organizations to acquire, process and store information in an uncertain environment, management will depend more on IT, hence increasing investment in IT. As a result, management will pay more attention on aligning IT and business strategies [11].

Although analysis of alignments' studies especially in certain industries has helped to provide better understanding on factors affecting business-IT alignment, many previous studies have ignored the strategic orientation, thus failing to get a clear findings regarding the effects of various factors on business-IT alignment in organizations that carry out different business strategies. The literature review related to quantitative and qualitative research that explored the process that acts as a backdrop for alignment are found to be very limited. Therefore, this study aims to fill gaps in the alignment logical extension of research by engaging in quantitative and qualitative research with the relationship between the characteristics of the strategic planning process for sharing knowledge and business-IT alignment. The relationship between process and some strategic, structural, social, and other cultural factors have been found to have strong relationships with alignment and require further study.

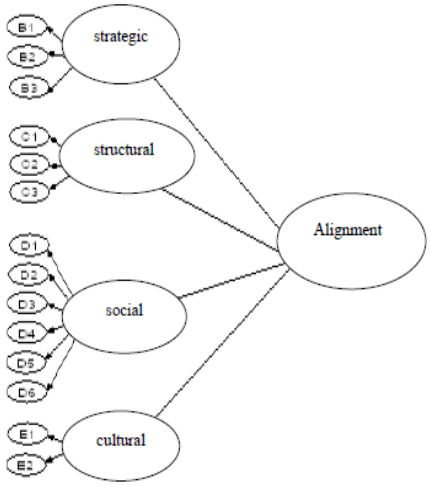
Past studies suggest that researchers on business-IT alignment should direct their efforts towards investigating the following factors: understanding the domain knowledge that is shared between business executives and IT executives because these factors have a strong influence on the alignment of business and IT executives; "Trust" and "commitment" in the context of the alignment of business and IT executives; IT knowledge creation; and relationship between CEO and CIO in an organization where the relationship exists in the context of cultural alignment. In addition, a review of the literature shows significant attention is given to the strategic and structural alignment compared to the social and cultural direction.

Research on business-IT alignment in higher education institutions also studied the relationship between factors that influence the alignment and found that survey research were conducted across the continent, in South Africa, the US, Canada, and only one in Malaysia. Therefore, this study aims to fill many gaps discussed above and improve models and other measurement techniques on alignment by analyzing their strengths and weaknesses.

4. RESEARCH MODEL

The research model shown in figure 1 is based on the theoretical lens as clarified in the literature review. The constructs and variables in the research model are as follows:

Figure 1: Research Model for Business-IT Alignment in Universities



- Strategic dimension is defined as a situation where formal planning involves business strategy and IT strategy that complement each other. Factors identified to have potential to influence strategic dimension alignment are sharing of domain knowledge

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

(B1), IT involvement in Strategic Planning (B2) and university strategy planning process (B3). In this research, as advocated by Chan, Saberwal and Thatcher [18], we are extending the research alignment stream by engaging our quantitative study that links features of strategic planning processes to shared knowledge and IS alignment because of the strong relationships among these processes and factors.

- Structural dimension is defined as a situation where business and IT infrastructure are integrated. Factors identified to have potential to influence structure dimension alignment are IT governance (C1), IT measurement process (C2) and IT support (C3).
- Social dimension is defined as a situation where business executives and IT executives understand each other as well as committed to achieve business and IT's aims, objectives, and plans. Factors identified to have potential to influence social dimension alignment are uncertainty of environment (D1), IT achievement record (D2), business-IT executive communication (D3), IT executive knowledge on the business environment (D4), commitment (D5) and university top administration and CIO mutual understanding (D6).
- Cultural dimension is defined as a situation where cultural integration exists between business and IT. Factors identified to have potential to influence cultural dimension alignment are top level management support (E1) and leadership (E2).

Factors in each of the alignment dimension above are independent variables whereas business-IT alignment is the dependent variable in this study.

5. RESEARCH HYPOTHESIS

Based on the review model as shown in Figure 1, there are four dimensions which were tested to see the significant impact on business-IT alignment at public universities in Malaysia, namely: strategic, structural, social, and cultural dimensions. The following are the research hypothesis:

H1: Strategic dimension factors contribute positively and significantly to business-IT alignment.

H2: Structural dimension factors contribute positively and significantly to business-IT alignment.

H3: Social dimension factors contribute positively and significantly to business-IT alignment.

H4: Cultural dimension contribute positively and significantly to business-IT alignment.

6. DATA COLLECTION AND ANALYSIS

The data for analysis were collected via a structured questionnaire survey that yielded 148 usable questionnaires from IT managers/executives and top administrators in 20 public universities who are involved in IT strategic planning. Data were analyzed using SPSS for descriptive and demographic analysis, while the model that was developed was validated using Structural Equation Modeling (SEM) analysis.

7. DEMOGRAPHIC PROFILE OF THE SAMPLE

Demographic profile of respondents in order to know the distribution of demographic data include universities, departments, positions held, academic qualification, years of service and involvement in strategic planning. Based on Table 3, majority of the respondents (79.1%) are executives at the Center for Strategic Planning and Information Technology Centre while the second highest number of respondents are deputy directors (10.8%) and 6.8% directors of Strategic Planning and the directors of the University Center for Information Technology. In terms of academic qualifications, most of the sampel acquired Bachelor degree (45.3%). Most of the respondents have served their university for at least 10-20 years (56%). All respondents are involved in IT strategic planning of the university. Thus, the findings indicate that the respondents were experienced, matured, educated, and are involved in IT strategic planning and had sufficient years of service which formed an appropriate foundation for subject of analysis.

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

Table 3: Demographic Profile of Respondents

Demographic variable	Frequency	Percentage
Department		
Administrators	71	48.0
IT Managers	77	52.0
Position		
Director	10	6.8
Deputy Director	16	10.8
Executive	117	79.1
Qualification		
PhD	38	25.7
Masters	40	27.0
Bachelor degree	67	45.3
Diploma	3	2.0
Service		
< 10 years	14	9.5
10-20 years	83	56.0
21-30 years	33	23.0
>30	17	11.5
Involvement in IT Strategic Planning	148	100

8. RELIABILITY OF THE CONSTRUCTS IN THE RESEARCH MODEL

The result of the reliability analysis is as shown in Table 4. The result for the entire construct was found to be at alpha Cronbach greater than 0.8 and the values is acceptable as suggested by Kubiszyn and Borich [20] who specified the value of α = = 0.80-0.90 as the best and reliable while the research scholars in the field of Social Sciences set the value of α = 0.6. Hence, the result indicates that the constructs used in the study is reliable. Almost all of the factors that have been extracted has Alpha value of more than 0.825 and there are nine factors that have a high value of Cronbach's alpha, which is more than 0.9.

9. DEVELOPMENT AND VALIDATION OF THE MODEL FOR BUSINESS-IT ALIGNMENT IN UNIVERSITIES

Figure 2 provides the full model that was tested. The measures of the overall goodness-of-fit for the entire model are illustrated in Table 5. According to Hair et al., if three or four indexes are acceptable, it is sufficient to demonstrate the suitability of the model. The analysis showed that three indices are accepted.

The model-fit statistics indicate an acceptable model fit. The chi-square value was 2064.573 with a significant p-value < 0.001. Although the chi-square test, as a measure of exact fit, shows a significant result, measures of exact fit

Table 4: Result of the Reliability Analysis

Dimension	Construct	Item	Alpha Cronbach
Strategic	Shared domain knowledge	6	0.847
	IT involvement in university's strategic planning	3	0.904
	University's strategic planning proses	7	0.826
Total		**16**	**0.910**
Structural	IT governance	13	0.833
	IT measurement process	4	0.918
	IT support	5	0.941
Total		**22**	**0.920**
Social	Environmental uncertainty	3	0.851
	IT achievement/tract record	5	0.911
	Communicationi	4	0.898
	IT executive knowledge on business environment	5	0.919
	Commitment	4	0.884
	Understanding between university's top administrators with CIO	6	0.865
Total		**27**	**0.927**
Cultural	Top management support	15	0.914
	Leadership	6	0.920
Total		**21**	**0.941**
	Alignment	15	0.954
Overall reliability		111	0.980

Table 5 : Measures of Model Fitness

Fit Measure	Recommended Value	Fitness measure
x^2		2064.573
x^2/df	<3.0(Medsker et al. 1994, Loo 1999)	1 .792
GFI	≥0.80 (Doll et al. 1994)	0.661
CFI	≥0.90 (Hu & Bentler 1995)	0.857
RMSEA	<0.10 (Hair et al. 2010)	0.073

alone are considered to be too strict in the Structural Equation Modeling literature. The chi-square/df ratio is 1.792 (recommended < 2.5), and the Comparative Fit Index (CFI) is 0.857, which is close to 0.90 is acceptable. The Root Mean Square Error of Approximation (RMSEA) is 0.073 (recommended < 0.08), and a value of .08 or less is indicative of a reasonable error of approximation. The RMSEA values are classified into four categories: close fit (.00–.05), fair fit (.05–.08), mediocre fit (.08–.10), and poor fit (over .10).

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

Table 6 : The Structural Model

Endogenous Construct: Alignment, F			$R^2 = 0.886$	
Exogenous	Reg.Coeff.,B (Std.Error)	β	t-	*p*-value
Strategic, B	0.490 (0.111)	0.443	4.417	< 0.001
Structure, C	0.142 (0.052)	0.138	2.752	0.006
Social, D	1.000	0.238		< 0.001
Culture, E	0.376 (0.107)	0.323	3.512	< 0.001

10. FINDINGS

Based on the Structural Model as shown in Table 6, the final model for business-IT alignment in universities gave R2 of 0.886. The exogenous latent constructs of Strategic, Structural, Social and Cultural were able to explain a high 88.6% of the variations in the endogenous construct Business-IT alignment. Each of the predictor was also found to be significant in influencing alignment (all *p*-values < 0.05). Strategic Dimension is the highest contributing factor towards alignment, with standardized regression weight of $\beta_{Strategic} = 0.443$, followed by Culture ($\beta_{Culture} = 0.323$), Social ($\beta_{Social} = 0.238$) and Structure ($\beta_{Structure} = 0.138$). The relationship model, relating to all dimensions to Business-IT Alignment can be written as:

Alignment = 0.490(Strategic) + 0.142 (Structure) + 1.00(Social) + 0.376(Culture) + ε

Table 7 shows the correlation amongst dimensions. The latent constructs; Strategic, Social and Culture were significantly correlated with each other, with correlation coefficients, r ranged from 0.714 to 0.866 (all p-values < 0.05). The relationships amongst the predictor constructs were positive and strong (since all r > 0.70). This indicated that an increase in any of the predictor would also result in an increase in the other predictors.

Table 7: Correlation of constructs

	Correlation Amongst Dimensions		
Dimension	Strategic B	Social D	Culture E
Strategic B	1.000		
Social D	0.886**	1.000	
Culture E	0.714**	0.798**	1.000

** Significant at 0.001 level

In order to answer the first research question, hypothesis H1, H2, H3, and H4 and all the sub hypothesis were tested. The result of the research hypothesis is based on Table 6 (Structural Model) and Table 8 (Measurement Model).

The test result for the first hypothesis shows that shared domain knowledge, IT involvement in strategic planning and university strategic planning process are significant indicators to strategic dimension related to business-IT alignment. University Strategic Planning Process (B3) appeared to be the most important indicator (highest $\beta_{B3} = 0.824$) to strategic dimension. These findings are consistent with the findings of Henderson and Venkatraman [21] and Lederer [9] which states that strategic planning facilitates knowledge sharing by providing the platform such as forum for business executives to learn IT and IT executives to learn the business that will contribute to business-IT alignment. The findings of this study indicate that the involvement of university administrators and IT executives in the strategic planning process and in the governance of IT, supports in generating the business strategy and achieve the goal of IT strategy.

The test result for the second hypothesis shows all factors; IT governance, IT measurement process and IT support factors are significant indicators to structural dimension related to business-IT alignment. IT support factor (C3) is found to be the most important indicators (highest $\beta_{C3} = 0.869$) to structural dimension. The findings showed that universities give support to IT by providing IT infrastructure that is cooperative to achieve common goals and flexible to handle changes in the university's goals. The results showed that the respondents' universities have IT department that is capable, skilled, and knowledgeable about IT resources to provide IT services efficiently and to increase the performance of universities. A high level of IT governance factors showed most respondents agreed that universities have IT governance processes that are effective and understandable. These findings support the findings of Albrecht et al. [1], which found that only a minority of respondents agreed that their universities' governance process is efficient. Albrecht et al. argued that the respondents that found the governance of their institutions satisfactory, have the perception that the alignment is higher in those institutions.

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

Results of this study support the third hypothesis: H3a, H3b, H3C, H3D and H3E. All the factors; environmental uncertainty, IT achievement/track record, communication, IT executives' knowledge, commitment, university top administrator and CIO mutual understanding are significant indicators to social dimension related to business-IT alignment. Commitment factors (D5) appeared to be the most important indicator (β_{D5} = 0.866) to social dimension. The results showed that majority of the universities are committed in giving their support to IT projects by appointing senior members of the management to engage in major IT projects. IT managers and university administrators ensure that every university project that is given high priority has an element of business strategy and IT strategy clearly stated. In relation to uncertainties relating to the environment, this study shows there is change and instability in the business environment such as changes in government's policy and agenda and in offering of courses and academic programs and innovations by other universities that increases the demand for university to process information. Universities respond to uncertainty by using IT to improve the information processing capacity. These findings were in line with Chan, Sabherwal & Thatcher [18] who studied the environmental uncertainty factor to the alignment of cross-industry and business organizations who found that environmental uncertainty has a significant impact to business-IT alignment in academic institutions but not among business enterprises. The results of this study demonstrate an excellent track record of past IT has a positive relationship with alignment. The results showed respondents agreed that the implementation of IT has increased the efficiency of internal operations, impact on the efficiency and effectiveness of decision-making and help to market the courses and programs. These findings support the studies by Reich and Benbasat [13] and Chan, Sabherwal and Thatcher [18] which found, track record that meets the needs of businesses facilitate alignment.

The test result of the fourth hypothesis shows both top level management support and leadership are significant indicators to cultural dimension related to business-IT alignment. Top level management support (E1) is found to be the most important indicator (β_{E1} = 0.987) to cultural dimension. This finding is consistent with research findings of Weiss and Anderson [22] that stated alignment strategy needs to be explained and supported in advance by senior management, before being implemented at a lower level such as business units, functional areas, and team or project. The commitment involves and requires the support of management at the highest level. IT leaders' participation in university's planning with senior university administrators in IT planning must be part of this process. This study shows, IT administrators have the support of senior university administrators where the IT manager is a member of the Senate, representing the interests of IT at the university level and involved in the planning process of the university's strategic plan. Meetings are regularly held among IT managers with university administrators who are also academics.

Table 8: Measurement Model

Item	Construct	Loading	*p*-value
B: Strategic Dimension			
B1	Shared Domain Knowledge	.770	< 0.001
B2	IT Involvement in Strategic Planning	.778	< 0.001
B3	University Strategic Planning Process	.824	< 0.001
C: Structural Dimension			
C1	IT governance	.846	< 0.001
C2	IT measurement process	.703	< 0.001
C3	IT support	.869	< 0.001
D: Social Dimension			
D1	Environmental uncertainty	0.490	< 0.001
D2	IT achievement/track record	0.752	< 0.001
D3	Communication	0.648	< 0.001
D4	IT executive's knowledge	0.859	< 0.001
D5	Commitment, University top administrator	0.866	< 0.001
D6	CIO mutual understanding	0.460	< 0.001
E: Culture Dimension			
E1	Top level management/senior executives support and	0.987	< 0.001
E2	Leadership	0.789	< 0.001

9. CONCLUSIONS

The main motivation of this study is to propose a model on factors affecting business-IT in universities. The factors identified were drawn from RBV, KBV, Contingency and UR theories in addressing the problem of the absence of alignment in organizations. Based on the review of literature, difficulty in aligning business-IT in organizations is because of the dynamic nature of both business and

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

IT strategies available that continues to grow and the interdependence between the various IT and business operations. Changes in IT technology require adjustments in business operations and vice versa. In other words, to achieve and maintain business-IT alignment is a process of co-evolution, which require large and coordinated effort from both business and IT professionals that constantly need to adapt to change. The study used data on 20 public universities to examine the antecedents and its bearing on business-IT alignment. The results of this study have made two important contributions. First, it has developed and empirically tested a comprehensive model of PBIUAM including some of the factors considered in the strategic dimension, structure, social and cultural that influence alignment.

The findings in this research illuminate not only the strong influence of process variables: strategic planning, the development of knowledge-sharing and its impact, but pinpoint the effect of top university administrators (the cultural dimension) and commitment (social dimension) in alignment. The study found factors of organizational culture (university's top management support) and social (university's administrators and IT managers' commitment) have a high influence on the business -IT alignment. This reflects the importance of this research in the field of management in general, and in the field of strategic management and IT management. PBIUAM model which is proposed and validated in this study contributes to strengthening research in the field of business-IT alignment with the integrative approach that includes business-IT antecedent factors in four dimensions which have an impact on the level of business-IT alignment at the university. The findings of this study will improve the relationship between business managers and IT managers, and thus help to realize the potential of the organization / IT division at the university to leverage IT to create public universities in Malaysia which are more competitive. The PBIUAM Model that has been validated provides empirical evidence that confirms the importance of various factors in achieving better business-IT alignment. The PBIUAM model can also act as a compass for driving IT investment of Malaysian public universities in line with the National Key Economic Areas (NKEA) to make Malaysia a regional hub for higher education hub.

ACKNOWLEDGEMENTS

The authors would like to acknowledge the Ministry of Higher Education (MOHE), Malaysia for the financial support of this research. This research is supported by MOHE under the Fundamental Research Grant Scheme (FRGS), with project code: FRGS/2/2013/SS05/UKM/01/1.

REFRENCES:

[1] Coso Enterprise Risk management Integrated framework. September 2004, www.coso.org7publications.htm accessed August 2013.

[2] TTGI and Price Waterhouse Cooper. *IT Governance Global Status Report*, IT Governance Institute, Rolling Meadows Illinois, SAD.

[3] J. Luftman & T. Brier, Achieving and Sustaining Business-It Alignment. *California management review* Vol. 42 No.1, 1999, pp. 109-122.

[4] M. J. Earl, "Experiences in Strategic Information Systems Planning," *MIS Quarterly*, Vol. 17, 1993, pp. 1-24.

[5] M. Johnson & A. L. Lederer, "Ceo/Cio Mutual Understanding, Strategic Alignment, and the Contribution of Is to the Organization", *Information & Management* Vol. 47, No.3, 2010 pp.138-149.

[6] R. Hussein, N. S. Abdul Karim, M. H. Selamat, A. Mamat. "The Relationship between Organisational Factors and Information Systems Success in the Malaysian Electronic-Government Agencies", *Jurnal Teknologi Maklumat & Multimedia* Vol.**4,** 2007, pp.73-92.

[7] Y.E. Chan & B.H. Reich, "IT Alignment: What have we learned?" *Journal of Information Technology*, Vol. 22, No. 4, 2007, pp. 297 – 315.

[8] L. L. Martins and A. Kambil, "Looking Back and Thinking Ahead: Effects of Prior Success on Managers' Interpretations of New Information Technologies," *The Academy of Management Journal*, Vol. 42, 1999,pp. 652-661.

[9] L. Lederer and A. L. Mendelow, "Coordination of information systems plans with business plans," J. Manage. Inf. Syst., Vol. 6, 1989, pp. 5-19.

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

[10] M. Broadbent, P. Weill, & B.S. Neo. "Strategic Context and Patterns of It Infrastructure Capability", *The Journal of Strategic Information Systems* Vol.8, No.2, 1999, pp.157-187.

[11] G. S. Kearns and A. L. Lederer, "A Resource-Based View of Strategic IT Alignment: How Knowledge Sharing Creates Competitive Advantage," *Decision Sciences*, Vol. 34, 2003, pp. 1-29.

[12] S. Frank, "Reconsidering the Dimensions of Business-IT Alignment," 2012, pp. 5053-5061.

[13] H. Reich and I. Benbasat, "Factors that influence the social dimension of alignment between business and information technology objectives," *MIS Q*., Vol. 24, 2000, pp. 81-113.

[14] R. Papp and J. Luftman. "Business and IT Strategic Alignment: New Perspectives and Assessments*", Proceedings of the Association for Information Systems, Inaugural Americas Conference on Information Systems*, 1995.

[15] P. Cragg, et al., "IT alignment and firm performance in small manufacturing firms," *The Journal of Strategic Information Systems*, Vol. 11, 2002, pp. 109-132.

[16] Motjolopane and I. Brown, "Strategic business-IT alignment, and factors of influence: a case study in a public tertiary education institution*," Proceedings of the 2004 annual research conference of the South African institute of computer scientists and information technologists on IT research in developing countries*, Stellenbosch, Western Cape, South Africa, 2004.

[17] B. Albrecht, R.N. Bender, J.A. Katz, G. Pirani, T.D. Salaway, J. Sitko, J. Voloudakis, "Information Technology Alignment in Higher Education", EDUCAUSE Center for Applied Research, 2004.

[18] Y.E.Chan , S.L. Huff, D.W. Barclay, D.G. Copeland, "Business Strategic Orientation, Information Systems Strategic Orientation, and Strategic Alignment", *Information Systems Research*, Vol. 8, No. 2, 1997, pp. 125 – 150.

[19] Hisham M. B and M.N. Daud, "The Effect of Strategic Alignment on Strategic Information System Planning (SISP) Success: An Exploratory Study in Public Universities in Malaysia", *International Journal of Scientific Research in Education*, Vol. 2, No. 2, 2009, pp. 76 – 87.

[20] T. Kubiszyn & G.D. Borich. Educational Testing and Measurement: classroom application and practice. New York: John Wiley & Sons, 2000.

[21] J. C. Henderson and H. Venkatraman, "Strategic alignment: Leveraging information technology for transforming organizations," *IBM Systems Journal*, Vol. 38, 1999, pp. 472-484.

[22] J.W. Weiss & Don Anderson, "Aligning Technology and Business Strategy: Issues and Frameworks,a field study of 15 companies," Proceedings of the 37th Hawaii International Conference on Systems Sciences, 2004.

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

Table 2: Past Research on Factors Influencing Business-IT Alignment

Dimension/Factor	Sabherwal & Chan [12]	Reich &Benbasat [13]	Papp & Luftman [14]	Cragg et al. [15]	Motjolopane & Brown [16]	Albrecht et al. [17]	Chan, Sabherwal & Thatcher [18]	Hisham & Mohd Daud [19]
Strategic								
Shared domain knowledge		√					√	
IT involvement in strategic planning			√					
Shared business and IT			√					√
Rational adaptation in SISP					√			
Effective planning						√		
Strategic planning process							√	
Skill in alignment								√
Structure								
Organizational integration	√							
IT sophistication				√				
External IT expertise				√				
IT implementation process					√			
Governance						√		√
IT measurement process						√		
Organizational size							√	
Competency measurement								√
Scope and architecture								√
Social								
Environmental turbulence	√				√		√	
IT track record/success		√					√	
Communication between business and IT executives		√						
Dimension/Factor	**Sabherwal & Chan [12]**	**Reich &Benbasat [13]**	**Papp & Luftman [14]**	**Cragg et al. [15]**	**Motjolopane & Brown [16]**	**Albrecht et al. [17]**	**Chan, Sabherwal & Thatcher [18]**	**Hisham & Mohd Daud [19]**
IT executive understanding on business			√					
Institutional environment						√		
Communication						√		√
Culture								
IT management sophistication	√							
Top management support on IT			√					
IT management resource					√			
Leadership involvement						√		

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

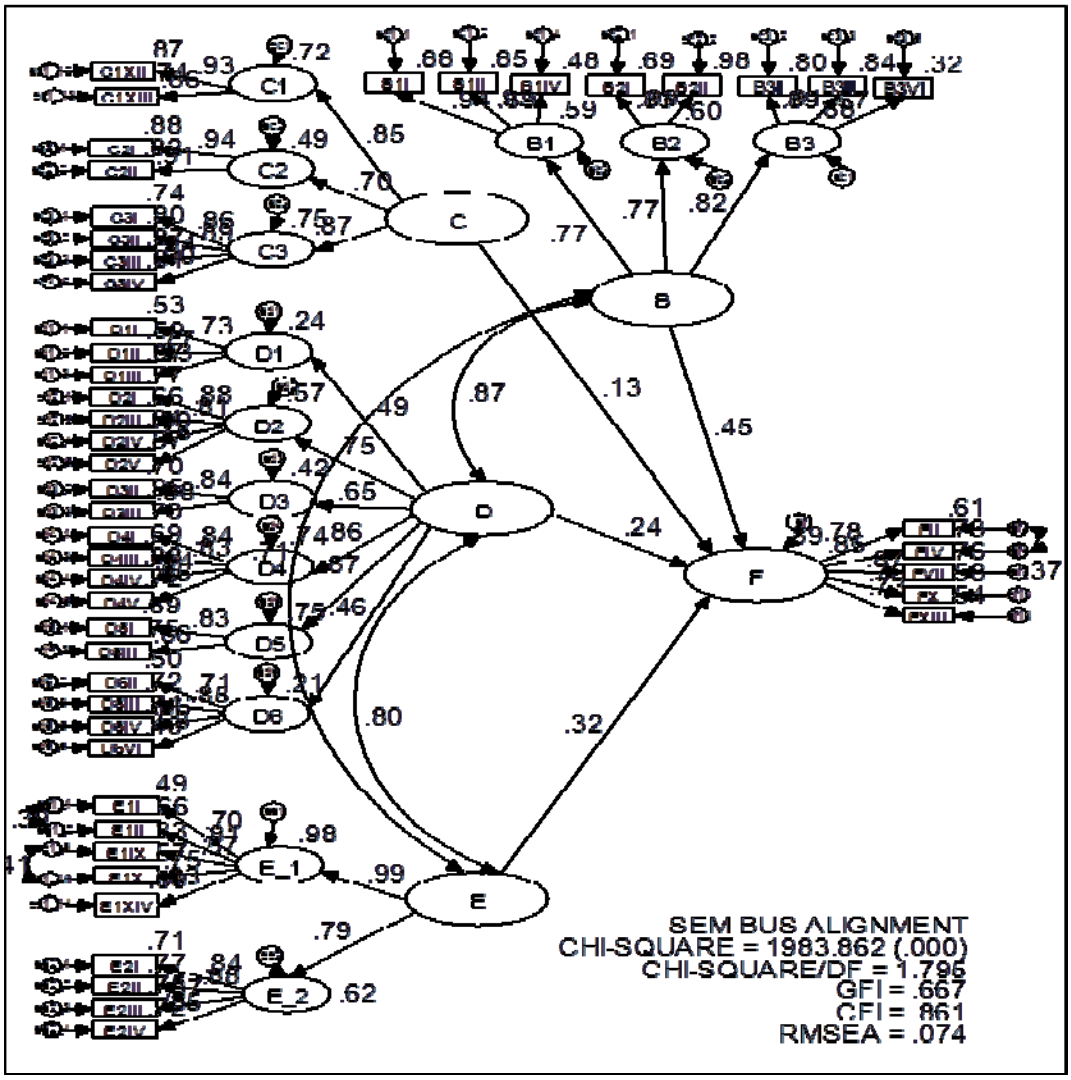


Figure 2: Full Model for Business-IT alignment in public universities in Malaysia