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The role and relevance of IT governance and IT capability in Business - IT alignment in medium and large companies

Mohammad Ali Jabbari Sabegh
Graduate School of Management, Multimedia University, Cyberjaya, Malaysia
E-mail: *jabbari.mohammad@gmail.com*

Soheil Mojtabaei Motlagh (Corresponding author**)**
Graduate School of Management, Multimedia University, Cyberjaya, Malaysia
E-mail: *soheil.mojtabayi62@gmail.com*

ABSTRACT

The key role of information technologies application in companies' business strategy toolset is undeniable in current market. However, in order to improve organizational efficiency and also to achieve competitive advantage, information technologies should be in line with organization's business strategies. The purpose of this study is to identify the impact of IT governance and IT capabilities on strategic alignment between business and IT, and also the extent of their influence. Quantitative method was used for this study and data were collected through survey questionnaires answered by business and IT managers and executives. Examined constructs are IT resource management, Performance measurement, knowledge sharing, IT architecture, and IT infrastructure. According to the findings of this study, all five factors influence the alignment of business and IT positively, and among them, performance measurement has the highest impact.

Keywords – *business-IT alignment, IT governance, IT capability, Knowledge sharing.*

1. INTRODUCTION

Nowadays, businesses have realized the significance of information technologies (IT) utilization in their business strategy toolset (Wong et al., 2012). There have been radical changes in IT and its application in business activities in the last few decades (Haes & Grembergen, 2009). Most of the industrial, governmental, and commercial organizations relied essentially on their IT system. IT has become intertwined with business in an inextricable manner and it is used in organizations intensively that can result in long-term competitive advantages for them (Jorfi, Nor, & Najjar, 2011).

Utilization of IT in business activities plays a key role in success of organizations. However, in order to achieve this success through information technologies, they have to be in line and matched with business strategies of the firm (Galliers, 1993). The strategic alignment between business goals and IT can improve organizational efficiency (Chan and Huff, 1993), increase return on investment (Feidker, Gorver, & Teg, 1995), enable companies to enhance management of their business needs, and provide the firm with a stable situation (Labovitz and Rosansky, 1997).

Although there are numerous benefits in strategic alignment between business and IT, there are many challenges during the process of sustaining the alignment. Unstable business environment and changes in firm's business strategies are of those challenges in this regard (Luftman, Papp, & Brier, 1999). Price wars, new products launched by rivals, and decrease in demand are examples of events which can affect business strategies (Mendelson & Pillai, 1998). In today's business environment, in order to maintain strategic alignment, it is highly important to have flexible IT systems with the ability of meeting business changes.

With emergence of the new breakthrough technologies in the domains of IT and IS, newer opportunities are emerging throughout the strategic technology implementation and making advantages accessible to businesses and organizations (Galliers & Leidner, 2003). IS and IT strategic employment has become important for businesses because it enables companies to change the fundamental nature of industries. Their effective and efficient utilization makes it necessary to align the IT and IS strategies with business strategies and stable continuous execution to enhance competitiveness and productivity (Jorfi, Nor, & Najjar, 2011). This can be

resulted in by improving the processes of core business and exploiting opportunities provided by redesigning business procedures (Luftman, 2000). Strategic alignment is not considered as a new concept; however, it is still helpful in building alignment between technology and business strategies (Ward & Peppard, 2002). It is critical for companies to implement strategic alignment in order to achieve sustainable competitive advantage. Strategic alignment is a proper concept that reflects the successful and strategic use of IT well. There are several definitions for the the concept of strategic alignment. Strategic alignment is defined by Reich and Benbasat (2000) as "the degree to which the IT mission, objectives and plans support and are supported by the business mission, objectives and plans".

2. THEORETICAL BACKGROUND AND HYPOTHESIS DEVELOPMENT

The purpose of companies from setting up IT governance practices is to make sure that the organization's information systems fulfill its needs (Haes & Grembergen, 2009). This idea is highly relevant to the resource-based view of the firm (Peppard & Ward, 2004), and was also used in a similar study about alignment and IT governance by Cumps et al. (2006). Framework of the study distinguishes between competences, resources, and capabilities. Resources are factors such as technology, information, skills, systems, and knowledge which are under control or ownership of the company; they themselves cannot create value for business and need organizational competences. Competency refers to the extent to which a company can deploy its resources using procedures, structures, and practices to influence a desired end. Finally, capabilities refer to the strategic use of competences to achieve organizational goals (Peppard & Ward, 2004).

IT resource management and performance measurement are two aspects of IT governance. The focus of IT resource management is on main issues associated with knowledge and infrastructure optimization. It entails "the optimal investment in, and the proper management of, critical IT resources (such as people, processes, applications, infrastructure and information) to meet the organizational strategic objectives" (Jorfi, Nor, & Najjar, 2011; Beulen et al., 2006; ITGI, 2005b; ITGI, 2003). Performance measurement uses methods such as maturity models and balanced scorecards to control strategy implementation, resource usage, service delivery, project completion and process performance (ITGI, 2005D; Haes & Grembergen, 2004).

Regarding to above mentioned factors, IT resource management and performance measurement are supposed to have a positive effect on IT strategic alignment. Thus, we contend:
H1: There is a positive relationship between IT resource management and business-IT alignment.
H2: There is a positive relationship between performance measurement and business-IT alignment.

According to the knowledge-based theory, it is critical for organizations to coordinate their knowledge within the firm in order to achieve competitive advantage. Knowledge sharing is considered as a central part of knowledge-based theory because it argues that the main reason for a firm's existence is its ability of transferring and integrating knowledge streams and also applying the existing knowledge to activities (Grant, 1996).

The aim of knowledge sharing in the context of strategic alignment is to capture business managers' IT knowledge and IT managers' business knowledge (Ranganathan & Sethi, 2002). Ineffective knowledge sharing increases the asymmetry of information and consequently, inaccuracy in message interpretations which may result in intergroup conflict (Nelson & Cooprider, 1996). Business knowledge of CIO improves his/her informal and formal interactions with top-level management and helps to increase the integration of IT in companies (Yayla & Hu, 2009). It has been argued that possessing IT knowledge by top management creates the opportunity for business and IT managers to take part in planning process of each other (Kearns & Sabherwal, 2007).

With regard to the facts mentioned above, it can be said that knowledge sharing is one of the important elements of strategic alignment (Tan & Gallupe, 2006). Therefore, we contend:
H3: There is a positive relationship between knowledge sharing and business-IT alignment.

Information technology capabilities are defined as the ability of organizations to allocate organizational

resources incorporate with IT resources to improve the organizational operations and work processes (Lee et al., 1999; Bharadwaj, 2007). Based on previous studies by Bharadwaj et al. (1999), Byrd & Turner (2000), and Bharadwaj (2000), information technology resources include intangible assets, human resources, infrastructure, and architecture of information technology. IT capabilities refer to the capability of information technology to implement integrated resources.

Information technology architecture can be defined as the design of system with the linkage of different applications, softwares, and subsystems (Kruchten et al., 2006; Fintel et al., 1998); it is also defined as a developed outline that organizations implement to synchronize IT resources with other resources in order to reach organizations' missions (DoC, 2008). Information technology architecture contributes to technology, information flows, business operations and processes, modules, and software as the key components which can be used to formulate improvement with regard to the organization's visions, intensify connections between all components, and increase operational efficiency (Ross, 2005). IT architecture is a process which provides guidance to interact with all key components involving in organizational activities. It is a collection of regulations, practices, and standards which improve decision making processes through a set of orderly methods.

According to the resource-based view, resources of organizations are important for their competitive advantages. Information technology resources are similar for most of organizations; thus, organizations that are able to implement integrated resources could sustain a competitive advantage. Optimal implementation of resources supports organizations and makes them agile, flexible, adaptable, and improves the quality of production (Zachman, 1987; Sauer & Willcocks, 2002). The efficient IT architecture can provide a sufficient guidance to optimal implementation of resources. A proper IT architecture supports all the processes and contents, and provides significant advantaged for organization. IT architecture improves decision making processes, upgrades operational activities, and improves business innovation capabilities of the organizations (Sowa & Zachman, 1992).

A capable IT architecture is crucial for organization to be able to react against upcoming business pressures. Highly competitive market, various resources and technological innovations compel the organizations to implement well-formulated information technology architecture in order to identify business opportunities and respond to threats (Sauer & Willcocks, 2002). Furthermore, organizations need to improve their capability in order to be able to respond quickly to business challenges based on their limited resources. In other words, companies should be agile and flexible enough, and formulate adaptable structure to achieve a sustainable competitive advantage. A well-developed IT architecture provides organizations with an agile decision making process and quick information processing system.

Information technology infrastructures are all resources that are used to improve operations, processes, and create various capabilities within the organization (Byrd & Turner, 2000). These resources include all technology components, applications, softwares, and all physical components (Chung et al., 2003). A company implements all these resources, capabilities, obligations, and skills to improve its capabilities and create multiple facilities. In other words, IT infrastructures are all the information technology capabilities that business needs them to improve its efficiency (McKay & Brockway, 1989).

Organizations have to change their business processes and infrastructure to meet their business needs. They need to improve their information technology capabilities in order to be able to use different types of modules, and be able to adapt quickly to new technologies (Whitworth & Zaic, 2003). Information technology infrastructure has the ability to implement various types of applications and softwares, manage issues from inside and outside of organization efficiently. An appropriate IT infrastructure has the capability to adapt rapidly to environmental and technical changes in business world (Chung et al., 2003).

These capabilities of information technology infrastructure facilitate organizational processes, help formalize and standardize business processes that need to share information, and decrease the cycle time within the

company (Papp, 1999). The information processing and operational activities will be simplified by implementing proper information technology infrastructure. This is to say that shared and appropriate infrastructure inside a firm helps to improve operational activities and develop transferring of data and information within the organization which lead to functional integration with business strategies (Papp, 1999; Chung et al., 2003).

Based on what discussed above we contend:
H4: There is a positive relationship between IT architecture and business-IT alignment.
H5: There is a positive relationship between IT infrastructure and business-IT alignment.

3. RESEARCH METHOD

The focus of this study is on business-IT alignment, and its aim is to determine the factors affecting business-IT alignment and also the extent of their effect. Research framework is presented in figure 1. To analyze the degree of factors' impacts, data were gathered from people who were working in business or IT management and executive positions.

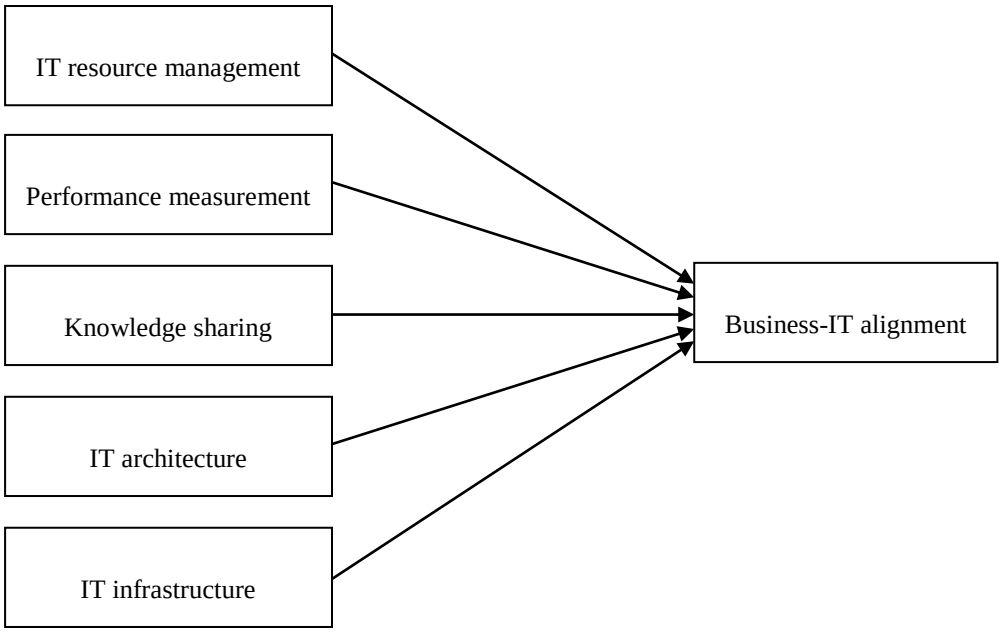

Figure 1: Research framework

To collect data, 700 questionnaires were distributed among various organizations and from that amount, 136 were answered and returned. To analyze the reliability of questions, Cronbach's Alpha test of SPSS software were used. To analyze the hypotheses and correlations between variables, regression analysis and frequency analysis were done by researchers.

4. DATA ANALYSIS AND RESULTS

The respondents of survey questionnaires are business and IT managers and executives. From collected data, 67.6 percent of respondents are males and 32.4 percent are females. Organizations which we considered in our sample are from different manufacturing and service companies from various industries. 37.5 percent are manufacturing companies, 24.3 percent are service companies and 38.2 percent are service-product companies. Based on the size of the organization, 29.4 percent have employees between 51 and 100, 16.9 percent have employees between 101 and 150, 17.7 percent have employees between 151 and 200, and 36 percent have more than 200 employees.

4.1 Reliability Test

Table 1 represents the results of reliability test for each construct.

Table 1: Reliability test

Research Constructs	Cronbach's Alpha	Number of Items	Mean
IT Resource Management	.822	3	3.91
Performance Measurement	.853	3	4.06
Knowledge sharing	.839	4	4.01
IT Architecture	.797	3	3.93
IT Infrastructure	.899	3	3.99
IT-Business Alignment	.843	4	3.90

Based on Sekaran (2003), a value above 0.7 for Cronbach's alpha is considered as an appropriate degree of reliability. Cronbach's Alpha value for IT resource management is 0.822, for Performance measurement is 0.853, for knowledge sharing is 0.839, for IT architecture is 0.797, for IT infrastructure is 0.899, and for IT-business strategic alignment is equal to 0.843. According to these results and Sekaran (2003), as all values are more than 0.7, all constructs are reliable and have relevant items, and these measures could be used for regressions and correlations analysis.

4.2 Hypothesis Testing

Response rates for all constructs are between 3.9 and 4.06 which present positive response from respondents. IT performance measurement with mean equal to 4.09 got the highest rate and Business-IT alignment with the mean value of 3.90 obtained the lowest rate. Standard deviations for all constructs are between 0.540 and 0.700, which knowledge sharing has the lowest standard deviation equal to 0.540 and IT infrastructure got the highest value with standard deviation equal to 0.699. Table 2 presents the results of correlation analysis, standard deviations, and means based on regression analysis.

With regard to the correlations between variables, correlations analysis report significant association. Independent variables have positive correlations. The most significant correlation is between IT infrastructure and IT architecture with value of 0.589 while performance measurement and IT resource management also have significant correlation value (0.574). Knowledge sharing significantly correlates with IT architecture (0. 565) and IT infrastructure (0. 491). Furthermore, we can say that IT resource measurement positively correlates with IT infrastructure with value of 0.470 and IT architecture with value of 0.419.

Based on previous researches and literature, the variables of this study were developed and discussed in previous sections. Regression analysis was used to analyze the influence of independent variables on Business-IT alignment; the results of this analysis reveal that performance measurement with $\beta = 0.739$ and $P < 0.05$ has a significant impact on Business-IT alignment. Moreover, IT resource management with $\beta = 0.700$ and $P < 0.05$, IT infrastructure with $\beta = 0.543$ and $P < 0.05$, IT architecture with $\beta = 0.518$ and $P < 0.05$, and knowledge sharing with $\beta = 0.435$ and $P < 0.05$ also have positive influence on Business-IT alignment at 5% level of confidence.

Based on results, performance measurement has positive effects on Business-IT alignment. Thus, accuracy of hypothesis one is confirmed. Furthermore, Business-IT alignment positively correlates with IT resource management and efficient IT resource management affects Business-IT alignment significantly; therefore, hypothesis two is accepted.

Knowledge sharing between business and IT managers and executives improves the level of communication between managers and executives, and results of regression analysis signify that knowledge sharing positively influences Business-IT alignment. Accordingly, we accept hypothesis three. In addition, the results of regression

analysis indicate positive effect of IT architecture on Business-IT alignment. IT architecture provides an optimal outline to efficient management of IT capabilities. Therefore, hypothesis four is accepted. Additionally, information technology infrastructure facilitates the adaptability and development of information technology capabilities, and results confirm that IT infrastructure has positive effect on Business-IT alignment. Thus, we accept hypothesis five.

Table 2: mean, standard deviation, and correlations results

	Mean	Std. Deviation	1	2	3	4	5	6
Business-IT Alignment	3.90	.565	1.00					
IT Resource Management	3.91	.600	.702	1.00				
Performance Measurement	4.06	.556	.734	.574	1.00			
Knowledge Sharing	4.01	.540	.435	.376	.376	1.00		
IT Architecture	3.93	.607	.524	.419	.339	.565	1.00	
IT Infrastructure	4.99	.699	.549	.470	.298	.491	.589	1.00

5. DISCUSSION AND CONCLUSION

As discussed before, IT resource management and Performance measurement, which their impact on business-IT alignment were examined in this study, are two aspects of IT governance. Our findings from data analysis reveal that both of these IT governance components have significant positive impact on alignment of IT with business strategies. By appropriate management of IT resources such as processes, people, information, infrastructure, and applications through IT resource management, and also, by using methods such as maturity models and balanced scorecards to control strategy implementation, process efficiency, resource usage, service delivery, and project completion through performance measurement, the ability of the organization to a superior business-IT alignment will considerably increase.

Knowledge sharing is another influencing factor on strategic alignment which has been studied widely. It refers to the knowledge of IT and business executives and the degree to which they understand each other's environment. Without knowledge sharing, executives will not be able to have an effective and high-level communication. Moreover, knowledge sharing between executives provides more opportunities to align firm's IT with its business strategies. Results of our study support this argument by suggesting that higher degree of knowledge sharing among executives contributes to better IT-business strategic alignment.

Furthermore, our findings indicate that IT architecture and IT infrastructure have a significant effect on business-IT alignment. IT architecture supports business architectures, and smoothes the progress of implementation and maintenance of business processes. IT architecture delivers value for business by providing a sufficient support for development, design management, and improvement of business operations and activities. In addition, characteristics of IT infrastructure contribute to strategic alignment. In modern business environment, organizations need an efficient information technology infrastructure to adopt rapidly to changing conditions. In other words, IT infrastructure facilitates a tight alignment of business strategies and IT. The alignment of business strategies and IT is crucial for organizations because it enables them to respond quickly to the dynamic business requirements.

5.1 Limitations and future research

One of the most important limitations of this study is related to previous researches in this area. There are few studies which have examined business-IT alignment's influencing factors detailed and comprehensively, especially in Malaysia. In addition, data for this study have been collected from IT and business managers and executives thus, it may not be valid for organizations that perform in other countries.

This study does not examine the correlations of identified factors based on a specific industry; therefore, future studies could concentrate on one or a few number of industries. Moreover, future researches may conduct an exploratory approach in order to identify new aspects which may influence business-IT alignment.

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