Effect of IT Capabilities and Business-IT Strategic Alignment on Business Agility

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ABSTRACT

The purpose of this study is to identify the effect of IT capabilities and business-IT strategic alignment on business agility and also referred to the knowledge based theory of the firm. This would bring up more understanding to support the management decision on how to execute IT planning with the whole company strategic planning so as to improve business agility. 432 employees who worked for the firm and had a chance to participate in IT or Business planning answered the questionnaires and responded back. Structural Equation Model (SEM) statistics technique was used to answer of the objectives in this study. The goodness of fit statistics revealed the fit of the model. (Chi-square value was 9.27 with df=8, p=0.31982). GFI and AGFI were equal to 0.99 and 0.98 accordingly which support the model was fit. While the errors indexes, RMR and RMSEA were 0.0028 and 0.019 accordingly which were approached to zero. The result of the analysis exposed that IT’s participation on the business planning had the positive effect on business-IT strategic alignment ($\beta = 0.52$; $t$-value = 15.95; $p = 0.001$) and business’s participation on the IT planning had the positive effect on business-IT strategic alignment ($\beta = 0.72$; $t$-value = 15.95; $p = 0.001$). Business-IT strategic alignment had the positive effect on the business agility ($\beta = 0.60$; $t$-value = 2.29;

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p = 0.05). Also, IT capabilities had the positive effect on the business agility ($\beta = 0.25; \text{t-value} = 5.35; p = 0.001$). The implication of the study also expose the way how the management teams would utilize IT resources effectively in order to increase the business agility that they should take the consideration on how to increase the participation level of IT and business managements as the priority so as to improve IT-business strategic alignment which would positive effect to the business agility.

**KEYWORD:** IT CAPABILITIES, BUSINESS-IT STRATEGIC ALIGNMENT, BUSINESS AGILITY

**INTRODUCTION**

Due to the recent crisis market situation in many regions around the world, this crucial event is leading the challenge condition for the firms which need to increase their ability to respond to the change to serve the volatile consumer demand, and rapid product obsolescence. The business agility is introduced to be defined on how the firm can detect and respond to opportunities and threats with ease, speed, and quickness. (Galliers 2007; Overby et al. 2006). Information technology is considered as the key engine for the business strategy driven. Therefore, in order to increase the business agility, information technology would be considered as the part of business strategic driven nowadays, many researches generally supported that information technology is able to increase the agility to speed up decision making, facilitate communication among the departments in the organization and respond quickly to rapid changing conditions (Sambamurthy et al. 2003). These questions have been raised to the top management’s minds to find out the way to utilize their IT resources so as to improve the business agility. There were some previous researches begun to link firm-wide IT capability to competitive advantage (Bharadwaj 2000) and concentrate on the effect of IT capabilities on
business agility which took the consideration on IT spending (Lu and Ramamurthy, 2011)

The executives in many firms have been considering on how information technology would be fit to the business strategy which is defined as Business-IT strategic alignment (Tallon and Pinsonneault, 2011; Kearns and Sabherwal, 2006). The knowledge-based theory is applied in order to improve Business-IT strategic alignment in the firm. The success of Business-IT strategic alignment rely on how the firm can integrate the knowledge of IT and Business Perspectives together to achieve the organization goal which need to be able to respond to the rapid change that has been defined as business agility. Participation of business managers in strategic IT planning and participation of IT managers in business planning could create “cross-function interfaces” which is the key factor of the alignment success (Cohen and Levinthal, 1990)

However, there was a gap that a few researchers studied on the magnitude of each item on how they impact to the business agility especially from the employee’s perception level. So, this research was intended to study the effect of IT management’s participation on business planning on business-IT strategic alignment and the effect of business management’s participation on IT planning on business-IT strategic alignment and see whether the Business-IT strategic alignment effect on the business agility. And also, the magnitude on the effect of IT capabilities and Business-IT strategic alignment on business agility were analyzed in this study as well.

The study also analyzed the demographic factors such as gender, age, education level, income per months and use IT capabilities of the firms which are measured by three dimensions (IT infrastructure capacities, IT business spanning capacities and IT proactive stance) and the participation levels between business and IT managers as the independent variables and see the effect on the dependent
variables which are Business-IT strategic alignment, business agility. The data analysis from this study would bring up more understanding to the stakeholders on how IT strategic alignment can enable the organization agility and give the benefits for the management to invest on IT capabilities and finally see whether IT capabilities can improve the business agility. Also, the executive team would be able to consider the business strategic plan along with IT strategic plan and see how they would spend IT efforts to the organization units more precisely.

LITERATURE REVIEW

Resource-Based Theory

The theory was referred to provide more understanding on the basis of the competitive advantage of the firm is primarily in the application of the bundle of valuable resources of the firm disposal (Wernerfelt, 1984; Rumelt, 1984). Barney (1991) stated that the key points of the resource-based view theory are following by the steps as following. Firstly, the firms need to identify the potential key resources. Secondly, the firm must evaluate their own resources whether they are fit to the following criteria referred to as VRIN (Valuable, Rare, In-imitable and Non-substitutable) and finally the firms must care and protect these resource that possess these evaluations.

Knowledge-Based Theory of the Firm

The primary role of the firm is to integrate the specialist knowledge into goods and services. The primary task of the management is to establish the coordination necessary for the knowledge integration. The theory is used to explore the linkage between the knowledge input and the product output and see the firm potential to establish the firm competitive advantage under the dynamic market conditions. The specialized knowledge is fundamental to their ability to create and sustain
competitive advantage and revealed the implication in term of the competitive advantage under the hypercompetitive market (Grant, 1996)

**Business - IT Strategic Alignment**

The top priorities in the business and IT executives are to find the way to improve the good mixture of the business strategy and IT supports. Many researchers explained the phenomenon how important of information technology which is supporting the business strategies and operations (Tallon et al. 2010; Tallon and Kreamer, 2007). Business-IT alignment could improve the competitive advantage; profit and market share of the firm (Tallon et al. 2010). Both of IT and business planning participation would effect to business-IT strategic alignment. Translating the alignment will be considered to enhance IT-effect on business agility. Therefore, it can imply that the knowledge management is also vital for the IT – business alignment. (Kearns and Sabherwal, 2006) The hypotheses were proposed to analyze the participations on both IT and Business planning were listed as below.

**Ho1:** IT management’s participation on Business planning has no effect on Business-IT Strategic Alignment.

**Ha1:** IT management’s participation on Business planning has positive effect on Business-IT Strategic Alignment

**Ho2:** Business management’s participation on IT planning has no effect on business-IT strategic alignment.

**Ha2:** Business management’s participation on IT planning has positive effect on business-IT strategic alignment

**Business Agility**

Agility of the firm reflects from how easily and quickly that firm can revise the behaviors based on the marketplace events. The recent study found out the effect of IT infrastructure flexibility on agility is as strong as the effect of alignment on agility (Tallon and Pinsonneault, 2011). Regarding the focus of this study, the
effects of IT capabilities and Business-IT strategic alignment on business agility were analyzed as the following hypotheses.

*Ho3: Business - IT strategic alignment has no effect on business agility.*

*Ha3: Business - IT strategic alignment has positive effect on business agility.*

*Ho4: IT capabilities have no effect on business agility.*

*Ha4: IT capabilities have positive effect on business agility.*

**IT Capabilities**

The definition of IT capabilities is how the firm can acquire, deploy, combine and reconfigure IT resources to support the business strategies enhancement and work processes (Sambamurthy and Zmud 1997) and reflect on how IT capabilities complements other organizational resources (IT spending) to enhance agility which is refined and conceptualized into three dimensions: IT Infrastructure capacity, IT business spanning capacity and IT proactive stance. (Lu and Ramamurthy, 2011)

**Business - IT Management’s Participation on the Planning**

The establishment of the business and information technology objectives which are clarified the nature of the linkage construct can be clarified into two dimensions, intellectual and social (Reich and Benbasat, 1996) Also, shared domain knowledge. IT implementation success, communication between business and IT executives, and connections between business and IT planning were found to influence short-term alignment as well (Reich and Benbasat, 2000)
RESEARCH METHODOLOGY

This study investigates the effect of Business-IT strategic alignment and IT capabilities on business agility. Therefore, the research is designed to use the quantitative research method and collect the primary data by survey research with structured questionnaires that referred to the prior studies according to objectives of the study. The target populations were employees who work for the firms and had a chance to participate in business planning or IT planning before. Furthermore, the size of the sample group that were unknown clearly, therefore, this research employed the formula for calculating the size of the sample group with confidence level provided at 95% and allowable error provided at 5%. Snowball sampling technique was used in this study to spread out the questionnaires through the web link to the target sample groups as stated earlier.

The research instrument was divided into 6 parts with 36 questions. The employee profile information included gender, age, education level and income per month. IT Capabilities was measured by three sub dimensions, IT infrastructure capacities, IT Business Spanning Capacities and IT Business Spanning Capacities. IT Management’s Participation on Business Planning reflected on how IT managers regularly attend business meetings and participate in setting business goals and strategies and Business Management’s Participation on IT planning was measured based on a prior measure of “planning participation” which explicitly identify tasks related to IT planning—evaluating future business needs, setting IT objectives and strategies, and selecting major IT investments. Business-IT Strategic Alignment was measured of “planning alignment.” which are focusing on activities that facilitate alignment, to assess the level of integration between business and IT. Business Agility was measured on the ability that the firm can speed up on the response to environmental threats and opportunities.
The data was conducted from online questionnaires with quantitative analysis for analyzing the collected data from August to October 2012. The online questionnaires web link as following were spread out via the emails https://docs.google.com/spreadsheet/viewform?formkey=dC04anB4YFNLYVpJV2FtVGpUc2E6MQ#gid=0 to the employees in the firms who had a chance to involve in business planning and IT planning. Snowball sampling technique or chained referral sampling was used in this study so as to send the questionnaires to the stakeholders.

The researcher analyzes data variables from questionnaire which processed by statistics program for the results. The results of respondents were presented as following, using the descriptive statistical techniques to describe demographic characteristics which were gender, age, education and income per month and evaluation for development and validation the model by performing the goodness of fit indices, such as chi-square, goodness of fit index (GFI), and average goodness of fit index (AGFI), and root means square error of approximation (RMSEA). The hypotheses were tested by structural equation model (SEM).

DATA ANALYSIS AND RESULTS

Regarding the table 1, the groups of the characteristics which were analyzed were gender, employee age (years), education level and income per month (Baht). According to the gender category, most of the samples are female (235 samples or 55.66 %), while 188 samples are male or 44.44%. For employee age category, the analysis showed that the highest sample has the age between 30-39 years (244 samples or 57.68%) while the second rank were the samples which had the age between 20 - 29 years (102 samples or 24.11%)

Looking into education level, the highest samples had bachelor degree level were 256 samples or 60.52%. While there were 143 samples or 33.81% who had the master degree level (or above) and others are 24 samples or 5.67%. For the income
per month category, the demographic analysis shows that most of the samples had
the income per month between 25,001 and 35,000 Baht (172 samples or 40.66%).
The second rank of the samples had the income per month between 35,001 and
55,000 Baht (108 samples or 25.53%) However, there were a few samples that had
the income per month less than 15,000 Baht (20 samples or 4.73)

Table 1 Demographic characteristics data analysis

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>188</td>
<td>44.44</td>
</tr>
<tr>
<td>Female</td>
<td>235</td>
<td>55.66</td>
</tr>
<tr>
<td><strong>Age (Years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 - 29 years</td>
<td>102</td>
<td>24.11</td>
</tr>
<tr>
<td>30 - 39 years</td>
<td>244</td>
<td>57.68</td>
</tr>
<tr>
<td>40 - 49 years</td>
<td>75</td>
<td>17.73</td>
</tr>
<tr>
<td>More than 50 years</td>
<td>2</td>
<td>0.47</td>
</tr>
<tr>
<td><strong>Education Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor Degree</td>
<td>256</td>
<td>60.52</td>
</tr>
<tr>
<td>Master Degree or Above</td>
<td>143</td>
<td>33.81</td>
</tr>
<tr>
<td>Others</td>
<td>24</td>
<td>5.67</td>
</tr>
<tr>
<td><strong>Income per Month (Baht)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 15,000 Baht</td>
<td>20</td>
<td>4.73</td>
</tr>
<tr>
<td>15,001 - 25,000 Baht</td>
<td>83</td>
<td>19.62</td>
</tr>
<tr>
<td>25,001 - 35,000 Baht</td>
<td>172</td>
<td>40.66</td>
</tr>
<tr>
<td>35,001 - 55,000 Baht</td>
<td>108</td>
<td>25.53</td>
</tr>
<tr>
<td>More than 55,001 Baht</td>
<td>40</td>
<td>9.46</td>
</tr>
</tbody>
</table>

Regarding the analysis, LISREL was used to analyze the structural equation
model. There were 2 types of the variable called latent variables and observed
variables. Both variables were constructed in the model as shown in figure 1.
Figure 1 SEM Standardized Solutions

Looking the statistics values which were used to determine the fit of the model, the chi-square with the p-value is 0.31982 which was more than 0.05 (standard value). The goodness of fit index (GFI) and adjusted goodness of fit index (AGFI) were closed to 1 which supported the fit of the model. Root mean square residual (RMR) and root mean square error of approximation (RMSEA) were 0.0028 and 0.019 respectively which were closed to zero. They reflect to the model fit with the low errors. After the goodness of fit was analyzed, the path analysis would be performed in the next stage.

Regarding the result of SEM analysis in table 2, IT management’s participation variable had the significant at B coefficient of 0.52 ($\beta$=0.52) with t-value of 15.95 which was more than critical value as 3.28 (at 0.001 significance level). Therefore, Ho1: IT management’s participation on Business planning has no effect on Business-IT Strategic Alignment was rejected and the result confirmed that IT management’s participation on Business planning had the positive effect on Business-IT strategic alignment. Also, Business management’s participation variable had the significant at B coefficient of 0.72 ($\beta$=0.72) with t-value of 22.04
which was more than critical value as 3.28 (at 0.001 significance level). Ho2: Business management’s participation on IT planning has no effect on business-IT strategic alignment was also rejected. The result confirmed that business management’s participation on IT planning had the positive effect on business-IT strategic alignment.

Business-IT strategic alignment variable had the significant at B coefficient of 0.60 ($\beta=0.60$) with t-value of 2.29 which was greater than 1.96 but less than 2.58 (at 0.05 significance level). Therefore, Ho3: Business - IT strategic alignment has no effect on business agility was rejected and the result confirmed that Business - IT strategic alignment had the positive effect on Business Agility. IT capabilities variable had the significant at B coefficient of 0.25 ($\beta=0.25$) with t-value of 5.35 which was more than critical value as 3.28 (at 0.001 significance level). Ho4: IT capabilities have no effect on business agility was rejected and the result confirmed that IT capabilities had the positive effect on business agility.

**Table 2 Path Analysis Summary**

<table>
<thead>
<tr>
<th>Path from</th>
<th>To</th>
<th>Estimated (B)</th>
<th>Standardize ($\beta$)</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT Management’s Participation on Business Planning</td>
<td>Business - IT Strategic Alignment</td>
<td>0.52</td>
<td>0.52</td>
<td>15.95 ***</td>
</tr>
<tr>
<td>Business Management’s Participation on Business Planning</td>
<td>Business - IT Strategic Alignment</td>
<td>0.72</td>
<td>0.72</td>
<td>22.04 ***</td>
</tr>
<tr>
<td>Business - IT Strategic Alignment</td>
<td>Business Agility</td>
<td>0.60</td>
<td>0.60</td>
<td>2.29 *</td>
</tr>
<tr>
<td>IT Capability</td>
<td>Business Agility</td>
<td>0.25</td>
<td>0.25</td>
<td>5.35 ***</td>
</tr>
</tbody>
</table>

Note: *significance at 0.05 level 1.96 ≤ p < 2.58; **significance at 0.01 level 2.58 ≤ p < 3.28; *** significance at 0.001 level 3.28 ≤ p
CONCLUSION AND DISCUSSION

The result of the study which revealed the effect of Business-IT strategic alignment had the positive effect on business agility was consistent the outcome of the previous literatures which stated that there were the positive link between Business-IT strategic alignment and business agility (Tallon and Pinsonneault, 2011). Also, looking into IT capabilities, it had the positive effect on business agility significantly as well. Therefore, it also supported the previous literature reviews which mentioned that IT capabilities were able to facilitate the business agility as well (Lu and Ramamurthy, 2011). Regarding Business-IT strategic alignment, Business-IT involvement on the planning revealed the establishment of the business and information technology objectives which had the positive effect to Business-IT strategic alignment. The result of the analysis was consistent with the previous literature that mentioned on the knowledge and behaviors of the management teams are related to the success of Business-IT alignment (Kearns and Sabherwal, 2006). The several factors on the social dimensions of alignments which are refer to the state in which IT and business executives understand and are committed to the business and IT missions, objectives and plans (Reich and Benbasat, 1996)

IMPLICATION OF THE STUDY

This research proposes the suggestions on how the management team would take the consideration to utilize the scarce resources. The result of the research revealed the magnitude on business management’s participation on IT planning was quite a bit higher than IT management’s participation on business planning. Management teams should take the consideration on the operation strategy to encourage the business people to involve in IT planning as the priority so as to improve the efficiency on business-IT strategic alignment. Also, the research
exposed the magnitude on business-IT strategic alignment was more than IT capabilities which is implied that the management team should ensure that their business and IT people have worked together effectively to align their operations/planning with the business strategic planning as the priority before the investing more on IT capabilities expansion. Especially, the result supported that the business people were playing as the crucial role to improve the business agility if they participate on IT planning effectively.

**RECOMMENDATION FOR FUTURE RESEARCH**

Due to the fact that the research indicated on the effect of IT capabilities and business-IT strategic alignment on business agility which was mostly conducting the data from the employees in Thailand, the researcher would recommend that the future research should conduct the data in another geographic area or expand the area of the data collection globally.

As the study did not look into the detail of the business processes within the firm, it should be beneficial if the researchers in the future to see how IT can improve each process so as to utilize IT more effectively on the most important process within the firm. Moreover, the technology has been changed rapidly nowadays. Therefore, the business improvement facilitated by IT would be important more and more.

Moreover, to get the result of the researches more precisely, the researcher should interview the employees directly rather than the questionnaire survey. Also, it would be helpful for the future research to see whether how the size of IT capabilities would be appropriated for the firms. Also, there are other interesting factors such as IT flexibilities which may effect to the successful of the strategic alignment which should be considered because it may effect to the business agility.
REFERENCE


