Information Technology and Business Alignments among Different Divisions: A Comparative Analysis of Japan and South Korea

Michiko Miyamoto

Abstract—This paper empirically investigates whether information technology (IT) strategies, business strategies, and divisions are aligned to meet overall business goals for Korean Small and medium-sized enterprises (SMEs), based on structure based Strategic Alignment Model, and make comparison with those of Japanese SMEs. Using 2,869 valid responses of Korean Human Capital Corporate Panel survey, a result of this study suggests that Korean human resources (HR) departments have a major influence over IT strategy, which is the same as Japanese SMEs, even though their management styles are quite different. As for IT strategy, it is not related to other departments at all for Korean SMEs. The Korean management seems to possess a great power over each division, such as Sales/Service, Research and Development/Technical Experts, HR, and Production.

Keywords—IT-business alignment, structured based strategic alignment model, structural equation model, human resources department.

I. INTRODUCTION

The competitive and ever fluctuating market is forcing many companies to spend huge amounts of money in the IT sector, since it has been increasingly accepted as a vital requirement for organizations to obtain competitive advantage and innovation [1]. In the context of business-IT alignment maturity, a potential influence of national cultures has been reported in several studies. Silvius [2] presents the influence of culture on business-IT alignment based on Hofstede’s framework of cultural dimensions [3], by making hypotheses on relationships between cultural aspects and business-IT alignment maturity based on this conceptual mapping. International competition seems quite formidable with a variety of forms of business organization established in different countries.

In a previous study, using data from 345 responses from Japanese SMEs, a consolidated framework of structure-based Strategic Alignment Model (SAM) suggests that the HR department’s great influence over other departments and its influence over business strategy. IT strategy is related to the HR department in some extent, but not related to other departments at all, and business strategy affects IT strategy [4]. Clear differences used to exist between the business systems and HRM in Japan and Korea [5]. A study of IT companies’ HR practices in South Korea [6] suggests an importance of HR practices in staying competitive for the future, and the role of HR has to be more strategic than operational, no matter what the industry is. This paper empirically investigates whether IT strategies, the business strategies, and divisions are aligned to meet overall business goals for Korean SMEs, and makes comparison with those for Japanese SMEs.

II. LITERATURE REVIEW

According to Roffey Park’s Management Agenda 2009 in UK, the majority of line managers (81%) agreed that their HR department is ‘out of touch with the rest of the organization, while 75% of line managers say that the function was “influential” in their organization, and 64% of line managers agree that it had “credibility” with leadership [7]. For the companies in the US, HR is said to be relatively decentralized, and HR departments generally have lower status than line departments [8]. On the contrary, Japanese HR departments have been characterized by the great power that they possess over other line departments [9]-[11]. Among divisions, differences in a role of HR departments are found between corporations in Japan and those in other countries. By centralizing personnel management, intensive accumulations of personnel information have been seen in Japanese HR departments. HR managers tend to have advantages of getting a higher status within companies with promising career paths. Japanese HR departments are also involved in determination of individual employee transfers [12]. Since Japanese HR departments could determine the individual personnel transfer issues together with the line managers, there is a check-and-balance relationship between the HR department and the line managers, called “personnel transfer dynamics” [13].

The HR departments in Korean firms have experienced radical changes. Kim and Bae [14] measured HR department effectiveness through the perception of a managing staff member engaged in a strategic planning function; a measure that intended to capture the extent to which HR contributes in enhancing the firms’ competitive advantage by appropriately supporting line managers and employees. Their finding indicates that HR professionals should develop strong and constructive relationship with the line managers and the employees to achieve their goals successfully.

In order to build a more effective understanding and working relationship between line business and information systems (IS) departments, an effort to build partnership between the IS and other groups regarding the role and importance of IS to
each corporation’s business context would provide major impact [15]. Therefore, the importance of achieving alignment between business and IT is widely recognized by many researchers and practitioners, and most companies have significant work to do before achieving business-IT alignment successfully.

Henderson and Venkatraman [16] proposed the realization of business-IT alignment by balancing four areas: business strategy, IT strategy, organization platform, and IT platform, using the SAM. Recent research reveals positive effects of alignment on business performance with empirical evidences [17]-[20], [4], [1]. External and internal factors of both business and IT strategy must fit (have “strategic fit”), and functions of business and IT must be integrated in order to balance the four areas. King et al. [21] suggest that the firms with high IT alignment achieved better organizational performance than firms with low IT alignment. Not only the large firms but many small firms have achieved a high degree of alignment between their business strategy and IT [22].

III. RESEARCH MODEL AND HYPOTHESES

The previous studies have suggested that achieving business-IT alignment more successfully than competitors is one of the keys to gaining competitive advantage. In this paper, a modified SAM, “Structure-based Strategic Alignment Model (SSAM),” developed by Miyamoto [4], is used to investigate empirically whether IT strategies, the business strategies and divisions are aligned to meet overall business goals for Korean SMEs as shown in Fig. 1.

Based on SSAM, the following four hypotheses are posited.

**Hypothesis 1.** Business strategy will affect IT strategy.

**Hypothesis 2.** HR department will affect other departments.

**Hypothesis 3.** HR department will affect IT strategy.

**Hypothesis 4.** Business strategy will affect other departments.

IV. SURVEY

Data were obtained from the Human Capital Corporate Panel survey, which is officially approved by Korea National Statistical Office. The first survey was started in 2005, and the fifth survey was completed in 2013. The survey is based on onsite interviews. This paper uses 2005 survey data, since it contains IT related questionnaires. The survey population includes corporations employing more than 100 workers and listed in "KIS Corporate Data 2005," published by the Korea Information Service, or those which employ more than 300 workers and unlisted. 10,232 responses were collected; after omitting the missing data, 2,869 valid responses are used in this analysis.

Most of the questionnaires used a five-point scale as follows: 1 = Poor, 2 = Inadequate, 3 = Sufficient, 4 = Strong, and 5 = Extraordinary. More than half of respondents (63.5%) are working in the manufacturing industry, and 12% of those are working in the finance industry, and one quarter of respondents are working in non-finance sector (see Table I). Definition of variable is shown in Table II.

Table III contains the Pearson correlation coefficient between all pairs of 12 variables on different divisions with the two-tailed significance of these coefficients. Although relationships among variables of HR and other departments are significant but negative and weak, variables among HR are correlated fairly well and none of the correlation coefficients are particularly large; therefore, multicollinearity is not a problem for these data.

![Fig. 1 SSAM [4]](image)

**TABLE I**

<table>
<thead>
<tr>
<th>DESCRIPTION OF THE SAMPLES</th>
<th>NR</th>
<th>NE/TR(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>1,821</td>
<td>63.5</td>
</tr>
<tr>
<td>Finance</td>
<td>344</td>
<td>12</td>
</tr>
<tr>
<td>Non-Finance</td>
<td>704</td>
<td>24.5</td>
</tr>
</tbody>
</table>

*TR denotes total respondents

V. RESULTS

Testing the efficacy of the structural equation model (SEM) was conducted by AMOS 22, and the major results of analysis are shown in Fig. 2. The path diagram highlights the structural relationships. In this diagram shown in Fig. 2, the measured variables are enclosed in boxes, latent variables are circled, and arrows connecting two variables represent relations, and open arrows represent errors. When SEM is used to verify a theoretical model, a greater goodness of fit is required for SEM analysis [23]; the better the fit, the closer the model matrix and the sample matrix. By means of various goodness-of-fit indices, including the comparative fit index (CFI) [24], Incremental Fit Index (IFI) [25], and the root mean squared error of approximation (RMSEA) [26], the estimated matrix can be evaluated against the observed sample covariance matrix to determine whether the hypothesized model is an acceptable representation of the data.

In general, fit indices (e.g., CFI and IFI) above 0.90 signify good model fit. RMSEA values lower than 0.08 signify acceptable model fit, with the values lower than 0.05 indicative of good model fit [26]. The research model is shown in Fig. 2; CFI=0.900, IFI=0.900, RMSEA=0.068 (see Table III). The Path Coefficient for the structural model suggested that the regression coefficient for all constructs show significance. Since all of the indexes satisfy the cut-off values, the result is regarded as acceptable. Table III summarizes the results of these tests for the research model.
TABLE II
DEFINITION OF VARIABLES

<table>
<thead>
<tr>
<th>Differentiation/ Diversification</th>
<th>Business Strategy</th>
<th>Cost efficiency/ Development</th>
<th>Quality/ Customer</th>
</tr>
</thead>
<tbody>
<tr>
<td>W108_27 Sufficiently raising new customers' acquisition rate</td>
<td>W108_29 Retention rate of major customers</td>
<td>W108_08 The development ability of new products / services</td>
<td>W108_23 Diversification of products / goods / services</td>
</tr>
<tr>
<td>W108_31 Improve and manage brand image</td>
<td>W108_07 Leadership of the management team</td>
<td>W108_11 Efficiency and simplification of business procedures</td>
<td>W108_23 Diversification of products / goods / services</td>
</tr>
<tr>
<td>W108_01 The overall capacity of the HR</td>
<td>W108_05 Building a trust based community</td>
<td>W108_19 Improvement of the defect rate and the production yield</td>
<td>W108_23 Diversification of products / goods / services</td>
</tr>
<tr>
<td>W108_03 Securing excellent HR</td>
<td>W108_17 Quality of the product / service</td>
<td>W108_09 The development ability of new products / services</td>
<td>W108_23 Diversification of products / goods / services</td>
</tr>
<tr>
<td>W108_15 Pursuit of economies of scale</td>
<td>W108_21 Rapid response to customers' needs</td>
<td>W108_07 Leadership of the management team</td>
<td>W108_23 Diversification of products / goods / services</td>
</tr>
</tbody>
</table>

TABLE III
CORRELATION MATRIX ON DIFFERENT DIVISIONS

<table>
<thead>
<tr>
<th>R&amp;D and technical experts</th>
<th>Sales and Service</th>
<th>Management</th>
<th>Production</th>
<th>HR</th>
</tr>
</thead>
<tbody>
<tr>
<td>W109_01 1</td>
<td>.709**</td>
<td>.685**</td>
<td>.377**</td>
<td>-.166**</td>
</tr>
<tr>
<td>W109_05 .709**</td>
<td>1</td>
<td>.161**</td>
<td>-.224**</td>
<td>-.175**</td>
</tr>
<tr>
<td>Management W109_07 .685**</td>
<td>.161**</td>
<td>1</td>
<td>.118**</td>
<td>.219**</td>
</tr>
<tr>
<td>Production W109_09 .377**</td>
<td>.161**</td>
<td>.118**</td>
<td>1</td>
<td>.693**</td>
</tr>
<tr>
<td>W106_01 -.166**</td>
<td>-.224**</td>
<td>-.323**</td>
<td>.118**</td>
<td>1</td>
</tr>
<tr>
<td>W106_02 -.155**</td>
<td>-.175**</td>
<td>-.246**</td>
<td>.219**</td>
<td>.693**</td>
</tr>
<tr>
<td>W106_03 -.179**</td>
<td>-.187**</td>
<td>-.298**</td>
<td>.031</td>
<td>.510**</td>
</tr>
<tr>
<td>W106_04 -.179**</td>
<td>-.193**</td>
<td>-.293**</td>
<td>.043</td>
<td>.465**</td>
</tr>
<tr>
<td>W106_05 -.182**</td>
<td>-.226**</td>
<td>-.348**</td>
<td>.108**</td>
<td>.436**</td>
</tr>
<tr>
<td>W106_06 -.181**</td>
<td>-.182**</td>
<td>-.305**</td>
<td>.085</td>
<td>.610**</td>
</tr>
<tr>
<td>W106_07 -.261**</td>
<td>-.234**</td>
<td>-.338**</td>
<td>.123</td>
<td>.459**</td>
</tr>
<tr>
<td>W106_08 -.251**</td>
<td>-.229**</td>
<td>-.353**</td>
<td>.053</td>
<td>.397**</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).
TABLE IV

RELIABILITY TEST

<table>
<thead>
<tr>
<th>FIT indices</th>
<th>Recommended level</th>
<th>A Structural Equation Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMIN/DF</td>
<td>5.0 (Wheaton et al. [27])=2.0</td>
<td>14.107</td>
</tr>
<tr>
<td>CFI</td>
<td>&gt;0.90 (Bentler [24])</td>
<td>0.900</td>
</tr>
<tr>
<td>IFI</td>
<td>&gt;0.90 (Bollen [25])</td>
<td>0.900</td>
</tr>
<tr>
<td>RMSEA</td>
<td>&lt;0.10 (Browne and Cudeck [26])</td>
<td>0.068</td>
</tr>
<tr>
<td>AIC</td>
<td>Smaller values suggest a good fitting (Akaike, [29])</td>
<td>8943.245</td>
</tr>
<tr>
<td>p-value</td>
<td>&gt;0.05</td>
<td>0.000</td>
</tr>
</tbody>
</table>

The followings are results of hypotheses.

**Hypothesis 1.** Business strategy will affect IT strategy.
H1a. There is a significant, but negative and weak relationship between leadership/reliability and IT strategy.
H1b. There is a significant, but negative and almost no relationship between cost efficiency/development and IT strategy.

**Hypothesis 2.** HR department will affect other departments.
H2a. There is a significant, moderate, and negative relationship between HR department and management.
H2b. There is a significant, weak, and positive relationship HR department and sales and service.
H2c. There is a significant, weak, and positive relationship HR Department and R&D and technical experts.
H2d. There is a significant, positive, and weak relationship between HR department and production.

**Hypothesis 3.** HR department will affect IT strategy.
There is a significant, moderate and positive relationship between HR department and IT strategy.

**Hypothesis 4.** Business strategy will affect other departments.
H4a. There is a significant, positive, and weak relationship between cost efficiency/development and production.
H4b. There is a significant, positive, and weak relationship between differentiation/diversification and production.
H4c. There is a significant, positive, and moderate relationship between management and production.

The observed variables for IT strategy have the estimate of standardized regression weight of 0.565–0.861, while all observed variables are above 0.758 for business strategy.

![Fig. 2 A Structural Equation Model](image-url)
VI. CONCLUSION

Using the framework of modified SAM, namely SSAM, this paper empirically investigates whether IT strategies, the business strategies, and divisions are aligned to meet overall business goals for Korean SMEs. Findings in the previous research using the present Japanese SMEs data show that Japanese HR departments did not only have great power over other line departments, but also they seem to possess great power over making decision on business strategy as well as IT strategy. As for Korean HR departments, the result of this study suggests that they also have a major influence over IT strategy.
while IT strategy is not related to other departments at all. Their
managements seem to possess a great power over sales/service,
and R&D/technical experts; they have a moderate influence on
HR and production. Each factor of business strategy hardly
affects IT strategy.

Although there are some cultural and structural similarities,
such as the dominance of powerful conglomerate companies,
the Korean management style and that of Japanese are not the
same. Managers of both countries emphasize group harmony
and cohesion; however, Korean organizations are known as
quite hierarchical, with family members occupying key
positions. The leadership style can best be described as
top-down, or autocratic/paternalistic. The empirical results of
this study support the effect of Korean management on this
respect [30]. Even though their management styles are different,
the result finds that HR departments of Korean companies
are having a great influence over IT industry as Japanese
companies.

The limitation of this study is the use of 2005 dataset. Korean
companies’ IT-Business alignment may have a different picture
using more recent data set, and the international comparative
analyses with other countries continue to be needed on this
subject to see if each country has different organization issues
on IT-business alignment.

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