A Study on Relationship between Organization Intelligence Quotient and Firm Performance
---A comparison study between Japan and China

ARuhan, Graduate School of Decision Science, Tokyo Institute of Technology, Ookayama 2-12-1-W9-66, Meguro-ku, Tokyo, Japan, a.r.aa@m.titech.ac.jp
Junichi Iijima, Graduate School of Decision Science, Tokyo Institute of Technology, Iijima.j.aa@m.titech.ac.jp
Ho Sho, Graduate School of Decision Science, Tokyo Institute of Technology, ho.s.aa@m.titech.ac.jp

Abstract

Companies invest huge amount of money into Information Technology (IT) expecting to get corresponding earnings from IT. This trend causes the debate of “IT paradox”, which refers to whether high IT investment brings high productivity. In the 1980s and early 1990s negative correlation was found between IT investment and economy-wide productivity (E. Brynjolfsson, S. Yang [1996]). However, at the firm level, direct relationship between IT investment and Firm Performance has not been found yet. Recently, researches conducted mostly in the U.S. shows that the organizational characteristics play an important role in the relationship of IT investment and Firm Performance. The characteristics of organizations are affected by the institutional environment and economic environment. Meanwhile, an organization is constituted by individuals. Individuals in different countries own different characteristics. In this paper we try to find how the difference of institutional environment, economic environment, and individual characteristics affect the relationship between Organizational Characteristics and Firm Performance (FP) in Japan and China.

We choose the Organization Intelligence Quotient (OIQ) as the indicator of the Organizational Characteristics and Sale’s Volume and Sale’s Volume per Number of Employees as Firm Performance indicators. The OIQ data was acquired from surveys in Japanese and Chinese companies. We analyzed the relationship of Organizational Characteristic and Firm Performance in Japan and China and compared and discussed about the result in two countries.

Keywords: Organizational IQ. Firm Performance. Environment factors, Comparison research
1 INTRODUCTION

Early in the 1980s, there began the discussion on “IT paradox” also called “Solow Computer Paradox”, which refers to whether high IT investment causes high productivity. Both academics and practitioners have discussions on this topic. The discussion mainly conducted on two levels: whole economy aggregate level and firm level. In the 1980s and early 1990s negative correlation was found between IT investment and economy-wide productivity [1]. In 2000, Robert Solow mentioned in an interview “…you can see computers in the productivity statistics”, which gave a conclusion to the discussion on whole economy aggregate level discussion. On firm performance level, the discussion is continuing both positive [2] and negative [3] correlations were found in the previous research.

With the development of the concept of “Organizational IQ”, some researcher notices the relationship of Organizational IQ and Firm Performance. Haim Mendolson mentioned that “Organizational IQ has a strong effect on a company’s financial performance…” [4].

About the different characteristics of Organizational IQ in different countries, Motohashi Kazuyuki conducted a comparison research on the Organizational IQ in high-tech organizations between Japan and the US in 2001. The different characteristics of Organizational IQ were used to explain the strengths and weaknesses of Japanese Enterprises.[5] Another researcher Massaki Hirano use Organizational IQ frame work to analyze and compare Japanese and the US product development organizations their research propositions suggested key difference between both countries.[6]

In this paper we try to find how the difference of institutional environment, economic environment, and individual characteristics affect the relationship between Organizational IQ and Firm Performance in Japan and China.

2 THEORETICAL BACKGROUND

2.1 Organizational IQ

The concept of Organizational IQ (Organizational Intelligence Quotient) was first developed by Haim Mendelson and other researches, who conducted a questionnaire survey of firms in Silicon Valley and used the results to analyze the relationship between organizational IQ and Firm Performance. [Mendelson and Ziegler, (1999)] Organizational IQ is a quantitative measure of an organization’s effectiveness in information distribution, decision making and execution [Synesis, (2001)].

As mentioned by Synesis in 2001 that none of the OIQ Principle were revolutionary, or new. However, the importance of OIQ was the ability to quantitatively measure the degree to which those Principles are being implemented in organization. The five factors in Organizational IQ are: Effective Decision Making (EDA), External Information Awareness (EIA), Internal Knowledge Dissemination (IKD), Organizational Focus (OF) and Continuous Innovation (CI).

2.2 Hofstede’s Culture Dimensions

Geert Hofstede mentioned that “Culture is more often a source of conflict than of synergy Cultural differences are a nuisance at best often a disaster”. With the development of economic globalization, anyone cannot ignore the culture differences between countries. Hofstede found five dimensions of culture in his study of national work related values, and
gathered extensive data on the world’s cultures then generated his impressions of that data into charts and graphs which help to better understand the many sublet implications contained in his raw data. The five dimensions in Hofstede’s research are: Power Distance Index (PDI), Individualism (IDV), Masculinity (MAS), Uncertainty Avoidance (UAI) and Long-Term Orientation (LTO)

3 DEVELOPMENT OF HYPOTHESES

3.1 Overview to the development of the hypotheses

The firms are not independent business units. They are located in given environments—market environments (business environments). We treat the market environment as an external factor. Besides, firms are organizations of individuals. According to Geert Hofstede’s research on culture dimensions, individuals in different countries have different characteristics. Hofstede use five cultural dimensions to express these differences. In his research, the differences of the cultural dimensions are considered as an internal factor. We propose that the external factors --market environments and internal factors --cultural differences will affect the relationship of Organization IQ and Firm Performance.

3.2 Development of hypotheses

4 DATA AND ANALYSIS

4.1 Data

4.1.1 Japan part

The questionnaire survey related to Organizational IQ was conducted in the May of 2007, which is a joint work with Kozokeikaku Kenkyuuzyo. The firms who took part in the questionnaire survey are the firms who answered the Survey on Actural condition of Information Processing by METI (Ministry of Economy Trade and Industry) continually from 2001 to 2006. The response from the survey is 230. It means we got 230 firms raw Organizational IQ data.

The Firm Performance is not a part of the content in the questionnaire survey, so we obtain the Firm Performance data from 日経 needs data base 2007. As not all the 230 firm’s performance data are contained in the data base, the available number is 185. So, in our research, in the Japanese side, we have 185 samples can be used in the data analysis. The industrial distribution of the sample is shown in Figure 4-1.

4.1.2 China part

In China, we constructed a corporation research group with researchers from School of Economics and Management in Tsinghua University. The questionnaire survey began from the middle of April and last two months, finished in the end of July. We got 48 whole
responses which can be used in the analysis. The industrial distribution of the sample is shown in Figure 4-1 and Figure 4-2.

4.2 Analysis and findings

The analysis can be divided into two steps. Firstly, in each country, what is the relationship between Organizational IQ and Firm Performance? Secondly, we try to compare the differences between the two results between Japan and China.

In order to test the hypotheses we adopt the Partial Least Square Path Modeling as the analysis tool. The analysis can be conducted in the following steps as shown in the left side of figure 4-3: model establishing, model estimation, model validation. From the 5 steps of model estimation, the final model was obtained as shown in figure 4-4. The components with black rectangle are Manifest Variables and the components with black circle are Latent Variables. The Manifest Variables relate the Latent Variables in reflective way. The components in the red rectangles are structure model which is also called inner model, and the components in the yellow rectangle are the measurement model also called outer model. PLS-Graph 3.0 was adopted as the analysis tool. We run bootstrap resampling on the final model with the Organizational IQ data and Firm Performance data. From the result we found that for Japanese data, all the average variance extracted are above the acceptable level 0.5, the range of average variance extracted is from 0.611 to 0.801. Meanwhile, the square root of each Latent Variable is larger than the inter-correlation with other Latent Variables; for Chinese data The range of average variance extracted is from 0.525 to 0.704. All of the five AVE are above the acceptable level 0.50. Meanwhile the square root of each Latent Variable is larger than the inter-correlation with other Latent Variables.
The results are shown in figure 4-5 and figure 4-6. From the result we found that for Japanese result, in the five factors in OIQ, External Information Awareness (EIA) and Continuous Innovation (CI) have significant correlation with Firm Performance. The significance of External Information Awareness is in the level <0.05 while the Continuous Innovation is in the level 0.01; From the Chinese result, we found that there is only one factor in OIQ has significant correlation with Firm Performance. That is Internal Knowledge Dissemination has negative correlation with Firm Performance in the level 0.05. Hypotheses 2~ Hypotheses 5 are supported by the statistical result, while Hypothesis 1 is not supported by the statistical analysis.

<table>
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<th>MVs</th>
<th>Number of LVs</th>
<th>Composite Reliability</th>
<th>AVE</th>
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<td>EDA</td>
<td>4 items</td>
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<td>CI</td>
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<td>CI</td>
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5 CONCLUSIONS

The objective of this research is to find how the difference of institutional environment, economic environment, and individual characteristics affect the relationship between Organizational Characteristics and Firm Performance (FP) in Japan and China.

We discussed how factors of Organizational IQ would affect Firm Performance in Japan and China from two aspects: external environment and internal environment. External environment include the market and institutional environment. Internal environment refers to the characteristic of individuals. Based on the discussion we proposed five hypotheses.
We choose the Organization Intelligence Quotient (OIQ) as the indicator of the Organizational Characteristics and Sale’s Volume and Sale’s Volume per Number of Employees as Firm Performance indicators. The OIQ data was acquired from surveys in Japanese and Chinese companies. The Japanese field survey was conducted by Kozokeikaku Kenkyuuzyo in May 2007. 185 usable data was used in this research. The Chinese field survey was conducted in collaboration with School of Economics and Management in Tsinghua University. 48 usable data was acquired. To test the relationship of factors of Organizational IQ and Firm Performance, PLS Path Modeling was used in this research. The OIQ Manifest Variable model is also acquired by using PLS path Modeling. As a result, we found that, not all the five factors in OIQ have significant correlation with Firm Performance. In Japan and China, the significant paths in the structural model are different. In Japan, External Information Awareness and Continuous Innovation have significant correlation with Firm Performance; while in China Internal Knowledge Dissemination has significant correlation with Firm Performance.

References

Haim Mendelson and Johannes Ziegler (1999), Survival of the smartest: Managing information for rapid action and world-class performance, Wiley