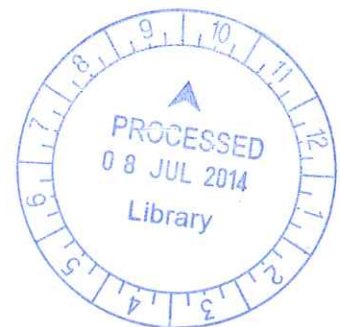# INTI INTERNATIONAL UNIVERSITY

MASTER OF BUSINESS ADMINISTRATION

The Relationship Between Intellectual Capital and Software Sector Performance in Malaysia

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Abstract

In this age's new economy, intellectual or intangible resources has become very valuable and has been the unique resource that firms around the globe continually tap into in order to find success. Intellectual resources allow new inventions and innovations on existing technologies and knowledge. Such resources has reshape the world into the new era of information age which operates around speed of information that is based on high tech electronics infrastructure. The new economy relies on such infrastructure as backbone as well.

The Malaysian economy relies on the same backbone as it is part of the global economy. Hence, it is crucial for the government to take on initiatives to strengthen the backbone of the economy so that the economy can thrive. Knowledge is then the key element in doing so.

Therefore the aim of this study is to identify the relationship between intellectual capital, namely Human Capital Efficiency (HCE), Capital Employed Efficiency (CEE), and Structural Capital Efficiency (SCE) on software sector performance, specifically Market to Book ratio (MB), Return on Assets (ROA), Return on Equity (ROE), and Revenue Growth (RG). This follows the model developed by Ante Pulic in 1998 of Value Added Intellectual Coefficient (VAIC). The data of this study covers 24 publicly listed software firms over 7 years period from year 2006 to year 2012. Partial Least Squares regression analysis is used to analyze the model. The result suggest that there is weak overall relationship of intellectual capital towards software sector firm performance. HCE has shown to have a positive significant relationship towards all 4 proxies.

Keywords - Intellectual Capital, Value Added Intellectual Coefficient, Software Sector, Malaysia

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Pee Ding Liang
April, 2014.

Declaration

I hereby declare that this research project is of my own effort except for those summaries and information of which the sources are clearly specified.

24th April 2014   Pee Ding Liang

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Introduction

1.0 Chapter Summary

Chapter one starts by introducing the movement from traditional economy into e-economy and its importance in advanced economy as well as the globalized world. ICT products especially software products becomes crucial in supporting this new breed of economy. This is followed by the Malaysian economy situation which requires further transformation to improve itself into a modern economy. This will require the support of ICT and software products. Hence, software sector's intellectual capital management is focused upon because a strong software sector will serve as a strong backbone for the country's economy development and transformation.

The purpose of this study is demonstrated in the formulating of research questions and objectives. Significance of this research is also discussed, mainly towards company managers, investors, and government. The scope of this study and major assumptions are discussed as well.

1.1 Background of the Study

"The e-economy will happen to Canada, whether or not we do anything about it. Our challenge and opportunity is to make it happen for Canada." (Government of Canada, 2004)

The excerpt from the Conference Background Paper published in 2004 by the Canadian Government is now proved to be truth. Electronic-economy ride on the back of globalization, and now it is around the globe.

In the same paper, it is defined that e-economy is the implementation and application of Information and Communication Technology (ICT), towards product and process improvement or innovation for all industries of the

economy. It has also mentioned that this has become the most important engine of growth for the economies of the world.

It is believed then, that this revolution will be as important and powerful as the invention of steam engine, automobile, etc. and application of electricity and fossil fuel.

The report from the Canadian Government shows that the economy of this era depends on a strong ICT backbone. This backbone hosts the environment for the global economy to grow.

The Software & Information Industry Association (SIIA), a principal trade association for the software and digital content industry, published a report titled "Software and Information Driving the Global Knowledge Economy" in 2008.

In this report, it is mentioned that software and information industries played a major role in shaping today's world. With software products, efficiency and productivity are increased as consumers are faced with all kinds of choices and personalization of products and services. This improves several areas of business processes, hence creating a high tech, knowledge based economy.

As an example, financial sector now allows customers to view, perform transactions, trading on stock markets, etc. through electronics means. This has greatly benefits the customers and helped the world economy to grow. The NASDAQ stock exchange itself is a masterpiece since the inception of software industry. This stock exchange does not have a physical trading floor; it is all built to be a virtual exchange.

In other sectors, due to the necessity to reduce cost and manage customer's requirements much efficiently, software products and services are utilized. Fields such as the healthcare sector, where the number of customers grows year by year has caused increased complexity in the services provided to the customers.

The 2008 report by SIIA also shows that software industry yield a higher growth rate than the overall U.S. economy. Due to the fact that this sector provided

products and services to all other economy sector, it also has the need to employ workforce suitable for its industry to keep it running. This in turns increases job creation. More high-paying job vacancies are available although they are generally in the software sector. This increases employment rate and consumption; therefore it is good for the overall economy of the U.S.

In essence, after being able to change how business works, and adding value to all sector across the economy, the software sector itself started to benefit from this action. As the world's economy becomes more knowledge intensive, the software sector will become one of the most important industries when it comes to hosting the economy.

Both the Canadian and the United States' report shows how the economy of today is tightly intertwined with the ICT industry, particularly the software industry, which connects the world. These phenomenons will not be restricted within borders or boundaries, it applies throughout the world. This includes Malaysia, a developing country with a national vision of transforming itself into a modern country with high income status in year 2020 (worldbank.org, 2014).

Malaysia as a developing country and emerging market is identified as one of those in a middle income trap situation (Xavier and Ahmad, 2012). Middle income country trap is defined as a country that has developed into middle income category but unable to transform into a high income country due to the lost of low cost leadership but without gain in terms of modern, service-based, knowledge-based industry.

In order to escape the middle-income trap economy, Malaysia has to improve itself to a service industry knowledge-based economy. The development of the Multimedia Super Corridor (MSC) is to accelerate the pace for Malaysia to achieve its Vision 2020 to becoming a modern state, with the adoption of knowledge-based society framework (Jeong, 2007).

As mentioned previously, the current global economy is dependent upon the software sector. As Malaysia gathers strength to escape from the middle

income trap through improving its economy, it requires a strong base of software industry to support the new knowledge-based economy.

1.2 Problem Statement

Due to the situation mentioned, Malaysia requires to build up a strong base of software sector to support its growth in knowledge-based service sector economy.

The government has taken initiatives to allow numerous packages of tax subsidy for ICT companies inclusive of software sector companies (mscmalaysia.my, 2014). This policy implemented by the Malaysian government shows adamant decision to improve the economy of the country.

Therefore, it is crucial to understand how software companies operate and which factors dictates their success or failure.

As Lev(2001) showed that market to book ratio of S&P 500 has increased from 1 to 5. This figure signals a trend, which signifies that true value in a company in the new era are very much represented by intangible asset. This is later supported by Marr et al. (2003) as the author suggests that a firm's value in this age is largely in its intangible intellectual capital not tangible physical assets.

Software companies are knowledge intensive. The sector requires skilled engineers, designers, systems architects, etc. to develop software products or services to support the general economy. Therefore, it is suffice to say that it requires a large amount of intellectual capital to strive.

However, there has been a limited study on significant effect of intellectual capital has on software sector in Malaysia. As Igel and Islam (2001) concluded, intellectual capital is key to competitive edge, the software sector needs to understand how intellectual capital affects their business and to organize resources optimally in order to produce results more efficiently as well as supporting the growing economy of the country.

1.3 Research Question

By the end of this paper, the following research questions would be fulfilled:

1. Is there a strong correlation between elements of intellectual capital towards software sector performance?

2. Which intellectual element contributes most to software sector's positive performance?

1.4 Research Objectives

The main objective is to investigate the relationship between intellectual capital and software sector's performance in Malaysia. Intellectual capital will be measured using Value Added Intellectual Coefficient (VAIC) which includes three elements including Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), and Capital Employed Efficiency (CEE).

1. To determine the relationship between intellectual capital and software sector performance in Malaysia.

2. To determine factors of intellectual capital that contributes significantly towards software sector performance in Malaysia.

1.5 Significance of Study

The purpose of this study is to identify the influence of intellectual capital has on software sector performance. As the world is currently in the Information Age, the software sector which builds tools for this era is bound to grow and evolve

as well as supporting the modern economy. It is therefore essential for the software sector companies to monitor how they could enhance their performance.

The research will be analyzing financial performance of the software sector by measuring Market-to-Book Ratio, ROA, ROE, and Revenue Growth. This study will also be measuring Intellectual Capital (IC) through Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), and Capital Employed Efficiency (CEE) as well as the combination of all three, forming Value Added Intellectual Coefficient (VAIC).

The results can be potentially useful for several parties including managers of the company, investors, and the government. The managers and decision makers of the software sector companies will be able to allocate resources much efficiently to achieve better performance. Investors who put money in the software sector will be able to evaluate their investment target through efficient IC allocation. The government will be able to incentivize the software sector in the right area so to encourage software firms to improve themselves as well as the economy as a whole.

The result produce at the end of this study can be utilized by the software sectors so to utilize its resources efficiently and effectively.

1.6 Scope of Study

This research aims to examine how intellectual capital affects the performance of software sector companies in Malaysia. The scope of study is limited within the Malaysian market from year 2006 to 2012. Due to the fact that the research methodology focuses on publicly available and audited financial data, only listed company in the Malaysian stock exchange, Bursa Malaysia, will be included. This will included the largest capitalized software firms in Malaysia. All financial data are gathered through extraction from the companies' annual report which is available from the stock exchange's official website.