UNIVERSITI TEKNOLOGI MARA

THE LONGITUDINAL STUDY OF INTELLECTUAL CAPITAL EFFICIENCY AND FIRM PERFORMANCE: THE MODERATING EFFECT OF INNOVATION

AZLINA BINTI RAHIM

Thesis submitted in fulfillment of the requirements for the degree of Doctor of Philosophy

Faculty of Accountancy

May 2019
ABSTRACT

In the knowledge economy, intellectual capital (IC) has become one of the primary sources of competitive advantage for a firm. Intellectual capital which consists of a set of intangibles drives the organizational performance and value creation. Therefore, it is important to understand whether the resource is being efficiently utilized by the companies to their advantage, especially in creating the value over time. The main objective of this thesis is to empirically examine the relationship between intellectual capital efficiency and its components namely human capital efficiency, structural capital efficiency and capital employed efficiency of the Malaysian companies. Intellectual capital efficiency is measured using Pulic's Value Added Intellectual Coefficient (VAIC) through quantitative approach. The empirical data were drawn from a panel consisting of 767 firms-year observation companies listed in the Bursa Malaysia Main Market, from several different industries, observed over the thirteen-year period from 2002 to 2012. In addition, this study also investigates the moderating effect of innovation on the intellectual capital efficiency and firms' performance. This study used statistical methods such as correlation and regression to analyze the data. Direct and moderating relationships between value added intellectual coefficient, human capital efficiency, structural capital efficiency and capital employed efficiency and five measures of performance are statistically analysed. The regression models were constructed to examine the relationship between intellectual capital efficiency and firms' market-to-book value ratios, and explore the relation between intellectual capital and firms' performance. The results obtained through testing the research hypotheses show that there is a positive and meaningful relationship between the variables. It suggests that there is a direct relationship between intellectual capital efficiency and performance of Malaysian publicly listed firms. It is revealed that intellectual capital efficiency of Malaysian companies is contributed by human capital efficiency followed by structural capital efficiency and capital employed efficiency. The results also suggest the possibility of a moderating relationship of innovation which impacts on firm performance. In addition, the results reveal that there is significant difference in the intellectual capital efficiency among different industries in Malaysia. The empirical investigation of these relationships in the context of the Malaysian economy enriches the literature. The results of the study also provide useful insights to regulators, professional bodies, policy makers, practitioners and academics that are relevant to their future decisions. In addition, the findings help companies reallocate intellectual resources properly since it is a way to enhance superior performance and building sustainable advantages in emerging economies.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter/Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONFIRMATION BY PANEL OF EXAMINERS</td>
<td>ii</td>
</tr>
<tr>
<td>AUTHOR'S DECLARATION</td>
<td>iii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>iv</td>
</tr>
<tr>
<td>ACKNOWLEDGMENT</td>
<td>v</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>vi</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>xii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xv</td>
</tr>
<tr>
<td>LIST OF ABBREVIATIONS</td>
<td>xvi</td>
</tr>
</tbody>
</table>

## CHAPTER ONE: INTRODUCTION

1.1 Preamble

1.2 Background of the Study

1.3 Statement of the Problem

1.4 Research Questions

1.5 Research Objectives

1.6 Significance of the Study

1.7 Scope of Study

1.8 Definition of Terms

1.9 Organisation of the Thesis

## CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

2.2 Underlying Theory

2.2.1 Resource-based theory

2.3 Intellectual capital
2.3.1 Definition of Intellectual Capital

2.3.2 Components of Intellectual Capital
   2.3.2.1 Human Capital
   2.3.2.2 Structural Capital
   2.3.2.3 Customer Capital

2.3.3 Intellectual Capital Models
   2.3.3.1 Saint-Onge’s Model
   2.3.3.2 Sveiby’s Model
   2.3.3.3 Wiig’s Model
   2.3.3.4 Sullivan’s Model
   2.3.3.5 The Skandia’s IC Scheme
   2.3.3.6 Brooking’s Model

2.4 Intellectual Capital Measurements
   2.4.1 The Market Capitalization Approach (MCA)
      2.4.1.1 Market-to-Book Value
      2.4.1.2 Tobin’s Q
   2.4.2 Direct Intellectual Capital Approach (DIC)
      2.4.2.1 Technology Broker
      2.4.2.2 Citation Weighted Patents
   2.4.3 The Return on Assets Approach
      2.4.3.1 Economic Value Added
      2.4.3.2 Calculated Intangible Value
      2.4.3.3 Value Added Intellectual Coefficient
   2.4.4 The Scorecard Approach
      2.4.4.1 Balanced Scorecard
      2.4.4.2 Skandia Navigator
      2.4.4.3 Intangible Assets Monitor
1.1 Preamble

In the knowledge based economy, intellectual capital (IC) has become the most important business success factor in sustaining competitive advantage and creating value of firms (Mditinos, Chatzoudes, Tsairidis, & Theriou 2011). In this new economy the organizations will give greater recognition to their knowledge assets/intangible assets for survival and growth. According to OECD (2005), the knowledge based economy is an expression coined to describe trends in advanced economies towards greater dependence on knowledge, information and high skill levels, which access by the business and public sectors.

The knowledge based economy is where the economy is directly based on production, distribution and use of knowledge and information. The vital role of knowledge is emphasized in the World Bank Institute’s Knowledge for Development (2007) where knowledge has clearly become the key driver of competitiveness and is now profoundly reshaping the patterns of the world’s economic growth and activity.

Economic managers of many countries feel that it is inevitable to transform the production-based economy to knowledge-based economy so as to maintain the pace of economic development (Abdul Majid Makki and Lodhi, 2005). Hence, intellectual capital has become a most powerful factor for all companies, especially those in the knowledge based economy, in generating their competitive competence and achieving corporate success (Wang, 2008).

Intellectual capital plays a key role in innovation, productivity as well as the performance of an organization (Zehri, Abdelbaki and Bouabdellah, 2012). Intellectual capital consists of non-physical sources of value related to employees’ capabilities, organizations’ resources and the way of operating relationships with their stakeholders (Kujansivu and Lonnqvist, 2007). Intellectual capital has become the object of particular attention by managers, investors, economic institutions and governments; as they are also the object of several studies recently realised in academic and professional environments (Zeghal and Maaloul, 2010).