Exploring the Role of Intellectual Capital in Determining Firm Performance

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Abstract

The recognition of knowledge as a key success factor in determining firm performance has laid the groundwork for scholars to explore intellectual capital in a variety of contexts including in relation to the business development, innovation management and social systems. Intellectual capital is defined as a group of knowledge assets that are owned and controlled by an organization that create value. It is divided into three components, namely human capital, structural capital and relational capital. Prior empirical studies on intellectual capital indicate that there were conflicting results between intellectual capital and its components, and firm performance. This paper tends to explore the conflicting results that link between them. The unit of analysis for the study is Small and Medium Enterprises operating in Malaysia.

Keywords: Intellectual capital, Human capital, Structural capital, Relational capital, Firm performance

Introduction

Previous literature has suggested that studies pertaining to knowledge, skills, competence and networking are based on the assumption that intellectual capital creates firm’s value. Due to this, a number of writings related to intellectual capital had gained attention during the 1990s (Galabova & Ahonen, 2011; Steward, 1997). According to Jo and Lee (1996); Murali, Abdul and Yusop (2009); Prieto and Revilla (2006); and Littunen and Niittykanges (2010) knowledge showed a positive relationship with performance. Chan (2009); Marr, Schiuma and Neely (2004) further explained that knowledge is synonymous with intellectual capital. In addition, several studies conducted by Kamukama, Ahiauzu and Ntayi (2010); Sharabati, Jawad and Bontis (2010); Phusavat, Compea, Sithok-Lutek and Ooi (2011); and Clarke, Seng and Whiting (2011) revealed that there are a positive association between the components of intellectual capital, namely HC, SC, RC, and performance. However, despite thousands of researches on intellectual capital have been published, its relationship with performance remains unclear and underexplored. Prior empirical studies on intellectual capital indicate that there were conflicting results between intellectual capital and its components, and firm performance. This paper tends to explore the conflicting results that link between them.

Intellectual Capital

Intellectual capital is defined as a group of knowledge assets that are owned and controlled by an organization that create value. Value would then increase profit and consequently performance. Intellectual capital is located in the firms’ employees, structure and customer (Ngah & Ibrahim, 2009). Sharabati, Jawad and Bontis (2010) added that it represents the wealth of ideas and the ability to innovate.

Components of Intellectual Capital

Many scholars have different views on the components of intellectual capital. Several researchers classified intellectual capital into three components, namely human capital (HC), structural capital (SC) and relational capital (RC) (Kamukama, Ahiauzu, & Ntayi, 2010; Clarke, Seng, & Whiting, 2011; Halim, 2010; Sveiby, 1997; Chan, 2009; Corcoles, Penalver, & Ponce, 2011; Sharabati, Jawad, & Bontis, 2010; Ngah & Ibrahim, 2009). Some authors shared the same view on the number of
components of intellectual capital with a little change seeing in SC; where it is further divided into two, customer capital and organizational capital (Corcoles, Penalver, & Ponce, 2011).

HC refers to the knowledge, abilities, experiences and attitudes possess by the organizational members. It represents the collective capabilities of a firm’s workforce that determine performance (Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011). Alipour (2012) stressed that the economic potential of a nation is dependent on the quality of its HC. In this matter, different individual has different level of understanding and different quality of knowledge where better quality of HC implies better in problem solving and value creation skills, thus better performance results.

SC refers to a collection of knowledge in an organization embedded in systems, databases and program. Halim (2010) defines SC as what happens amongst the people, how the people are connected within the firm and what stays when the employee leaves the company. Bontis (1998) further defined SC as the knowledge that stays within the firm. Initially, SC is created by HC to guide employees on the work flow, work culture, rules and procedures in a firm. It is developed from time to time, adapting the changes in a business environment to ensure that a firm is functioning effectively towards profit making activities. SC comprises all intangible assets that shape the real firm structure and culture which fosters the knowledge flow and integrates all knowledge across different functions within a firm (Delgado-Verde, Castro, & Navas-Lopez, 2011). Examples of SC are structure, systems, databases and corporate culture.

RC represents all the knowledge embedded in the relationships with external parties which include alliances, customers, investors, distribution networks, partners and suppliers. It involves interactions across the firm’s boundary. Halim (2010) and Joshi, Cahill, and Sidhu (2011) defined RC as the ability of an organization to create relational value with is external elements or external stakeholders. RC includes the links and connection of employees with their coalition partners such as customers and suppliers (Seleim & Khalil, 2011).

Performance

Performance can be understood differently by different people in many aspects and connotations depend on the application. It is defined as a standard that a firm does something. Performance can be measured according to either an objective concept based on absolute measures of performance or a subjective concept based on self-reported measures. Objective measures are directly taken from external recorded and audited accounts using absolute measures; whilst subjective measures are based on the respondents’ ratings of their company performance (Wall, et al., 2004). Performance in this study is measured according to subjective concept based on self-reported measures; where the respondents were asked to give ratings of their firm performance.

Nothnagel (2008) further explained that firm performance is measured according to level of performance, either firm-level performance or lower level performance. Firm level performance is known as organizational performance whilst lower level performance is known as operational performance. Organizational performance is distinguished into four groups namely accounting returns, stock markets, growth measures and hybrids whilst operational performance consists of outcome measures that are narrowed down into a specific value chain activity rather than disaggregated performance level. The outcome measures are divided into five groups namely service outcomes, human resource outcomes, technology development outcomes, infrastructure outcomes and operations outcomes. The study has employed hybrid organizational performance measuring the financial and non-financial indicators of each firm.

The Relationship of Intellectual Capital and Its Components with Firm Performance

Delgado-Verde, Castro and Navas-Lopez (2011) stressed that knowledge is one of the main determinants for the existence of a firm. This factor drives the interest of scholars to study intellectual capital and firm performance (Bramhandkar, Erickson, & Applebee, 2007; Clarke, Seng, & Whiting, 2011). Previous studies conducted by Jo and Lee (1996); Murali, Abdul and Yusop (2009); Prieto and Revilla (2006); and Littunen and Niittykanges (2010) showed a positive relationship between knowledge and performance. Knowledge is a term that no single agreed upon the definition. Knowledge is a collection of facts, information and experience which is known. From an
epistemological perspective, knowledge refers to the intellectual capital entity that can be treated either as an asset or a resource (Chan, 2009; Marr, Schiuma, & Neely, 2004). Bramhandkar, Erickson and Applebee (2007) further added that intellectual capital will lead to a unique and sustainable competitive advantage. Ray, Barney, and Muhanna (2004); Morgan, Kaleka and Katsikeas (2004); and Tayles, Pike and Sofian (2007) shared the same view when they found that competitive advantage has a significant relationship with performance. It is because intellectual capital has the potential to establish firm’s unique capability and competency. Sharing the same view, Sharabati, Jawad and Bontis (2010) concluded that intellectual capital has a substantive and significant relationship with business performance. Kamukama, Ahiauzu and Ntayi (2010); Sharabati, Jawad and Bontis (2010); Phusavat, Comepa, Sitko-Lutek and Ooi (2011); and Clarke, Seng and Whiting (2011) extended their study on intellectual capital looking at the relationship of the components of intellectual capital with performance and revealed that there are a positive association between HC, SC, RC and performance.

However prior to archival evidence, inconsistencies do exist in the effect of intellectual capital on firm performance. The inconsistency refers to the conflicting results in the relationship between both constructs. For example, Chan (2009) found that HC is negatively associated with some indicators of performance. In contrast, Kamukama, Ahiauzu and Ntayi (2010); and Phusavat, Comepa, Sitko-Lutek and Ooi (2011) concluded that HC is positively associated with performance. On the other hand, Joshi, Cahill and Sidhu (2011) found that SC and RC has little or no impact on overall performance. Conversely, Sharabati, Jawad and Bontis (2010); Kamukama, Ahiauzu and Ntayi (2010); Clarke, Seng and Whiting (2011); and Phusavat, Comepa, Sitko-Lutek and Ooi (2011) concluded that SC and RC are associated with performance. For a better view, Table 1 is constructed to show a summary of past researches pertaining to the relationship between intellectual capital and performance.

Table 1: Research Studies of the Relationship between Intellectual Capital and Performance

<table>
<thead>
<tr>
<th>Author (Year)</th>
<th>Independent Variable</th>
<th>Dependent Variable</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ting and Lean, (2009)</td>
<td>Intellectual capital:</td>
<td>ROA</td>
<td>• There is a significant positive effect of HCE and CEE on ROA.</td>
</tr>
<tr>
<td></td>
<td>i. Human Capital Efficiency (HCE)</td>
<td></td>
<td>• SCE has a negative effect with ROA but it is not significant.</td>
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<tr>
<td></td>
<td>ii. Structural Capital Efficiency (SCE)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>iii. Capital Employed Efficiency (CEE)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chan (2009)</td>
<td>Intellectual capital:</td>
<td>Corporate</td>
<td>• HCE is negatively associated with MB, ROA, ATO and ROE.</td>
</tr>
<tr>
<td></td>
<td>i. HCE</td>
<td>performance:</td>
<td>• SCE is negatively associated with MB and ATO</td>
</tr>
<tr>
<td></td>
<td>ii. SCE</td>
<td>i. Market valuation</td>
<td>• SCE is positively associated with ROA and ROE.</td>
</tr>
<tr>
<td></td>
<td>iii. CEE</td>
<td>(MB)</td>
<td>• CEE is positively associated with MB, ROA, ATO and ROE.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ii. ROA</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>iii. Productivity</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>(ATO)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>iv. ROE</td>
<td></td>
</tr>
<tr>
<td>Sharabati, Jawad and Bontis (2010)</td>
<td>Intellectual capital:</td>
<td>Business performance:</td>
<td>• Intellectual capital has a substantive and significant</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Source</th>
<th>Intellectual capital:</th>
<th>Financial performance:</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kamukama, Ahiauzu and Ntayi (2010)</td>
<td>i. HC ii. SC iii. RC</td>
<td>i. Productivity ii. Profitability iii. Market valuation</td>
<td>• There are a positive association between HC, SC, RC and Financial performance.</td>
</tr>
<tr>
<td>Joshi, Cahill and Sidhu (2011)</td>
<td>i. HCE ii. SCE iii. CEE</td>
<td>Performance: i. Assets ii. VA (Input-Output) iii. Shareholders’ equity</td>
<td>• HCE has significant impact on VA • SCE and CEE has little or no impact on overall performance.</td>
</tr>
<tr>
<td>Wah Chu, Chan and Wu (2011)</td>
<td>i. HCE ii. SCE iii. CEE</td>
<td>Corporate Performance i. Market Valuation (MB) ii. Profitability (ROA) iii. Productivity (ATO)</td>
<td>• There is a strong association between VAIC and MB. • VAIC is positively associated with ROA. • HC has no impact on ATO. • SC was negatively associated with ATO with very high significance.</td>
</tr>
<tr>
<td>Clarke, Seng and Whiting (2011)</td>
<td>i. HCE ii. SCE iii. CEE</td>
<td>Financial performance. i. ROA ii. ROE iii. Revenue growth</td>
<td>• There are significant relation between HC, SC, RC and Financial performance.</td>
</tr>
</tbody>
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Source: Compiled by the Authors

These empirical evidences show that there were conflicting results that linked between intellectual capital and its components with firm performance. Thus, it raises the interest for researchers to study issues pertaining to intellectual capital in a variety of contexts including in relation to the business development, technology and social systems. Concerning this, the study is one of the attempts to explore the relationship of intellectual capital, HC, SC and RC with firm performance.

**Data collection**

There are two types of data collection that were used in this study. First, the primary data collection consists of 1,071 sets of questionnaire and second, the secondary data collection containing data which was gathered from documentation and archival evidence such as journals, articles, reference books, websites and other materials related to the study. The primary data collection took seven months. The study has employed systematic random sampling technique as it allows a system of random selection of subjects to occur and provides assurance that the population will be evenly sampled (Zikmund, Babin, Carr, & Griffin, 2010). The unit of analysis for the study is Small and Medium Enterprise (SMEs) in Malaysia.

Concerning questionnaire design, the study has adapted questions of measuring intellectual capital captured from Sharabati, Jawad and Bontis (2010). In this regard, intellectual capital is divided into three components, namely HC, SC and RC. They are measured using a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).
The study has utilized postal mail survey and online survey as a medium to send the questionnaires because they are commonly used in similar kind of researches. Furthermore, these medium is the best alternatives as they have an advantage of wider geographical coverage. Of 1,071 set of questionnaires sent, 185 sets were received and 172 sets were usable; which translates to about a 17.3% response rate.

Data Analysis and Result
The data was analyzed with non-response bias test and common method bias test using SPSS software and it is found free from any issues that could lead to inconsistency and inaccurate conclusions. There are no multivariate outliers found in the data set and the data distribution is not normal. Analysis of discriminant validity, internal consistency, convergent validity and path significance were using Smart-PLS software as the objective of the study is to explore the relationship between intellectual capital and performance; and the conceptual model of the study is complex with a sample size of 172. Concerning this, Hair, Ringle and Sarstedt (2011) stressed that Smart-PLS has the ability to perform multivariate analysis under the conditions of non-independence of data with small sample size and without distributional assumptions.

Initial assessment of the data shows that it violates the discriminant validity requirement where most of the correlation values of the constructs have exceeded the square root of Average Variance Extracted. Due to this, high correlation values that load strongly in other construct rather than on their own construct were deleted as suggested by Gefen, Straub and Boudreau (2000). Further assessment of the data internal consistency and convergent validity showed satisfactory results. Looking at the path significant analysis, the study indicates that intellectual capability has a positive relationship with performance. The result is parallel with previous studies conducted by Sharabati, Jawad and Bontis (2010), and Phusavat, Comepa, Sitko-Lutek and Ooi (2011) The study concludes that intellectual capital contributes to performance.

Further analysis of the study on the components of intellectual capital recorded that only RC has influence on performance. The result findings are in contrast with several studies performed by Kamukama, Ahiauzu and Ntayi (2010); Sharabati, Jawad and Bontis (2010); Phusavat, Comepa, Sitko-Lutek and Ooi (2011); and Clarke, Seng and Whiting (2011) where they recorded a positive association between RC and performance. Nevertheless, the relationship of HC and RC with firm performance produced the same results with their findings.

Conclusion
The study concludes that intellectual capital and SC are associated with firm performance. As means to recognize intellectual capital as a key to future wealth, it is a necessity for firms to set a management mechanism to enable it to grow and function effectively and efficiently. It is the process of managing intellectual capital a firm may be able to survive and enjoy competitive advantage benefits.

References


