Relationship of Intellectual Capital Dimensions and Performance of Banks in Malaysia: An Exploratory Study

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Abstract

The purpose of this paper is to explore the relationship between dimensions of intellectual capital and performance of banks in Malaysia. The dimensions studied are human capital, relational capital and structural capital. A quantitative survey method was employed and data were collected using questionnaires. The sample was the branch managers of commercial banks in Malaysia, and they were chosen because they are responsible for strategic decisions at the corporate as well as the strategic business unit levels. A total of 1844 questionnaires were mailed to the respondents, and 345 usable responses were received, giving a response rate of 18.70 percent. Descriptive statistics were used to analyze the characteristics of the respondents including frequency, mean, and measures of reliability, while multivariate technique employed was multiple regressions. The findings revealed that significant relationships exist between human and structural capitals and bank performance, while no significant relationship was found between relational capital and bank performance. These findings may be of help to banks to utilize more of their internal resources to compete and survive the intensely competitive business environment.

Keywords: Banks, intellectual capital, human capital, relational capital, structural capital, performance

1. Introduction

The banking industry in this era of globalization has seen noticeable changes in its business environment due to the financial liberalization and consolidation, economic transformation and more discerning customers. This competitive business environment is expected to intensify dramatically as technological advancements have allowed the developments of new and more efficient delivery and processing channels as well as more innovative products and services. As a result, banks are adopting more innovative strategies to keep with the changing environment and customers' requirements (Al Swidi & Mahmood, 2011). These banks are also likely to focus well on the management of their resources as it has been acknowledged that organizations that succeed in mobilizing their resources in the form of knowledge, technological skills and experience, and strategic capabilities toward creating new processes and product/service offerings can easily achieve competitive advantage (Thacker & Hanscombe, 2003; West & Anderson, 1996; Burpitt & Bigoness, 1997, Preito & Revilla, 2006). It can also be the primary determinant of sustainable competitive performance because knowledge can be used to create business value, achieve business goals, and develop greater value from the core competencies of the business (Tiwana, 2001; Zahra, Nielsen & Bogner, 1999). As a form of knowledge, intellectual capital (IC) has also been recognised as a critical firm resources in getting and sustaining competitive advantage (Edvinssone & Malone, 1997; Stewart, 1997; Bontis, 2002; Barney, 2002). Bontis, (1999, 2002), Youndt (1998), Kamath (2007), and Tovstiga and Tulugurova (2007) have all demonstrated that intellectual capital has a positive association with organizational performance. Intellectual capital is also being increasingly viewed as a key determinant of business performance of knowledge intensive industries. However the banking sector which is often characterized as a highly knowledge industry has been given less attention by past researchers (Mavridis, 2004).

Realizing the important roles of intellectual capital in providing a competitive edge and contributing towards better performance, it is the aim of this research to focus on intellectual capital relationship to the bank performance.

2. Literature Review

Intellectual capitals are intellectual materials that can be captured as assets, such as knowledge, information, intellectual property, and employees' experiences, commitments or capabilities (Barney, 2002). Although intellectual capital has being viewed as a key determinant of business performance, relatively little is known about how dimensions of intellectual capital individually and collectively affect a firm's performance (Tovstiga & Tulugurova, 2007). Hsu (2006) suggested that intellectual capital dimensions such as human capital, innovation capital and structural capital are crucial and act as integral knowledge in an organization. However, there is no consistency as to the types of capitals to include as dimensions of intellectual capital. Some studies examined dimensions from a classification and conceptual models perspective (Bontis, 1999, 2002; Van Buren, 1999; Pike, Rylander & Roos, 2002), while others measured dimensions of intellectual capital using accounting, financial and disclosure methods (Kamath, 2007; Goh, 2005; Mavridis, 2004). Thus, there is a need to examine more closely the specific dimensions of intellectual capital that are crucial to the firm performance.

Typically most firms have three forms of IC embedded in their people, structures, and customers. These are human capital, structural capital, and relational capital (Stewart, 2001; Grace, 2006; Curado & Bontis, 2007; De Castro & Saez, 2008; Hsu & Fang, 2009). Human capital is the knowledge, skills, experience, intuition, and attitudes of the workforce (Stewart, 1997), and can be enhanced by increasing the capacity of each worker (Teo, 1998). Structural capital includes patents, copyrights, and information-age assets such as data bases and software. These are organizational and technological elements that pursue integration and coordination within the firm (De Castro & Saez, 2008). Relational capital is the value of a firm's relationships with the people with whom it does business. It is the likelihood that these people will keep doing business with the firm (Stewart, 1997; Edvinsson & Malone, 1997). Firms with more human, relational and structural capital should be able to better enact their environment as well as respond and adapt to environmental changes (Gold, Malhotra & Segars, 2001).

It also increases the firm's information processing capacity through the creation of lateral relations and investments in information system (Reeds, 2000; Youndt, 1998), and these bolster the firm's performances. From a human capital perspective, an increase in employee skills, knowledge and abilities most likely translates into increased performance because it generates new ideas and techniques that can be embodied in production equipment and processes (Saa-Perez & Garcia-Falcon, 2002; Reeds, 2000). It may also initiate changes in production and service delivery method, and improves the link between employees, managers, and customers. In relational capital, the knowledge tied up in relationships among employees, customers, suppliers, alliance partners, and trade associations may lead to process innovation and better problem solving. These tend to increase production and service delivery efficiencies, thereby reducing organizational costs (Marinova, 2004; Lee & Choi, 2003; Reeds, 2000; Youndt, 1998). Structural capital can improve firm performance by reducing its operational costs. Structural capital embedded in routines, procedures, and information systems can help filter information as well as direct and simplify information processing, and organizational sense making, all of which should diminish organizational costs (Reeds, 2000; Garvin, 1993). Based on these discussions, the following hypotheses are formulated:

H1: There is significant relationship between human capital and performance of banks in Malaysia.
H2: There is significant relationship between relational capital and performance of banks in Malaysia.
H3: There is significant relationship between structural capital and performance of banks in Malaysia.

3. Methodology

3.1 Population and Sampling Frame

The population used for this study was the branch managers of locally incorporated commercial banks in Malaysia. The local banks were chosen because these banks have extensive branch networks, even in rural areas. The sampling frame was obtained from the Association of Banks Malaysia (ABM). The key informants were branch managers and the choice of the banking industry makes the sample homogeneous. Branch managers were chosen because they are responsible for strategic decisions at the corporate level and the strategic business unit level, and therefore they are in the best position to describe the various organizational characteristics of their banks (Dwairi, 2004; Mahmood & Abd Wahid, 2012).

Furthermore, this study focused more on the organizational capabilities that are more closely related to branch management rather than top management. This study also aimed to measure those responsible for the execution of strategy, not the top management who formulated it. Thus, collecting information from the branch managers would well support the focus of this study. A total of 1844 branch managers from the sampling frame were sent with the questionnaires and 360 completed questionnaires were returned with a response rate of 19.52 percent. This response rate is acceptable considering the fact that mail survey response rates of over 30 percent are rare, and are frequently as low as 5 to 10 percent (Alreck & Settle, 1995). Fifteen returned questionnaires were later detected as outliers and were deleted from the data.

3.2 Questionnaire Design

Data for this study were collected using a survey questionnaire research instrument. It is the logical way to measure intangible constructs such as perceptions and attitudes. Questionnaire also can provide an efficient and versatile data gathering technique (Babbie, 1990). Although questionnaire may results in data bias due to time of measurement effects and the inability to measure any changes in attitudes, perceptions, or behaviours, it is still the most prevalent data collection method used to measure intellectual capital, and business performance (Youndt, 1998; Bontis, 2002; Dess & Robinson, 1984; Gupta & Govindarajan, 1984). This study proposed three definitional dimensions of intellectual capital, namely; human capital, relational capital, and structural capital. The instruments for these dimensions were adapted from a previous research by Youndt (1998). Although the instruments were previously tested for validity and reliability, some of the questions were slightly modified to make them more relevant to the purpose of this study. The questionnaire of the three dimensions each consists of five items and uses a five point Likert scale on which the respondents have to indicate the extent to which the items represent their bank's strategy. For measuring performance, a subjective approach developed by Dess and Robinson (1984) and Gupta and Govindaran (1984) was adopted. Past research has indicated that subjective measures can be consistent with objective measures, and were a reliable means for measuring performance (Dess & Robinson, 1984; Pearce, Robbins & Robinson, 1984; Venkatraman & Ramanujam, 1987). Moreover, subjective measures may increase the response rate where objective data are either not available or respondents not willing to reveal the information. The questionnaire consists of three items, and respondents were asked to rank the performance of their bank for the past three years based on a Likert type scale ranging from much lower (1) to much higher (5). A three year average performance measure was used in order to reduce the decision variation impact of the bank's annual financial report (Covin, Slevin & Heeley, 2001).

3.3 Pilot Study

A pilot study was conducted prior to the beginning of the full study. The objectives of the pilot study were to establish that the respondents understand the questions in the survey, to solicit feedback for improvements to the instrument, and to determine the time required for the respondents to complete the survey (Robson, 2002; Cooper & Schindler, 2006; Good & Harding, 2003). The overriding objective of this pilot study was to improve the reliability and validity of the survey instrument and to enhance the psychometric properties of the scales (Nunnally, 1978). A convenience sample of thirty banks in Kuala Lumpur area was chosen for this pilot study. The branches represented all the nine domestic banks in Malaysia. The survey questionnaires were hand-delivered to the selected branch managers and picked up a week later. Once all the thirty completed and usable questionnaires were obtained, the pilot study was completed. The responses showed the general ease of completion of the questionnaire, and there were no comments or improvement suggestions from the participants. Therefore, no further adjustments were needed. In addition, a reliability test was conducted to examine the internal consistency of the instruments employed in this study. The reliability test was conducted on the 30 completed questionnaire obtained during the pilot test, and the results are shown in Table 1 below:

Table 1: Results of the reliability test

No.	Variable	No. of Items	Alpha Value
1.	Human capital	5	.899
2.	Relational capital	5	.843
3.	Structural capital	5	.811
4.	Performance	3	.853

3.4 Factor Analysis

Factor analysis was used to check construct validity on all of the scales. The results would be used to primarily determine the dimensionality of constructs. The results of the factor analysis were based on two measures. The first is the Kaiser-Meyer-Olkin (KMO) measure. The KMO measures the sampling adequacy. According to Kaiser (1974), KMO is an index used for comparing the magnitudes of the observed correlation coefficient to the magnitudes of partial correlation coefficient. If the sum of the squared partial correlation coefficient between all pairs of variables is small when compared to the sum of the squared correlation coefficient, the KMO will be closer to one (1.0). The closer the value of KMO is to one, the more appropriate the factor analysis will be. The further the value of KMO from one, the less appropriate the factor analysis for the sampling population (Kaiser, 1974). Bartlett's test for sphericity was also used to determine the suitability of data for the factor analysis. Bartlett's test for sphericity indicates whether the correlation matrix is an identity matrix, which indicates that the values are unrelated. Very small significance levels (less than 0.05) indicate that they are probably significant relationships among the variables. A high significance level may indicate that the data are not suitable for factor analysis.

Second, is the factor loading or communality among the scale items. The loadings reflect the strength of the relationship between a scale item and a particular construct or factor. The higher the loading, the better the representation that particular item has on the factor. Hair et al., (2006) recommended that factor loadings greater than 0.30 are the minimum requirement; loadings of 0.40 are considered more important; and loadings of 0.50 or greater are considered significant. Based on this guideline, items that have factor loadings of lower than 0.30 should be discarded. However, to minimize the deletion of items from the established measures to ensure that the level of comparability with previous studies was not decreased, the coefficient alpha was taken into consideration as well. If the deletion of a low factor-loading item helped to substantially improve a coefficient alpha, then that item was deleted.

The factor analysis procedure of SPSS was performed to determine the constructs. Varimax rotation, an orthogonal technique, was used to maximize the spread between factors and simply the analysis of the results. All items with factor loadings above 0.30 were considered (Hair et al, 2006). The first scale by factor analysis measures intellectual capital, and varimax rotation analysis was conducted on the 15 item scale. Prior to performing this analysis, the suitability of the data for factor analysis was assessed. Statistical measures to assess the factorability of the data were conducted through Kaiser-Meyer-Olkin (KMO) to determine the measure of sampling adequacy. Table 2 below shows the KMO value of 0.924, which can be considered as 'Marvelous' (Kaiser, 1974) and the Bartlett's Test of Sphericity, which is significant at $p<0.001$. Therefore the sample is adequate for factor analysis.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of sampling Adequacy		.924
Bartlett's Test of Sphericity	Approx. Chi-Square	4575.233
	Df	105
	Sig.	.000

Table 3 shows the results of the factor analysis. The varimax rotated principal components exploratory factor analysis revealed a three factor structure that explained 69.04 percent of the variance. Only factors with a loading value of 0.30 and above were considered. Therefore no items were deleted. Eigenvalues for each factor were greater than 1.0. The three factors were designated as human capital (F2), relational capital (F1) and structural capital (F3). For five items attempting to measure human capital, the highest loading was 0.810 and the lowest 0.448. Five items were extracted for relational capital, and the highest loading was 0.791 while the lowest loading was 0.734. The five loadings attempting to measure structural capital have the highest and lowest loadings of 0.887 and 0.649, respectively.

Table 3: Factor Analysis for Intellectual Capital

Items	Factor 1	Factor 2	Factor 3
Our employees are skilled at collaborating with each other to diagnose and solve problems (6)	.734		
Our employees share information and learn from one another (7)	.786		
Our employees interact and exchange ideas with people from different areas of the bank (8)	.791		
Our employees have the capacity to partner with customers, suppliers, alliance partners to develop business solutions (9)	.784		
Our employees apply knowledge from one area of the bank to problems and opportunities that arise in another (10)	.781		
Our employees are highly skilled (1)		.647	
Our employees are widely considered the best in our industry (2)		.810	
Our employees are creative and bright (3)		.591	
Our employees are experts in their particular jobs and functions (4)		.497	
Our employees are able to develop new ideas and knowledge (5)		.448	
Our bank uses patents and licenses as a way to store knowledge (11)			.691
Our bank's knowledge is mostly contained in manuals, data base (12)			.814
Our bank's culture contains valuable ideas, ways of doing business (13)			.887
Our bank embeds much of the knowledge and information in structures, systems, and processes (14)			.755
Our bank protects vital knowledge and information to prevent loss in the event key people leaves the organization (15)			.649
Eigen values	8.244	1.111	1.002
Percentage of variance explained	54.958	7.409	6.677

4. Findings

4.1 Characteristics of Respondents

The findings in Table 4 below revealed that nearly 72 percent of bank managers holding the position at branch levels were male. This shows that the banking industry in Malaysia was still male dominated at the higher managerial level. The ethnic groups were diversely distributed, and this reflects that of the country with a majority of them Malays contributing 53.3 percent, followed by the Chinese with 27.0 percent, Indians (12.5%) and others (7.2%). Most of the respondents possessed at least an undergraduate degree with 70 percent of them while another 18 percent were diploma holders. There were also 23 respondents who had post graduate degree including two of them with doctorate qualification. This shows the importance of academic credentials for managerial positions in the Malaysian banking industry. In terms of experience, about 80 percent of the respondents had been in the banking industry for more than 10 years with 25.5 percent of them having been in the industry for more than 20 years. None of the respondents had less than 5 years working experience with the banks. This again shows the importance of banking experience as a criterion for a managerial position in the industry. Thus it is expected that the respondents were all well-versed and knowledgeable in their jobs.

Another important finding is that more than 75 percent of the respondents had been in the branch managerial position for less than 10 years and only 7.8 percent had been holding the post longer than 15 years. A possible reason for the low longevity of bank managers at branch levels is that long experienced bank managers would normally be pulled back to the head office for more responsible positions (Mahmood & Abd Rahman, 2007). The findings also revealed that about 70 percent of the respondents' banks had less than 25 employees. Only 30 of the banks had 25 or more staff employed at the branch levels. Therefore these findings show that the size of bank branch in Malaysia as measured by the number of employees is relatively small. This is expected as most banking operations today are fully computerized and the application of e-banking demands less employees.

Table 4: Profile of the respondents

Variable		Frequency	Percentage
Gender	Male	248	71.9
	Female	97	28.1
Ethnicity	Malay	184	53.3
	Chinese	93	27.0
	Indians	43	12.5
	Others	25	7.2
Qualification	SPM/STPM	36	10.4
	Diploma	62	18.0
	First Degree	224	64.9
	Master	21	6.1
	Doctorate	2	0.6
Managerial position (years)	Less than 5	145	42.0
	5 and less than 10	117	33.9
	10 and less than 15	56	16.2
	15 and more years	27	7.8
Banking experience (years)	More than 5 but less than 10	69	20.0
	10 and above but less than 15	114	33.0
	15 and above but less than 20	74	21.4
	20 and above	88	25.5
Number of staff	More than 10 but less than 15	97	28.1
	15 and more but less than 20	87	25.2
	20 and more but less than 25	55	15.9
	25 and more	106	30.7

4.2 Test of Hypotheses

Hypotheses 1, 2 and 3: There are significant relationships between human capital, relational capital, structural capital and bank performance. In order to assess these relationships, a multiple regression analysis was conducted, and the results are shown in Table 6. The overall model was significant ($F = 59.278$, $p < .001$) accounting for 34.3 percent of the variance in bank performance. When all three independent variables were considered simultaneously in the model, only two variables showed significant positive contribution to the performance, that is human capital ($\beta = .394$, $p < .05$) and structural capital ($\beta = .351$, $p < .001$). However, relational capital had shown no significant relationship with performance. Thus, only Hypotheses 1 and 3 are supported. The results are in contrast to most of major findings of previous studies (For example, Sharabani & Jawad, 2010; De Castro & Saez, 2008; Bontis, Keow & Richardson, 2002), which concluded that all constructs of IC contribute significantly to organizational performance. Only Seleim and Ashour (2007) did not find any relational capital influence to firm performance. The relational capital encompasses knowledge embedded within the bank in its relationship with the customers. The relatively small size of most banks in this study may have an impact on the relationships with the customers that it would not facilitate direct exchange and sharing of information. There is also a possibility that the advent of information technology in the banking system necessitates the less demand in face to face interactions with the customers.

Table 6: Regression of human capital (HC), relational capital (RC) and structural capital (SC) on performance

	SS	*df*	*MS*	*F*	*Sig.*
Regression	61.268	3	20.423	59.278	.000**
Residual	117.482	341	.345		
	B	*Beta*	*t*	*Sig.*	
HC	.483	.394	2.060	.040*	
RC	-.099	-.080	-.415	.679	
SC	.402	.351	6.551	.000**	

Significant *p< .05, **p< .001

5. Implications and Recommendations

Past researchers have found that investments in information technology systems and bank efficiency have a significant impact on intellectual capital performance (Joshi et al, 2010; Shih et al, 2010; Kamath, 2007; Mavridis, 2004). They suggested that banks should address factors affecting intellectual capital performance towards developing their performance and in turn maximize their value creation. Kamath (2007) who studied banks in India also found that most big foreign banks were in the list of top performers in IC, while mainly domestic banks fared poorly or were average performers on the IC scale. Most of the big foreign banks were top performers because they have only corporate customers, they are also highly technology intensive and perform only specialized activities, and offer specific high value customized products. On the other hand, the domestic banks are basically poor customer base with huge non-performing assets, incorrect allocation of resources, huge employee costs, unplanned growth and bad investment decisions. Mavridis (2004) who surveyed 141 banks in Japan found that the best performing banks were those who mainly have very good results in the usage of their intellectual capital. He highlighted the fact that those with high intellectual capital are strongly contributing to the corporate performances.

Therefore, banks in Malaysia should find ways to cultivate and increase contents of IC in the industry. They should have a complete and comprehensive training and education to expand the professional knowledge, skills and creativity of employees for their human capital. They should also enhance employees with relational skills to maintain good and long-lasting relationships with all the stakeholders. This will have strong ramifications in the long-term effectiveness of the organizations. For structural capital, the banks should strive to improve the operational efficiency by enhancing the innovation capabilities and bettering the value of knowledge treasury and systems within their organizations. The interaction and accumulation of all dimensions of IC will create differentiated advantages and boost organizational competitiveness. Kaplan and Norton (1996) argued that this interaction may trigger absorption of information, which can transfer knowledge formats, stored and shared within the organizations.

This study is considered a first step in the knowledge-based research concerning intellectual capital in the banking industry in Malaysia. Intellectual capital is a knowledge-based research field that still faces some lack of cumulative theoretical development, presenting challenging opportunities to explore this concept further. The banking industry proved to be an excellent setting for the study, both in terms of firm's participation and the relevancy of the research questions involved. From the practical view, this study does offer evidence that bank's intellectual capital influences its performance. Thus, it provides a rough guide to help bank managers prioritize their efforts in regard to the dimensions of intellectual capital used in this study, to support their performances. This study also highlights how these banks can view resource acquisition as a path to competitive advantage, and to focus on optimizing resource acquisition activities to the bank's benefits.

This study is not without its limitations. The subjects for this study include only one sector of the business that is commercial banks, thus the findings may not be generalized to other organizations in Malaysia, or more generally, to any other settings. A larger sample of organizations by many other sectors might show different patterns. This needs to be investigated further. In addition, the data were obtained from the bank managers, who were considered the top person in each bank branch. They would have the most influence over how decisions were made at each of these banks.

It would be useful to obtain a broader sample of executives and perhaps even non-executives in various sections of the banks in future studies. This would minimize any potential bias in the data resulting from the level of informants. Furthermore, it would be interesting to compare perceptions of employees at different levels and account for differences in perceptions, if any. This study employed quantitative research methods, and the survey questionnaire was the only instrument used to collect data. Thus it is impossible to guarantee the reliability of data collected because it depended on the respondent's attention to detail when answering the questions. Perhaps future research should employ also qualitative methods which would include detailed interviews to elicit verbal descriptions of characteristics, cases, and the setting. Qualitative research usually involves fewer cases investigated in more depth than quantitative research. It would also provide a more comprehensive understanding of interactive and complex relationships among variables in specific contexts. Therefore this method could develop further insights into the practices of intellectual capital and entrepreneurial orientation in the banking sector.

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