



Investigating and Prioritizing Factors Affecting Intellectual Capital Management Based on Bontis Model Using Hierarchical Analysis Method in Municipality

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ABSTRACT

Today, the necessity of the development and management of intellectual capital has become a serious requirement at the macro-national level and in the business arena and led to the paradigm change governing the industrial economy by moving towards a knowledge-based economy. The purpose of this study is to investigate and prioritize the factors affecting intellectual capital management based on Bontis model using hierarchical analysis method in municipality of Terengganu province. The field research and questionnaire extracted from the original questionnaire were used for data collection. The validity and reliability of the questionnaire were confirmed. The statistical population of this study was all 145 managers of Terengganu municipality in central building of the municipality. The hierarchical analysis method was used for analyzing the data by Expert choice software. The research findings showed that among the three main components, human capital was in the first priority, which means that it should be invested more in this area and structural capital was in the last priority. Among all the indicators identified, abilities and knowledge and skill were in the first priority and common conditions were in the last priority.

1. Introduction

In today's world that is the period of unbridle changes and, according to Toffler, the power shift period, the intellectual capital management and intangible property of organizations after reengineering issues (80s) and total quality management (90s) as an important phenomenon has affected the horizon of management changes. The most recent paradigm that covers the above issue in the management of organizations is the issue of intellectual capital management. (Gholichli & Meshbaki, 2016). Stewart

believes that intellectual capital is a collection of knowledge, information, intellectual property, experience, competition, and organizational learning that can be used to create wealth. In fact, the intellectual capital of all employees encompasses organizational knowledge and its capabilities to create value-added and causes continuous competitive benefits. Thus, intellectual capital seeks to consider the intellectual property, knowledge, experience and organizational learning in organization to achieve development more than ever. So, contrary to common beliefs that considered the mere existence of technology underlying development, knowledge and sharing it in organizations and human capital guarantee improving performance and development. The intellectual capital management is the management of social phenomena more than everything (Talebi et al., 2017). In a knowledge-based economy, intellectual capital is used to create value for the organization, and in today's world, the success of any organization depends on the ability to manage these assets. Today, we can see the growth of the importance of intellectual capital as an effective tool for increasing corporate competition. Intellectual capital measurement is essential for comparing different companies, determining their real value, and even improving their controls. Today, the necessity of developing and managing intellectual capital has become a serious requirement at the macro-national level in the business arena and led to the paradigm shift governing the industrial economy by moving towards knowledge-based economy. Intellectual capital is caused by knowledge and science. This word still is in its development periods (Khosravi et al., 2017).

Therefore, the main purpose of this study is to investigate and prioritize the factors affecting the success of intellectual capital management in the municipality of Terengganu province.

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2. Theoretical foundations of research

2.1. The concept of intellectual capital

Intellectual capital from a managerial perspective is the human and structural capital such as knowledge, applied experience, organizational technology, relationships, and specialized skills that bring organizational life to market by creating competitive advantage (Hassanpour et al., 2016). Intellectual capital is used under titles such as intangible assets, knowledge-based assets, knowledge capital, information assets, human capital and hidden values of the organization, which gradually create wealth for the organizations. A general definition that seems to have a wide acceptance and accepted by the academic community is the following three components: (Anvari Rostami et al., 2016)

1-Human capital 2-Structural capital 3-Relational capital

2.2. Human Capital

Human capital is the inventory of people's knowledge of an organization referred to as capital, and it is the backbone of intellectual capital and it is considered an important element in the value creation of organizations. This capital exits the company at the end of working day by leaving the organization from employees, but structural capital and relational capital remain unchanged even by leaving the organization. Chen et al. (2014) describe the components of human capital as follows:

- Employees' competence: Strategic leadership of management, employees' traits, employees' learning ability, employees' training efficiency, employees' ability to participate in decision making and management, technical and managerial staff training.
- Employees' attitude: Identifying organizational values, satisfaction, employees' turnover rate, average useful life of individuals.
- Employees' creativity: Employees' creativity ability, revenue from employees' creative thoughts.

2.3. Structural capital

Structural capital is the infrastructure supporting human capital in performing its tasks and it is owned by the organization. Structural capital includes all the inhumane reservoirs of knowledge in the organization, including databases, organizational charts, and executive instructions of processes, strategies, executive plans, and generally whatever its value to the organization is higher than its material value. Chen and his colleagues state the components of organizational capital as follows:

- Organizational culture: Creating and applying an organizational culture, identifying employees from the perspective of the organization
- Organizational structure: clear relationship of authority, responsibility and interests, validity of the organization's control system
- Organizational learning: Creating and applying intra-organizational information network, creating and applying intra-organizational information reservoirs
- Operational process: Period of business process, product quality level, organizational operational efficiency
- Information system: Mutual support and cooperation among employees, access to organizational information, knowledge sharing. (Anvari Rostami et al., 2016)

2.4. Relational capital

Relational capital is the most important component of intellectual capital in creating value added and includes domestic and foreign relationships with the organization's beneficiaries. Distribution channels, customer satisfaction and customer loyalty are the most basic factors in creating value added in organizations. Chen and his colleagues state the components of relational capital as follows:

- Basic capabilities of marketing: Creating and applying customer database, capability of customer service, ability to identify customer needs
- Market intensity: market share, potential ability of market, sales units to customers, brand reputation, creation of sales channel, fair regulations with suppliers, timely performing of obligations to suppliers, honest response to investor's questions from informed sources.
- Customers' loyalty: Customers' satisfaction, customers' complaints, customers' escape, investment on customer relationship.

3. Research methodology

This study is applied objectively and in terms of nature and method, it is a descriptive and survey research. The statistical population of this study is all the managers of the municipality of Terengganu province. According to the latest statistics reported by the deputy of the municipality of Terengganu in 2018, 145 managers have been declared that according to the limited population, the whole population has been considered as sample by a complete and census method. This study is a field research and a researcher-made questionnaire was used to conduct this research. Its validity was confirmed by managers, experts and management experts and its reliability was calculated by Cronbach's alpha using SPSS software that value 0.78 for alpha indicates highly acceptability and appropriateness. In order to analyze the data, descriptive statistics such as frequency percentage and mean were used and the AHP test was used to prioritize the indices.

4. Findings

4.1. Ranking three dimensions of intellectual capital management in municipality of Terengganu

As it can be seen in Table (1), among the three dimensions of intellectual capital management, human capital with a weight of 0.638 has the highest importance among the dimensions and the dimension of relational and structural capital with weights of 0.258 and 0.105 are in the next priorities respectively.

Table 1. Ranking of three dimensions of successful intellectual capital management in municipality of Terengganu

Objective: Determining the most important indicator			
Intellectual capital dimension			
Structural capital	Relational capital	Human capital	Dimensions
0.105	0.258	0.638	Weight
Inconsistency rate=0.04			

4.2. Ranking indices related to each of the dimensions affecting intellectual capital management

A- Ranking indices related to the human capital dimension

Table (2) shows the ranking of indices of "human capital" dimension in the municipality of Terengganu province. Among the 9 indicators of this dimension, abilities and knowledge and skill index with weight 0.230 has the highest importance among the indicators and flexibility index with weight 0.019 has the lowest importance and the indicators of experience, learning, job competence, working spirit, employee satisfaction, and employee loyalty are in the next priorities.

Table 2. Ranking indices of human dimension

Objective: Determining the most important indicator									
Human capital dimension									
Flexibility	employee loyalty	employee satisfaction	working spirit	job competence	learning	experience	knowledge and skill	abilities	Dimension
0.019	0.025	0.042	0.066	0.087	0.128	0.174	0.230	0.230	Weight
Inconsistency rate=0.05									

B. Ranking indicators related to the structural capital dimension

Table (3) shows the ranking of indicators of "structural capital" dimension in intellectual capital management in the municipality of Terengganu province. Of the 13 indicators in this dimension, the alliance and solidarity index with a weight of 0.196 is in the highest priority and the common condition index with a weight of 0.012 is in the last one. Indicators of trust, company reputation, formal relationships, partners, trademarks, customer loyalty, customer requirement, social networking, informal relationships, contract sharing and formal contracts are in other priorities. Table (3): Ranking of structural dimension indicators

Table 3. Ranking indices of structural dimension

Objective: Determining the most important indicator			
Structural capital dimension			
Inconsistency rate	Weight	Dimensions	Priority
Inconsistency rate=0.04	0.196	Unity and solidarity	1
	0.164	Trust	2
	0.131	Reputation of company	3
	0.117	Formal relations	4
	0.099	Partners	5
	0.076	Trademarks	6
	0.063	Customer loyalty	7
	0.048	Customer requirement	8
	0.037	Social network	9
	0.025	Informal contracts	10
	0.019	Contract sharing	11
	0.014	Formal contracts	12
	0.012	Common condition	13

C) Ranking indices related to the relational capital dimension

Table 4 shows the ranking of indices related to the dimension of relational capital in the intellectual capital management in the municipality of Terengganu province. Among the fourteen indices of relational capital, the organizational culture index with a weight of 0.158 is the highest priority and processes and informal habits with the weight of 0.011 are in the lowest priority, indices of intellectual property, management processes, social capital, management philosophy, business secrets, coded knowledge, data and information, brand, processes and habits, company value, formal process and patents and copyrights are in the next priorities.

Table 4. Ranking indices of relational dimension

Objective: Determining the most important indicator relational capital dimension			
Inconsistency rate	Weight	Dimensions	Priority
Inconsistency rate=0.03	0.158	Organizational culture	1
	0.147	Intellectual property	2
	0.130	Managerial processes	3
	0.116	Social capital	4
	0.097	Managerial philosophy	5
	0.087	Business secrets	6
	0.067	Coded knowledge	7
	0.056	Data and information	8
	0.045	Branding	9
	0.033	Processes and habits	10
	0.023	Value of company	11
	0.016	Formal process	12
	0.014	Patents and copyright	13
	0.011	Informal processes and habits	14

5. Discussion and conclusion

Among the three dimensions of successful intellectual capital management, the dimension of "human capital" with weight 0.637 had the highest importance and the dimension of "relational capital" with weight 0.258 was placed in second rank and the dimension of "structural capital" with weight 0.105 placed in the last priority. Also among the sub-criteria identified for the "human capital" dimension of intellectual capital management, among the 9 indices, the ability and knowledge and skill index with weight 0.230 had the highest importance among the indices and the flexibility index with weight 0.019 had the lowest importance and indices of work experience, learning, job competence, working spirit, employee satisfaction and employee loyalty were in the next priorities. Therefore, it can be stated that the presence of human capital as inputs existed in employees leads to outputs such as self-management decision, company survival and corporate performance. Outputs retell the identifying and pursuing opportunities. Indicators of formal contract and common conditions with the lowest final weight are in last priorities.

Among the 14 indices of relational capital, the organizational culture index with a weight of 0.158 is in the highest priority and the processes and informal habits with the weight of 0.011 are in the lowest priority, indices of intellectual property, management processes, social capital, management philosophy, business secrets, coded knowledge, data and information, branding, processes and habits, company value, formal process and patents and copyright are placed in the next priorities. Therefore, the attention of corporate managers to a strong relationship with customers and partners affects the identification of opportunities by them. In fact, the relational capital of the organization, which represents the potential capital that an organization has as intangible assets in the external environment, is effective on forming the detection of opportunities of members of the organization. Therefore, an organization that has extensive communications, or in other words, has extensive social networks with its outside environment, can better explore opportunities than others. Of the 13 indicators in this dimension, the alliance and solidarity index with a weight of 0.196 is in the highest priority and the common condition index with a weight of 0.012 is in the last priority. Indicators of trust, company reputation, official relationships, partners, trademarks, customer loyalty, customer requirement, social network, informal relationships, contract sharing, and formal contracts are in other priorities. Therefore structural capital refers to the structures and processes within an organization that employees use and thereby apply their knowledge and skills. Therefore, the findings show that the more the organizational structural capital such as organizational culture, organizational processes, organization information systems, and intellectual property systems have a high efficiency, the opportunities available in businesses are quickly identified and discovered by the organization and they will be exploited.

It is suggested that intellectual capital indicators to be included in financial reports of Terengganu municipality in order to be evaluated to assess them more easily and identify their strengths and weaknesses in relation to these indicators and to improve them. They can also take action in the main areas of intellectual capital:

It is suggested that managers to have continuous measuring from employees' competency level to strengthen their human capital, to establish a job satisfaction measurement system in the organization, and to try to maintain and sustain employees using measures such as encouragement, punishment, job enrichment and development plans.

It is suggested that to strengthen structural capital, the organization's managers to take actions to identify value-added activities for individuals, create a supportive culture by designing incentive systems to foster creativity and innovation, applying corporate information systems in a way that by maintaining the intellectual property rights of each individual, free access to information for the organization's personnel to be facilitated to the sharing of knowledge within the internal components to be established. In addition, deploying computer networks to communicate with customers and other companies can help identify better productivity opportunities from customers' perspective.

It is suggested that to strengthen relational capital, managers continually act to establish relationship with customers and partners, tend to customer-oriented training in the organization, take steps to develop social networks, and in addition provide systems for timely and quickly respond to customer expectations and complaints.

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