The Indicators Of Measuring Intellectual Capital
In Higher Education Institutions

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Abstract

The main responsibility and processes of universities is producing knowledge through the teaching and learning strategies. Faculty and staff represent knowledge producers since they have skills, abilities and qualifications that enable them to create, transfer, and effectively use of knowledge. As universities seek to differentiate themselves and increase their performance, they have to understand their core competencies in terms of their intellectual capital. Universities can gain competitive advantages by identifying its intellectual capital and integrating it with its strategies and goal. Three components of IC in the universities which are: human capital, structural capital, and relational capital. To measure the effectiveness of IC and, hence the university performance, one of significant approach was considered to measure the IC is Balanced Scorecard. According to Balanced Scorecard, non-financial measures of intellectual capital complement financial measures to provide both a feedback mechanism for actions and the information to develop new strategies that lead to enhance university performance. Based on the analysis of the four perspectives of Balanced Scorecard, this study is an attempt to clarify how to measure IC by aligning IC to university strategy and objectives. This alignment takes place through the linkage of learning and growth with internal process, students and parents’ relations and financial performance. The main purpose of this study is to analyze the IC components in HEIs and examine the applicability of Balanced Scorecard in identifying the IC indicators to enhance the HEIs performance. Based on the theoretical analysis some popular indicators for each perspective of BSC are suggested as IC indicators show both comparability and the uniqueness of the institution.

Keywords: Intellectual Capital, Balanced Scorecard.

Introduction

Universities across the world have the basic responsibilities in developing the society. Effective universities emphasize on designing and offering appropriate academic programs to satisfy both the students' needs and labor market requirements. Enhancement of the academic
programs quality can be achieved effectively and efficiently by the qualified faculty members and academic leaders who manage and lead the desired and acceptable level of development and change. Academic leaders who represent the human capital in the universities are the change agents for improving the students' personality and behavior that lead to society development. The critical elements which enable the university to handle its responsibilities in developing the society are its human resources (human capital). Human capital plays vital roles in formulating, implementing and developing the university strategies and policies.

Knowledge has become critical asset for the universities as knowledge products organizations. Therefore, a diverse set of academic researchers and economists have developed a new view on university strategy that emphasized resource efficiency rather than the generally accepted competitive forces. The resource-based perspective serves the university to increase their performance through acquiring, enhancing and developing a unique resources, capabilities, and endowments. The resources-based perspective focuses on strategies for exploiting existing university specific assets. Among the university's important assets is intellectual capital which is considered a main source of effective university performance (Sullivan, 2000, p. 238).

Measuring intellectual capital in higher educational institutions lead to better understanding of the core competencies contribute in enhancing the quality of HEIs performance, thus potentially allowing a better allocation of resources, potential synergies, and ultimately, achievement of strategies and goals. This potentially translates into greater student and faculty acquisition, retention, and achievement of research or teaching goals. Furthermore, maximizing the efficiency of intellectual capital via teaching or research, colleges and universities can potentially significantly improve the quality and effectiveness of their endeavors in teaching and research. Many studies are showing the relationship of human capital and value creation. Human capital can be used to help formulate organizational strategy, provide some evaluation base, and allocate some resources in the context of universities.

This paper discusses evaluation of intellectual capital in academic organizations based on Balanced Scorecard. Balanced scorecard is one of performance evaluation tool initiated by Kaplan and Norton in 1992. This tool concentrate on the idea of balancing of tangible resources and intangible resources, such tangible resources in the university are the financial resources, while the intangible resources are customer perspective, internal business process perspective, and learning and growth perspective. Therefore, in measuring the university's long term performance four perspective have to be considered according to balanced scorecard. The three perspectives that reflect intellectual capital are customer perspective, internal business process perspective, and learning and growth perspective. These perspectives create the university value based on the indicators of IC which have led to financial results.

Significant of the study

Literature has mentioned the importance of the relationship between IC and BSC. Kaplan and Norton (2004) emphasized on how to align intangible assets to an organization's strategy. However, they only focused on the learning and growth perspective of BSC. Bontis et al. (1999) indicated that BSC has a clear relationship between non-financial indicators and financial performance. It is widely suggested that the measurement and management of IC are quite important (Bontis, 1999; Carroll and Tansey, 2000). However, Marr et al. (2003) found that most of the research in the IC measurement is at the theory-building stage, and little
measurement theory has yet to be examined. Andriessen (2004) also pointed out that researchers have paid little attention to valuation or measurement issues of IC. Several studies have suggested that BSC is an important tool to measure and manage IC (Andriessen 2004; Kaplan and Norton 2004). Kaplan and Norton indicated that the measurement and management of IC play an important role in the transformation of non-financial performances into financial performances of organizations.

A University has several basic and essential functions which are: knowledge creation, knowledge extraction, and knowledge transmission. The ability to identify and measure the intellectual capital of the university represents a way to allocate and develop it as well as to institutionalize the effective management of it. Identifying and managing strategic intellectual capital to respond to changing needs in university represents an important method to sustain or improve the competitive advantage of the university. Therefore, the universities compete to attract talented faculty, staff and students. Cullen, Joyce, Hassall, and Broadbent (2003) proposed that a balanced scorecard be used in educational institutions for reinforcement of the importance of managing rather than just monitoring performance. Sutherland(2000) reported that the Rossier School of Education at the University of Southern California adopted the balanced scorecard approach to assess its academic program and planning process. Also, Chang and Chow (1999) reported that responses in a survey of 69 accounting department heads were generally supportive of the balanced scorecard’s applicability and benefits to accounting programs. Universities and colleges, devote their revenues into R&D, in the search for tomorrow’s profit-generating intellectual assets. Therefore, universities search for ways to attract and retain the “best and the qualified human resources and adopt effective policies to manage them in order to foster innovation and fuel new development.

According to above clarifications and studies, the intellectual capital performance indicators are to be identified and determined to measure and manage the quality of university human resources (faculty members and staff competencies and skills, and students’ abilities), University's strategy and goals effectiveness and teaching and learning processes, and the indicators related to the relations with the stakeholders (government, industry, parents, stockholders, and others).

Literatures Review

The term of Intellectual Capital, which was firstly declared by John Kenneth Galbraith in 1969, became popular with theoretical and industrial practical publications (Bassi, and Van Buren, 1999; BontisandChoo, 2001; Edvinsson and Malone, 1997; Stewart, 1997).

Intellectual Capital can be defined as the factors whose essence is composed of knowledge, skills, experience, and information, which influence the present and future success of the organization, and establish its rank in comparison with the other organizations.(Sveiby, 2001).

According to Roos, Pike and Fernstrom (2005) “Intellectual Capital can be define as all nonmonetary and nonphysical resources that are fully or partly controlled by the organization and that contribute to the organization’s value creation”.

Intellectual Capital is a complex concept. It possesses big and complicated structure, which is not exactly specified. In order to measure IC, it is necessary to understand the distinguish between the different components of IC. The main components of IC are Human Capital, Structural CapitalandRelational Capital (Stewart, 1994).
Human Capital

Human capital consists of the individual knowledge and skills embodied in employees which consider the primary source of intellectual capital for any organization. At a fundamental level, the workforce's knowledge and capabilities serve as an engine, allowing organizations to operate, innovate, execute, and adapt to changing business conditions. In this sense, human capital is the most dynamic form of intellectual capital, as it allows a firm to flexibly and rapidly respond to new challenges. It is also difficult to manage, since it depends upon staff retention as well as the effective use of individual abilities. Beyond the explicit, task-oriented skills of the workforce, human capital consists of knowledge and capabilities that are inherently tacit in nature and, accordingly, can be extremely difficult to define and manage. Examples of human capital in the university include:

1. The “talent pool” constituted by faculty and staff members’ ability to design, innovates, and creates knowledge and teaching and learning services. Measures such as faculty's experience (i.e. number of years) and the knowledge base of the workforce (e.g. certifications, degrees held) are sometimes used as indicators to assess the health of an organization’s human capital.

2. The capability of faculty and staff members to perform collaborative work. This refers to the ability of staff to communicate, express ideas both verbally and in written form, and to effectively translate knowledge across personal boundaries.

3. Personal norms and values, faculty members reflect the ability to be open to a new experience and work well with others in a collaborative, team environment.

4. Faculty members’ awareness and understanding to the industry’s competitive requirements.

5. Managerial and leadership skills, Senior management must not only have the requisite management skills, but needs to be able to lead by example, motivate, and articulate both operational and strategic goals to their teams. Clearly, each individual staff member contributes by bringing their own unique combination of human capital assets to the workplace.

Structural Capital

Structural capital provides the necessary infrastructure for coordinating efforts and turning knowledge into products or services. As with other types of intellectual capital, it emphasizes the importance of knowledge-based assets in the production function. Unlike human capital, however, structural capital represents an organization’s “know-how” that is embodied in organization processes, tools, and organizational structure. It includes a firm’s unique capabilities, proprietary tools and data, corporate technologies, intellectual property, as well as structures and mechanisms that aid in collaborative design and project execution.

Structural capital is therefore the form of intellectual capital that is most clearly owned and controlled, despite the intangible nature of most knowledge-based assets. Note that structural capital is organization knowledge – embedded in both the tangible and intangible infrastructure of the organization – that results in unique capabilities, allowing workers to collaboratively deliver new products and services. This concept is at the core of
what managers refer to as their “organizational know-how” or “corporate intelligence”. Structural capital in the HEIs takes on many forms, including:

1. The intellectual property of the university, such as patents and copyrights.

2. Business practices, including processes and procedures, whether formalized or informal, represent the valuable knowledge gained from past projects, codified into the operating procedures of the organization. In particular, lean business practices add to the organization’s structural capital, as they emphasize this infusion of this knowledge into all aspects of the workplace.

3. The knowledge in the form of documents, manuals, and databases complementing the tacit experience base of the workforce, this data represents the explicit portion of “university memory” which can be re-used for new projects or programs. This knowledge remains with the university, regardless of staff retention and the effects of “organization amnesia”. However, as mentioned earlier, this captured knowledge must be both accessible and relevant for it to be useful in creating value.

4. Information systems are an essential component of structural capital in today’s workplace, as they serve to capture, organize, and disseminate knowledge throughout the organization.

5. Organizational structure and management resources are also an aspect of an organization’s structural capital, providing an administrative foundation that is necessary for any collaborative effort.

6. Organizational culture, it is considered a part of an organization’s structural capital. The organizational culture that fosters knowledge exchange and learning, or encourages experimentation and risk taking, is an intangible asset that adds value to the organization.

Relational Capital

In addition to human and structural capital, organizations benefit from their relationships with suppliers, partners, and clients. The organization to succeed, it must constantly exchange knowledge with the client community that it serves, developing an awareness of both potential clients and their needs. Relational capital of the HEIs includes all of the mutually-beneficial collaborations outside of the university.

Examples of relational capital include:

1. The relationship between a university and its students as customers and their parents. Students provide feedback on the quality of services, and contribute to the organization’s reputation in the HE industry.

2. Partnerships with industry or affiliated professional bodies represent another form of relational capital that has been explicitly formalized through contracts between parties. These relations are mutually beneficial arrangements that provide a source
of lasting value for both university and partners, and are therefore one of the most enduring forms of relational capital.

3. Relationships with government are indispensable requirements for the HEIs.

Most of these types of relational capital are intangible and the most difficult category of intellectual capital to acquire, manage, and successfully sustain.

Applying Balanced Scorecard in Measuring IC in HEIs

Kaplan and Norton (1992) suggested that organizations should develop a comprehensive set of measures to use as leading indicators, or predictors of financial performance. They suggested that measures should be developed based on four perspectives:

1. The financial perspective. Measures in this perspective should answer the question, “How should the organization appear to its shareholders?”

2. The customer perspective. These measures should answer the question, “How should the organization appear to its customers?”

3. Internal business processes perspective. Measures in this perspective should answer the question, “What processes must the organization excel at?”

4. Learning and growth perspective. These measures should answer the question, “How can the organization sustain its ability to change and improve?” A critical factor for an effective BSC is the alignment of all the measures in the four perspectives with the organization’s vision and strategic objectives. The BSC allows managers to track short-term financial results while simultaneously monitoring their progress in building the capabilities and acquiring the intangible assets that generate growth for future financial performance (Kaplan & Norton, 1996). Thus, the BSC enables managers to monitor and adjust the implementation of their strategies and to make fundamental changes in them.

Balanced Scorecard emphasizes on measuring Innovation and learning: patents, new products (would potentially translate into publications in academics). These aspects of measurement would align with the following elements of measuring the IC in HEIs are:

1. Intellectual property assets which include know-how, copyright, patents and various design rights.

2. Human-centered assets comprise the creative and problem-solving capability, leadership, entrepreneurial and managerial skills embodied by the employees of the organization.

3. Infrastructure assets are those technologies, methodologies and processes which enable an organization to function efficiently on the long run.
An important aspect of scorecards in organizations is the issue of alignment of strategic objectives among strategic business units or levels in organizations. This process of alignment is accomplished by cascading balanced scorecard levels where each level is aligned to a higher and lower level of the organization. “Cascading” can be accomplished in a top-down model or in a bottom-up manner or in a hybrid of both top to middle or vice versa. The linkage of levels insures the resonance of key objectives among levels and insures alignments and synergistic results. Effective non-financial measures of intellectual capital complement financial measures; provide both a feedback mechanism for actions and the information to develop new strategies to enhance the management of the organization (Holmen, 2005:2).

**Figure 1:** Scorecard (Kaplan and Norton, 2006 p 175)

**Figure 2:** Hierarchy of Balanced Scorecard perspective
Each perspective refers to the logical hierarchy model commonly used in the development strategy i.e., inputs, processes, outputs, and outcomes. The adaptation of the four balanced scorecard perspectives developed by Kaplan and Norton (1992, 1993) was based on the consideration that the management of university has to adopt appropriate ways carried out by profit organization to improve its competitiveness. In overall, the university top leader could monitor and control the determined strategic themes to develop university. The strategic themes of the input perspectives consist of facilities, staff professionalism, and systems and policies and procedures and organizational structure. The development of input perspective has further improved the process perspective. The strategic themes of process perspective consist of academic atmosphere, good university governance, university social responsibility, teaching and learning, and research. A good performance on the process perspective has delivered value for multiple stakeholders consisting of students, users, community, and partners. The strategic theme of output perspective is manifestation of value delivered to multi stakeholder. According to Kaplan and Norton (1996), the strategy is a set of hypotheses that can be expressed in the form of if-then. Therefore, organizational performance measurement system should be able to explain a series of success stories. That will enable strategies to be animated and criticized before, during, and after its implementation. Change initiative will be easily done because the causal relationship among performance indicators can be explained and examined in detail.

One of the important principles of balanced scorecard is that the organization's performance indicators need to be combined between the lag and lead indicators. The former reflects the organization's strategic goals, while the later indicates the uniqueness of the strategy used by the organization. The understanding of the lead performance indicators will allow precise control and development to achieve the strategic objectives of the organization. Ruben (1999).

All performance measures must be linked to the outcomes. The organizational achievement measured by lead indicators could not be considered as the success of organization since such achievement is not the ultimate objective. Even the effectiveness of lead indicators is measured by lag indicators.

Based on the above clarifications, we can conclude that BSC is a tool to measure and manage IC by aligning IC to university strategy and objectives. This alignment takes place through the linkage of learning and growth with internal process, customer and financial.

Higher education has emphasized academic measures. As in the case of business the demands of external accountability and comparability, measurement in higher education has generally emphasized those academic variables that are easily quantifiable (Ruben, 1999). These measures usually are built on and around such aspects as faculty/ student numbers (ratios), demographics; student pass percentages and dispersion of scores; class rank, percentile scores; graduation rates; percentage graduates employed on graduation; faculty teaching load; faculty research/publications; statistics on physical resource.

Ruben (1999) indicates that one area deserving greater attention in this process of measurement is the student, faculty and staff expectations and satisfaction levels. Considering such indicators lead to attract and retain the best talent/people in university.

Low (2000) indicates that the provision of quality service to students on campus is a key element in attracting and retaining students. Failure to attract or satisfy students, would negatively impact student enrollment and retention, funding, job security and viability of a university or educational institute. Therefore, in university value presented to students is learning quality; value for graduates is competence relevancy; value for society is accessibility to learn, and value for partners is the mutual benefit. Consumer satisfaction has
improved the performance of output strategic themes measured by financial indicators. The strategic themes of result perspective is funding from government, community, and grants or aids. The output achievements allow the university to obtain a bigger budget allocation from government as well as grants or aids. The better performance achieved by the university at output perspective, the greater the public desire to enter the university or cooperate with the university. This will increase the amount of university income earned from society. Daryush et al (2008).

Furthermore, the increase of university revenue will be used to further develop the input perspective that will multiply the performance results achieved by the university. With this strategy map, the university can translate its vision, mission, and strategies into the operational strategy to be implemented at the departmental levels within the university. The strategy map will also allow the alignment between the units within the university. The units will no longer develop its strategy partially, but comprehending that they must move forward in a portfolio plan in accordance with the strategic road map at the university level. Each unit has to understand its targets and on how they could contribute to the achievement of the university strategic objectives. Daryush et al (2008).

After the strategy map is drawn, the next step is the development of a balanced scorecard showing multiple goals and measures for each perspective. Even though the number of measures in each perspective varies, it is important that each measure aligns with the organization’s strategy. It should be noted that one of the most important aspects of this application process is the alignment of individuals and resources within units to create synergistic value. Once alignment of objectives is achieved, new possibilities for cooperative enterprises will appear and can be added to the basic strategy maps. The sum total of all these efforts will create an augmented value to the stakeholders at all levels in an organization with the adoption of Balanced Scorecard serving to facilitate this process. The following general goals, measurements, and indicators can be considered and modified according to the respective university situation: Selected Indicators of IC based on BSC

Financial perspective

Table 1. Selected financial perspective’s goals, measurements and indicators

<table>
<thead>
<tr>
<th>Goal</th>
<th>Measurement</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased research grants</td>
<td>Volume and number of research grants received</td>
<td>Rate of Research grant to faculty members</td>
</tr>
<tr>
<td>To be financially sound</td>
<td>Financial competency management</td>
<td>Budget submissions cover all essential requirements.</td>
</tr>
<tr>
<td>To financially succeed</td>
<td>Increase the No of intakes</td>
<td>Rate of increase in fee-paying students</td>
</tr>
</tbody>
</table>
The stakeholder perspective’s goals and measurements

Value propositions are created to meet the needs of each stakeholder. These value propositions are those that hold the greatest value to each stakeholder and represent outcomes of the college’s internal processes. Satisfactory realization of the value propositions translate into financial outcomes outlined in the financial perspective.

Table 2. Selected stakeholder perspective’s goals, measurements and indicators

<table>
<thead>
<tr>
<th>Goal</th>
<th>Measurement</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attract high-quality students</td>
<td>Increase the students’ persistence rate</td>
<td>No. and quality of students Persistence rate.</td>
</tr>
<tr>
<td>Develop high-quality students</td>
<td>Quality of teaching and advising</td>
<td>Students’ Pass rate, GPA</td>
</tr>
<tr>
<td>Graduate high-quality</td>
<td>Graduate exit surveys, Gradates competency test.</td>
<td>Ease in getting “good” job, Job performance of newly graduates, Job satisfaction of newly graduates,</td>
</tr>
<tr>
<td>Student satisfaction</td>
<td>Courses offer to meet the demand of students, Student evaluations of faculty/ courses,</td>
<td>Ability to get access to “needed” courses, Satisfaction level with faculty and courses.</td>
</tr>
<tr>
<td>Faculty satisfaction</td>
<td>Encouragement given to faculty to engage in development activities, Effectiveness of orientation process for new faculty.</td>
<td>No of development programs for faculty members, availability of office space and computer facilities to faculty members.</td>
</tr>
</tbody>
</table>

The internal process perspective’s goals and measurements

The internal process perspective describes the critical internal processes that drive the stakeholder satisfaction and the college’s financial outcomes. Internal business processes deliver the value proposition to stakeholders and drive the financial effectiveness.
Table 3. Selected internal process perspective’s goals, measurements and indicators

<table>
<thead>
<tr>
<th>Goal</th>
<th>Measurement</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching excellence</td>
<td>Teaching/ learning excellence</td>
<td>Student satisfaction, Employer satisfaction, Teaching awards, Course evaluations, Peer and outside reviews</td>
</tr>
<tr>
<td>Developing learning and Teaching skills</td>
<td>Teaching/ learning excellence</td>
<td>Standards Grade point Average, Pass rates on professional exams, Opportunities for writing and oral presentations, No. of students going to graduate/professional schools, Advancement of alumni in profession</td>
</tr>
<tr>
<td>Quality faculty</td>
<td>Quality and currency of faculty</td>
<td>Faculty credentials, Faculty appraisals, Faculty development plans</td>
</tr>
<tr>
<td>Production efficiency</td>
<td>Efficiency and effectiveness of service</td>
<td>% of students completing undergraduate program in 4 years, % of students completing graduate program in 2 years, Teaching costs/student Administrative costs</td>
</tr>
<tr>
<td>Student services effectiveness</td>
<td>Efficiency and effectiveness of service</td>
<td>Type and no. of services provided, Time required to register, Availability of internships – co-ops</td>
</tr>
</tbody>
</table>

The Learning And Growth Perspective’s Goals And Measurements

The learning and growth perspective identifies the sets of skills and processes that drive the college to continuously improve its critical internal processes. The learning and growth areas that feed into internal processes subsequently drive stakeholder satisfaction and ultimately financial outcomes.
Table 4. *Selected learning and growth perspective’s goals, measurements and indicators*

<table>
<thead>
<tr>
<th>Goal</th>
<th>Measurement</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty and staff development</td>
<td>Teaching/learning excellence and</td>
<td>No of Academic and professional faculty members hold PhD, No of Academic and professional faculty members are senior, Professional qualifications of administration and service staff</td>
</tr>
<tr>
<td></td>
<td>innovation</td>
<td></td>
</tr>
<tr>
<td>Technology leadership (use, development, application)</td>
<td>Teaching/learning excellence and</td>
<td>Teaching capacities and competences (pedagogical capacity, teaching innovation, teaching quality, language proficiency, etc.)</td>
</tr>
<tr>
<td></td>
<td>innovation</td>
<td></td>
</tr>
<tr>
<td>Teaching/learning innovations</td>
<td>Teaching/learning excellence and</td>
<td>Development of assessment device/ technique for each innovation</td>
</tr>
<tr>
<td></td>
<td>innovation</td>
<td></td>
</tr>
<tr>
<td>Relations with the business world, Relations with society in general</td>
<td>Partnership facilities</td>
<td>Contracts and R&amp;D projects, etc. institutional representation in external organizations, Collaborations and contacts with public and private organizations</td>
</tr>
<tr>
<td>Adequate physical facilities</td>
<td>Quality of facilities</td>
<td>Adequacy of classroom and equipment facilities for providing globally relevant management education</td>
</tr>
</tbody>
</table>

Measurement tool reflects the processes aiming at the renewal and growth of the strategic resources. Intellectual capital measures should take into account the different qualities of output of the organization (e.g. publication, a training course), and the output of the client/user (e.g. problem solved).

Conclusion

HEIs are concerned nowadays to enhance the quality. One of the most important components to be considered in building the institutional capacity and enhancing the quality of HEIs is IC. Many studies and practices have been conducted to measure and manage the IC in universities and colleges in order to add value and increase performance. Among these measurements is the BSC. Applying BSC in an educational institution requires faculty
members, and management to work together. It begins with senior staff who are responsible for policy making and execution in a top-to-bottom hierarchy. In the ultimate, the introduction of the BSC will create a cause-and-effect linkage involving feedback from staff members and communication among corresponding functions.

In applying BSC in HEIs, it is necessary to start with goals and objectives and determine the measurements and indicators for each of four perspectives of BSC. The indicators that should be considered as per the four perspectives of BSC emphasize on student satisfaction with instructor teaching style, quality of instruction, quality of feedback from instructor, Infrastructural facilities which all generate from faculty members and academic leader effectiveness level. Academic leaders have the responsibility to establish and strengthen the stakeholders’ perspective, by applying efficient internal process to enhance the teaching and learning perspective which ultimately achieve the financial perspective of the university performance.

References


