INTERRELATIONSHIP AMONG HUMAN CAPITAL, STRUCTURAL CAPITAL AND RELATIONAL CAPITAL IN THE INTELLECTUAL CAPITAL AND THEIR EFFECTS ON PERFORMANCE OF THAI PRIVATE UNIVERSITIES

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ABSTRACT

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Today global transforming into a knowledge-based economymore rapidly even in the developing countries, the major role of intellectual capital (comprise of human capital, structural capital and relational capital) that effects and impacts on performance and sustainability in every organization is becoming more and more prominent. It is represented and promoted as the organization's most valuable resource for establishing the sustainable business and organization's wealth; also it is recognized as the most important source of organizations' competitive advantage in bloody business world. Many researchers also agree and approve that intellectual capital is "knowledge" and "experience" that directly contribute to every organization's bottom line, as well as mainly contribute to an organization's survivability and sustainability. Intellectual capital comprises of knowledge and competencies that residing with the organization's employees. Most IC researches have been conducted in a variety of international settings such as the UK, Scandinavia, Australia, Canada, Austria, Malaysia, the USA, and Ireland, South Africa, Egypt, Taiwan, Portugal, and Jordan. However, no empirical research has been conducted at the organizational level in the field of IC in Thai educational sector. The purpose of this empirical study is to emphasize the importance of intellectual capital, particularly at this time in terms of our current economic business

environment. The main objective of this study is to explore the interrelationship among three components of intellectual capital (human capital, structural capital and relational capital) and their effects on performance within the private educational institutions of Thailand. Model development and hypothesis testing was conducted using path analysis on a sample of 131 respondents from 19 Thai private universities. Results demonstrate a confirmation of previous studies as it relates to hypothesis testing but a difference in psychometric item evaluation given the distinctive geographical and sector context. Recommendations are then made for both researchers and practitioners.

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CHAPTER 1

INTRODUCTION

With the beginning of the ‘innovative era’ and knowledge- based economy, most academics and also managements agree that knowledge has become the most valuable economic resource and property in every types of organization even in a very small company (Bontis, 1999). The wealth and prosperity of the modern economy depends on intangible assets, especially, knowledge. Many researchers state that only knowledge can provide the good opportunity to develop and improve the wealth of nations, the growth of organizations and the value of individuals (O’Donnell, Tracey, Henriksen, Bontis, Cleary, Kennedy & O'Regan, 2006). Intellectual capital is essentially defined as “the knowledge assets” that can be converted into “value” (Edvinsson & Sullivan, 1996). Intellectual capital originates in the resource-based view of the firm (Barney, 1991). Grant (1996) mentions thatthe knowledge-based view of the firm presents that the principal firm’s foundation is the creation and application of knowledge. Strategically, the conception of intellectual capital is associated to the ability to produce and apply the potential of an organization’s knowledge (Cabrita & Bontis, 2008). Roos, Roos, Dragonetti, and Edvinsson (1997), Shaikh (2004), and Bontis, Keow, and Richardson (2000) also support that intellectual capital is recognized as a set of intangible assets such as resources, knowledge, competences and capabilities of employees, creativity and innovationwhich increase not only performance of the firm but also lead for organizational value creation. Tangible assets such as land, building, tools, and equipment continue to be important elements in the production of both goods and services. However, their relative importance has decreased from time to time as the importance of intangible, knowledge-based assets has increased (Luthy, 1998). There is a growing awareness that intellectual capital is a major key asset for achievement in today’s high competitive economic environment.

Intellectual capital is not just data and information that exists in files and databases. It comprises all precious and useful knowledge in whatever form in every level of the organization. In this sense, intellectual capital is a matter of creating and supporting connectivity between all sets of skill, expertise, experience and competences both inside and outside the organization (Cabrita & Bontis, 2008). Chatzke l(2002) describes that intellectual capital is a phenomenon of interactions and complementarities, meaning that a resource's productivity may increase and improve through the investments in other resources.A firm can gain a competitive advantage through the ownership of these resources and capabilities that are valuable, rare, inimitable and non-substitutable (Barney, 1991). Not only in business world that are interested in the issue of intellectual capital, also in academic world, there are an increasing amount of literature has recognized that the potential for competitive advantage arises from intellectual capital (IC) in the form of human, social (relational) and structural resources as well (Teece, 1998).

1.1 Statement of the Problem

The impact of intellectual capital (IC) on the general performance of the organization has become a very important and critical issue now than ever, this is due to the level of globalization of whose outcomes are privatization and deregulation of markets, high aggressive competition and the ever-rising expectations of all customers. As a result of these, there is need for organizations to be at their best in order to survive in such environment (Uadiale & Uwuigbe, 2011). For Thai business, the two major forces that we currently face include the rapid rate of technological change and increasing industrialization. The rate of change is likely to accelerate in the near future led by AEC (Asian Economic Community). Transforming into a knowledge-based economy, there is an increasing need for Thailand to explore how intellectual capital creates value for companies.

Unfortunately, most Thai industries are still-for the most part-using traditional financial accounting and ancient performance measurement methods which were developed centuries ago for an environment of arm's-length transactions using primarily tangible assets such as buildings and equipment. However, the knowledge-

based business environment that Thailand and most other countries are currently developing requires a new model that encompasses intangible assets. In this case, the intellectual capital (IC) model is receiving increased attention.

The educational industry, especially in institutions of higher learning (such as in university), is an important and crucial sector in Thai economy. The cultural functions of teaching and research have been the primary function of universities, whereas the human capital function of preparing trained persons has played a secondary role. Etzkowitz and Leydesdorff (1997) stated that in the late twentieth century, universities received attention for their inputs to economic and social development. Thus, this is not a completely new situation: academic institutions in the USA contributed to agricultural innovation during the Experiment Station movement of the mid-nineteenth century and were instrumental in the basis of the chemical industry in Germany during the same time. Nevertheless, the development of knowledge was formerly primarily the concern of the university, whereas capitalization of knowledge was the concern of industry. However, the growing interest of the university and its faculty members, often stimulated and encouraged by government policies, in earning capital from knowledge is moving academic institutions closer in spirit to the corporation, a type of organization whose interest in knowledge has always been closely tied to economic utility (Etzkowitz & Leydesdorff, 1997). Kok (2007) stated that universities are under acommitment to strike a balance between their responsibilities internally to their employee and student inventors, and externally to their prospective commercial partners. The latter could be business organizations, communities, government and semi-government departments, or statutory organizations. As being an employer the university is assured to be rational and sensible in its dealings with its employees. A difficulty is the point that it is also a guardian of the welfare of its students, taking as a parent role. On the other hand, a university must be responsible and careful (specifically with regard to state sponsorships), and commercially intelligent and realistic (especially when dealing with the corporate world). The supreme challenge is to constitute a balance between these different considerations to guarantee that, eventually, the university stays true to its ideal of searching for truth and knowledge in the spirit of academic freedom, and to applying such knowledge to the advantage of humankind. The question thus rises

how universities can administrate themselves successfully without recognizing the significance of intellectual capital.

Like other knowledge-based enterprises, one particular sector that is considered knowledge-intensive and a source of great intellectual capital is Thai private universities. They often provide professional knowledge and technologies, research-intensive, highly innovative, and well balanced in its use of human intervention and technology, and their lecturers are also knowledge-based professionals. Thus this industry belongs to the knowledge-intensive business, for which the most important asset is intellectual capital (for a source of renewal), which is beyond the range of the balance sheet. Knowledge is a close concern of this industry, and proper management of intellectual capital might have an immediate effect on their operation and management. Even though it is difficult to analyze and manage knowledge of Thai private universities, the knowledge management activities, such as acquisition, innovation, storage, sharing and reutilization, are closely related to enterprises' competitiveness and performance. Thus it is worthwhile to discuss if proper management of intellectual capital can improve business operation and performance. Ultimately, it is a great opportunity for analyzing intellectual capital components.

Shih, Chen, and Morrison (2010) stated that theoretically, many researchers have emphasized the influence of intellectual capital on business performance; and many of IC researches have been conducted in a variety of international settings including Canada (Bontis, 1996; 1998; 1999), Austria (Bornemann, 1999), Malaysia (Bontis, Keow, & Richardson, 2000), South Africa (Firer & Stainbank, 2003), Taiwan (Chen,Cheng, & Hwang, 2005), and Sub-Sahara Africa (Kwasi & Kwesi, 2011) and the USA (Bassi & van Buren, 1999). However, none of them seem to have been conducted empirical researches at the organizational level in the field of IC in the educational sector of Thailand, especially in Thai private universities. Where society, economic, and culture are different from most countries in the aforementioned list. As a result, the researcher is interested in investigating the impact of intellectual capital on the performance (productivity, profitability, and the external quality assessment) of Thai private universities. The paper thus examines the interrelationships among intellectual capital components and their influence on business performance

respectively. Also, recommendations are provided to assist Thai private university management in managing the intellectual capital of their universities.

1.2 Research Question

Having the intentions to enrich Thailand's intellectual capital studies, specifically in Thai private universities, as defined in the study,thus, this research question is"How muchthe intellectual capital influence Thai private universities' performance?"

1.3 Purpose of the Study

The educational industry in Thailand has not been really seen as important until recent years. It is hoped to bring Thailand to a brand new knowledge economy phase. Behind the high value-added industry performance of Thai private university, it is the intellectual capital of these universities that plays a major role in creating values. Despite the fact that the importance of intellectual capital has been noticed, it is just beginning to be unveiled by Thai's academic and practitioners' fields. In order to understand more about intellectual capital of Thai private university in Thailand, this paper proposes to 1) investigate and analyze how the components of intellectual capital (Human Capital, Structural Capital, and Relational Capital as defined in the paper) may influence the performance of Thai private universities in Bangkok and 2) provide recommendations to the management of Thai private universities on how to utilize and manage the intellectual capital of their universities.

1.4 Significance of the Research

The research setting for this particular study is unique because the concept of intellectual capital is not well known to most deans in the educational industry in Thailand. Therefore, the expected contributions of this research are as follows:

1) This study represents one of only a handful in the extant literature to focus on the Asian region and the first one to focus on measuring intellectual capital development in this particular sector in Thailand. It thus offers a novel perspective.

2) Whereas intellectual capital measurement studies often focus on accounting measures and financial calculations. This particular study will also focus on the external quality assessment as well because this sector has unique characteristic that differs from other sectors. It musts concern about the higher education standards and quality assurance in private higher education institutions.

3) This study is the testing of intellectual capital concepts within Thailand. There are several other countries both in the Southeast Asia and elsewhere that would benefit testing these concepts in a non-Anglophonic setting.

4) This study provides knowledge, research and literature references to encourage further investigation.

1.5 Limitations

The main limitation of this study is that the study will focus only on one country, and one sector andone point at a time. Becausein present study will present empirical data in understanding how intellectual capital influences business performance; specifically in the context of Thai private universitiesin Bangkok only**.**Thus, the ability to generalize is limited to that context.The other limitations are about the perception and language competency of the respondents.Future researchers can surmount this predicament and they can conduct the study in an extended manner in order to better explain the overall condition of intellectual capital in the business sector of Thailand.

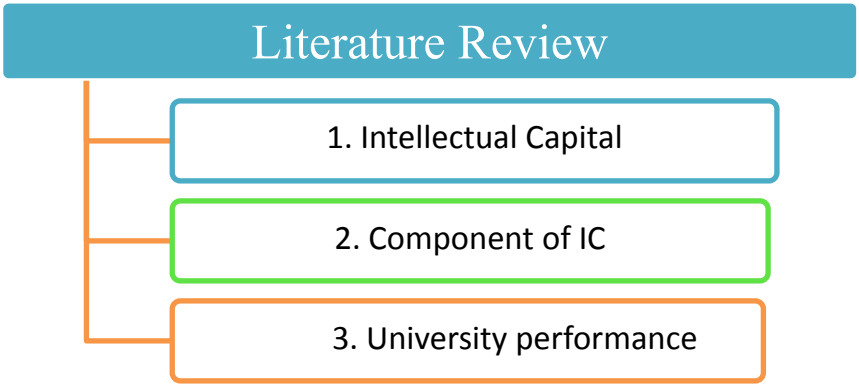
1.6 Summary

Thai private universities, like other knowledge-based enterprises, claim that they take intellectualcapital as their most important asset embedded in the organization. However,in the intellectual capital (IC) literature in the past, only a few studies have analyzed the relationships among the components of IC and organizational success.The purpose ofthis research study is to examine interrelationships among intellectual capital components (human capital, structural capital, and relational capital) and to measure the effect of intellectual capital components on the corporate performance of Thai private universities in Bangkok.Thus,the research question of this studyis **"**how does intellectual capital influence Thai private universities' performance?**"**

CHAPTER 2

REVIEW OF LITERATURE

For the research process, the literature review is the significant part of it. It requires the researcherto make both good judgments and evaluations of each piece of the work, and organize those ideas and findings that will be the most value for the review. In order to measurethe effect of intellectual capital components on the corporate performance of Thai private universities in Bangkok, to raise awareness of intellectual capital, and to betterutilize and manage the intellectual capital in these universities, the related body of literature is reviewed. This chapter begins by highlighting the main description of the intellectual capital (IC), then, the components of IC- namelyhuman capital, structural capital, and relational capital.Then, concept of corporate performance, includingthe external quality assessmentofthe Office for National Education Standards and QualityAssessment(ONESQA) of Thailandare also reviewed in this chapter. Finally, seven hypotheses according to the reviewed literature are presented.



Figures 2.1 Literature Review

2.1 Intellectual Capital (IC)

For the concept of "intellectual capital" (IC), it was first presented by John Kenneth Galbraith. He wasan economic scholar; he named and utilized it to describe

the dissimilarity between a company's market value and book value (Edvinsson & Sullivan, 1996; Roos et al., 1997). After that, when coming to this new "innovation era," several scholars in academic area, thus, start and initiate to discuss more about the matter of IC. Bontis (1999) states that it is seen to be the greatest valuable economic resource for the company or any organization and is determined to be a possible source of sustainable competitive advantage. Shih et al. (2010) also confirms that apart from the academics, every sector of the economy in both developing and developed countries**,** many firms have trulysensed the impact of increased intellectual capital. For example, in the steel industry the labor cost per ton of steel has been decreased considerably. In the airline business reservation systems and service systems have turn into a main origin of revenue. Inengineering, product design is processed by computers without the need for hand drawings. And the list goes up and up. Furthermore, Luthy (1998) mentions that intellectual capital has leaded to theformation of wholeinnovativekinds of businesses and methods of achieving business. Numerousorganizations depend almost entirely on intellectual assets for creating revenuesin reality, forexample, in the software business, it is principally knowledge based with most productstaking anintangible form; being generated and transported electronically (Luthy, 1998).

Stewart and Kirsch (1991) notes that the terminology of"intellectual capital" is typically used by the research community as a synonym forintangible assets which can be converted to economic value. However, until now, due to different and various research backgrounds,there is still not having the samemutual accepted unified definition for intellectual capital. There arestill having many various definitions of IC such as:

Table 2.1 Definitions of IC

Researchers	IC definitions
Edvinsson and Sullivan (1996)	IC as the knowledge assets that can be converted into value.
Bontis (1996)	IC as the difference among the market value of the company and the substitution cost of assets.

Table 2.1 (Continued)

Researchers	IC definitions
Brooking (1996)	IC is the term given to the integrated intangible assets of market, intellectual property, human-centered and infrastructure - which facilitate the company to function.
Roos, J., Roos, G., Dragonetti, andEdvinsson (1997)	IC is the entirety of the unseen assets of the company and consequently includes both what is in the heads of organizational members, and what is left in the company when they are gone.
Stewart (1997)	IC is the total of all the knowledge and abilities of the organization members that creates the company's competitive advantage, including intellectual substantial like knowledge, information, intellectual property and experience that makes profit.
Nahapiet and Ghoshal (1998)	IC is knowledge and knowing capability of a social collectivity.
Ulrich (1998)	IC initiates from employees' competence and obligation.
Caddy (2000)	IC as the dissimilarity among intangible assets and intangibleliabilities.
Dzinkowski (2000)	IC including intellectual assets, knowledge assets, total stock of knowledge-based equity possessed by a company.
Bontis, Crossan, and Hulland (2002)	IC is the stock of knowledge that exists in an organization at a certain point in time.
Subramaniam and Youndt (2005)	IC is the total of all knowledge organizations apply for competitive advantage.

Table 2.1 (Continued)

Researchers	IC definitions
Martínez-Torres (2006)	IC including of those intangible assets of an organization that are not documented in financial statements.
Cabrita and Bontis (2008)	IC as the knowledge assets that absolutely can be transformed into value. It is a matter of building and supporting connectivity between sets of expertise, experience and competences inside and outside organization.
Chang, Chen, and Lai (2008)	IC as knowledge-related intangible assets rooted in an organization.
Hsu and Fang (2009)	IC as the sum of the capabilities, knowledge, culture, strategy, process, intellectual property, and relational networks of an organization that generate value or competitive advantages and assist an organization reach its goals.
Cohen and Vlismas (2013)	IC is a wide perception including the knowledge and the learning capabilities of a company. It is demonstrated as the collaboration of knowledge assets related with the human assets (i.e. human capital), the organizational structures (i.e. structural or organizational capital) and the external social partners (i.e. customer, or relational or social capital) of an organization.

By reviewing the abovevarious definitions of IC, Martin-De-Castro, Delgado-Verde, López-Sáez, and Navas-López (2011) can draw some conclusions.

Firstly, they say that intellectual capital mostly mentionsthese three dimensions; the organizational knowledge of the human assets, the organizational structures and the external social partners of an organization.Secondly, intellectual capital is converted to economic value through organizational action. Thirdly, intellectual capital is linked to the existence of competitive advantage because intellectualcapital boosts the environmental responsiveness of the organization. In addition, Cabrita andBontis (2008) also discover that at least three elements of intellectual capital are obvious from the literature:

1) Its intangibility
2) The truth that it creates value and
3) The growth effect of collective practice.

For the purposes of this paper, the researcher describes intellectual capital as the stock of organizational knowledge and the cooperative ability to convert this knowledge to operation by leveraging organizational learning occurrences.

2.2 The Component of IC

As already mentioned that although IC may be a moderately new expression, it has anextensive lineage in many different business sectors (Bontis, 1996) and has established a lexicon and categorized the sub-dimension of its own, including such terms as “customer capital”, “organizational capital”, “internal resources”, “intangible assets” and severalother terms (Boedker, Guthrie, & Cuganesan, 2005; Houlsel & Nelson, 2005). Among the many studies, the clssifcation of IC remains inconsistent. However, in this new paradigm, many researchers aretrying to have commonly mutual analyzed “intellectual capital” is, at least, three dimensions: human capital, structural capital and relational capital (Sveiby, 1997; Nahapiet & Ghoshal, 1998; Bontis, 1999, 2001; Petty & Guthrie, 2000; Martín-de-Castro, Delgado-Verde, López-Sáez, & Navas-López., 2011). SharabatiJawad, and Bontis (2010) also refer that these sub-dimensionsinclude the intelligence found in human beings, organizational routines and network relationships respectively.

2.2.1 Human Capital

Human capital is considered the primary foundation or the lifeblood of intellectual capital and the most significantbasis of sustainable competitive advantage (Seleim, Ashour, & Bontis, 2004) becausealmost everything in the present market environment depends on the individual's opinions, knowledge, ability, and skills. It is emphasized that the human capital in an organization is the majorsignificant intangible property, especially in terms of innovation (Edvinsson, 2000). In knowledge-based organizations this may add up to the majority of market value provided to the firm (Johnson, 1999). Sveiby (1998) mentions human capital, especiallyindividual competence is crucial for organizations. This is people's capabilityto performin differentcircumstances. It comprises skill, education, experience, values and social skills. Peopleare the solely real agents in business; all assets and structures (structural capital), whether tangible physicalproducts or intangible relations(relational capital), are the outcome of human performance and depend eventually on people for their continued existence.

Human capital is defined by many researchers such as Roos, Bainbridge, and Jacobsen (2001) as the competence, skills, and intellectual agility of the individual employees. Cabrita and Bontis (2008) state that it symbolizes the individual knowledge stock of an organization as showed by its employees.It mentions to the knowledge, capabilities and behaviors of the human determinant (Cabrita & Bontis, 2008; Hsu & Fang, 2009). Human capital as wellembraces how effectively an organization uses its employees or its human resources as measured by creativity and innovation (Bollen, Vergauwen, & Schneider, 2005). Human Capital comprises of the people who belong to the organization and who contribute to its achievement through their skills and motivation. At the basis of each organization are the people, orbetter, the system of knowledge, competences, capabilities, creativity and innovation originated onthe knowledge of each person operating in the company and also the entrepreneurial, organizational, and working qualities which come together to establish the business organization (Puntillo, 2009). Johnson (1999) also defines human capital as the power behind the human intellect and innovation of the firm; moreover, he exemplifies general types of intangible assets associated withhuman capital such as knowledge-based workforce, assembled workforce, R&D projects,

experts, and managerial competence.In addition, Martin-de-Castro et al. (2011) express that human capital comprises of knowledge, skills, innovativeness and the ability to response effectively at task performance.

However, the tacit nature of human capital is not easy to pull out and organize and therefore hard to seize (Bontis, 1996) and also, human capital is intrinsic in people and hardly be possessed by firms, thus, human capital can abandon a firm or disappearwhen employee exit (Luthy, 1998). Like Gannon, Lynch, and Harrington (2009) narrate that employee turnover is dishonorable in the decrement of human capital in many industries; even though human capital is one of the majorsignificant and valuable resource an organizationcould possess. When these employees abandon the organization, they take these stocks of knowledge with them. Nonetheless, the collaboration of these viewpoints with dynamic capability theory gives human capital the possibility to be leveraged and arranged to neutralize this problem (Eisenhardt & Martin, 2000). Bontis (1996) also recognizes that it is a collective capability that is needed to extrapolate knowledge at an individual level and implant within the organization.

Although human capital has been linked to increased firm performance because it finally delivers the direct goods or services that customers need or the solutions to their problems, and recognized as being the heart of creating intellectual capital (Ordonez de Pablos, 2003; Parrup - Nielson, 2006), it is not adequate alone to create a sustained competitive advantage (Tansley & Newell, 2007). Bontis (1998), highlighting the organizational perspective, refers to human capital as ‘the source of innovation and strategic renewal’, nevertheless, human capital must be integrated with relational and structural components in the firm, to create value. Harris (2000) also confirms that although, human capital is frequently the easiest theoretical basis to recognize and define when criticizing intellectual capital, it alone cannot sustain intellectual capital. This requirement to link individuals with knowledge produces the appearance of the second foundational component of intellectual capital: Structural capital.

According to Wang and Chang (2005), human capital influences business performance through innovation capital, process capital and customer capital because employees are needed to perform and complete the internal process of a company.

Employees are also required to manage all customer services. By providing quality of service in the meantime implementing internal processes, the capability of employees would affect process efficacy and customer satisfaction (Wang & Chang, 2005).

For this study (in private universities), human capital is defined as the entirety of the explicit and tacit knowledge of the human resources (lecturers, researchers, management, service and administrative staff in this case) acquired through formal and non-formal education and refresher processes included in their activities and these human resources would bring these knowledge with them if they left the institution.

2.2.2 Structural Capital

Structural capital has not been fairly well-definedsufficiently in the past studies, in which it had various tags but similar meanings among dissimilar intellectual capital perceptions. Based on the previous literature, structural capital can be process capital and organizational capital, and it also interconnects with innovation capital (Van Buren, 1999; Bontis, 2001). Among different components of intellectual capital, Bontis (2001) determines structural capital as the most challenging as it is connected to other capital in terms of description. Bontis et al. (2000) explain that structural capital comes from processes and organizational value, reflecting the external and internal emphases of the organization, plus renewal and development value for the future. According to Bontis (1998), if an organization has bad systems and measures by which to track its performances, the total intellectual capital will not reach its fullest capability. Organizations with well-built structural capital will have a helpful culture that permits individuals to test and try new things, to learn, and to fail. Structural capital is the crucial link that allows intellectual capital to be measured at the organizational level of analysis (Bontis et al., 2000).Structural capital is identified as the structural capability of the organization to utilize human intelligence and innovation to create prosperity (Johnson, 1999).Itcomprises the knowledge merged into technological infrastructures (Edvinsson & Malone, 1997; Sveiby, 1997) and organizational structures (Chang et al., 2008); and the capability to develop it. Cabrita and Bontis (2008) mention structural capital is a valued strategic asset, which is consisted of non-human assets such as information systems, routines, procedures and databases. In addition, Bontis et al. (2000) also state that structural capital embraces

all the non-human warehouses of knowledge in organizations which comprise the databases, organizational charts, process manuals, strategies, routines and anything whose value to the firm is greater than its substantial value.Structural capital is possessed by a company and still exists with acompany even when people depart (Luthy, 1998). Riahi-Belkaoui (2003) confirms that, in contrast with human capital, structural capital is the property of the firm. It is the knowledge that belongs to the organization as a whole for instance technologies, inventions, databases and files, publications, patents, licenses, copyrights, trademarks, brands, organizational strategies and culture, structures and systems, internal networks, organizational routines and procedures (Riahi-Belkaoui, 2003). Structural capital can be developed when organizations invest more in technology and improve processes and other internal initiatives (Knight, 1999).Structural capital can be conceptualized as the changeable intangible assets such as processes, routines, culture, and the more officiallypreserved structural capital is categorized in an organization's policies, procedure booklets, and intellectual property (Carson, Ranzijn, Winefiel, & Marsden 2004). Johnson (1999) also exemplifies general types of intangible assets associated with structural capital such as intellectual property, firm infrastructure, corporate practices and procedures, trade secret, and internal relations.

Bontis (1996) assures that structural capital is the firm's organizational competences to meet market requests. It encompasses the organization's routines and structures that support employees' missions for having best intellectual performance and, consequently, overall business performance. And because knowledge sharing is reliant on differentchannels of transmission, anappropriate structural capital must be in place. Therefore, structural capital comes to be animportant foundational component of intellectual capital because it offers the scope and outlines for the transmission of knowledge. In order for organizations to maximize their human capital, they have to measure their investments made in creating the skills central to their competitive advantage (Harris, 2000).

In the long term, it is the accountability of management to pull out the knowledge from its workforces (human capital) and classify it in a proper way thus when these workforces exit the office after a day's work there is a record and document of this valued knowledge and once implanted, it becomes structural capital

(Ordonez de Pablos, 2004). Structural capital offers support mechanisms in the form of organizational routines, capabilities and a motivated attitude inside the corporate culture for workers (Bontis, 1996). This supportive culture is required to encourage employees and inspire them to try and haveinnovative ideas although their efforts are ineffective (Bontis, 1996). Nevertheless, like human capital, structural capital is incapable to build aprofitablecondition for a company on its own and has to be utilized in combination with the other capitals (Bates & Flynn, 1995).Structural capital emphases on the organized knowledgefounded of the company. Structural capital also reflects the firm's capability to transform the innovation and energy of its people (human capital) into firmassets while taking advantage of that innovation to make prosperity (Seleim et al., 2004). Johnson (1999) mentions structural capital allows for the construction of prosperity through the transformation of the work of human capital. Bontis (1998) also support that structural capital is function of human capital. It is the supportive structure that empowers people to performtheir work because structural capital is the hardware, software, databases, organizational structure, patents, trademarks and the whole thing that supports employees' productivity. In addition, Huang and Hsueh (2007) mention that structural capital is proposed to share knowledge efficiently, expand collective knowledge, reduce learning and training time and increase the productivity of human capital. It is essential to share knowledge and experience consistently, and through the assistance of instruments(for example job descriptions, operational manuals, hardware, and Internet), thenutilize them repeatedly and creatively in an organizedmethod.Huang and Hsueh (2007) further suggest that the structural capital contains 4 components that are system, structure, strategy and culture, and because these 4 components are closely interconnected, they must be appropriately fitted to bring structural capital into full play, and increase the efficiency of human capital through fast knowledge-sharing, preservation and effectivemeasures.Therefore, structural capital and human capital assist and cooperate with each other to organizations that as coordinate develop and operate and form the third foundational component of intellectual capital: Customer capital.

For this study (in private universities), structural capitalis defined as the explicit knowledge relating to the internal process of dissemination, communication

and management of the scientific and technicalknowledge at the university. This knowledge stays within the institution at the end of the working day. It comprises the governance principles, the organizational routines, procedures, systems, cultures, databases, intellectual property.

2.2.3 Relational Capital

Actually, the primary term of relational capital is customer capital that originates from the concept of Hubert Saint-Onge (and some researchers still use this term until few years ago). Additionalcurrent definitions have extended the category to embrace relational capital which in consequenceincludes the knowledge embedded in all the relationships a firm creates whether it is from customers, from the competitors, from suppliers, from trade associations or from the government (Bontis, 1999). This slight variant of this term developed by Dr. Nick Bontis, he re-states customer capital as relational capital by including relationships with suppliers (Ahangar, 2011). Cabrita and Bontis (2008) describe relational capital is the knowledge rooted in relationships with customers, suppliers, industry associations or any other stakeholders that effect the organization's life. Bontis (1999) also approves that relational capital characterizes the potential a company has due to ex-firm intangibles. In addition, same as the opinion of Dr. Bontis, Ahangar (2011) insists that relational capital is a firm's relationship with its customers and with its network of suppliers, strategic partners and shareholders. The value of these assets is defined by the firm's reputation or image.

Relational capital continues somewhat under discoveredcomparatively to the other two above-mentioned dimensions or components of intellectual capital (Swart, 2006; Martin-de-Castro et al., 2011), concerns the knowledge and the ability of a company to administrate its relationships with outsidecollective partners to generate economic value. Customers, suppliers, partners, other social agents as well as corporate reputation can be determined as variables related with external environment (Cohen & Vlismas, 2013). Johnson (1999) explains relational capital as the capability of the firm to cooperate positively with business community participants (such customers, suppliers, and partners) to motivate the potential for wealth establishment, long-lasting profit-making and successful business operation by enhancing human and

structural capital. He also exemplifies general types of intangible assets associated with relational capital such ascompetence-enhancing customers, profiling-interaction, supplier alliances, and regulatory authority relations.Moreover, Huang and Hsueh (2007) emphasize the most importantconcerns include customer's satisfaction, procurement frequency and time consuming, characteristics of customers, partners, and competitors, amount of transaction, connections, product quality and services, the relationship with government and other organizationsthat interact with the firm.

In the knowledge based society, intellectual capital presents an important character in the formation of intangible and knowledge towards value creation. Especially, the previous literature clarify human, organizational (or structural) and customer (relational) capital as dissimilarobjects and recommend that they are interrelated causality so that human capital creates knowledge which then can developcontinuous in organizational capital (structural capital) to boost customer relations (relational capital) (Ahmad & Mushraf, 2011). Chen, Zhu, and Xie (2004) insist that relational capital cannot be accomplished without human capital as investments are made in human capital, more experienced and talented people improve better structural capital, leading to the growth of further productive external capital, causing in superior financial performance. Bontis (1998) also agrees that progress of relational capital relies on the assistance of human capital and structural capital. Relational capital usually performs as a link and intermediate in intellectual capital process. It is the keyelement and transformationof intellectual capital to market value and as anoutcome business performance of company (Chen et al., 2004). Under an atmosphere with anaggressivebusiness competition, the crucial pointfor a company to make profit and develop its performance is to gain the loyalty and trustworthiness of customers, and form long-term pleasant relationships with them.If a company understands better than others what customers' desire and need in a product or a service, is what creates that company to become a business leader as opposite to a follower. Customer and supplier loyalty, target marketing, longevity of relationships and satisfaction are all assessablecomponents of this form of intellectual capital (Bontis, 1996).

For this study (in private universities), relational capitalis defined as all resources linked to the external relationships of the institution such as customers(i.e.

students, parent), suppliers, other private universities as the competitors, partners(i.e. enterprises, non-profit organizations, community), government, and society.

In summary for the interrelation of these three components (human capital, structural capital, and relational capital), Martín-de-Castro, Delgado-Verde, López-Sáez, and Navas-López (2011) pinpoint that the three components or dimensions of intellectual capital are extremely interrelated. Human capital is an input to structural and social capital (they use the term of social capital for representing the term of relational capital). Finally, they confirm that the interaction of intellectual capital with the surroundings goes through relational capital. Cabrita and Bontis (2008) agree to this statement by state thata generalagreement harmonizes that none of these dimensions is valuable by itself. Value is established and fostered through the efficientcollaboration of the three dimensions of intellectual capital.Harris (2000) also confirms that once a firm becomes arranged and well-adjusted in these three significant components, it is able to create the greatest possible financial performance.

Private universities rely on good stable and long lasting relationships with their clients, especially with their students and parents. This largely depends on human resources (including academic and non-academic staff). In this context, employees' performance is a critical differentiator in university performance (i.e. the quality of university relationships depends on the quality of thesestaff and their ability to satisfy client needs). Hence, interaction between human capital and relational capital is a crucial strategic issue in the educational industry.

2.3 University Performance

The major concept of university performance for this research comes from the original concept of "corporate performance". Itis asignificantconception that relates to the way and manner in which both financial and non-financial resources available to an organization are carefully utilized to accomplish the overall corporate objective of an organization. It is consequently crucial that organization's performance be measured on a consistent basis in order to guarantee sustainability (Uadiale & Uwuigbe, 2011).

Syed (2005) mentions theorists of resource-based theory suggest corporate performance is an operation of the effective and efficient use of the particular tangible and intangible assets of the company.

However, many researchers call and also group corporate performance in different name such as Gilaninia and Matak (2012) tell that many articles and books state that the output organization is called“performance”. Researchers in studies related to the commercial performance used the different components for its measuring. Few researchers closely put performance components in groups and have named them. For example in the work of Pelham (1997) performance components have put in three categories: organizational effectiveness, growth/share, and profitability. Guo (2002) divides performance components to two categories:

1) Market performance: including a component of customer retention, attract new customers.

2) Financial performance: including components of return on assets rate, market share, and sales growth.

For this study, regarding university performance, there are two important references. One is financial reference that is business performance (focus in productivity and profitability). The other is non-financial reference that is the external quality assurance. It is the criterion of the education standards and quality assurance for Thai universities.

2.3.1 Business Performance

Uadiale and Uwuigbe (2011) state that business performance is an important concept that relates to the way and manner in which financial resources available to an organization are carefully used to achieve the overall corporate objective of an organization. It is therefore important that organization’s performance be measured on a regular basis in order to ensure sustainability.

According to the work of Bontis in 1998, there were 10 items for measuring the business performance related to key competitors in the industry and then these items have been adopted and adapted for many times until the work of Sharabati et al. (2010). These researchers were revised these 10 items to become the qualified and reliable

items to measurebusiness performance and these items still have been popular until now. These 10 items comprise of:

1) Industry leadership
2) Future outlook
3) Overall response to competition
4) Success rate in new product launches
5) Overall business performance and success
6) Employee productivity
7) Process (transaction) productivity
8) Sales growth
9) Profit growth
10) Company's market valuation (stock value)

For this study, the researcher will adopt and revise these items to represent the measurement of the university performance.

2.3.2 The External Quality Assurance

Thai Office for National Education Standards and Quality Assessment (2012) declares that the external quality assurance is defined that it is the assessment and monitoring of the educational quality and standards of the institutions from outside. Such assessment and monitoring are to be managed and carried out by the Office for National Education Standards and QualityAssessment (ONESQA) (2012) or by persons or external agencies certified by this office. Thesemeasures(including-quality of graduates, research and creativity, academic service, supporting art and culture,developing organization and staffs, courses and teaching/ learning, and quality assurance) ensure the quality desired and further development of educational quality and standards of these institutions.

Similar to the operation of other concerns, education provision needs the proper administrative and managerial principles for the whole cyclical functioning. It has been well recognized that evaluation is truly indeed and essential step for feedback information, which provides us with the basis for assessing the extent of target achievement. It also enables us to identify any weaknesses or problems for which remedial measures are needed so as to support and facilitate subsequent

planning and actions required to achieve the goals effectively and efficiently (Office for National Education Standards and Quality Assessment, 2012).

Therefore, it is crucial and necessary that the importance of evaluation be recognized, particularly quality assessment by an external and neutral body. Such mechanism will provide meaningful assessment. For Thai national education, it also gives all agencies responsible for education provision from those at the national level to the smallest - i.e. educational institutions and classrooms, the incentives for self-evaluation so that the quality of education will be more continuously enhanced (Office for National Education Standards and Quality Assessment, 2012).

2.4 Description of IC Indictors

There are many works from various institutions and researchers trying to present some possible indicators or measures for managing intellectual capital such as:

1) According to IFAC (1998), Ramona Dzinkowski, President OF RND Research Group illustrates thetypes of intellectual capital falling under each following category:

(1) Human Capital
   a) Know-how
   b) Education
   c) Vocational qualification
   d) Work-related knowledge
   e) Occupational assessments
   f) Psychometric assessments
   g) Work-related competencies
   h) Entrepreneurial lean, innovativeness,
   i) Proactive and reactive abilities,
   j) Changeability

(2) Customer (Relational Capital)
   a) Brands
   b) Customers
   c) Customer loyalty

d) Company names
e) Backlog orders
f) Distribution channels
g) Business collaborations
h) Licensing agreements
i) Favourable contracts
j) Franchising agreements

(3) Organizational (Structural) Capital
a) Intellectual Property
b) Patents
c) Copyrights
d) Design rights
e) Trade secrets
f) Trademarks
g) Service marks
h) Infrastructure Assets
i) Management philosophy
j) Corporate culture
k) Management processes
l) Information systems
m) Networking systems
n) Financial relations

Then IFAC (1998) presents some possible measures for managing IC as follow:

1) Human Capital Indicators
(1) Reputation of company employees with headhunters
(2) Years of experience in profession
(3) Rookie ratio (percent of employees with less than two years' experience)
(4) Employee satisfaction
(5) Proportion of employees making new idea suggestions (proportion implemented)

(6) Value added per employee

(7) Value added per salary dollar

2) Organizational (Structural) Capital Indicators

(1) Number of patents

(2) Income per R&D expense

(3) Cost of patent maintenance

(4) Project life-cycle cost per dollar of sales

(5) The number of individual computer links to the data base

(6) The number of times the data base has been consulted

(7) Contributions to the data base

(8) Upgrades of the data base

(9) Volume of IS use and connections

(10) Cost of IS per sales dollar

(11) Income per dollar of IS expense

(12) Satisfaction with IS service

(13) The ratio of new ideas generated to new ideas implemented

(14) The number of new product introductions

(15) New product introductions per employee

(16) Number of multi-functional project teams

(17) Proportion of income from new product introductions

(18) Five year trend of product life cycle

(19) Average length of time for product design and development

(20) Value of new ideas (money saved, money earned)

3) Customer and Relational Capital Indicators

(1) Growth in business volume

(2) Proportion of sales by repeat customers

(3) Brand loyalty

(4) Customer satisfaction

(5) Customer complaints

(6) Product returns as a proportion of sales

(7) Number of supplier/customer alliances and their value

(8) Proportion of customer's (supplier's) business that your product (service) represents(in dollars terms)

2) Engström, Westnes and Westnes (2003) summarize a set of measures as follow:

Table 2.2 A Set of Measures

Level 1	Level 2	Level 3
Human capital	Competence	Competence ideal level
	Improvement "systems"	Succession training program
		Cross-departmental cooperation
		Upgrade employees' skills
		Recruitment program comprehensive
		Consequences if key employees left
	Intellectual agility	Come up with new ideas
		Employees voice opinions
		Individuals learn from one another
	Performance	Employees are best in industry
		Get the most out of employees
	Attitude and motivation	Employee satisfaction
		Employees perform their best
		Employees think actions through
		Employees perform with "energy" Affect one another positively Employees give it their all

Table 2.2 (Continued)

Level 1	Level 2	Level 3
Customer capital	Customer loyalty and satisfaction	Customer satisfaction
		Customer loyalty
		Degree of customer repurchase
		Confident of future with customer
	Market share	Market share improving
		Market share is highest
	Market orientation	Hotel is market-oriented
		Meet with customer
		Customer information disseminated
		Understand target markets
		Care what customer wants
		Launch what customers want
	Handling customers	Reduce time to handle complaints
		Value added service
		Feedback with customer
Structural capital	Efficiency and effectiveness	Most effective processes
		Improving cost per revenue
		Increase in revenue per employee
		Revenue per employee is best
		Transaction time decreasing
		Hotel is efficient
	Renewal and development	Implement new ideas

Table 2.2 (Continued)

Level 1	Level 2	Level 3
		Supports development of new ideas
		Develops most ideas in industry
		Procedures support innovation
	Systems and procedures	Systems allow easy info access
		Hotel is not a bureaucratic nightmare
		Not too far removed from one another
	Atmosphere	Atmosphere is supportive

3) Seleim et al, (2004) describe a list of the used indicators is classified under the three main IC components as follow:

(1) Human capital measures include indicators such as: number of certified developers, superstardevelopers (their performance equals four times the performance of their colleagues),star developers (their performance equals two times the performance of their colleagues), new comers, leaving developers, developers who attended project management training programs, developers who are able to translate customer needs into programming structures, developers who have the ability to work in a team, training hours for developers, years of experience.

(2) Structural capital measures include indicators such as: number of books and references in the company library, number of licenses from international companies, number of meetings held among the developers weekly, percentage of implementing software project documentation, percentage of reusability of knowledge from previous projects, average number of bugs in a system or program, percentage of using prototype in software development, number of registered system programs, number of unregistered system programs, and implementation speed for projects within the company and the number of innovation sources in developing software.

(3) Relational capital measures include indicators such as: percentage of long-term customers, average time from customer complaint to solution

delivery for that complaint, how many customers participate in software testing before final delivery, percentage of customers who regularly upgrade or buy the follow product, percentage of software launched by the release date, customer's complaints, percentage of positive media PR in achieving business goals, number of connections and correlates between the company and the research centers and universities, how many times the media write about the company, number of talks in conference sessions about the company, number of memberships in association or professional organizations, number of countries the company exports to and the number of collaborative ventures with competitors.

Until the famous work of Dr. Bontis in 1997, he adjusted all over these indicators or measures to be easy to use and understand, then he developed the IC questionnaire and originally administered in Canada in 1998 and re-administered in Malaysia in 2000. This IC questionnaire has been popularand widespread among many researchers until now (Sharabati et al., 2010).

For this study, the researcher will apply the work of Sharabati et al. (2010) for demonstratingthe summative sub-components of HC, SC, and RC to be the measures as follow:

The summative sub-components of HC

1) Learning and education
2) Experience and expertise
3) Innovation and creation

The summative sub-components of SC

1) Systems and programs
2) Research and development
3) Intellectual and proprietary rights

The summative sub-components of RC

1) Strategic alliances, licensing, agreements
2) Relation with partners, suppliers and customers
3) Knowledge about partners, suppliers and customers

2.5 Conceptual Framework

This research framework was developed in accordance with the literature review. From the review, it was noticed that intellectual capital is related to corporate performance. The Intellectual Capital Variables defined in the study are in relation to Cabrita and Bontis' (2008) classification of intellectual capital: Human Capital, Structural Capital, and Relational Capital. Their interrelation and their impact on university performance will be tested.

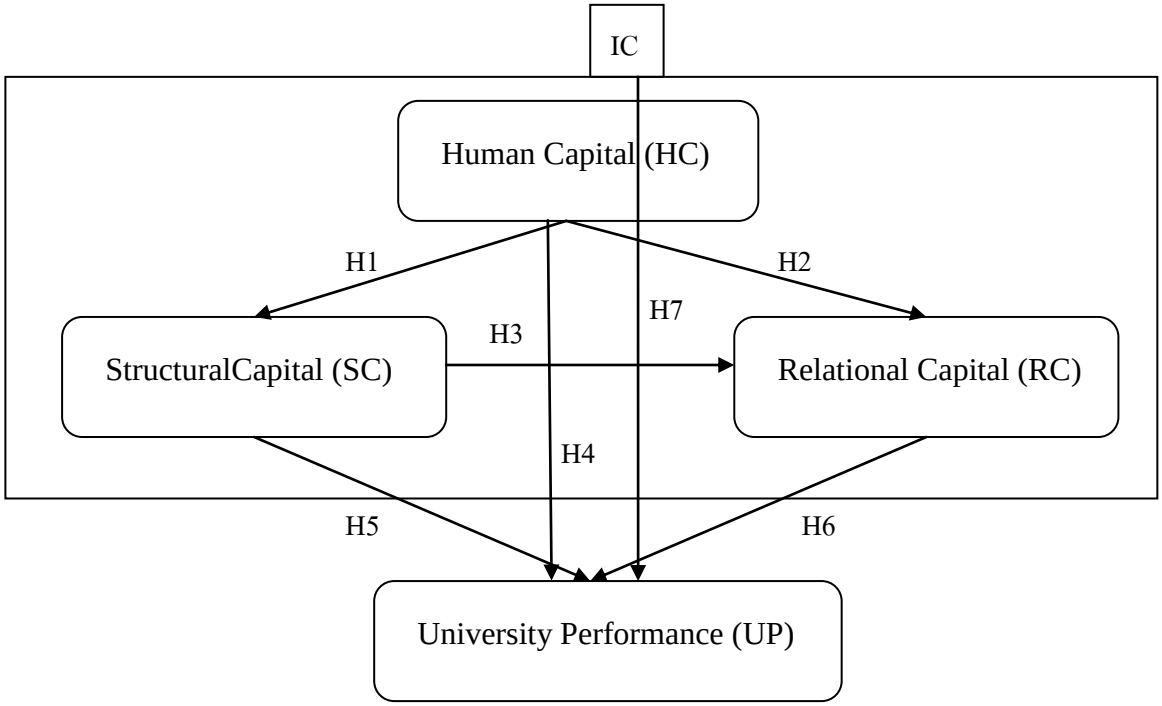


Figure 2.2 Conceptual Framework

Source: Revised From Cabrita & Bontis, 2008.

2.5.1 Research hypotheses

Previous studies have described about the relationship between intellectual capital and performance and thus indicated that there are interaction relationships between the three components of intellectual capital and this capital has middle effect in business performance (Bontis, 1998; Bontis et al., 2000; Cabrita & Bontis, 2008). Therefore, the following hypotheses are developed.

H1. Human capital is positively associated with structural capital.

H2. Human capital is positively associated with relational capital.

H3. Structural capital is positively associated with relational capital.

H4. Human capital is positively associated with university performance.

H5. Structural capital is positively associated with university performance.

H6. Relational capital is positively associated with university performance.

H7. Intellectual capital is positively associated with university performance.

2.6 Summary

In this chapter 2, important literature is reviewed as an important part of the research process. As the main focus of this research is the influence of intellectual capital on performance of Thai private universities, thus, the literature regarding intellectual capital, component of IC (Human Capital, Structural Capital, and Relational Capital), and corporate performance (includingbusiness performance and the external quality assurance)are examined as the important variables in this research. Finally, seven main hypotheses based on the reviewed literature are presented.

H1. Human capital is positively associated with structural capital.

H2. Human capital is positively associated with relational capital.

H3. Structural capital is positively associated with relational capital.

H4. Human capital is positively associated with university performance.

H5. Structural capital is positively associated with university performance.

H6. Relational capital is positively associated with university performance.

H7. Intellectual capital is positively associated with university performance.

CHAPTER 3

RESEARCH DESIGN AND METHODS

This chapter presents the research methodology used in this study. The following components are discussed in this chapter: l) research design, 2) sampling method, 3) data collection, and data analysis.

3.1 Research Design

This paper intends to verify if human capital, structural capital and relational capital can improve the university performance of an organization which is composed of both financial and non-financial performance. This study also explores the correlation between 3 kinds of intellectual capital: human capital, structural capital and relational capital. And because these capitals are complementary to eachother, the intellectual capital can create value only by combining these 3 capitals and also the final performance of an organization is influenced by the interactionsof the 3 dimensions of the intellectual capital (Stewart, 1999).

Therefore, in this research intellectual capital and its dimension are independent variables and university performance is the dependent variable.

3.2 Questionnaire Design

Table 3.1 Dimensions, Sub-Dimensions and Items of the Measurement Scale

Dimension	Sub-dimension	Items in the sub-dimension
Human capital	Learning and education (hc1)	10
	Experience and expertise (hc2)	10
	Innovation and creation (hc3)	10
Structural capital	Systems and programs (sc1)	10
	Research & development (sc2)	10
	Intellectual Property Rights (sc3)	10
Relational capital	Strategic alliances, licensing and agreement (rc1)	10
	Customer and supplier relations (rc2)	10
	Customer knowledge (rc3)	10
University performance (up)		10

Source: Revised from Chen, 2001.

As Table 1 shows, the measurement scales are divided into human capital, structural capital, relationalcapital, university performance, which are then subdividedinto several sub-dimensions.

The original questionnaire items came fromthe empirical study of Bontis (1998). Then, they were adopted and adapted by the work of Bontis, et al. (2000); Cabrita and Bontis (2008); and Sharabati et al. (2010), which were 100 items in total. For this study, all items are revised by experts to suit the study and also, a pilot test, review by four experts in this field (all are deans from different faculties: Business Administration, Economics, Accountancy, and Information Technology). In addition, the items are placed categorically as Bontis (1998); and Cabrita and Bontis' (2008) classification of intellectual capital. See table 3.2.

Table 3.2 Summary of Survey Items

Human Capital
1. Competence ideal level (from Bontis, et al., 2000)
2. Employeescooperate in team (from Bontis, et al., 2000)
3. Employees undergo training programs (from Sharabati et al., 2010)
4. Employees learn from others (from Cabrita and Bontis, 2008)
5. The ratio of educated personnel (from Sharabati et al., 2010)
6. Update and develops knowledge and skills (from Sharabati et al., 2010)
7. Market share improving (from Cabrita and Bontis, 2008)
8. Learning and education affect productivity (from Sharabati et al., 2010)
9. Learning and education affect profitability (from Sharabati et al., 2010)
10. Learning and education affectthe external quality assurance
11. Employees are experts (from Sharabati et al., 2010)
12. Employees perform at their best (from Cabrita and Bontis, 2008)
13. Employees generally give it their all (from Cabrita and Bontis, 2008)
14. Turnover is low (from Sharabati et al., 2010)
15. University being efficient (from Bontis, et al., 2000)
16. Employees are professional (from Sharabati et al., 2010)
17. Lowest costs per transaction (from Bontis, et al., 2000)
18. Experience and expertise affect productivity (from Sharabati et al., 2010)
19. Experience and expertise affect profitability (from Sharabati et al., 2010)
20. Experience and expertise affectthe external quality assurance
21. Employees are creative and bright (fromBontis, et al.,2000)
22. Employees voice their opinions(from Cabrita and Bontis, 2008)
23. Employees come up with new ideas (from Cabrita and Bontis, 2008)
24. New projects are launched (from Sharabati et al., 2010)
25. Employees are encouraged to bring and share new knowledge and ideas (from Bontis, et al.,2000)
26. Employees are satisfied (from Bontis, et al.,2000)
27. Employees are motivated and committed to share new great ideas (from Sharabati et al., 2010)

Table 3.2 (Continued)

Human Capital
28. Innovation and creation affect productivity(from Sharabati et al., 2010)
29. Innovation and creation affect profitability(from Sharabati et al., 2010)
30. Innovation and creation affect the external quality assurance
Structural Capital
1. Succession training programs (from Bontis, et al.,2000)
2. Culture and atmosphere are supportive (from Bontis, et al.,2000)
3. Recruitment programs are comprehensive (from Cabrita and Bontis, 2008)
4. Well-developed reward system (from Sharabati et al., 2010)
5. Upgrading employees skills and education (from Cabrita and Bontis, 2008)
6. Sufficient influence over decisions made (from Sharabati et al., 2010)
7. Not a "bureaucratic nightmare" (from Cabrita and Bontis, 2008)
8. Systems and programs affect productivity (from Sharabati et al., 2010)
9. Systems and programs affect profitability (from Sharabati et al., 2010)
10. Systems and programs affect the external quality assurance
11. Research leader (from Sharabati et al., 2010)
12. Develops work processes (from Sharabati et al., 2010)
13. Develops and re-organizes based on R&D (from Sharabati et al., 2010)
14. Follows up and adopts the latest scientific and technical development (from Sharabati et al., 2010)
15. Systems and procedures support innovation (from Cabrita and Bontis, 2008)
16. Appropriate and adequate budget for R&D (from Sharabati et al., 2010)
17. Management trust and support the R&D department (from Sharabati et al., 2010)
18. R&D affects university's productivity (from Sharabati et al., 2010)
19. R&D affects university’s profitability (from Sharabati et al., 2010)
20. R&D affects university's the external quality assurance
21. Clear strategies and procedures for IPRs management (from Sharabati et al., 2010)
22. Monitors performance of the IPRs portfolio (from Sharabati et al., 2010)

Table 3.2 (Continued)

Structural Capital
23. Licensing IPRs create new organizations (from Sharabati et al., 2010)
24. Encourages and rewards creation (from Sharabati et al., 2010)
25. IP is a key intellectual asset (from Sharabati et al., 2010)
26. Utilizes the IPRs to maximum level (from Sharabati et al., 2010)
27. High number of IPRs per year (from Sharabati et al., 2010)
28. IPRs affect university's productivity (from Sharabati et al., 2010)
29. IPRs affect university's profitability (from Sharabati et al., 2010)
30. IPRs affect university's the external quality assurance
Relational Capital
1. Working on joint projects with many organizations (from Sharabati et al., 2010)
2. University has diverse distribution channels (from Sharabati et al., 2010)
3. Ratio of business is done with strategic alliances (from Sharabati et al., 2010)
4. University has many and diverse alliances (from Sharabati et al., 2010)
5. People from outside are consulted when decisions are made (from Sharabati et al., 2010)
6. Able to learn and add value through its partners (from Sharabati et al., 2010)
7. Prides on being partnership-oriented (from Sharabati et al., 2010)
8. Strategic alliances affect productivity (from Sharabati et al., 2010)
9. Strategic alliances affectprofitability (from Sharabati et al., 2010)
10. Strategic alliances affect the external quality assurance
11. Customers be loyal (from Cabrita and Bontis, 2008)
12. Customers have selected university's products (from Bontis, et al.,2000)
13. Capitalizes on customers' wants and needs (from Bontis, et al.,2000)
14. Devotes time to select suppliers (from Sharabati et al., 2010)
15. Long-standing relationship with suppliers (from Sharabati et al., 2010)
16. Reduce time to resolve customer's problem (from Cabrita and Bontis, 2008)
17. Feels confident with their customers (from Cabrita and Bontis, 2008)
18. Relationship with customer and supplier affects university's productivity (from Sharabati et al., 2010)

Table 3.2 (Continued)

Relational Capital
19. Relationship with customer and supplier affects university'sprofitability (from Sharabati et al., 2010)
20. Relationship with customer and supplier affects the external quality assurance
21. Share knowledge with its partners (from Sharabati et al., 2010)
22. Gets feedback from customers (from Cabrita and Bontis, 2008)
23. Customer knowledge is distributed (from Bontis, et al.,2000)
24. Data of customers are updated (from Sharabati et al., 2010)
25. Complete data about the suppliers (from Sharabati et al., 2010)
26. Meets with customers (from Cabrita and Bontis, 2008)
27. Information system in use (from Sharabati et al., 2010)
28. Knowledge about customers and suppliers affects productivity (from Sharabati et al., 2010)
29. Knowledge about customers and suppliers affectsprofitability (from Sharabati et al., 2010)
30. Knowledge about customers and suppliers affectsthe external quality assurance
University Performance (from Sharabati et al., 2010)
1. Industry Leadership
2. Future Outlook
3. Response to Competition
4. Rate in new product launches
5. Business performance and success
6. Employee productivity
7. Process (transaction) productivity
8. Sales growth
9. Profit growth
10. University's the external quality assurance

3.3 Sampling Method

This research according to study design is analytical –descriptive (because it tries to describe the phenomena whileconcerns with cause-effect relationships), with emphasis on the correlation based on the objectives is applied research. In present study, statistical society is Thai private universities' performance in Bangkok. The analysis is based on a sample of all 19 Thai private universities in Bangkok:

1) University of the Thai Chamber of Commerce (8 faculties)
2) Rangsit University (21 faculties)
3) Bangkok University (11 faculties)
4) Bangkokthonburi University (16 faculties)
5) Krirk University (5 faculties)
6) KasemBundit University (9 faculties)
7) RattanaBundit University (8 faculties)
8) Thonburi University (4 faculties)
9) Dhurakij Pundit University (12 faculties)
10) Sripatum University (10 faculties)
11) Siam University (11 faculties)
12) HuachiewChalermprakiet University (13 faculties)
13) Mahanakorn University of Technology (5faculties)
14) Assumption University (10 faculties)
15) South East Asia University (4 faculties)
16) Saint John's University (5 faculties)
17) North Bangkok University (5 faculties)
18) Eastern Asia University (11faculties)
19) Nation University (2 faculties)

Therefore, sample size was around 167 all deans in all faculties that would be studied.

3.4 Data Collection

In this research, data were collected through quantitative survey approach. This data were collected through field survey and data collection tool were questionnaire and also financial documents in enterprises.

The questionnaires were distributed among respondents to answer the questions in the questionnaire. The respondents were all the deans of all faculties in Thai private universities in Bangkok. The questionnaire contained 100 statements to which respondents indicated the extent of their agreement on a five-point Likert scale (1 = strongly disagree and 5 = strongly agree).

Respondents were encouraged to ask questions about the purpose of the survey and to make sure that the meanings of the questions were clear. All such questions were answered during the administration of the survey.

The questionnaire was six pages in length and was accompanied by a covering letter from NIDA which introduced the concept of IC. The items were developed to encompass the underlying meaning of their respective latent constructs and were revised from their original form to suit the study. The items of performance were remained the same and added on the issue of the external quality assessment.

The covering letter asked respondents to "take on the role as their employer's representative" and to respond to items from an overall company perspective. In effect, each respondent would act as a proxy respondent for their whole organization. The covering letter would also encourage respondents to provide feedback on the questionnaire items (i.e. if they were difficult to understand).

3.5 Analytical Methods

According to Huang and Hsueh (2007) the reliability and validity of scale were confirmed through reliability analysis. With Pearson correlationanalysis, various dimensions and sub-dimensions of intellectual capital were analyzed with respect to their correlation with the university performance. Then, regression analysis was used to verify the theoretical model, and identify the cause–effect relationship between 3 dimensions of intellectual capital and university performance.

The correlation analysis was used to check linear relationship between variables, which constituted the basic assumptions of path analysis. Thus, the degree of correlation is firstly confirmed through correlation analysis, and then the cause-effect relationship is confirmed through regression analysis (Brown, Adams, & Amjad, 2007).

3.6 Summary

This chapter explains the research design and method that will be used in this study. It intends to verify if human capital, structural capital and relational capital can improve the university performance of Thai private universities.

The population and samples of this study will be consisted of all deans inall Thai private universities that situated in Bangkok (19 universities).

The questionnaire items are adopted and adapted from the empirical study of Bontis (1998); Bontis, et al. (2000); Cabrita and Bontis (2008); and Sharabati et al. (2010), which are 100 items in total. All items are revised by experts to suit the study. Also, the items are placed categorically as Bontis (1998); and Cabrita and Bontis' (2008) classification of intellectual capital.The questionnaire contained 100 statements to which respondents indicated the extent of their agreement on a five-point Likert scale (1 = strongly disagree and 5 = strongly agree).

The reliability and validity of scale were confirmed through reliability analysis.The degree of correlation is firstly confirmed through correlation analysis, and then the cause-effect relationship is confirmed through regression analysis.

CHAPTER 4

RESEARCH FINDINGS

This chapter discusses the results from thedata collection described in the previous chapter. It reports the results that answer the primaryresearch question: How does the intellectual capital influence Thai private universities' performance? This chapter explores the interrelationship among three components of intellectual capital (human capital, structural capital and relational capital) and their effects on performance within the private educational institutions of Thailand.

4.1 Sampling Profile

In this study, 100% of the sample universities are situated in Bangkok. They are all Thai private universities. Overall, thescale of these universities is relatively small compared to their competitors nationwide.167 copiesof the questionnaire weresent to all these universities for all their deans in all faculties, of which 133 copieswere returned, and 131 copies (78.44%) were valid. See table1 for frequency score.

Table 4.1 Frequency Score

Item	Frequency				
	1	2	3	4	5
Human capital					
Learning and Education					
(hc1)					
1	-	2(1.5%)	51(38.9%)	65(49.6%)	13(9.9%)
2	-		13(9.9%)	99(75.6%)	19(14.5%)
3	-	3(2.3%)	45(34.4%)	25(19.1%)	58(44.3%)
4	-	-	49(37.4%)	69(52.7%)	13(9.9%)

Table 4.1 (Continued)

Item	Frequency				
	1	2	3	4	5
5	2(1.5%)	2(1.5%)	33(25.2%)	63(48.1%)	31(23.7%)
6	-	3(2.3%)	37(28.2%)	54(41.2%)	37(28.2%)
7	-	22(16.8%)	65(49.6%)	44(33.6%)	-
8	-	3(2.3%)	16(12.2%)	75(57.3%)	37(28.2%)
9	-	-	-	108(82.4%)	23(17.6%)
10	-	-	-	41(31.3%)	90(68.7%)
Experience and Expertise(hc2)					
11	-	-	26(19.8%)	80(61.1%)	25(19.1%)
12	-	-	40(30.5%)	76(58%)	15(11.5%)
13	-	-	46(35.1%)	73(55.7%)	12(9.2%)
14	6(4.6%)	19(14.5%)	22(16.8%)	72(55%)	12(9.2%)
15	-	-	14(10.7%)	86(65.6%)	31(23.7%)
16	-	-	36(27.5%)	82(62.6%)	13(9.9%)
17	-	-	93(71%)	25(19.1%)	13(9.9%)
18	-	-	-	59(45%)	72(55%)
19	-	-	12(9.2%)	76(58%)	43(32.8%)
20	-	-	8(6.1%)	52(39.7%)	71(54.2%)
Innovation and Creation(hc3)					
21	-	11(8.4%)	79(60.3%)	41(31.3%)	-
22	-	17(13%)	30(22.9%)	71(54.2%)	13(9.9%)
23	-	13(9.9%)	95(72.5%)	23(17.6%)	-
24	-	11(8.4%)	57(43.5%)	53(40.5%)	10(7.6%)
25	-	-	18(13.7%)	93(71%)	20(15.3%)
26	-	10(7.6%)	49(37.4%)	69(52.7%)	3(2.3%)
27	-	-	22(16.8%)	109(83.2%)	-
28	3(2.3%)	10(7.6%)	12(9.2%)	79(60.3%)	27(20.6%)
29	-	6(4.6%)	44(33.6%)	80(61.1%)	1(0.8%)
30	-	10(7.6%)	15(11.5%)	59(45%)	47(35.9%)
Structural Capital					
Systems and Programs(sc1)					
31	-	12(9.2%)	45(34.4%)	35(26.7%)	39(29.8%)
32	-	-	9(6.9%)	95(72.5%)	27(20.6%)
33	4(3.1%)	9(6.9%)	59(45%)	59(45%)	-

Table 4.1 (Continued)

Item	Frequency				
	1	2	3	4	5
34	-	11(8.4%)	23(17.6%)	67(51.1%)	30(22.9%)
35	-	-	41(31.3%)	61(46.6%)	29(22.1%)
36	5(3.8%)	11(8.4%)	41(31.3%)	74(56.5%)	-
37	-	-	37(28.2%)	51(38.9%)	43(32.8%)
38	-	-	-	83(63.4%)	48(36.6%)
39	-	-	-	96(73.3%)	35(26.7%)
40	-	-	12(9.2%)	63(48.1%)	56(42.7%)
Research & development(sc2)					
41	-	36(27.5%)	70(53.4%)	12(9.2%)	13(9.9%)
42	-	-	10(7.6%)	85(64.9%)	36(27.5%)
43	-	-	34(26%)	68(51.9%)	29(22.1%)
44	-	24(18.3%)	56(42.7%)	38(29%)	13(9.9%)
45	-	-	32(24.4%)	99(75.6%)	-
46	-	13(9.9%)	30(22.9%)	75(57.3%)	13(9.9%)
47	-	-	39(29.8%)	79(60.3%)	13(9.9%)
48	-	13(9.9%)	36(27.5%)	56(42.7%)	26(19.8%)
49	-	13(9.9%)	48(36.6%)	56(42.7%)	14(10.7%)
50	-	13(9.9%)	13(9.9%)	37(28.2%)	68(51.9%)
Intellectual Property Rights(sc3)					
51	50(38.2%)	-	21(16%)	36(27.5%)	24(18.3%)
52	50(38.2%)	13(9.9%)	21(16%)	38(29%)	9(6.9%)
53	44(33.6%)	19(14.5%)	32(24.4%)	27(20.6%)	9(6.9%)
54	37(28.2%)	14(10.7%)	5(3.8%)	59(45%)	16(12.2%)
55	50(38.2%)	-	12(9.2%)	40(30.5%)	29(22.1%)
56	50(38.2%)	13(9.9%)	58(44.3%)	1(0.8%)	9(6.9%)
57	63(48.1%)	-	36(27.5%)	32(24.4%)	-
58	42(32.1%)	21(16%)	11(8.4%)	21(16%)	36(27.5%)
59	42(32.1%)	21(16%)	11(8.4%)	46(35.1%)	11(8.4%)
60	42(32.1%)	21(16%)	-	32(24.4%)	36(27.5%)

Table 4.1 (Continued)

Item	Frequency				
	1	2	3	4	5
Relational capital					
Strategic alliances, licensing and agreement(rc1)					
61	-	-	13(9.9%)	32(24.4%)	86(65.6%)
62	-	-	8(6.1%)	58(44.3%)	65(49.6%)
63	-	-	56(42.7%)	51(38.9%)	24(18.3%)
64	-	-	13(9.9%)	60(45.8%)	58(44.3%)
65	-	13(9.9%)	52(39.7%)	46(35.1%)	20(15.3%)
66	-	-	13(9.9%)	85(64.9%)	33(25.2%)
67	-	-	38(29%)	67(51.1%)	26(19.8%)
68	-	-	25(19.1%)	60(45.8%)	46(35.1%)
69	-	-	21(16%)	64(48.9%)	46(35.1%)
70	-	12(9.2%)	1(0.8%)	47(35.9%)	71(54.2%)
Customer and supplier relations(rc2)					
71	-	-	41(31.3%)	77(58.8%)	13(9.9%)
72	-	-	64(48.9%)	54(41.2%)	13(9.9%)
73	-	-	25(19.1%)	75(57.3%)	31(23.7%)
74	-	11(8.4%)	38(29%)	73(55.7%)	9(6.9%)
75	-	-	13(9.9%)	108(82.4%)	10(7.6%)
76	-	-	24(18.3%)	73(55.7%)	34(26%)
77	-	-	13(9.9%)	84(64.1%)	34(26%)
78	-	-	-	59(45%)	72(55%)
79	-	-	-	84(64.1%)	47(35.9%)
80	12(9.2%)	-	30(22.9%)	43(32.8%)	46(35.1%)
Customer knowledge(rc3)					
81	-	-	51(38.9%)	52(39.7%)	28(21.4%)
82	-	-	34(26%)	86(65.6%)	11(8.4%)
83	-	-	59(45%)	61(46.6%)	11(8.4%)
84	9(6.9%)	4(3.1%)	21(16%)	72(55%)	25(19.1%)
85	-	-	48(36.6%)	72(55%)	11(8.4%)
86	-	10(7.6%)	16(12.2%)	93(71%)	12(9.2%)
87	9(6.9%)	15(11.5%)	14(10.7%)	68(51.9%)	25(19.1%)

Table 4.1 (Continued)

Item	Frequency				
	1	2	3	4	5
88	-	12(9.2%)	25(19.1%)	56(42.7%)	38(29%)
89	-	12(9.2%)	14(10.7%)	41(31.3%)	64(48.9%)
90	-	24(18.3%)	26(19.8%)	46(35.1%)	35(26.7%)
University performance					
91	-	-	13(9.9%)	86(65.6%)	32(24.4%)
92	-	-	13(9.9%)	74(56.5%)	44(33.6%)
93	-	-	13(9.9%)	87(66.4%)	31(23.7%)
94	-	-	47(35.9%)	71(54.2%)	13(9.9%)
95	-	-	26(19.8%)	68(51.8%)	37(28.2%)
96	-	-	49(37.4%)	82(62.6%)	-
97	-	9(6.9%)	51(38.9%)	59(45%)	12(9.2%)
98	-	20(15.3%)	47(35.9%)	52(39.7%)	12(9.2%)
99	-	20(15.3%)	38(29%)	61(46.6%)	12(9.2%)
100	-	1(0.8%)	25(19.1%)	66(50.4%)	39(29.8%)

4.2 Scores of Intellectual Capital

The statistical data of various dimensions and sub-dimensions of intellectual capital are listed in Table 4.2, wherein the mean score of human capital is 3.84, which include the highest mean score “experience and expertise” (3.96), and the lowest mean “innovation and creation” (3.63). The average score of structural capital is 3.46, which include the highest mean score “systems and programs” (3.94), and the lowest mean “Intellectual Property Rights” (2.71). The average score of relational capital is 3.98, which include the highest mean score “strategic alliances, licensing and agreement” (4.14), and the lowest mean “customer knowledge” (3.80). Among the three dimensions of intellectual capital, relational capital (3.98) and human capital (3.84) show a better performance than structural capital (3.46).

The average score of university performance is 3.86, may indicate that the universities are quite satisfactory in their performance.

Table 4.2 Reliability and Average Score of Various Dimensions and Sub-Dimension in the Scale

Dimension/sub-dimension	**Cronbach's a**	**Mean**	**S.D**.
Human Capital	0.796	3.84	0.39
Learning and education(hc1)	0.766	3.95	0.39
Experience and expertise(hc2)	0.548	3.96	0.38
Innovation and creation(hc3)	0.394	3.63	0.33
Structural Capital	0.913	3.46	0.63
Systems and programs(sc1)	0.685	3.94	0.36
Research & development(sc2)	0.907	3.72	0.37
Intellectual Property Rights(sc3)	0.983	2.71	0.28
Relational Capital	0.780	3.98	0.29
Strategic alliances, licensing and agreement(rc1)	0.692	4.14	0.31
Customer and supplier relations(rc2)	0.750	4.00	0.30
Customer knowledge(rc3)	0.901	3.80	0.16
University Performance(up)	0.857	3.86	0.31

4.3 Reliability Analysis

Table 4.2 also shows a reliability analysisof various dimensions and sub-dimensions of intellectual capital. The reliability of the test is inspected using Cronbach's alpha in SPSS VERSION19**,** in which thereliabilityof major dimensionsis higher than 0.7 and the overall reliability of the scale is over 0.7, showing a consistency and reliability of results. Overall, the scales developed in this study proved themselves to be suitable measurement tools.

4.4 Correlation Analysis

Table 4.3 lists the correlation analysis results for intellectual capital,three dimensions of it and the university performance. A Pearson correlation analysis was performed on the dependent and independent variables in order to determine the degree of relationship between them.

The results reveal that university performance is positively and significantly correlated tointellectual capital at 0.518^{**} ($p < 0.01$). And there is also a positive correlation between three dimensions of intellectual capital and the university performance, of which a higher positive correlation exists in relational capital vs university performance, and structural capital vs.university performance, ie 0.511^{**} and 0.458^{**}. These results reveal support for hypothesis4, 5, 6, and 7.

In addition, there is also a positive correlation among the three dimensions of intellectual capital; especially the coefficient of structural capital and relational capital is 0.645^{**}, showing a remarkable level of correlation. However, the coefficient of humancapital and relational capital is 0.026, showing a low level of correlation.

Table 4.3 Correlation Matrix of Measured Dimensions

		up1	**ic**	**hctotal**	**sctotal**	**rctotal**
up1	Pearson Correlation	1	.518**	.154	.458**	.511**
ic	Pearson Correlation	.518**	1	.462**	.732**	.758**
hctotal	Pearson Correlation	.154	.462**	1	.270**	.026
sctotal	Pearson Correlation	.458**	.732**	.270**	1	.645**
rctotal	Pearson Correlation	.511**	.758**	.026	.645**	1

Note: ** Correlation is significant at the 0.01 level (2-tailed).

Table 4 shows the results of correlation analysis between various sub-dimensions of intellectual capital and dimension of university performance. There are high positive correlations between “university performance” and “customer knowledge (rc3)” under relational capital, “Strategic alliances, licensing and agreement (rc1)”

under relational capital, and "systems and programs(sc1)" under structural capital, with the coefficients separately up to 0.527**, 0.506** and 0.416** respectively.

In addition, table 4 also shows the negative correlations among various sub-dimensions of intellectual capital. There is low negative correlation between "learning and education (hc1)" under human capital and "Customer knowledge(rc3)" under relational capital which is -0.240**.There is low negative correlation between "experience and expertise (hc2)" under human capital and "Intellectual Property Rights(sc3)" under structural capital which is -0.352**.There is low negative correlation between "Innovationand creation (hc3)" under human capital and "Customer knowledge (rc3)" under relational capital which is -0.260**. Also, there is low negative correlation between "research & development (sc2)" under structural capital and "customer knowledge (rc3)" under relational capital which is -0.262**.In addition, there is moderate negative correlation between "experience and expertise (hc2)" under human capital and "customer knowledge (rc3)" under relational capital which is -0.590**.

Table 4.4 Correlations Matrix of Measured Sub-Dimensions

	up1	ic	hc1	hc2	hc3	sc1	sc2	sc3	rc1	rc2	rc3
up1	1	.518**	.301**	-.059	.146	.416**	.289**	.354**	.506**	-.042	.527**
ic	.518**	1	.392**	.231**	.578**	.739**	.538**	.777**	.485**	.769**	.451**
hc1	.301**	.392**	1	.844**	.628**	.427**	.623**	-.217*	.314**	.315**	-.240**
hc2	-.059	.231**	.844**	1	.596**	.397**	.589**	-.352**	.239**	.313**	-.590**
hc3	.146	.578**	.628**	.596**	1	.320**	.832**	.184*	.102	.519**	-.260**
sc1	.416**	.739**	.427**	.397**	.320**	1	.333**	.403**	.628**	.455**	.140
sc2	.289**	.538**	.623**	.589**	.832**	.333**	1	.171	-.012	.363**	-.262**
sc3	.354**	.777**	-.217*	-.352**	.184*	.403**	.171	1	.151	.589**	.715**
rc1	.506**	.485**	.314**	.239**	.102	.628**	-.012	.151	1	.226**	.179*
rc2	-.042	.769**	.315**	.313**	.519**	.455**	.363**	.589**	.226**	1	.237**
rc3	.527**	.451**	-.240**	-.590**	-.260**	.140	-.262**	.715**	.179*	.237**	1

Note: ** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

4.5 Regression Analysis

For the section of regression analysis, the researcher separates it into two parts.

1) University performance vs. three dimensions of intellectual capital University performance is regressed against three dimensions of intellectual capital namely (human capital, structural capital and relational capital). The equation foruniversity performanceis expressed by the following regression equation:

Ys = b0 + b1 X1 + b2 X2 + b3 X3, where

Ys–University performance,

X1 –Humancapital,

X2 –Structural capital,

X3 – Relational capital,

b0 – constant (coefficient of intercept).

b1, b2, b3 – regression coefficient ofthree dimensions,

Table 4.5 shows summary of the regression model. To predict the goodness-of fit of the regression model, the correlation coefficient (R), coefficient of determination (R2), and F ratio are examined in Table 6. First, the R of independent variables (human capital, structural capital and relational capital) on the dependent variable (university performance, or Ys) is 0.550, which shows that the university performance has positive and high overall association with the three dimensions. Second, the R2 is 0.302, suggesting that more than 30% of the variation of university performance is explained by the three dimensions. Last, the F ratio in Table 6, which explains whether the results of the regression model could have occurred by chance, has a value of 18.322 (p =0.00) and is considered significant. The regression model achieves a satisfactory level of goodness-of-fit in predicting the variance of university performance in relation to the three dimensions, as measured by the below –mentioned R, R2, and F ratio. In other words, at least one of the three dimensions is important in contributing to university performance. Table 7 presents the regression analysis, the beta coefficients can be used to explain the relative importance of the three dimensions (independent variables) in contributing to the variance in university performance (dependent variable). As far as the relative importance of the three

intellectual capital dimensions is concerned, relational capital, B3=0.412, p=0.000) carries the heaviest weight for university performance, followed by structural capital, B2=0.159, p=0.130, and human capital, B1=0.121, p=0.132. The results shows that a one-unit increase in relationalcapital will lead to a 0.412 unit increase in university performance, one-unit increase in structural capital would lead to a 0.159 unit increase in university performance, one-unit increase in human capital would lead to a 0.121 unit increase in university performance. In conclusion, the results of multiple regression analysis agree hypothesis 4, 5 and 6, that there is relationship between intellectual capital dimensions and the overall university performance. So, there is a relationship, which is what the researcher expected.

Table 4.5 Summary of Regression Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.550[a]	.302	.286	.38474

Note: a. Predictors: (Constant), rctotal, hctotal, sctotal

Table 4.6 Summary of ANOVA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.136	3	2.712	18.322	.000[a]
	Residual	18.799	127	.148		
	Total	26.936	130			

Note: a. Predictors: (Constant), rctotal, hctotal, sctotal

b. Dependent Variable: up1

Table 4.7 Summary of Coefficients of Regression Model

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	.497	.618		.805	.422
	hctotal	.144	.095	.121	1.515	.132
	sctotal	.117	.077	.159	1.522	.130
	rctotal	.596	.146	.412	4.084	.000

Note: a. Dependent Variable: up1

2) University Performance vs. Intellectual Capital

University performance is regressed against intellectual capital. The regression model is represented as follows:

IC = a0 + a1 HC + a2 SC + a3 RC

Y1 = b0 + b1 IC

Where:

IC - Intellectual capital,

Y1–University performance,

HC–Humancapital,

SC– structural capital,

RC– relational capital,

a0, b0 – constant (coefficient of intercept),

a1, a2, a3, b1 – coefficient for each ofthe independent variables.

Table 4.8 presents summary of regression model result. The value of R and R2 are 0.518 and 0.268 respectively. The R value of 0.518 represents the correlation between university performance and the intellectual capital. The R2 which indicates the explanatory power of the independent variables is 0.268. This means that about twenty-seven percent of the variation in university performance is explained by the independent variable. The R2 value as revealed by the result is not so high which means that about seventy-three percent (73%) of the variation in the dependent variable is unexplained by the model. The standard error of the estimate is 0.391, which explains how representative the sample is likely to be of the population. The

strength of the model was also considered by examining the goodness-of-fit of the model. Results show that that model designed for the study is good as evidenced by the result in Table 9 which has F value of 47.234 and p = 0.000. Table 10 shows the results of the coefficients of regression model with university performance as dependent variable. The beta coefficient for intellectual capital is 0.518, p = 0.000. It can be deduced from the results that intellectual capital impact positively and significantly on university performance. The result also reveals support for hypothesis 7.

Table 4.8 Summary of Regression Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.518[a]	.268	.262	.39095

Note: a. Predictors: (Constant), ic

Table 4.9 Summary of ANOVA

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.219	1	7.219	47.234	.000[a]
	Residual	19.716	129	.153		
	Total	26.936	130			

Note: a. Predictors: (Constant), ic

b. Dependent Variable: up1

Table 4.10 Summary of Coefficients of Regression Model

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	.980	.420		2.336	.021
	ic	.764	.111	.518	6.873	.000

Note: a. Dependent Variable: up1

4.6 Results

Figure 4.1 demonstrates the results for the structural model. The results pinpoint that the three constructs (human capital, structural capital and relational capital) that forms intellectual capital still affect one another. Two paths (human capital to structural capital, structural capital to relational capital) have shown significance**,** although human capital might not affect relational capital at a very significant level.

In addition, after analysis of the theoretical model, thecause–effect relationships are depicted in Figure 4.1. It is found that,among the 4 paths to university performance (intellectual capital, human capital, structuralcapital, and relational capital),thepath of intellectual capital and relational capital touniversity performance areobvious,they have a direct andsignificantinfluence on university performance, with a betacoefficient of 0.518**and0.412**respectively. These also prove that of intellectual capital and relationalcapital have direct cause–effectrelationships withuniversityperformance more than the others.

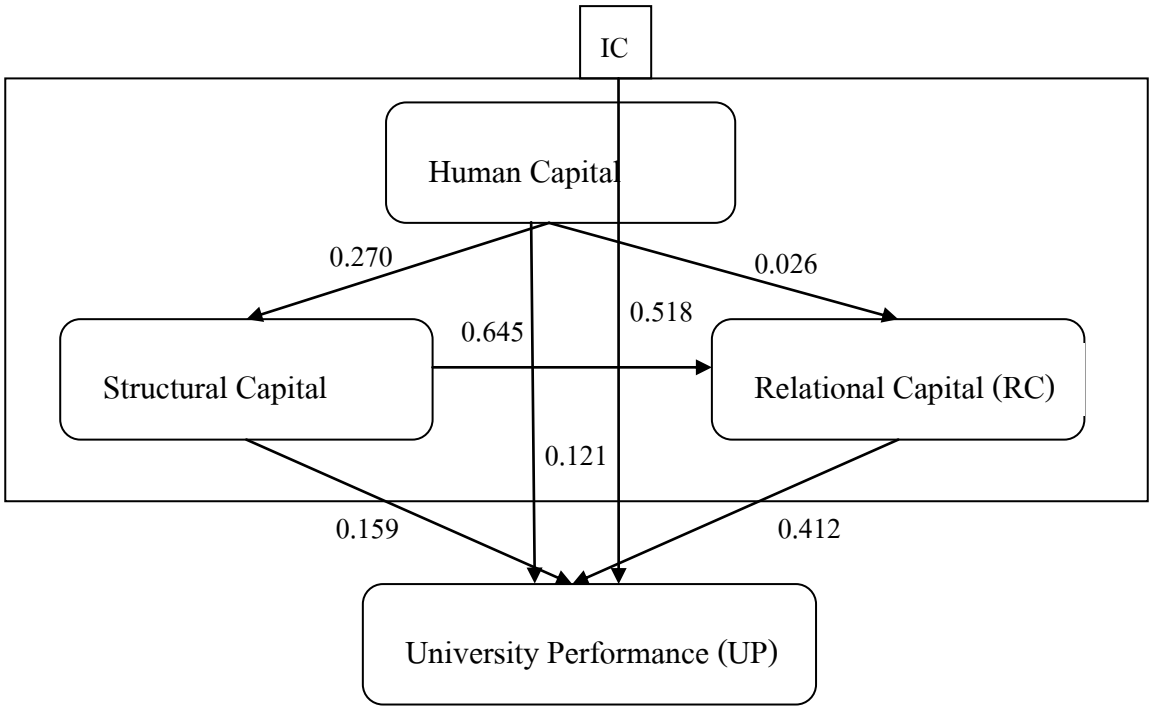


Figure 4.1 Path Model after Analysis

4.7 Summary

This chapter explores the interrelationship among three components of intellectual capital (human capital, structural capital and relational capital) and their effects on performance within the private educational institutions of Thailand.It is found that, among the 4 paths to university performance (intellectual capital, human capital, structural capital, and relational capital), the path of intellectual capital and relational capital to university performance are obvious**.**And forthe interrelationship among three components of intellectual capital (human capital, structural capital and relational capital), it is foundthat eventhere is a positivecorrelation among human capital,structural capital and relational capital. However, thehuman capital has immediate and considerable influence on structural capital more than relational capital.

CHAPTER 5

DISCUSSION

This survey explores the performance of intellectual capital in Thai private universities. From the descriptive statistics, the researcher has found out some characteristics of intellectual capital in these institutions.

5.1 Summary Research Results

It is discovered that there is a significant positive correlation between the intellectual capital and university performance,and also a significant positive correlation among some of the sub-dimensions of the intellectual capital(human, structural and relational capital).

Based on correlation analysis of 9 sub-dimensions of intellectual capital and university performance, it is found that “Customer knowledge”(rc3)and “Strategic alliances, licensing and agreement” (rc1) in relational capital as well as “Systems and programs”(sc1) in structural capital have an outstanding relationship with university performance. However, it is clearly seen from the average scoreof the items in the sub-dimensions that“Innovation and creation” (hc3) in human capitalpresents the poorest performance.

5.2 Research Discussion

The researcher found that all of the hypotheses were supported except hypothesis 2 (H2. Human capital is positively associated with relational capital).This finding was similar to the work of Shih Chen, and Morrison in 2010. They explored the impact of IC on business performance in Taiwanese design industry and found that for some companies that had not much employees, human capital was notpositively associated with relational capital too. Unlike the samples of previous

studies (Bontis, 1998; Bontis et al., 2000; Cabrita & Bontis, 2008; Chen, 2001), Thai private universities have many characteristics that are not possessed by other industries. Such as, in terms of the relationship between lecturers and their students, it is not really “customer service”. In Thai, this relationship are about teaching, educating and moreover it also concerns about “respect “more” than “service”. And because ofthe business issue, Thai private universities themselves need more profit so one lecturer has to lecture and take care students more than 100 students per one class, thus, how do they know each other well. For these reasons, it is not surprising for this study that whyhypothesis 2 was failed (especially, in “Customer and supplier relations” (rc2) and “Customer knowledge (rc3)”. But one limitation lies in the results is that the samples in the study contain onlyThai private universities that situated in Bangkok. It is possible thatThai private universities in other areas of Thailand, whose human capital has significant influence on relational capital. That is to say, an inclusion of these samples might lead to different research results.

However, among human capital, structural capital and relational capital of Thai private universities, the relational capital has a direct and substantial influence on university performance more than the others. This indicates that improving relational capital performance will directly contribute to university performance. Furthermore, the human capital has an influenceespecially on structural capital. The theoretical model shows some important paths respectively, ie structural capital relational capital; human capital structural capital.

In conclusion, the empirical findings of this research suggests that the human capital of Thai private universities have positive influence on structural capital, and structural capital have positive impact on relational capital. The path of human capital to relational capital and structural capital to university performance is not shown to be significant. However, relational capital is a significant mediator that contributes to Thai private universities’ performance instead of structural capital. That is to say, the talents of Thai private universities are helpful in building the universities—information systems, routines, procedures and databases—instead of maintaining good relationship with the organizations’ stakeholders. However, good relationship with the universities’ customer, competitor, and sector association is vital to Thai private universities’ good performance.

Furthermore, the empirical findings of this research are also in support of the fact that that the human capital of Thai private universities has positive influence on structural capital and relational capital (the mediators). Structural capital also positively influences relational capital as hypothesized. Besides, relational capital shows a positive association with university performance, while the positive impact of structural capital on university performance is not significant. This might result from the characteristics of Thai private universities' organizational structure. Their organic structure brought the university the advantage of high flexibility and adaptability, however, the efficiency of the organization is sacrificed as it is difficult and it takes much cost to maintain such a structure.

The previous empirical research present that human capital has an influence on structural capital and relational capital (Bontis, 2001). For this reason, the universities should make additional investment in this area, for example, to strengthen innovation and creation, universities should support employee education and the training system and also university's employees should be continuously encouraged and motivated to bring new knowledge and ideas to the business and commit to share their knowledge with their colleagues.

As being the educational sector which specialized inproviding knowledge services, the most valued asset is the knowledge and experience of the employees. Therefore, the major step is to promote the human capital and then allow it to be utilized through structural capital and relational capital, for example through structural capital: by storing systematically the academic documents and records well. Through relational capital: by focusing more on strategic alliances, licensing and agreement with its partners.

5.3 Research Implications and Recommendations

Results from this study may give benefits to both intellectual capital research and strategic management literature. Intellectual capital research offers an academic connection for discovering the relationship between the static notion (i.e. knowledge stocks) and the dynamic notion (i.e. knowledge flows) of the firm's resource-based view. In this understanding, whether the resource and the knowledge-based view of

the company are the outlines for the theoretical improvement of intellectual capital, it is also real that the intellectual capital literature delivers the strategic management auniversalviewpoint of value creation (Cabrita & Bontis, 2008).

It also appears that the result of this present study has a number of implications and recommendations that should be very beneficial for both academic researchers and practitioners as following:

1) Academics in the financial and accounting areas have traditionally been very interested in how intangible assets reflect on the performance of firms. The multi-dimensional and various nature of intellectual capital pose many challenges as well as enormouschances for interdisciplinary and cross-functional learning (Cabrita & Bontis, 2008).The researcher encourages other researchers to utilize these methods for further theory testing, model development and instrument improvement.

2) Another significant conclusion in this study is that the results of this study approvefairly similar results found byShih, Chen, and Morrison in Taiwan (2010), Bontis in Canada (1997) and Bontis et al. in Malaysia (2000). The test for interrelation effects also extendedprevious research. The researcherconsiders that intellectual capital is a significant incident of interactions, combinations and revolutionsand consequently encourages future researchers to test inter-relationships and interactions in other businesses or industries and geographical settings to generalize these results.

3) The contribution of this study is surely connected with human resource management. The researcherrecommends that identifying human capital as major part of intellectual capital assists organizationsrecognize how employees create value. According to Cabrita and Bontis (2008), as individuals, employees do not meet therequirements of a strategic asset because they readily move from one firm toanother. Furthermore, when tacit knowledge is not utilized in the attention of the organization, it doesnot create any value to the organization. Employee productivity relies on a complicatedcombination of influences (e.g. motivation, reward, skill level, experience and even emotion)and organizational support. The researcher suggests that practitioners acknowledge that although many departments of universities such as HR (human capital), IT (structural capital) and marketing (relational capital) departments are normallydissimilar units that sometimes do not participate their services, they

musttry to accept their differentopinions and harmonize their financialdistributions sothat a more universalviewpoint on the intangible value (intellectual capital) of the organizationcan be more readily recognized.

4) The researcherclaims that the intellectual capital is a crucial discipline within the area of strategic management and be thesignificantpart of research in the innovation period. Accordingto the resource-based view, value is created as a function of the approach scarce resourcesmanaged (Cabrita & Bontis, 2008). An increasing number of private universities are trying torealize their resource structure to manage their strategy construction towards new business models.In this understanding, intellectual capital model is able to help discover explanationsand suggestions for the management of intangibles. The researcher recommends that managementshould adopt an intellectual capital perspectiveof the firm which can provide insight into how intangible resources and theirformations contribute to a sustainable competitive advantage. This more universal view of the firm's resources can assistenvision the significance of strategic assets and the valuethey generate thus providing paths for innovative new business models.

5) For practitioners, especially university management, this study grants empirical evidence ofthe interrelationships among intellectual components with positive influence onperformance. This study provides university managementwith a well understanding of how intellectual resourcesimprove and drive their performance.Known that human capital contains the individual's education, skills, values and experiences, these components cannot be eternally kept in an organization. Ulrich (1998), claims that employees' competence and commitment (intellectual capital = competence × commitment) would possible forecast other positive consequences for example customer loyalty, productivity and job performance. Moreover, some researchers (Becker & Gerhart, 1996) discover that commitment to supervisors' goals and values via leadership, socialization and team building is more definitely associated to performance than commitment to organizations. Bontis and Fitz-enz (2002) also discover a strong positive linkage between employee commitment and business performance. According to these researchers, overall employee emotion in an organization which is defined as a meaning of employee satisfaction, commitment and motivation positively influences the distribution and

reproduction of knowledge (volunteer and willing to share and generate their knowledge to their coworkers) (Cabrita & Bontis, 2008), retention of significant employees and eventually, business performance. Consequently, universities should recruit and select capable employees, administrate their professional intelligence (Quinn, Anderson and Finkelstein, 1996) and create their knowledge more dynamic, by converting intellectual capital into customer value through collaboration (Chauhan & Bontis, 2004). Stovel and Bontis (2002) also confirm that improvement training of employees can reach to having higher efficiency and boosted creativity, causing in satisfied and faithful customers (human capital is positively related to relational capital). Team work is assumed to increase innovation and output (Henderson and Cockburn, 1994). Thus, knowledge transfer is intimately linked to motivation. Dealing motivation, specifically harmonizing intrinsic and extrinsic motivation is a significant and difficult to copy basis of competitive advantage (Osterloh & Frey, 2000). In addition, for taking whole advantage of human capital, the top management of these universities should be well aware of the employee concerns, and provide appropriate training programs to highlight the effective utilization of collective wisdom. These universities must not only teach their employees how to nurture their professional skill through analytical thinking, but also communicate them why this is essential. Despite the fact that employees are the ultimate significant property of the universities, the universities themselves are not the true owner of human capital if they are not aware of the principle of resource sharing. To this end, the universities can reinforce and apply accurately the knowledge, skill and learning competence of employees, and also make investment in them to improve and increase personal value and create intellectual capital for the universities (Grantham, 1997).Last but not least, structural capital is the outline and the instruction of an organization because it provides the implements and structure for maintaining, packaging and transferring knowledge along the value chain (Cabrita & Bontis, 2008). Within this perspective, effectiveness and innovation become the drivers of university performance. This supports the notion that structural capital and human capital go together in the creation of intellectual capital.

6) The researcher recommends that university management apply an intellectualcapital outline when assessing the assets of a potential target. The

researcher also trusts that acomprehensive understanding of the strategic importance of intellectual capital could also encourage universities to financially support the growth of Thai knowledge intensiveindustries. Moreover, the management, based on these above measures, should be in place to provide and stimulate motivations for employees to perform in a way that will increase and expand the university's intellectual capital value. Once universities can categorize and recognizespecific items of intellectual capital, they willcertainly realize and invest in human capital, customer capital, and structural capital well, to enrich corporate value. The major assumption places to the truth that, if universities capitalize on these capitals in the parameters that are mentioned above, they would attain a higher competitive advantage towards the competitive market. If intellectual capitalis conducted in the accuratepath and universities take advance of its components together and link to each other, they could succeed in university performance.

As for Thailand, to our knowledge, no study has up to now examined the relationship between these three elements with university performance in educational sector. This is one of the motivations to conduct this study in Thai environment.

5.4 Directions for future research

Further research is required to explore whether these findings generalize to othercountries and other industries. Interesting relationships may also be found out by investigating various internationalcontexts and cultural dimensions(Hofstede, 1978). Because some authors such as Chaminade and Johanson (2003) argue that cultural diversity has a substantial impact on intellectualcapital developments at both the firm and national level analysis (Bontis, 2004).

5.5 Summary

It would also be glad to see whether adifferentmethodology to measurement indicates to similar results.Finally, future research should also compare these perceptual results with objectiveperformance measures. A longitudinal study should be engaged to determine if theassociations identified in this paper hold over time.

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APPENDIX

APPENDIX

INTELLECTUAL CAPITAL QUESTIONNAIRE

(Revised from Bontis, 1998 and Sharabati et al., 2010)

A – General Information

Intellectual Capital has often been described as the difference between what a firm's market value is and the cost of replacing its assets. Therefore, this (often-positive) difference can be described as "those things that we normally cannot put a price tag on" such as expertise, knowledge, and a firm's organizational learning ability.

There are three elements encompassing Intellectual Capital: 1) Human capital can be described as the firm's collective capability to extract the best solutions from the knowledge of its individuals, that which is in the minds of individuals; 2) Structural capital can be thought of as the firm's organizational capabilities to meet market requirements, what is left after employees go home for the night; 3) Relational (customer) capital refers to firm's relationships e.g. with the customers, suppliers and partners.

Corporate performance is an important concept that relates to the way and manner in which both financial and non-financial resources available to an organization are judiciously used to achieve the overall corporate objective of an organization. It is therefore important that organization's performance be measured on a regular basis in order to ensure sustainability (Uadiale&Uwuigbe, 2011). Just to remind you for this study, the researcher will use two references to refer to corporate performance that are 1) business performance (productivity and profitability) Productivity means the relation between input and output of processes and transactions(number of student graduate in each year). Profitability means earnings before interest and tax (EBIT). 2) The external quality assurance.

B – Questionnaire Items

The following 90 items tap into Intellectual Capital and its effect on company's corporate performance. Please, answer these questions based on actual and current situation and not on beliefs.

[1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree]
Based on how you feel about the statement.

Human Capital

Learning and Education (HC1):

1	The competence of university's employees as a whole is equal to the most ideal level (matching with their work requirements and responsibilities)	1	2	3	4	5
2	The university gets the most out of its employees when they cooperate with one another in team tasks.	1	2	3	4	5
3	University's employees undergo continuous training programs every year.	1	2	3	4	5
4	University's employees continuously learn from others (colleagues and outsiders).	1	2	3	4	5
5	The ratio of educated personnel is on average compared with industry (on. of PhD, Master and Bachelor degrees compared with what should be).	1	2	3	4	5
6	University devotes a lot of time and effort to update and develops employees' knowledge and skills.	1	2	3	4	5
7	University's market share has been continually improving over the past few years.	1	2	3	4	5

8	Employees' learning and education affect university's productivity.	1	2	3	4	5
9	Employees' learning and education affect university's profitability.	1	2	3	4	5
10	Employees' learning and education affect university's the external quality assurance.	1	2	3	4	5

Experience and Expertise (HC2)

11	University's employees are experts in their respective areas.	1	2	3	4	5
12	University's employees consistently perform at their best.	1	2	3	4	5
13	University's employees generally give it their all, which makes this company different from others in the industry.	1	2	3	4	5
14	University's employees have worked for many years in the firm (employee turnover is very low)	1	2	3	4	5
15	The university prides itself on being efficient.	1	2	3	4	5
16	The employees are highly professional.	1	2	3	4	5
17	The university has the lowest costs per transaction of any in the industry.	1	2	3	4	5
18	Employees' experience and expertise affect university's productivity.	1	2	3	4	5
19	Employees' experience and expertise affect university's profitability	1	2	3	4	5
20	Employees' experience and expertise affect university's the external quality assurance.	1	2	3	4	5

Innovation and Creation (HC3)

21	University's employees are considered creative and bright compared with other universities in the industry	1	2	3	4	5
22	University's employees are keen to voice their opinions in group discussions.	1	2	3	4	5
23	University's employees usually come up with new ideas.	1	2	3	4	5
24	Large numbers of new projects are launched compared with competitors.	1	2	3	4	5
25	University's employees are continuously encouraged to bring new knowledge and ideas to the business and share their knowledge with their colleagues.	1	2	3	4	5
26	University's employees are satisfied with their university’s innovation policies and programs.	1	2	3	4	5
27	University's employees are highly motivated and committed to share new great ideas within the university, as it should be.	1	2	3	4	5
28	Employees' innovation and creation affect university’s productivity.	1	2	3	4	5
29	Employees' innovation and creation affect university's profitability.	1	2	3	4	5
30	Employees' innovation and creation affect university's the external quality assurance.	1	2	3	4	5

Structural Capital

Systems and Programs (SC1)

31	The university has succession training programs for each and every post/position (major positions)	1	2	3	4	5
32	The university's culture and atmosphere are supportive and comfortable.	1	2	3	4	5
33	The university's recruitment programs are comprehensive; and dedicated to hiring the best candidates available.	1	2	3	4	5
34	The university has a well-developed reward system related to performance.	1	2	3	4	5
35	The university supports their employees by constantly upgrading their skills and education whenever it is necessary.	1	2	3	4	5
36	Employees have sufficient influence over decisions made within the university.	1	2	3	4	5
37	The university is not a "bureaucratic nightmare".	1	2	3	4	5
38	University's systems and programs affect university's productivity.	1	2	3	4	5
39	University's systems and programs affect university's profitability.	1	2	3	4	5
40	University's systems and programs affect university’sthe external quality assurance.	1	2	3	4	5

Research & Development (SC2)

41	The university is considered a research leader.	1	2	3	4	5
42	The university continuously develops work processes.	1	2	3	4	5

43	The university continuously develops and re-organizes itself based on R&D (e.g. structure and responsibilities).	1	2	3	4	5
44	The university follows up and adopts the latest scientific and technical development around the world.	1	2	3	4	5
45	The systems and procedures of the university support innovation.	1	2	3	4	5
46	The university determines appropriate and adequate budget for R&D	1	2	3	4	5
47	The university's board of management highly trust and support the R&D department.	1	2	3	4	5
48	University's R&D affects university's productivity.	1	2	3	4	5
49	University's R&D affects university’s profitability.	1	2	3	4	5
50	University's R&D affects university's the external quality assurance.	1	2	3	4	5

Intellectual Property Rights (IPRs- for Example Books, Wining Projects) (SC3)

51	The university sets clear strategies and procedures for IPRs management	1	2	3	4	5
52	The university monitors performance of the IPRs portfolio.	1	2	3	4	5
53	The university pursues a multiple strategy of licensing IPRs spinning out new organizations or disposing of them to other parties.	1	2	3	4	5
54	The university actively encourages and rewards creation and extended use in order to maximize the income from IPRs.	1	2	3	4	5

55	IP is a key intellectual asset for top management, which is considered for value creation.	1	2	3	4	5
56	The university utilizes the IPRs to maximum level.	1	2	3	4	5
57	The university has high number of IPRs per year compared with competitors.	1	2	3	4	5
58	University's IPRs affect university's productivity.	1	2	3	4	5
59	University's IPRs affect university's profitability.	1	2	3	4	5
60	University's IPRs affect university's the external quality assurance.	1	2	3	4	5

Relational Capital

Strategic alliances, licensing and agreements (RC1)

61	The university is currently working on joint projects with many other organizations.	1	2	3	4	5
62	The university has diverse distribution channels.	1	2	3	4	5
63	High ratio of university's business is done with strategic alliances.	1	2	3	4	5
64	The university has many and diverse alliances (R&D, marketing, and community)	1	2	3	4	5
65	People from outside the university are consulted when decisions are made within the university.	1	2	3	4	5
66	The university is able to learn and add value through its partners.	1	2	3	4	5
67	The university prides itself on being partnership-oriented.	1	2	3	4	5
68	University's strategic alliances affect university's productivity.	1	2	3	4	5
69	University's strategic alliances affect university's profitability.	1	2	3	4	5

70	University's strategic alliances affect university's the external quality assurance.	1	2	3	4	5

Customer and supplier relations (RC2)

71	A poll of university's customers shows them to be loyal to the university, and would indicate that they are generally satisfied.	1	2	3	4	5
72	When it comes to new business, the university's customers have increasingly selected university's products versus competitors' customers over the past few years.(เช่นเปิดคณะ หลักสูตรใหม่)	1	2	3	4	5
73	The university capitalizes on customers' wants and needs by continually striving to make them satisfied.	1	2	3	4	5
74	The university devotes considerable time to select suppliers.	1	2	3	4	5
75	The university maintains a long-standing relationship with suppliers.	1	2	3	4	5
76	The university has greatly reduced the time it takes to resolve a customer's problem.	1	2	3	4	5
77	The university feels confident that their customers will continue to do business with it.	1	2	3	4	5
78	University's relationship with customer and supplier affects university's productivity.	1	2	3	4	5
79	University's relationship with customer and supplier affects university's profitability.	1	2	3	4	5
80	University's relationship with customer and supplier affects university' the external quality assurance.	1	2	3	4	5

Customer Knowledge (RC3)

81	It is important for the university to share knowledge with its partners.	1	2	3	4	5
82	The university gets as much feedback out of customers as it possibly can under different circumstances.	1	2	3	4	5
83	Customer knowledge is widely distributed throughout the university.	1	2	3	4	5
84	Data about customers are continuously updated.	1	2	3	4	5
85	The university has relatively complete data about the suppliers.	1	2	3	4	5
86	The university continually meets with customers to find out what they want from it.	1	2	3	4	5
87	The university has a useful and updated information system in use.	1	2	3	4	5
88	University's knowledge about customers and suppliers affects university's productivity.	1	2	3	4	5
89	University's data about customers and suppliers affects university's profitability.	1	2	3	4	5
90	University's knowledge about customers and suppliers affects university's the external quality assurance.	1	2	3	4	5

C – Questionnaire Items

The following 10 items are about theuniversity's performance related to key competitors in the industry over the last few years and will be used for administrative and comparative purposes only. If you are not absolutely sure about an item, please just approximate.

[1 = bottom, 5 = top] based on the number that best corresponds to your answer.

How do you rank your company compared to the competitors:

91	Industry leadership.	1	2	3	4	5
92	Future outlook.	1	2	3	4	5
93	Overall response to competition.	1	2	3	4	5
94	Success rate in new product launches.	1	2	3	4	5
95	Overall business performance and success.	1	2	3	4	5
96	Employee productivity.	1	2	3	4	5
97	Process (transaction) productivity.	1	2	3	4	5
98	Sales growth.	1	2	3	4	5
99	Profit growth.	1	2	3	4	5
100	University's the external quality assurance	1	2	3	4	5

Please Complete this Section of the Survey:

Total No. of Employees:	
Total 2012 Revenue:	
Total 2013 Revenue:	
Your Position (Title):	
University Name:	
University Address:	
Telephone:	
Fax:	
E-mail:	
Web-site URL:	

E – Please note that the researcher left this space for any comments the respondent wishes to state.

Thank you for completing the questionnaire.

BIOGRAPHY

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