

Investigating the role of Intellectual Capital on the performance of pharmaceutical firms in Thailand

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ABSTRACT

This is acknowledged that intellectual capital is a vital success element in a progressively competitive and universal economy. Intellectual capital is a combination of three type of capital i.e “human capital, structural capital and relational capital”. These three capital creates value for the firm and play important role to boost the performance of any firm. This study intended to examine the relationship between intellectual capital and firm performance of pharmaceutical firm in Thailand. For the investigation of proposed associations among the variables, quantitative research approach with cross sectional method was carried out and data was collected by using survey questionnaires. This study found that three types of intellectual capital have significant and positive influence on the performance of Thai pharmaceutical firm.

Findings of the study highlights provide guidelines to business owners and managers regarding the management of intellectual capital effectively. Moreover, findings of this research will be helpful in formulation of policies to achieve better performance.

Keywords: intellectual capital, pharmaceutical firm, firm performance, Thailand

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INTRODUCTION

Generally, traditional financial reports have lack of much potential that may represent true and fair picture of the business intangible resources that incorporate the variance between the market and book value in the contemporary firms (Madininos et al., 2011). “Intellectual Capital” (IC) is an implied value for the business in achieving a competitive edge (Mehralian et al., 2012). Evaluation of the value of IC is an important element for the executives of business because both kinds of resources, tangible and intangible, are regarded as the likely strategic resources. Moreover, Smriti and Das (2017) has the opinion that intellectual resources that include information and experience may generate value for the business and IC is described as the “new wealth of companies”. Additionally, Jen Huang and Ju Liu (2005) argued that despite the fact that IC might be the foundation of competitive gain, but maximum of the firms disregard its nature and importance. By keeping in vie the extensive worldwide competition, it is widely recognized that intellectual capital is an important force that results in the better financial growth.

Stakeholders of a business that include workers, investors, clients, stockholders, contractors and as well as government, use a common appraisal assessment of annual statement may be insufficient because they provide information only with the accounting perspective regarding business performance. Therefore, many of the researchers have opinion that traditional financial measures of performance evaluation are

inappropriate with respect to the knowledge-based firms (Dumay, Demartini, & Paoloni, 2013). Dependence on these measures may guide stakeholders and decision makers in the wrong direction with respect to the resource allocation of firms. For the reason, available accounting methods are misfit in the changing paradigm so there should be an alternative method or tool of analysing and evaluation business performance. So, the contemporary method of representing value of intangible assets in the balance sheet is regarded insufficient in understanding the importance of intangible resources as an important element of economic worth and value. In contrast, Guthrie and Abeysekera (2006) have the opinion that prevailing accounting system provides the foundation of raw information that may be utilized in the content evaluation of numerous subjects and in the collection of other appropriate data for further investigation. Businesses operating in the developed countries have found many of the logical justifications in evaluation and reporting their intangible resources. Moreover, these elements are also regarded as the satisfactory performance indicators for gaining competitive edge. Numerous past studies (Bharathi Kamath, 2008; Hang Chan, 2009; Maditinos et al., 2011) regarding the subject have attempted to evaluate IC in association with the business performance. On the other hand, only few of the scholars emphasized on this approach and found some effective conclusions for developing economies. Research associated with IC includes

reporting, evaluation, analysis, and disclosure have gained wider attention of the researchers in the developing economies. The researcher in the current study has the intention to fill the gap to some extent by investigating the association of traditional measures of business performance (productivity, profitability and market worth) and IC in the context of Thailand pharmaceutical sector. Accordingly, Sharabati, Naji Jawad, and Bontis (2010) determined that pharmaceutical sector is a major source of IC because the sector is research-intensive, extremely advanced and well balanced in the application of human capital and technological information. Innovation in the pharmaceutical sector is widely dependent upon the intellectual capital.

Therefore, pharmaceutical business may be observed as an ideal business for examining IC element (M. Y. Cheng et al., 2010). Rapid changes are taking place, be it in social, technological, political and economic context occasioned by the effect of globalization. Globalization implies a borderless world where borders are disappearing with unprecedented movement of people, goods and services as well as capital. In a globalized world having inadequate information, it is hard for firms to assess potentials and threats of the global business. Those people with wide knowledge and skills in most aspects of operations and technical areas likewise in human resource, accounting, information technology and engineering will have more mobility and are widely accepted around the globe than those with less knowledge. To some extent, what makes them different from others is that the former possesses greater aptitude to familiarize with new knowledge and new culture and value generation. Value can be termed as the relative worth of something that can be understood in wealth generation. In addition, a business must have the ability of generating new thoughts, adopting new methods, producing new products, providing new services and establish a highly efficient supply network for the purpose of gaining competitive advantage. Similarly, they should have the capability to innovate, thus being an important reason for firms to utilize people having passion and commitment towards work and foremost, people with sufficient knowledge.

A study by Bernard Marr, Giovanni Schiuma, and Andy Neely (2004a) stressed that the foundation of firm's capability is based on knowledge. It is knowledge that distinguishes amongst firms as knowledge of each firm varies. Businesses that have effective information will face less uncertainty in relation to their efficiency and they better will be in the position of assessing and learning in response to changes. A study completed by Gomezelj Omerzel and Antončič (2008) on small and medium enterprises (SMEs) in Slovenia showed that nearly 18.0 percent of the inconsistency in firm performance may be settled with the information. Alsaaty (2011) further described knowledge comes from experience, learning, talents and collaborative effort through times. Those firms with high knowledge qualities and skills are able to create opportunities, innovate and sustain. Thus, the knowledge possesses by a firm is proven a crucial asset. Shepherd, Douglas, and

Shanley (2000) and Matlay (2005) shared the same view when they cited that the most common reason for business failure is lack of quality in terms of knowledge and experience.

Similarly, Bernard Marr, Gianni Schiuma, and Andy Neely (2004b) found that the accomplishment of a business depends upon the experiences and capability to utilize specific information, better understanding of idea and converts it into an opportunity. Hang Chan (2009) stressed in their model of knowledge-based organization regarding the significance of knowledge towards the well-being of an organization. Knowledge is a term that no single agreed upon the definition. From an epistemological perspective, knowledge is regarded as the IC that is considered as the asset or resource (Marr et al., 2004a). Knowledge is a collection of facts, information and experience which is known. Intellectual capital is described as the combination of human, operational and interpersonal capital that decides the potential performance of business. Delgado-Verde, Martín-de-Castro, et al. (2011) explained intellectual capital as "organizational knowledge stock". It determines the upcoming prosperity of a business and no longer based solely on tangible capital available (Martín-de-Castro et al., 2011).

Furthermore, regardless of the type of business a firm is engaged, intellectual capital will determine the survival of a firm. The significance lies in the fact that these are valued and unique assets in the form of information compress inside the business and operations that provide competitive advantage to a business (Delgado-Verde, Martín-de Castro, & Emilio Navas-López, 2011). It is obvious that firms which concern on intellectual capital development are a step ahead and hold state-of-the-art technology that results in the innovative ability thus greater profitability. In the absence of proper action to accomplish intellectual capital, the possibility of it could be realized and functioning effectively (Shakina & Barajas, 2014). Thus, discussions about the art of managing intellectual capital have gained more attention not only amongst practitioners but also academicians. Looking at the facts where both intellectual capital and innovation play a crucial role to the performance of a firm, the Government of Thailand has decided to shift the economic framework from "industry-based economy to knowledge-based economy". Knowledge-based economy refers to an economic system which is associated with the generation and utilization of information that contributes the economic growth and wealth creation. Thailand believes that knowledge-based economy will colour its position in the global competitive market. The knowledge-based economy makes available a platform to continue a fast rate of financial development and enhances local and international competitive ability. It is characterized by the recognition of knowledge as a source of competitiveness that will strengthen the national ability of innovation, apply and generate native technology, design and advance in market offerings that ultimately increase the transition from an input driven to a productivity driven economy. By keeping in view, the importance of IC regarding the contribution in the

performance and acquiring competitive edge of a business as well as national economy, both aspects of the issue that contribute in the performance should be contextualize. The researcher intended to explore role of these constructs and to discover the gap exists amongst them, so that performance will be improved.

LITERATURE REVIEW

Firm Performance

Prior researches have unanimous opinion that there is an association of intellectual capital with business performance by considering a limitation that innovation ability mediates the procedure and firm age moderate the effect. At the times where businesses apply their intellectual capital efficiently and effectively, and wherever firm age determines the quality of the intellectual capital, innovation emerges and results in the value creation and future income. The value and profit produced can be measured by observing the performance of the firms. Performance is measured based on two perceptions that are "objective" and "subjective" concepts. Objective concepts have focus on the absolute measures of performance and subjective concepts have its focus on the self-reported procedures. However, objective concepts are extracted from exterior complied and audited statements by applying absolute measures (Mohd Nor, Ahmad, & Mohd Saleh, 2010). It has typically used more specific financial indicators such as return on assets and profits. Meanwhile, subjective procedures are focused on the respondents' evaluations of their company performance (Sircar et al., 2015). Researchers prefer to employ subjective measures because financial data from firms are generally confidential and are publicly hard to obtain. Even some of them, especially those small entities might not have proper financial records (Horta et al., 2016). Ulum and Jati (2016) further explained that in general firm performance is measured according to level of performance, either business-level performance or inferior level performance. They elaborated that business level performance is known as organizational performance whilst lower level performance is known as operational performance. Firm level performance is distinguished into four groups namely accounting returns, stock markets, development measures and hybrids. Accounting returns uses financial ratio to measure performance whilst growth measure looks at sales growth, market share, and firm growth. Amongst the four groups, the researcher has decided to use hybrid to measure performance of firms for current research as it is extensively used in previous studies (Ulum, Kharismawati, & Syam, 2017). The study will incorporate subjective measure of financial performance by measuring the perceived performance of the firm. The outcomes measures are grouped into five parts; service outcomes, outcomes regarding human capital, technological growth outcomes, infrastructure outcomes and operations outcomes. For instance, product performance persistence and IT performance fall under the technology development outcomes group. Next section further explores the

association of intellectual capital and organizational performance, innovation capability and firm performance.

Intellectual Capital and Firm Performance

Delgado-Verde, Martín-de-Castro, et al. (2011) stressed that knowledge is the main component for the existence of a business. This factor drives the interest of scholars to study intellectual capital and firm performance. Previous studies conducted by Sambasivan, Abdul, and Yusop (2009) showed a positive relationship between knowledge of entrepreneur and performance. Also, several studies conducted by (Alipour, 2012) and Wang, Wang, and Liang (2014) found the positive association between HC, SC, RC and performance. However, prior to archival evidence, there are insistence evidences regarding the impact of intellectual capital on business performance. The inconsistency refers to the conflicting results in the relationship between both constructs. For example, Inkinen (2015) found that HC has a negative association with some indicators of performance. In contrast, Phusavat et al. (2011) concluded that HC is positively associated with performance. On the other hand, Korutaro Nkundabanyanga et al. (2014) found that SC and RC has little or no influence on overall performance. Conversely, Phusavat et al. (2011) concluded that SC and RC are associated with performance. Nevertheless, despite previous contributions, the linkage of intellectual capital and performance remains unclear. Concerning this, two questions are raised: Are there any other factor that mediates the effect between both construct? Do the elements of intellectual capital have positive influence of performance? These questions indicate that there is a gap among intellectual capital and its elements, and performance and this study will look into the gap. Difference in definitions by numerous scholars evident that attempts are made to describe the paradigm of intellectual capital by representing the terminology of intellectual capital in the field of management has been less advanced. Although no consensus has been reached on the definition, scholars are obvious that information is a dominant element of intellectual capital that is beneficial for firm performance. For this research, definition of intellectual capital is "a combination of human, structural and relational capital that creates value and consequently determines performance of a firm". Furthermore, Yuqian and Dayuan (2015) pinioned that intellectual capital is considered synonym of intangible resources by most of the researchers. He added that the definition used by the "Organization for Economic Co-operation and Development" draws a line by describing intellectual capital in term of an element of intangible assets. It is used together with other assets in production. Nevertheless, he agreed that intellectual capital have capability of increasing profit, enhancing value and wealth.

The importance of intellectual capital in determining business performance is recognized globally. To some extent, numerous economies have begun publishing guidelines and installing requirements for firms to publish the annual reports with the inclusion of

intangible resources (Han & Li, 2015; Schiemann, Richter, & Günther, 2015). Many of them are way ahead in the evaluation, reporting and administration of their intellectual capital as they realized that traditional financial statements are insufficient for providing comprehensive picture of firm worth and its capabilities (Grajkowska, 2011). They weighted intellectual capital as firm's nonfinancial resources that represent the ideas for future wealth. Thus, adding the intellectual capital statement as a supplement to the financial statements indicates the recognition and its significant part play in determining the book and market value of a firm (Lau & Amirthalingam, 2014). In addition, intellectual capital reporting complements the financial statement of a firm which demonstrates a broader, comprehensive and transparent image. In some cases, it becomes a significant method to exhibit the truthful picture of business. Illustratively, a knowledge intensive organization such as a consultation firm need to provide reports on intellectual capital to get people either potential bankers or investors to pay more attention to the firm (Hussain, 2004). This is due to the fact that they are not able of seeing through the ability of intellectual capital having the business which has the potential in creating value and making profits. Also, attracting investors to allocate money into a firm requires gaining trust from them; and reporting intellectual capital will not only implies the potential of value creation but also denotes greater trust. In this sense, trust is given by investors to use their money to run business when they have the confidence that the business has the ability of undertaking business and earning profits (Upadhaya, Munir, & Blount, 2014). Thus, intellectual capital declaration is vital in establishing more evidence about the firm's value and value creation. Furthermore, stating an intellectual capital would create assurance and pride to the employees where better intellectual capital results in better repute (Schiemann et al., 2015). Value in this manner refers to the element that is relatively worth which determines capital formation. Being employees of a firm that possess strong intellectual capital will make they proud and increase their self-esteem, consequently motivates them to work for the more value and increasing profit of the firm. There are many indicators that may represent HC, SC and RC in the intellectual capital statement. Discussing further, the quality of people, organizational structure and relationships will determine the competitive edge of a firm in the economy. The firm will be able to produce superior product which will result better performance (Abeysekera, 2007).

Many scholars have different views regarding the components of intellectual capital. This is in line with some previous studies in the subject regarding the number of elements of intellectual capital. They classified intellectual capital into three elements that are human, structural and relational capital (Clarke, Seng, & Whiting, 2011; Fu et al., 2016). Some authors shared the same view about the number of components of intellectual capital with a little change seeing in structural capital; where it is further classified into two

that include customer and organizational capital (Mehralian et al., 2012). In relation, Ramírez Córcoles, Santos Peñalver, and Tejada Ponce (2011) added that the three components are closely interrelated, meaning that in term of knowledge acquisition, they have influence on each other. Knowledge acquisition refers to external learning which gives benefits to firms in term of expanding knowledge base and enhancing the capability to recognize opportunities (Noordin & Mohtar, 2012). By having the purpose of enhancing business performance, the researcher has intention of establishing a comprehensive combination of empirical evidence about the significance of intellectual capital and its elements in a business.

Human Capital

Human capital (HC) indicates the knowledge, aptitudes, experiences and attitudes in Relational Capital having by the members of business (Rungsrisawat & Jemsittiparsert, 2019). Other researchers define HC as the knowledge, skills (Han & Li, 2015). It represents the collective capabilities of a firm's workforce that determine performance (Phusavat et al., 2011). Joshi et al. (2013) stressed that the financial capability of a country is dependent on the superiority of their HC. In this matter, different individual has different level of understanding and different quality of knowledge where better quality of HC implies better in problem solving and value creation skills, thus better performance results. HC manages and contributes to the knowledge stock of a firm, both to SC and RC. Accepting that knowledge of a firm is derived from HC, the researcher agreed with some of the researchers in the area that it represents the largest share in intellectual capital (Hamdan, 2018). Korutaro Nkundabanyanga et al. (2014) shared the same view and added that the inputs of people are in the form of knowledge which determines the functioning of an organization.

Structural Capital

Structural capital (SC) is recognized as the combination of information in a firm surrounded setup, databases and program. Bontis (1998) defined SC as "the knowledge that prevails within the firm". Halim (2010) further defined SC as what takes place amongst the employees, in what way employees are associated with each within the organisation and what outcomes are faced by business when employees leave the firm. Initially, SC is generated by HC to direct workers regarding work processes, work environment, rules and processes in a business. It is developed from time to time by applying variations takes place in the context of business to ensure that a business is performing effectively in profit making activities. SC includes all intangible assets that help in designing actual business structure and environment that ultimately will result in the information exchange and integrate that information across the operations of business (Delgado-Verde, Martín-de Castro, et al., 2011). Examples of SC are structure, systems, databases and corporate culture. Referring to the previous literatures the researcher found that different scholars have different views on SC.

Some may even further divide SC into several sub components. For example, Ramírez Córcoles et al. (2011) divides SC into organizational capital and technological capital whilst Phusavat et al. (2011) divides SC into organizational capital and customer capital. Organizational capital associated with the codification of knowledge retrieved from the communication within the organization for sustaining organizational capability. Organizational capital is a “non-human storehouses of knowledge of an organization” (Alipour, 2012). It prevails in business operations that enhance the information exchange within the business organization. Organizational capital comprises codified and institutionalized knowledge within an organization (Cleary, 2015). Examples of organizational capital are organizational day to day activities, business environment and values and firm level operations. Later, technological capital refers to “the technological resources available in an organization” (Ortiz, Donate, & Guadamillas, 2017) and customer capital refers to the “value of relationship with the people like suppliers, marketers, customers and industry associations” (E. C. Cheng, 2017).

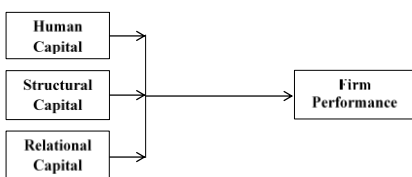
Relational Capital

Relational capital (RC) defined as “all the knowledge embedded in the relationships with external parties which include alliances, customers, investors, distribution networks, partners and suppliers”. It involves interactions across the firm's boundary. Halim (2010) and Joshi et al. (2013) defined RC as the capability of a business to create relational value with is external elements or external stakeholders. RC includes the links and connection of employees with their coalition partners such as customers and suppliers (Seleim & Khalil, 2011). Some researchers suggest that RC (Hosseini & Owlia, 2016; Mubarik, Chandran, & Devadason, 2016) is an intangible asset that is gained through successful association with the elements of business environment such as customers, suppliers or allies (Aaltonen & Turkulainen, 2018). It is used together with other resources in production activities.

Research Framework and Hypotheses:

The proposed research framework of this study is presented Figure 1.

Figure 1: Proposed research framework



- H1:** Human Capital has a significant influence on firm performance of Thai pharmaceutical firms.
- H2:** Structural Capital has a significant influence on firm performance of Thai pharmaceutical firms.
- H3:** Relational Capital has a significant influence on firm performance of Thai pharmaceutical firms.

METHODOLOGY

Before undertaking any study, there is a necessity to understand the method of inquiry that is appropriate to use either through the qualitative or quantitative research. Qualitative research is a method that incorporates research goals by applying techniques which permit researchers to elucidate interpretations regarding a specific phenomenon have no dependence on the numerical values. However, quantitative method applies numerical values for the evaluation to address the objectives of the study (Zikmund et al., 2010). The researcher decided to use the quantitative approach for this study because it is regarded as the best available technique applied by the numbers of researchers of the field. With the existence of many hurdles, period of the research is smaller and the researcher opted a cross-sectional survey technique. Cross-sectional method has its focus on the specific phenomenon for a certain period of time that is best option for researchers in the presence of constraints. Survey method is the best method for studies that generalize findings. The researcher has utilized self-administered surveys that minimize bias because respondents are not forced to answer the questions. Therefore, this study has resulted in reliable and valid outcomes. The data was collected from owners and managers of pharmaceutical firms in Thailand.

ANALYSIS AND DISCUSSION:

The data was analysed to test the proposed relationship by using SMART-PLS-SEM statistical software.

Measurement Model

Checking the reliability and validity of the scale is necessary before testing the hypotheses of the study. According to Hair et al. (2010) scholars are required to check the data for the assurance that there is no error for the validity and reliability of the research. Conclusively, measures of Cronbach's Alpha value and Composite Reliability value are used to assess the consistency and reliability of the questionnaire. The threshold value for “Cronbach's Alpha” and CR should be equal or greater than 0.7. For the examination of “discriminant validity” the suggestion of Fornell and Larcker (1981) was followed by researcher.

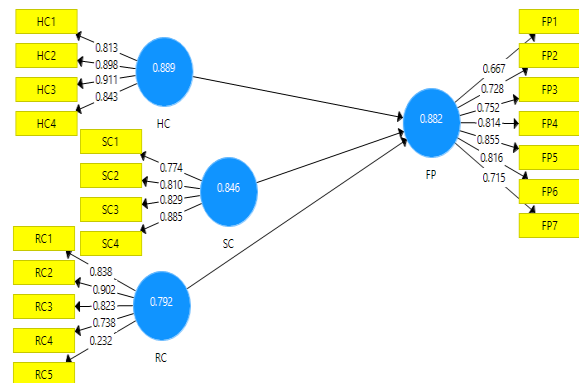


Figure 2. Measurement Model Assessment

Table 1: Values of alpha, CR and AVE

Sr#	Constructs	Cronbach's alpha	CR	AVE
1	FP	0.882	0.908	0.587
2	HC	0.889	0.924	0.752
3	RC	0.792	0.850	0.558
4	SC	0.846	0.895	0.681

The value of discriminant presented in **Table 2**

Table 2: Discriminant Validity

Sr#	Constructs	1	2	3	4
1	FP	0.766			
2	HC	0.571	0.867		
3	RC	0.527	0.316	0.747	
4	SC	0.552	0.634	0.403	0.825

Structure Equation Modelling

Structure model was assessed for the estimation of hypotheses of the study.

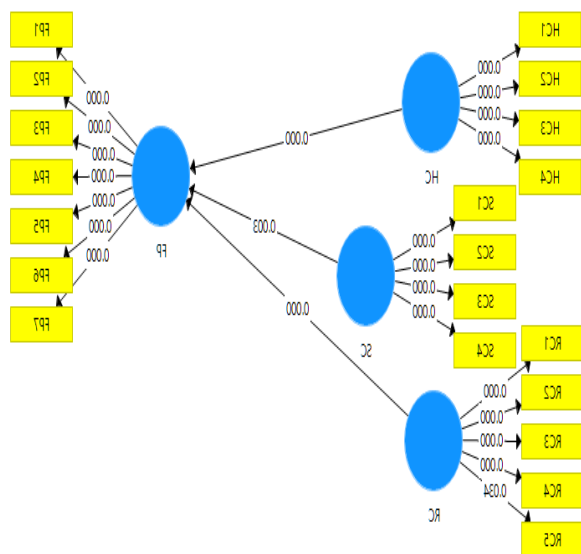


Figure 3. Structural Model Assessment

Table 3: Direct Relationship

Hypothesis	Relationship	Std. Beta	S.E.	t-Value	P-Value
H1	HC -> FP	0.336	0.079	4.244	0.000
H2	SC -> FP	0.203	0.067	3.029	0.003
H3	RC -> FP	0.339	0.065	5.219	0.000

Table 3 shows the results of direct relationship among Intellectual Capital (Human Capital, Structural Capital and Relational Capital) with performance of Thai pharmaceutical firms. The statistical analysis exemplified that human capital has significant

association with performance of Thai pharmaceutical firms. The β value 0.336 indicated that it has positive relationship with firm performance. The t-value 4.244 and p-value 0.000 illustrated that H1 is accepted at 1% level of significance. Results also show that structural capital also influences to the performance of pharmaceutical firms in Thailand. The β value 0.203 indicated that structural capital also has positive influence on firm performance. The t-value 3.029 and p-value 0.003 illustrated that H2 was accepted at 1% level of significance. Findings also revealed that there is a significant association between relational capital and performance of pharmaceutical firms in Thailand. The β value 0.339 illustrated that relational capital positively effect to performance of pharmaceutical firms in Thailand. The t-value is 5.219 and p-value 0.000 are according to the standard and H3 was accepted at 1% level of significance. These findings are consistency with Sharabati et al. (2010) concluded that intellectual capital contributes to performance, thus in line with the result finding of the study. The finding is justified because firms with more knowledge in the form HC, SC and RC will have better ability to learn and manage changes on the market faster.

CONCLUSION:

The core objective of current research was to investigate the relationship among intellectual Capital (“Human Capital, Structural Capital and Relational Capital”) and performance of Thai pharmaceutical firms. To attain the objective, researchers carried out quantitative approach of research with cross sectional method and data was collected by using survey questionnaires.

SMART-PLS statistical software used for the analysis of data. Results of statistical analysis show that intellectual Capital (Human Capital, Structural Capital and Relational Capital) has significant relationship with performance of Thai pharmaceutical firms. Human Capital, Structural Capital and Relational Capital play important role in enhancing the performance of pharmaceutical firms in developing countries like Thailand. On the basis of resource based theory, this research develops a new conceptual framework to examine the association among the component of intellectual capital and performance of Thai pharmaceutical firms. The study tries to fill the gap that had caused contradictory findings among intellectual capital and firm performance. This study has shown the important role of intellectual capital towards performance. This study provides guideline to managers and owners of pharmaceutical firms on the management of components of intellectual capital. Findings of this research study will contribute in the formulation of policies to enhance the firm performance of pharmaceutical organizations.

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