

## Human Capital And Competitive Advantage Of The Industrial Business

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### Abstract

This study aims to examine the effect of human capital on competitive advantage of industrial business. The objectives of the study were to study the level of human capital in the industry business, to study the performance result of the industry business and study on the relationship between human capital and the performance result of industry business. The researcher used questionnaire as a tool for data collection from 395 samples of industry in Rayong province, Thailand. Analysis was conducted using structural equation modelling. The statistical results from factor analysis found that all three aspects are appropriate measurements of human capital; Intellectual capital, Social capital, and Emotional capital. Also, the results of factor analysis found that all four aspects are appropriate measurements of competitive advantage; financial perspective, customer perspective, internal business process and learning and growth perspective. The study found that all three group dimensions of human capital are positively related to competitive advantage.

**Keywords:** human capital, competitive advantage, industry business

### 1. Introduction

Businesses in the previous age cannot take the benefits from the information related to intangible assets since it aimed at the financial information. For sometimes, it might ignore other information unrelated to financial and it also considered human resource only as the cost for the organization that cannot assess the values into money and record as the assets. But the current economic system is the Knowledge-based Economy that relied on knowledge as the main driver to create growth and sustainability leads to the sustainable development in the long run. Knowledge is the push for the efficiency in production and growth in economic system, therefore, one of the assets with more and more increasing importance is the human resource since personnel takes the main role to create knowledge, use and communicate it to form the work efficiency and drive the organization with secure progress (Cabello-Medina et al., 2011, Wang et al., 2014). Human ability is the intangible asset that seems more important than any relationship (Easton, P. D., et al., 2015). Therefore, the academicians try to measure on the value of human resources in the company by interpreting the values of human into accounting system or "Human Resource Accounting". Interpretation of human value to record on the accounting then is the process to define, assess, analyze and communicate the information related to human resources for the company management run smoothly with effectiveness by applying the concept in conform to the accounting principle. The heart here is to calculate for the cost and return from the investment in human capital. Many companies at recent turn to pay attention to personnel and invest more on human resources since the knowledge and ability as well as experts and skills also the experiences of each in themselves. If we can bring these things to get together and become the potential in the production or to be the key valuable resources, it would create the advantages for the firm the business competition no matter on the ability to generate profits, efficiency in capital spending, and efficiency in work assessment results or organization values. According perspective on resource-based view and dynamic capability view of organization, human capital is clearly significant to the assembly of resources and capabilities (Chadwick and Dabu, 2009; Mayer, Somaya, and Williamson, 2012). At present, Thailand is

growing in the industrial economy and population continually, resulting in the expansion of the industrial sector. As a result, there is a promotion of investment in various industries from both domestic and foreign investors, with a focus on making Thailand a new industrialized country. The industrial sector is one of the key mechanisms that will lead the country to a strong and sustainable development and competitiveness, thus promoting more investment in the industrial sector. Each year, Thailand has a number of industrial factories that tend to increase continuously (Department of industrial works, 2019). For this reason, the researcher realizes the importance of the relationship in various areas between human capital and corporate performance in industry business.

### **2.Literature Review**

#### **2.1.Theoretical concept related to the competitive advantage**

To measure the competitiveness ability, in order to decide to use any methods to measure the ability to compete of the business, it is usually the general step of the business development process in which they are so many. However, investing on competitive ability measurement is another kind of investment that consumed both money and time as well as difficult to do it obviously and choosing the wrong methods will make lose benefits. At recent, the assessment on the competitive ability can be divided into two groups; traditional measurement is to focus on financial result only or financial analysis such as net profit and loss, financial ratio, profits comparing etc. (Kucharčíková, A. 2014; Kozena, M. 2007). Another method is that currently we can measure on competitiveness ability in more forms either in qualitative or quantitative styles or both in combination (Hakes, 2007; Kaplan and Norton, 2005; Watson, Gallagher, Armstrong, 2005).

At the present, the business with diverse forms; the measuring on competitiveness ability can be done using the financial performance in which may not reflect the real competitive ability. The modern methods such as Balanced Scorecard (BSC) is the management tool that help us assess the results of the organization and help them on Strategic Implementation starting from vision, mission, and organization strategy which is the process to set for the key factors toward success. Next, it is to form the Key Performance Indicators: KPI to be the indicator for objective and to measure on the operation in the part that important to strategy (Kaplan and Norton, 2006; Miyake, 2002). Balanced Scorecard (BSC) measurement is different from other methods since it is not to measure the ability to compete of the business only at present but it can connect each of the indicators with the business strategic management as well. Business organization in general will use vision and mission to set for the business strategy but sometimes the strategy may not be able to apply in the real organization. BSC is then the tool to help transform vision and mission to blend in the integral set of the operation and operational performance as suggested by Kaplan and Norton (1992) for the first time that the concept of BSC is the system for strategic operational management.

Balanced Scorecard is the concept rises from Professor Robert Kaplan Harvard and Dr. David Norton (1992) with the awareness that the tool used for the former company efficiency measurement has weak point and ambiguous such as checking only the figures in financial status in which it is a sole corner of company success that usually comes from the past. This does not show any potential or tendency of the company in the future. Both suggested that concept of organization assessment or the Balanced Scorecard in Harvard Business Review journal in 1992 considered the indicators in four perspectives instead of considering just on the financial aspect only; consisting of: Financial Perspective, Customer Perspective, Internal Business Process and Learning and Growth Perspective

#### **2.2.Theoretical concept of Human capital**

Human capital according to the concept of Theodore W. Schultz (1981) is several of abilities in person come with innate or from the accumulation of knowledge, creative thinking, loyalty, attempt, and aim toward success which are the valuable indicators for the ability. This value will increase from the suitable investment (Tracey, 2004). Next, the study on human capital in the new meaning in which widely affect in the management and human resource development society. Human capital according to the new concept by Lynda Gratton and Sumantra Ghoshal (2003) give the definition of human capital as contains with three mixed aspects of Intellectual capital, Social capital, and Emotional capital. The intellectual capital consists of knowledge and ability to learn, expertise, skills and experiences as well as tacit knowledge. For the social capital consists of relation network in which will help forming the chance to reach to the values forming in any forms such as trust, credibility, etc. Emotional capital consists of any characteristics such as Self-awareness, Integrity and Resilience. Human capital then becomes the key factor effects on the ability to sustainably compete and grow of the business.

Given the above, and considering the human capital dimensioning relevance for the organization's management, the authors of this paper attempted to study the human capital factor by focusing on three

dimensions; Intellectual capital, Social capital, and Emotional capital, which can assist in the firm's human capital measurement.

### 2.3.Hypothesis Development

Human capital development gains more interesting since there is the influential tendency on the firm's performance (Marimuthu et al., 2009). Human capital has strongly related to the operational performance especially, when human capital cannot be bought from labor market. When the academics use the performance measurement that is not under profits allocation, it shows that management shall invest into more projects and to keep the human capital with the company. It is more accepted that human capital development that adds more efficiency to the company tends to form the key benefits related to the ability of the company and becomes the good innovation adding. The past literatures support on the reality that the company operational performance is the positive affected from the human capital practice. Sometimes, the development of human capital is necessary for the best operational and financial efficiency thus, it is suggested from Firer Stainbank (2003) that human capital can explain on the ability to generate profits and production capacity. Ghosh & Mondal (2009) studied on the relationship between the results of human capital performance and the traditional performance indicators such as ability to generate profits, production capacity, and market values. It was found that the human capital performance of the companies in India can explain on the ability to generate income but, cannot explain on the production capacity and market values. The higher human capital performance of the company tends to lead toward the higher market price ratio per the accounting price. For the human capital management toward staff satisfaction in which results on loyalty could lead toward better activity performance as measured from the organizational values (Tobin's Q), measured by the market value of common stocks at the end of the period plus with the total liabilities divided by total assets. Besides, Bhattacharya, Gi (2005) reported on the same results related to the flexibility in human resources management in which positively related to the sales revenue, profits from the operation per staff and sales per staff. In the same way with Soriano & Castrogiovanni (2012), investigating on the effect of human capital and the SME business operational performance based on the operational measurement on the ability to generate profits such as return on asset and the production capacity such as revenue. It is pointed out from the research results that the ability to generate incomes and production capacity have the positive relationship in the businesses that use specific industrial knowledge. CEO is the business owner. Depending on the information of physical resources source, traditional financial measurement, and ROCE to measure on the use of capital in the business and for the value to communicate the information with the stakeholders. Besides, the research by Bassi and McMurrer (2007) have found that the development of human capital can positively result on the development long-term operational effectiveness from the literature reviews related to human capital and the effects on company operational performance.

Grounded on the view of resource-based and dynamic capability of the company, definitely human capital is central on the assembly of resources and proficiencies since the performance and competitiveness of the firm have relied on the profiles of its human capital (Chadwick, & Dabu, 2009; Mayer, Somaya, & Williamson, 2012). In the same way with recently research provided that human resources practices can lead to a company's sustainable competitive advantage. It not only increases the competence of employees and offers incentives and opportunities, but also imposes supply and demand mobility constraints (Delery & Roumpi, 2017). However, there is no fully development of the underlying dimensions that bind the human capital with the competitive performance (Coff, & Kryscyn-ski, 2011). Indeed, it is clearly indicated from the applied psychology and strategic human resource management researches the human capital investigating reflects the outcomes of yielded positive individual and organization performance level (e.g., Becker & Huselid, 2006; Bowen & Ostroff, 2004; Huselid, 1995; Le, Oh, Shaffer, & Schmidt, 2007; Subramony, Krause, Norton, & Burns, 2008). Thus, a key tenet within micro-organizational inquiry is that the human capital available to an organization has potentially important performance implications (Takeuchi, Lepak, Wang, & Takeuchi, 2007). Based on the literature review and field study evidence, the following hypothesis is proposed.

*Hypothesis: Human capital is positively related to competitive advantage (BSC)*

### 3.Research Methodology

The populations in this research are staff at the management level in 3,057 Rayong industrial plants (Department of Industrial Works, 2019). This study interested in doing this research by selecting the Rayong Province area due to main industrial zones are located in the eastern part of Thailand. This contains with large plants of industrial estates where Thailand at recent assigns the policy for the special economic development project in the Eastern Economic Corridor (EEC). It is to allow for more possible economic opportunity. It has purposively raised Thai business level toward the World-Class Economic Zone. The size of sample group in this study has been calculated according to the ready-made table by Taro Yamane at the Reliability level of 95% and setting for the deviation at  $\pm 5\%$ ; the size of sample group is then 359 samples.

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This study uses questionnaire as the data collection tool. The questionnaire is in form of Rating Scale with the criteria to set for the evaluation weight at 5 levels based on Likert's scale. The questionnaire can be divided into two parts: the questionnaire related to the business human capital and the questionnaire related to the business performance. Researcher presents the draft of designed questionnaire and the evaluation form to three experts who have knowledge and experiences on the research topic to consider on the questionnaire. This is the validity testing and the covered content and the accuracy of language used. After the questionnaire is considered by the experts, the researcher has brought the evaluation form to calculate for the validity value of the questionnaire on the suitable content of the questionnaire using the IOC: Index of Item Objective Congruence. The criteria for consideration is to select the question with the conformity index between 0.50 onward. All the messages passed the criteria with the conformity index at 0.67-1.00. Thus, the result of the tool validity is at 0.97. It can be concluded that this questionnaire can be brought to use. After that the draft questionnaire that passed the correction from the experts were used to Try-Out with the group of populations that contained similar characteristics with the study populations for 30 sets. Thus, to calculate to find the discrimination power and credibility of the draft questionnaire post to the Try-Out. The questionnaire in form of Check-List will calculate on the discrimination power via Standard Deviation: S.D. analysis. The results are shown between 0.58 - 0.79. In the part of questionnaire in form of Rating Scale, it will calculate for the Reliability via Alpha coefficient analysis and the result is at 0.98.

In this research, data analysis was done with a structural equation modelling (SEM) approach adopting where it was chosen since the ability to test on multiple relationships. SPSS AMOS was adopted as the analytical tool while Confirmatory factor analysis (CFA) and path analysis were mainly applied as the analytical tools. CFA was adopted to examine and extract the model of measurement and latent variables identifying.

### 4. Research Results

**Table 1** Descriptive statistic of human capital

Human Capital	The opinions level		
	$\bar{x}$	S.D.	Interpret results
Intellectual capital	3.92	0.50	high
Social capital	3.93	0.51	high
Emotional capital.	3.95	0.54	high
Total	3.93	0.45	high

From Table 1, it was found that the overall level of analysis on human capital was high ( $\bar{x}=3.93, S.D.=0.45$ ). For results to be considered on each item including emotional capital ( $\bar{x}=3.95, S.D.=0.54$ ), Social capital ( $\bar{x}=3.93, S.D.=0.51$ ) and Intellectual capital ( $\bar{x}=3.92, S.D.=0.50$ ) all items in high level respectively.

**Table 2** Descriptive statistic of Balance Scorecard

Industry performance in BSC perspective	The opinions level		
	$\bar{x}$	S.D.	Interpret results
Financial Perspective	4.22	0.54	high
Customer Perspective	4.24	0.54	high
Internal Business Process Perspective	4.22	0.54	high
Learning and Growth Perspective	4.14	0.59	high
Total	4.21	0.43	high

From Table 2, it was found that the overall level of industry performance in BSC perspective was high ( $\bar{x}=4.21, S.D.=0.43$ ). For results to be considered on each perspective including; customer perspective ( $\bar{x}=4.24, S.D.=0.54$ ), financial perspective ( $\bar{x}=4.22, S.D.=0.54$ ), internal business process perspective ( $\bar{x}$

=4.22,S.D.=0.54) and learning and growth perspective ( $\bar{x}$ =4.14,S.D.=0.59) all perspective in high level respectively.

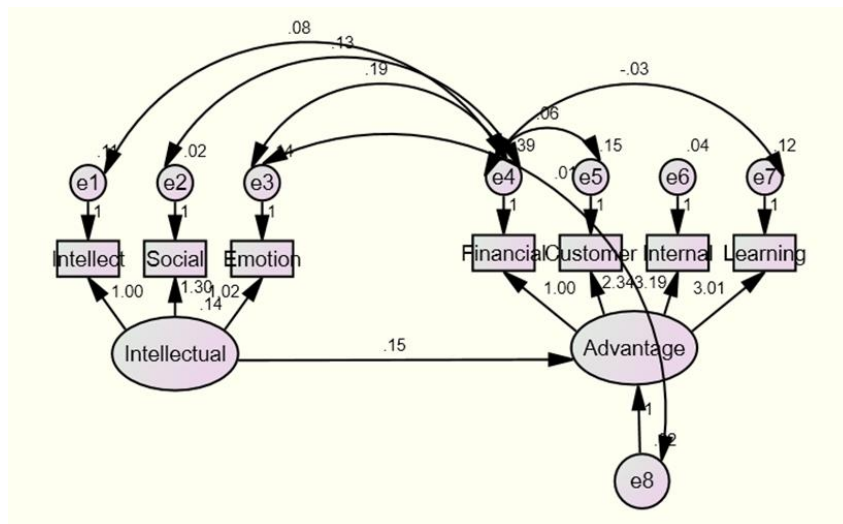
**Table 3** Correlation coefficient

Correlations		BSC	Social	Emotion	Intellectual
BSC	Pearson Correlation	1.00	.46**	.53**	.34**
	Sig. (2-tailed)		.00	.00	.00
	N	359.00	359.00	359.00	359.00
Social	Pearson Correlation	.46**	1.00	.69**	.73**
	Sig. (2-tailed)	.00		.00	.00
	N	359.00	359.00	359.00	359.00
Emotion	Pearson Correlation	.53**	.69**	1.00	.53**
	Sig. (2-tailed)	.00	.00		.00
	N	359.00	359.00	359.00	359.00
Intellectual	Pearson Correlation	.34**	.69**	1.00	1.00
	Sig. (2-tailed)	.00	.00		
	N	359.00	359.00	359.00	359.00

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

For general determination of correlation coefficient (Hinkle D. E. 1998) to determine the degree or size of the correlation, the number of the correlation coefficient is used, if the correlation coefficient approaches -1 or 1 indicates a high degree of correlation. However, if approaching 0 indicates there is little or no correlation.

From Table 3, the results obtained from the correlation between performance and social capital were .46, which had a low correlation. Emotional capital is equal to .53, which have moderate correlation. Intellectual capital is equal to .34, which were low in correlation. Where all sides are positive. Show that the performance variable with social capital, emotional capital and intellectual capital. They are related in the same direction. This means that if social capital is low, performance will be lower, or emotional capital will decrease, it will also reduce performance.



**Figure 1** Structural model

**Table 4** Goodness of fit statistics

Model	Model Fit Criteria	Result
Chi- square	-	13.972
Degrees of freedom(DF)	-	12
p- value	>.05	.303
CMIN/DF	< 3	2.039
GFI	> .90	.964
AGFI	> .90	.934
NFI	> .90	.972
CFI	> .90	.985
RMSEA	< .08	.045
PCLOSE	> .05	.326

The structural model (Figure 1) shows the relationships identified in the path analysis and their relative weights. Goodness of fit indicators (Table 4) show that the measures selected are consistent with a good fit, including chi-square 13.972 ( $p = 0.303$ ), CMIN/DF (2.039), GFI (0.964), AGFI (0.934), NFI (0.972), CFI (0.985), RMSEA (0.045) and PCLOSE (0.326). Therefore, this model is consistent with empirical data regarding model fit.

**Table 5** Regression Weight

			Estimate	S.E.	C.R.	P	Standardized Estimate
Advantage	<---	Human	.150	.047	3.162	.002	.359
Intellect	<---	Human	1.000				.755
Social	<---	Human	1.303	.087	14.927	***	.964
Emotion	<---	Human	1.022	.074	13.856	***	.710
Financial	<---	Advantage	1.000				.243
Customer	<---	Advantage	2.342	.513	4.565	***	.681
Internal	<---	Advantage	3.187	.730	4.365	***	.921
Learning	<---	Advantage	3.008	.712	4.227	***	.803

The Regression Weights (Table 5) shown that all three latent variables of human capital, are fit to measure each factor is used to assess the significance of the proposed relationship paths in the model, assessed at  $p < 0.05$ . This presents that each factor loading as well as the model were consistent and adequately fit. The factors loading verification found that a critical ratio (C.R.) value was greater than 1.96 and p-value was less than 0.010. The regression analysis demonstrated human capital was significant effects on competitive advantage ( $\beta = 0.359$ ).

## 5. Conclusion

From this study results, it is found that human capital investment has an effect on the industrial performance in Rayong. This conformed to the study in which found that human capital development has the direct effect on the competitive advantages, human capital development has the direct effect on the successful operation and the competitive advantages has direct effect toward the successful operation (Delery and Roumpi 2017). In line with the RBV theory, sustainable competitive advantage's success needs to be supported by strategic human resources management practices through the development of human expertise with corporate core values. In a behavioral point of view, it is pointed out that different behaviors are critical to an organization in achieving a sustainable competitive advantage (Chadwick and Dabu, 2009; Mayer, Somaya and Williamson, 2012). Thus, the entrepreneurs or human resources management of the private companies shall pay attention to human capital development in all aspects in order to lead the company toward successful operation and to form the competitive advantages to keep up with the changing pace of the economic at recent. This study argues on the results from the study by Wanida (2016) that studied on the potential of human capital and the dynamic ability of Thai software industry entrepreneurs to add more potential to the ability to race among the ASEAN countries. It is found that intellectual capital gains the highest important rank, then, social capital or relationship network and emotional capital, respectively. It can be seen that the human capital components on the aspect of social capital is also crucial. It is to form the commitment with the organization in order to bring all knowledge and ability to apply for the utmost benefits of the organization. Relationship network can be formed and promoted among the

team. It allows for personnel participation in opinions giving and linking them as the network based on reliability and trust. This would create the learning atmosphere, enthusiasm and target toward the goal including emotional capital or emotional intelligence in the operation. Besides, the knowledge, skill and attitude, emotional control would help personnel perceived more on any stories in opposite to their own opinions. This will promote for the ongoing relationship and extending the scope to enhance each other. When bringing the human capital that pays attention on the social relationship networks and emotional control in addition from ability and knowledge as the intellectual capital to develop toward higher ability of human capital.

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