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The Impact of Intellectual Capital on Performance of Universities in Thailand: The Mediating Role of Entrepreneur Orientation

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The prime objective of the current study is to examine the relationship between intellectual capital and the performance of universities in Thailand, and to understand the mediating role of entrepreneur orientation in this relationship. Several gaps have been identified in the literature which require investigation. The first is related to examining the various components of intellectual capital which have been proposed by several researchers. These include relational capital, human capital, and structural capital. Moreover, there is inconsistency in the findings of previous studies related to the impact of entrepreneurial orientation on the performance of firms. To achieve the objective of the current study, SEM-PLS was employed. In previous research studies, the focus has been on manufacturing organizations. The study is among the first to address these issues. In sum, SEM-PLS has been used as a statistical tool to address the research questions raised, and the research objectives envisaged, in the current study. The findings of the current study have supported the hypotheses. This study will be helpful for policymakers and researchers.

Key words: *Intellectual Capital, Performance, Entrepreneur Orientation, Universities, Thailand.*

Introduction

It has been argued by Wiklund (1999) that the performance of a firm can increase with entrepreneurial orientation. This improves the chances of a firm taking advantage of opportunities in the emerging market. New opportunities can be identified and discovered

with greater entrepreneurial orientation. This enables firms to differentiate their business from competitors (Wiklund & Shepherd, 2005; Hye, Wizarat, & Lau, 2013). The ability of an organization to comply with organizational changes can be improved with entrepreneurial orientation which is a crucial element for performance (Covin & Slevin, 1991; Lumpkin & Dess, 1996). Premium markets can be targeted by firms with entrepreneurial orientation and they can also charge high prices (Zahra & Covin, 1995). Entrepreneurship intention is regarded as a collection of attitudes, preferences, and beliefs which are related to firms or individuals (Gupta, Niranjan, & Markin, 2019; Chienwattanasook, & Jermsittiparsert, 2019).

Entrepreneurial orientation is defined as the ability of an organization to be innovative, take risks, and be pro-active. Such organizations solve problems through innovation and use of technology (Jermsittiparsert & Pithuk, 2019; Haseeb, Hussain, Slusarczyk, & Jermsittiparsert, 2019; Mulyani, 2017). Moreover, these organizations adapt to the changing environment and take risks when required in order to achieve set goals (Covin & Miles, 1999). The degree to which a firm that is aligned with the strategic process of decision-making and management is referred to as entrepreneurial orientation (Kojo, & Paschal, 2018; Oktavio, Kaihatu, & Kartika, 2019). According to Wiklund and Shepherd (2003), the strategic orientation of a firm involves entrepreneurial aspects in the process, practices, and styles of decision-making. Moreover, intellectual capital is considered as an important indicator of business performance in knowledge-intensive industries. Past researchers have paid less attention to universities which are considered to be an industry with high knowledge. It has been argued that the nature of business in the education sector is intellectually intensive. However, it was suggested by Kubo and Saka (2002) that university staff are of a similar level of intelligence as compared with other sectors in the economy. Universities possess greater power and work autonomy. This is because universities are more marketable and difficult to manage as compared with other sectors.

Universities possess the ability to work effectively and are free to pursue resources. Intellectual capital plays an important role in universities for gaining a competitive edge and increasing performance improvements. It is therefore appropriate to focus on intellectual capital in this research. Increased attention has been given by researchers to the ability of firms to perform their actions independently. It has been suggested that a firm must become entrepreneurial in order to prosper and survive (Wales, Gupta, Marino, & Shirokova, 2019). There is need for continuous innovation, risk-taking, and renewal of strategies by firms in order to take advantage of opportunities and become successful (Swann, 2017; Kweka, & Ndibalema, 2018). An organization which is entrepreneurially-oriented can explore options, organize systems, use resources, and implement strategies to make use of opportunities. Therefore, it is assumed that firms which adopt entrepreneurial orientation behaviors will see positive effects on performance (Covin & Slevin, 1991; Lumpkin & Dess, 1996). The ability of a firm to transform its resources to output is referred to as organizational capabilities. With

these capabilities, resources are utilized by the organization in an innovative way. The abilities, skills, and knowledge of the managers in a firm are referred to as capabilities, which can lead to high performance (Chen, Zhou, Zhou, & Xue, 2017). There is a need to conduct research based on the concept of IC (intellectual capital) as the capability of an organization, and to empirically investigate the relationship between university performance and IC. Organizational capabilities and resources are linked with improved financial performance as per the resource-based view of the firm. The resources and capabilities have been differentiated and classified into intangible, tangible and personnel-based resources. The ability of a firm to assemble resources leads to the development of organizational capabilities. When an organization has capabilities, it is likely to integrate, assemble, and make use of resources in an efficient manner. The organizational competences are considered as abilities related to the routines and processes of business (Prahalad & Hamel, 1990). According to previous research which examined developed and developing countries, there is a positive effect of entrepreneurial orientation and intellectual capital on organizational performance.

Several gaps have been identified in literature which require further investigation. The first is related to examining the various components of intellectual capital which have been proposed by several researchers. These include relational capital, human capital, and structural capital. Moreover, there is inconsistency in the findings of previous studies which have examined the impact of entrepreneurial orientation on the performance of firms. It has been reported by some that there is positive association, whereas others have identified a negative relationship. A study based on a different context and environment may yield different results. Another important gap is related to the role of entrepreneurial orientation as a mediator. Previous research has analyzed the mediating role of entrepreneurial orientation on performance. Further research is required to examine the role of entrepreneurial orientation as a mediator in the relationship between performance and every component of intellectual capital. Lastly, there is very limited theoretical work regarding the association between entrepreneurial orientation, intellectual capital, and organizational performance, particularly in relation to the performance of universities.

Literature Review and Hypothesis development

Intellectual Capital

Several researchers have provided different definitions of intellectual capital based on its increasing significance. There is variation in the definitions given by researchers due to the focus on intangible capital moving from quite broad to much more narrow. The concept of intellectual capital was introduced in 1958 when the stock market valuations of different companies, such as Hewlett-Packard, were described by two financial analysts. In the late 1980s, the concept became popular and the first exploration of intellectual capital was conducted in Sweden. In Japan, it was analyzed by researchers who believed that wealth

could be produced through the creation of knowledge. Moreover, artificial intelligence specialists in the US developed a way to transform human skills into software. Reengineering consultants discovered that speed and organizational performance is increased through the effective flow of knowledge and information. It was suggested by Klein (1998) that intellectual capital is linked with soft assets such as experience, knowledge, and expertise as compared to financial and physical capital.

Intellectual capital has been defined by Roos and Roos (1997) as the total hidden assets of an organization which have not been captured fully in the balance sheet. It is the most crucial source for gaining a competitive advantage. The researchers included all of the intangible assets along with those that are not normally depicted in the balance sheet such as the brand, patents, and trademarks. Non-physical or non-monetrary resources which are partly or fully controlled by a firm, and add to value creation, are regarded as intellectual capital (G. Roos, Pike, & Fernstrom, 2005). According to researchers, intellectual capital is related to all of the knowledge of an organization including individual, collective, explicit, or tacit knowledge. Moreover, it has been defined as the knowledge of an organization and its individual workers which leads to the achievement of a competitive advantage. Intellectual capital has been referred to by some researchers as the total intangible assets that contribute to an organization. Researchers have also defined intellectual capital as an asset of knowledge based on three intangible assets: competence of employees, organizational structure, and external structure. Edvinsson and Malone (1997) have defined intellectual capital as the acquisition of knowledge, technology, practical experience, relationships with customers, and personal and professional skills, which lead to the achievement of a competitive advantage in the industry. According to Youndt (1998), it is the aggregate sum of useful skills and stock of potential knowledge and information. In a similar vein, it has been suggested by Choo and Bontis (2002) that different resources are involved in intellectual capital; these are based upon the employees, routines of the organization, intellectual property, supplier-customer relationships, as well as stakeholders and distributers. According to Cohen and Kaimenakis (2007), it is a collection of knowledge, including intangible resources, which a firm has at its disposal. The effective management of these resources enables organizations to achieve and sustain a competitive advantage. In sum, it is knowledge assets, intangible resources, and organizational capabilities that are a part of intellectual capital, and these enable an organization to develop its processes in order to achieve a competitive advantage.

Entrepreneurial Orientation

Greater attention has focused on the concept of entrepreneurial orientation (EO) in the literature. The prominent aspects include the legitimization and growth of entrepreneurship studies. Entrepreneurial orientation has been considered in several studies as a logical and theoretical construct which illustrates the entrepreneurial nature of an organization (Lan, Lin,

& Lin, 2017; Gupta et al., 2019). It has become a prominent concept which is valuable in understanding changes in the performance of an organization (Genc, Dayan, & Genc, 2019). Entrepreneurial orientation is a basic requirement for organizational success. Several studies have echoed that entrepreneurial orientation is the strategic position of an organization, the organizational culture, and the organizational capability (Knight, 2000; Wiklund, 1999). Different perspectives on defining the concept of entrepreneurial orientation exist in literature. For example, organizations have been characterized based on their entrepreneurial strategic ability in decision-making. This is based on the degree to which organizations explore opportunities and make use of them for growth, keeping in mind the uncertainty of the environment. Entrepreneurial orientation has also been defined as the top managers' propensity for risk-taking as compared with the stability-oriented and conservative style of decision-making. (Miller, 1983) offered a theoretical foundation for the concept of EO based on the two earlier studies. Entrepreneurial firms were regarded as those being innovative in product marketing, taking risks, and introducing proactive innovations in the industry. The propensity of an organization to employ resources on projects with higher expected returns is referred as risk-taking. However, there can be failure as well (Lumpkin & Dess, 1996). It was suggested by Lumpkin and Dess (1996) that there are several definitions of risks, which are based on the particular circumstances.

High-risk opportunities in the industry can be sustained by using scarce resources and incurring debt. Those with an entrepreneurial orientation may be willing to incur heavy debt loads and commit scarce resources to obtain the high returns that accompany high-risk market opportunities. An organization is required to evaluate the risks and analyze the problem being experienced as well as the way in which it is being framed. The consequences of taking risks for employees should be considered as well. It is important to take risks as the external environment is continuously changing. Organizations which lack the ability to move with the dynamic environment and fail to take risks are exposed to losses in market share and a competitive position in the industry (Covin & Slevin, 1991).

Organizational Resources and Entrepreneurial Orientation

The internal resources of an organization and its business can be linked as per the resource-based view. Better performance can be achieved by an entrepreneurially-oriented firm utilizing their limited resources to create unique output. With a lack of sufficient resources, entrepreneurially-orientated firms have limited ability to take advantage of market opportunities to make profits and expand business. It has been argued that entrepreneurial orientation is a basic concept in resource-based theory. Resources that are important for surviving and competing in the market are linked with entrepreneurial orientation under the resource-based view. The ability of a firm to differentiate itself with appropriate resources can be facilitated by EO. It has been suggested that firms with intellectual capital are

dependent on entrepreneurial activities to explore opportunities in the market and develop innovation. It has been found that there is a significant influence of EO on intellectual capital dimensions, particularly structural capital, relational capital, and human capital. Moreover, it was established by a study that firms with higher levels of intellectual capital are able to increase their level of innovation. Several studies which have examined the dimensions related to entrepreneurial orientation have found that relational capital plays an important role in supporting creativity and innovation. The focus on innovation in firms is based on different types of systems possessed by the firms. In a similar vein, several researchers have suggested that the risk-taking behavior of a firm is influenced by the relational capital of the firm.

It has been argued by some researchers that the strategic activities and organizational structure of a firm are influenced by its intellectual capital as opposed to the activities of capital market. The role of relational capital in entrepreneurial activities has been examined. It was found that there is a significant association between relational capital and entrepreneurial orientation. A model was developed for small business performance in which social capital and human capital are expected to be positively related to the entrepreneurial orientation of a firm. They positively influence the performance of a firm. Researchers found that social and human capitals are linked with entrepreneurial orientation, and business performance is enhanced by these capitals. In a similar way, a direct association has been found between entrepreneurial orientation and intellectual capital. The following research hypotheses have been formulated.

H1: Human capital is significantly related to entrepreneurial orientation.
H2: Relational capital is significantly related to entrepreneurial orientation.
H3: Structural capital is significantly related to entrepreneurial orientation.

Intellectual capital and Organizational Performance

Several studies have revealed that intellectual capital has a positive influence on organizational performance. With more relational, structural, and human capital, organizations are able respond to environmental changes and improve their performance (Gold, Malhotra, & Segars, 2001; Liu et al., 2017). Organizational performance can be improved through intellectual capital, which improves the information processing of an organization by creating innovative relationships. Changes can be made in the production and delivery of services which ultimately improve the relationships between managers, employees, and customers. The process of innovation improves with the knowledge gained from the relationships between employees, suppliers, partners, customers, and trade associations (relational capital). The innovation process can result in problem-solving, efficient delivery of services, and a reduction in costs.

Moreover, the use of relational capital to transfer knowledge enables an organization to bring together a range of skills and to implement different types of technologies. Moreover, it reduces the duplication of efforts and redundancies in the organization. Structural capital can improve organizational performance through a reduction in operational costs. Information can be filtered by the structural capital embedded in procedures, routines, and information systems. This also results in the simplification of information process and a reduction of costs. New circumstances can be handled the structural capital and it ultimately lowers costs through eliminating the need to 'reinvent the wheel' (Tripopsakul, 2018).
Kamukama, Ahiauzu, and Ntayi (2010) analyzed the interactions of components of intellectual capital and the way in which they influence the financial performance of microfinance institutions in Uganda. The study found that a blend of elements of intellectual capital led to value creation and improved performance. Structural, human, and relational capitals significantly influence the financial performance of microfinance institutions in Uganda. A significant amount of variation in the performance of microfinance institutions was accounted for by the elements of intellectual capital. The results reflect mixed empirical evidence with respect to intellectual capital and performance. Some research studies have established a significant and direct association between dimensions of intellectual capital and performance. Other studies have identified an indirect and insignificant association between performance and some dimensions of intellectual capital. Based on these findings, the following research hypotheses were formulated:

H4: Human capital has a significant positive association with the performance of universities.
H5: Relational capital has a significant positive relationship with the performance of universities.
H6: Structural capital has a significant positive relationship with the performance of universities.

Entrepreneurial Orientation and Performance

With the rapidly changing and expanding global market (Jermsittiparsert, Sriyakul, & Rodoonsong, 2013; Lyston, 2018), certain risks are experienced by universities. It has been found, through empirical analysis, that firms with an entrepreneurial orientation are able to dynamically improve their performance. Research suggests that there is a positive association between organizational performance and entrepreneurial orientation. However, there is lack of systematic empirical evidence which examines the association between performance and entrepreneurial orientation. A number of researchers agree that entrepreneurial orientation will improve organizational performance in addition to creating a competitive advantage and profitability. These previous research studies have utilized different approaches to measure entrepreneurial orientation (EO). Some researchers have examined this in relation to performance, and some have analyzed performance and individual dimensions of EO. When

EO was analysed as a singular construct, a significant positive association between performance and EO was found. The relationship between the variables is strengthened with time. It was confirmed by Wiklund (1999) that a positive relationship exists between the performance of a firm and EO (Sanchez, 2018).

In a similar way, support has been found for the unidimensionality of the construct of EO. Changes in net worth and profitability of the firms were predicted by EO. The association between the success of business owners in South Africa and entrepreneurial orientation was investigated by Zhao, Seibert, and Lumpkin (2010). Findings revealed that there was a significant association between the dimensions of EO, business performance, and EO. Moreover, the study provided support for the notion of EO as a singlular construct. Bhuin and Habib (2001) found a positive relationship between performance and entrepreneurial orientation. Keh, Nguyen, and Ng (2007) analysed the effects of EO and marketing knowledge on the performance of small and medium-sized enterprises. It was found that there is a direct effect of EO on the performance of a firm. A difference in the importance of dimensions of EO was identified by Coulthard (2007). They showed that there are positive relationships between the dimensions of proactiveness and innovation with performance (Shawtari et al., 2016).

The importance of the risk-taking dimension varies with time. Naldi, Nordqvist, Sjoberg and Wiklund (2007) proposed risk-taking as a crucial dimension of EO and examined its influence on family-owned firms. Hughes and Morgan (2007) examined the influence of innovativeness, risk taking, autonomy, aggressiveness, and proactiveness on the performance of new firms with high technology. It was found that business performance was positively affected by innovation and proactiveness. However, there was a negative effect of risk-taking on performance. Autonomy and competitive aggressiveness had no significant impact on performance in the firm's developing stage. The majority of studies in the literature have identified a positive relationship between performance and EO. However, some studies have revealed an insignificant or negative correlation between the variables (Kaya & Seyrek, 2005; Brown et al, 2001; Covin et al, 1994; Fatula, 2018). The majority of researchers have agreed upon, and identified, a positive association between the performance of organizations and entrepreneurial orientation. The basis of this research study is demonstrate that there is a positive association between the performance of universities in Thailand and entrepreneurial orientation. Therefore, the following research hypothesis has been formulated:

H7: Entrepreneurial orientation has a significant positive relationship with performance.

Role of Entrepreneurial Orientation as a Mediator

The role of entrepreneurial orientation as a mediating variable has not been considered in previous studies. According to Navrekar and Jain (2006), there is a need for innovation (a dimension of entrepreneurial orientation) to leverage intellectual capital. Innovation creates additional value for customers which then improves the performance of the firm. In a study conducted on SME's in Sweden, it was found that resources based on knowledge, such as marketing capabilities, led to an improvement in performance (Wiklund & Shepherd, 2003). Wolff and PETT (2007) conducted a study was small manufacturing firms. They found that the relationship between the performance of firm and learning orientation is mediated by entrepreneurial orientation. There is therefore a need for additional research on the mediating effect of entrepreneurial orientation (Lumpkin & Dess, 1996). The role of entrepreneurial orientation as a mediator in the relationship between performance and market orientation in Chinese enterprises was analyzed. It was found that proactiveness and innovativeness mediate the relationship between performance and market orientation. The relationships between the three dimensions of entrepreneurial orientation and firm performance were examined by Poon, Ainuddin, and Junit (2006). Surveys were used and distributed to 96 entrepreneurs. To explain the relationships between the variables, entrepreneurial orientation (as operationalized by the dimensions of proactiveness, innovativeness, and risk-taking) was adopted as a mediator. The findings revealed that there is positive association between firm performance and locus of control. However, entrepreneurial orientation did not play a mediating role in the relationship (Alegre & Chiva, 2013). There is no impact of generalized self-efficacy on firm performance but the relationship is positively mediated by entrepreneurial orientation. It was suggested by Wiklund and Shepherd (2003) that the relationship between firm performance and knowledge-based resources can be improved through EO. The researchers claimed that firms with higher EO are more likely to have chances to extend their intellectual capital.

The mediating influence of EO on the relationship between innovation and intellectual capital was studied. The researchers supported the role of EO as a mediator and suggested that the implementation of intellectual capital can be implemented to improve performance, via EO. Therefore, the following research hypotheses were proposed:

H8: The relationship between performance of Universities in Thailand and human capital is mediated by entrepreneurial orientation.
H9: The relationship between performance of Universities in Thailand and related capital is mediated by entrepreneurial orientation.
H10: The relationship between performance of Universities in Thailand and structural capital is mediated by entrepreneurial orientation.

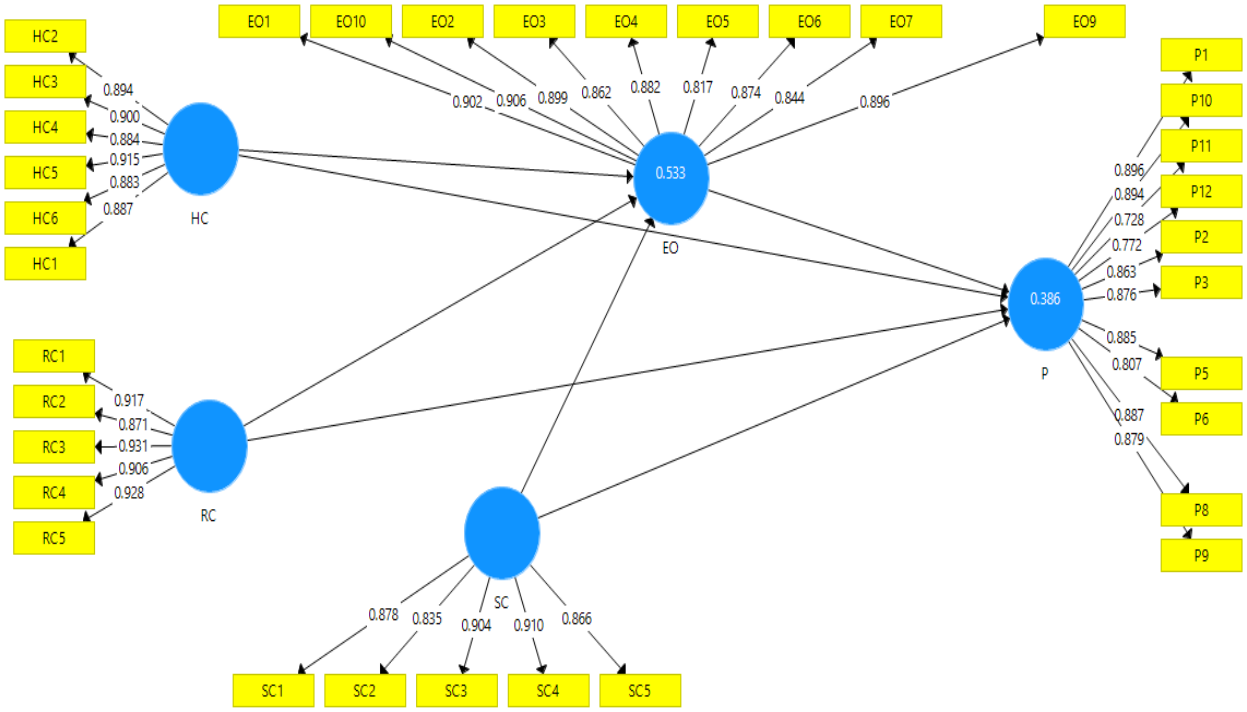
Methodology

This study used SEM-PLS. The study population is 6915 and, as per the table, a sample of 361-364 should be selected when the size of the population is in the range of 6000-7000. Therefore, 362 was selected as the sample size for this study. The purposive sampling method was used to select the respondents as there are issues that may arise when using the random sampling technique. Respondents were selected to be employees who had taken in soft skills training. A questionnaire was developed and distributed to the respondents. Almost 420 questionnaires were disseminated across 12 government sector universities in Thailand. There were 371 questionnaires received back from the respondents. The response rate was over 80%. Approximately 10 questionnaires were not fully completed and therefore were not included in the analysis. More than 75% of responses were valid. As stated by Sekaran and Bougie (2003), the valid response rate should be greater than 30%; this assumption has therefore been satisfied in the current study. Moreover, the reliability and validity of the instrument has been assessed through the use of structural and measurement models in SmartPLS. This is also referred to as a second generation data analysis tool (Fornell & Larcker, 1981). For data analysis, PLS-SEM was used as this has been endorsed as a suitable approach for complex models (Cassel, Hackl, & Westlund, 1999). Therefore, it was suitable to use the PLS-SEM approach in the current study. The nature of the items, being reflective and formative, means that they cannot be examined with other analytic software (Hair, Sarstedt, Hopkins, & G. Kuppelwieser, 2014; Makhloufi, Al-Rejal, & Mohtar, 2018). It has been recommended by Chin and Newsted (1999), as well as Wetzels, Odekerken-Schröder, and Van Oppen (2009), that the use of the PLS-SEM approach is appropriate as it considers measurement error which is requirement of well-recognized journals.

Analysis and Results

The analysis was conducted using structural and measurement models (Calvo-Mora, Leal, & Roldán, 2006). The measurement model was assessed through the use of PLS to confirm theory and to draw conclusions about the relationships between the variables. The measurement model of the current study is shown in Figure 1.

Figure 1. Measurement Model



By examining the reliability and validity of the measurement model, the structural model is also determined. The percentage of indicator variance, which is determined by the unobserved variable, is referred to as indicator reliability. Its value should be in the range of 0 and 1. Outer loadings are estimated to determine indicator reliability (Hair et al., 2014; Hulland, 1999). In terms of the standardization of latent and indicator variables, the reliability of the indicator is equal to the square value of the indicator loading. As per a rule of thumb, the loadings of reflective indicator loadings less than 0.4 in the PLS model should be eliminated (Hair et al., 2014; Hulland, 1999). When the value of loadings is less than 0.7, no item is deleted in the measurement model.

Table 1: Outer Loadings

	EO	HC	P	RC	SC
EO1	**0.902**				
EO10	**0.906**				
EO2	**0.899**				
EO3	**0.862**				
EO4	**0.882**				
EO5	**0.817**				
EO6	**0.874**				
EO7	**0.844**				

EO9	0.896				
HC2		0.894			
HC3		0.900			
HC4		0.884			
HC5		0.915			
HC6		0.883			
P1			0.896		
P10			0.894		
P11			0.728		
P12			0.772		
P2			0.863		
P3			0.876		
P5			0.885		
P6			0.807		
P8			0.887		
P9			0.879		
RC1				0.917	
RC2				0.871	
RC3				0.931	
RC4				0.906	
RC5				0.928	
SC1					0.878
SC2					0.835
SC3					0.904
SC4					0.910
SC5					0.866
HC1		0.887			

Moreover, an assumption of PLS is that all the measured variances can be explained. It has been proposed by Hair et al. (2014) that the measurement model reflects the relationship between the unobserved and observed variables. CFA analysis was carried out in the evaluation of the measurement model in order to estimate construct validity, i.e. convergent validity and discriminant validity, as well as item reliability. In the current study, AVE (average variance extracted) and CR (composite reliability) were calculated for all variables. The value of CR should be greater than, or equal to, 0.7 and the value of AVE should be greater than, or equal to, 0. It was recommended by Nunnally and Bernstein (1994) that the Cronbach's alpha value should be 0.7. When the outer loadings are higher than 1.96 at the significance level of 0.05, convergent validity is established.

Table 2: Reliability

	Cronbach's Alpha	rho_A	CR	(AVE)
EO	**0.962**	**0.964**	**0.967**	**0.768**
HC	**0.950**	**0.951**	**0.960**	**0.799**
P	**0.957**	**0.961**	**0.963**	**0.723**
RC	**0.948**	**0.951**	**0.960**	**0.829**
SC	**0.926**	**0.929**	**0.944**	**0.773**

The extent to which there is difference in the measures of a particular construct with respect to another construct is referred as discriminant validity. By establishing discriminant validity, it is accepted that there is a difference between the measures of one construct from others in the structural model. To estimate discriminant validity, two methods have been proposed for the reflective measurement model. The methods include the estimation of cross loading indicators. The value of indicator loadings for a certain construct must be greater than the cross-loadings value. The assumption of discriminant validity is violated when the cross loadings value is higher than the loading of the actual construct. This means that discriminant validity has not been established. The second method is the Fornell and Larcker (1981) criterion. This is quite a conservative method for estimating discriminant validity and involves comparing the square root value of AVE for every unobserved construct with the latent variable association of other unobserved constructs. Alternatively, the criterion of assumption in Fornell and Larcker (1981) discriminant validity is not fulfilled by the reflective measurement model (Hair et al., 2014). Fornell and Larcker (1981) proposed the method of AVE for measuring convergent validity. AVE is equal to the sum of the indicators' square loadings (for each construct) divided by the total number of indicators. When the value of AVE is equal to, or greater than, 0.50, convergent validity is established. This means that more than half of the variation in the indicators is explained by the construct. When the AVE value is less than the standard value of 0.50, convergent validity in the model is not established as variation in the construct is not explained by the indicators. It refers to the errors in items (Hair et al., 2014; Urbach & Ahlemann, 2010). The table illustrates the convergent validity of the model and shows that it is sufficient. The values are in the range of 0.610 and 0.814. These values are greater than the minimum standard value of 0.5 (Bagozzi & Yi, 1988) which means they are acceptable.

Table 3: Fornell and Larcker (1981) Discriminant Validity

	EO	HC	P	RC	SC
EO	0.876				
HC	0.697	0.894			
P	0.649	0.619	0.850		
RC	0.673	0.892	0.776	0.911	
SC	0.724	0.710	0.769	0.915	0.879

According to Hair et al. (2014), the structural model deals with dependent associations of constructs in the model. The structural model explains the associations between the unobserved variables. The hypothesized relationship between the variables was tested using the structural model. The exogenous variable in the structural model is distributed leadership. The quality of administrative process, quality of academic process, and effectiveness of institutions are regarded as endogenous variables. The collinearity issues, significance of variables, coefficient of determination, predictive relevance, and effect size were determined using the structural model. The method of bootstrapping has been used to determine standard errors and t-statistics. The method is a non-parametric approach to estimate the accuracy of PLS estimates which then allows the researcher to determine the statistical significance of the path coefficient.

Figure 2. Structural model

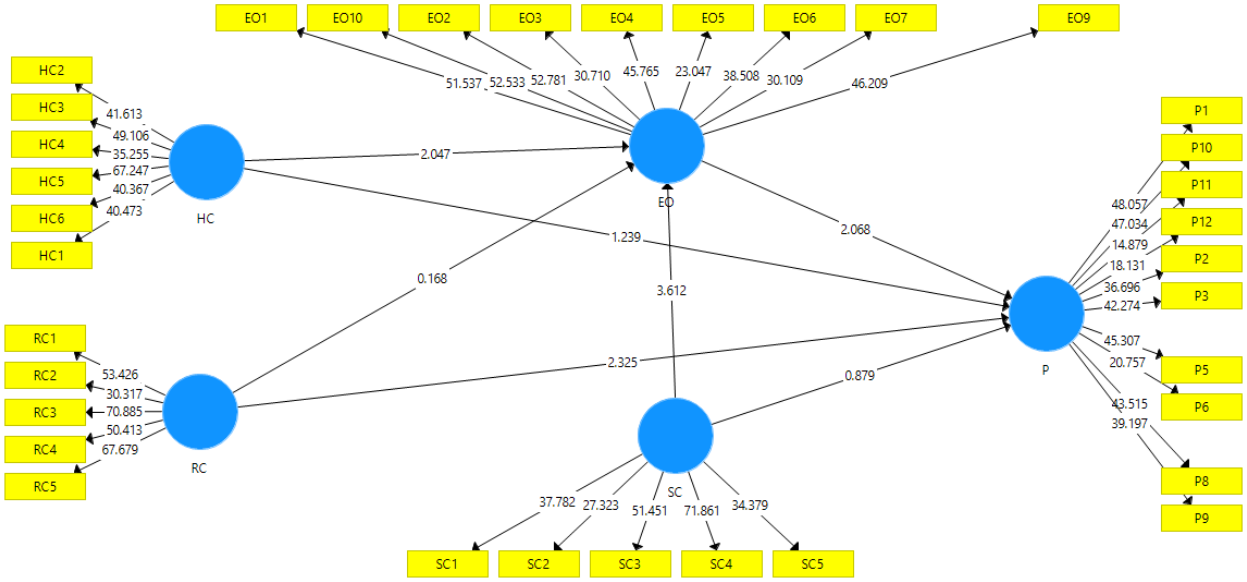


Table 4: Direct Relationships

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
EO -> P	0.296	0.295	0.143	2.068	**0.019**
HC -> EO	0.226	0.221	0.110	2.047	**0.020**
HC -> P	-0.126	-0.130	0.155	0.815	**0.208**
RC -> EO	-0.019	-0.007	0.114	0.168	**0.433**
RC -> P	0.389	0.408	0.177	2.192	**0.014**
SC -> EO	0.536	0.530	0.148	3.612	**0.000**
SC -> P	0.328	0.317	0.182	1.804	**0.036**

Table 5: Indirect Relationships

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
HC -> EO -> P	0.067	0.066	0.050	1.340	**0.090**
RC -> EO -> P	-0.006	0.000	0.037	0.153	**0.439**
SC -> EO -> P	0.158	0.153	0.084	1.888	**0.030**

According to Ringle et al. (2012), the method of PLS-SEM is good for prediction and estimation of models. The value of R2 is used to identify variations in the dependent variable due to the independent variables. The combined effects of the exogenous latent variables on the independent unobserved variables are represented by the coefficient of determination. The coefficient of determination is considered as the goodness of fit. The value of R2 should be in the range of 0 and 1. For R2, a value of 0.71 is considered substantial, 0.41 as moderate, and 0.21 as weak. The criterion for acceptability of the goodness of fit differs from one field to another. When the value of R2 is high, this represents a greater proportion of variation in the dependent variable explained by the independent variables (Hair et al., 2014).

Table 6: R-Square

	R Square
EO	0.533
P	0.386

Discussion and Conclusion

This study demonstrated that some dimensions of intellectual capital and entrepreneurial orientation significantly and positively impacted the performance of universities in Thailand, thereby providing significant support for knowledge-based theory, entrepreneurship theory, and resource-based theory. In addition, the study contributed to the literature by demonstrating the existence of a mediating variable which can influence the effect of intellectual capital on performance of universities in Thailand.

Researchers have called for further investigation examining the mediating effect of entrepreneurial orientation (EO) on relationships with performance (Gupta et al., 2019). This study took a step in the direction by investigating the mediating role of entrepreneurial orientation on the relationship between intellectual capital and performance. In doing so, this study contributed to the development and operationalization of entrepreneurial orientation as a mediating construct. This relationship did not take into account potential interactive effects. A longitudinal study would allow for the universities to be studied over time and give a

clearer picture on performance. Also, a longitudinal study would capture the impact of changes in the business environment. A limitation of the current study was the use of subjective judgment to determine business performance. The best measures of business performance are always objective measures. However, subjective perceptions of performance do correlate well with objective measures. In addition, subjective measures could be beneficial in the absence of objective measures. Lastly, the use of a single informant for each of the universities surveyed may have the potential to introduce a single response bias into the study. Nevertheless, the use of single informant was appropriate because the university staff selected were knowledgeable about the phenomena being studied and were the only members of the organization with a broad enough knowledge base to respond to the questions in the survey. A longitudinal study would capture the impact of changes in the University's environment and as well as modifications in managerial strategy. The subjects for this study came from only one sector of the university. In addition, the data were obtained from staff who were considered the top person in each University.

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