

# Transformational Leadership, Mediating Effect Of Knowledge Management System And Moderating Effect Of Training In Human Capital Development: SEM-SMART PLS Approach

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**Abstract:** This is a knowledge-based economy era; consequently, the role of human capital cannot be neglected, constituting as it does an important competitive asset in today's global market. After leisure tourism and health tourism, the newest growth sector is education tourism, which attracts a huge number of international students. In the ASEAN region, Singapore and Malaysia are leading countries in this new growth industry. Education tourism is also recognized as a source of GDP growth. To compete with 21st century educational and technological challenges, the government of Thailand has to focus upon improving teachers' knowledge, skills, and abilities. Human capital can play a vital role in achieving this objective; in turn, this research has developed a framework which identifies the mediating effects of knowledge management systems and the moderating effects of training in developing human capital. Quantitative methods have been used in this study, with data collected from different schools located in Bangkok and other provinces. In order to test the structural model, SMART PLS software has been used in this study. The results of this study reveal that knowledge management systems mediate the relationship between transformational leadership and human capital development. Results also evidence that variable training moderates the relationship between 360 degree performance appraisal and human capital development. This study, therefore, contributes to transformational leadership and human capital theory.

**Index Terms:** Human capital development (HCD), Knowledge Management system (KMS), Training, Transformational leadership (TL), 360 Degree performance appraisal (PA), Structural Equation Modeling, Smart-PLS.

## 1. INTRODUCTION

The UNESCO's latest report on Thailand's education system is "a disappointment for the government and Thai people as a whole, as Thailand came 54th out of a total of 70 assessed countries, classified by subject, Thailand ranked 54th for mathematics, 57th for reading, and 54th for sciences" {1}.

Therefore, to compete with the rest of the world Thailand has to improve the education system, given that the quality of education represents the primary method for genuinely lifting the country.

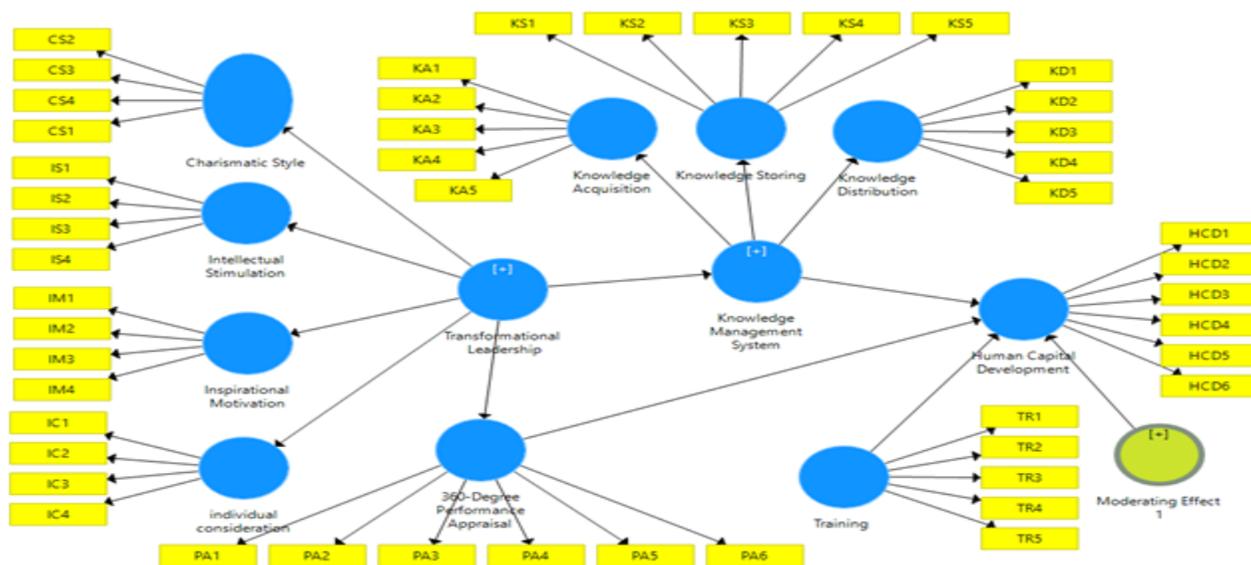


Fig. 1. Conceptual Framework

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Singapore finished top in this global comparison of students' respective mathematics and science abilities. Singapore's education contributes to its intensity and strictness. "Singapore also invested heavily in a quality teaching force to elevate the status of teaching and to attract the best graduates, as noted by OECD education director Andreas Schleicher" {1}. Current research suggests that investment in HCD can transform the education system of Thailand, by utilising the latest technology and new techniques; these include knowledge management systems, transformational leadership styles and, 360-degree performance appraisal systems which can help the nation enhance the knowledge, skills, and abilities of Thai teachers. Up to date knowledge on the part of teachers can help the students acquire the latest knowledge and improve their skills. Researchers urge the identification of other variables which influence Human Capital Development (HCD) in addition to education and training {2}, {3}, {4}. This study bridges the theoretical gap by including Knowledge Management systems as mediatory, 360-degree performance appraisals and the function of training as a moderator. Such transformational leadership styles can transform working environments within organisations. Therefore, this study aims to identify the mediating effects of the knowledge management system, the effect of 360-degree performance appraisal and the moderating effect of training upon human capital development.

## 2 LITERATURE REVIEW

### 2.1 Underpinning Theories: Human Capital Theory

Becker (1993) appeals to the reader: "I am going to talk about a different kind of capital. Schooling, a computer training course, expenditures on medical care, and lectures on the virtues of punctuality and honesty are capital too, in the real sense that they improve health, raise earnings, or add to a person's appreciation of literature over a lifetime. Consequently, it is entirely in keeping with the capital concept as traditionally defined to say that expenditures on education, training, and medical care, etc., are investments in the capital. HCD is not a cost for any nation, but it converts humans into an asset. Thus, for government policy and western education systems, HC theory constitutes the most influential economic theory in the early 1960s {5}. The future success of a nation's economy will depend in part on a "well-educated and highly resourceful workforce that is capable of adapting existing knowledge and adopting new skills in order to remain competitive in a continually changing global market and economic development is greatly related to adult education" {6}. Since the implementation of economic reforms in the late 1970s, China's GDP per capita has grown almost 100 times from 89.5 USD in 1960 to over USD 8123 in 2016 (the World Bank) lifting millions of Chinese out of poverty {6}. This shows how human capital development is essential for the success of any organisation and country. The focus of HC theory was mainly on education and health. Conversely, this study suggests that in today's digital era education and skills could be transformed by adopting transformational leadership style which will transform the system and bring knowledge management system, training, and 360-degree performance appraisal system that will help in the human capital development process.

### 2.2 Transformational Leadership

Transformational leadership was first presented as an idea by Downton, J. V. 1973's "Rebel Leadership" study conducted within the "sociological field" {7}. The concept of TL was subsequently used by James McGregor in his book "Leadership" (1978), following which is in 1985, Bass developed these previous findings into a formal transformational leadership theory. This kind of leader motivates subordinates to achieve goals in an efficient way and beyond expected results; consequently, this kind of leader builds a high level of trust among the subordinates and leader {8}, {9}. TL provides a clear vision, concentrating individuals' energies and thus motivating subordinates towards the achievement of goals {9}. Employees who trust a leader manifest more capacity to acquire knowledge and experiences. TL hence empowers employees to think differently and learn new ways to attain goals {10}, {8}, {11}, {12}. Transformational leaders can successfully change an organisation's culture, developing systems that can meet environmental demands through aligning or synthesising all strategies {13}.

Bass {14} defined four characteristics of transformational leadership: (a) "charisma or idealized influence"; (b) "inspirational motivation"; (c) "intellectual stimulation"; and (d) "individual consideration".

(a) Idealised influence or charismatic qualities confirm a "transformational leader" to be a "visionary leader" who can build a clear mission, achieve respect and establish an organisation's trustworthiness ({15}, {16}).

(b) "Inspirational motivation" is known as a leadership trait, where the building of sophisticated standards constitutes a point of reference for other {16}, {8}, {12}, {17}).

(c) "Intellectual stimulation" sets new challenges, fosters new ideas for subordinates and inspires them to challenge the old status quo of a working environment. Such leaders manifest intelligence, logical thinking ability and particular problem-solving traits {8}, {16}).

(d) The fourth dimension of TL is "individual consideration" which is associated with the development of subordinates by training and mentoring them ({8}, {13}).

### 2.3 Knowledge Management system

In this digital era and knowledge-based economy system, knowledge management has become a leading factor in organizations' global competitiveness {18}, {4} organizational performance effectiveness {19}, {20}; {21}, and building human capital {22}. Nonaka identified the importance of KM {23} who noted that: "Successful companies are those that consistently create new knowledge, disseminate it widely throughout the organisation and quickly embody it in new technologies and products". Presently "technologically propelled economies" are displaying signs of fundamentally transforming knowledge-based economies (World Development Report, 1999), in developed countries. Work has transformed from an agriculture system to a knowledge-based economy {24}.

**Table1:**  
**FACTORS OF KNOWLEDGE MANAGEMENT SYSTEM IMPLEMENTATION**

Key Dimensions	Description
Leadership and Support	Management team support for KM activities
Technology and Infrastructure	Establishment of an effective IT system
Knowledge Creation	Development of new knowledge and workplace
Acquisition and Learning	Search for new knowledge and enable the learning process
Dissemination and Transfer	Facilitate the organisation to share the knowledge inside the organisation
Application and Exploitation	Employee's attitudes and requirements for applying knowledge and putting it into practice
People Competency	To judge the effectiveness of KM activities in terms of advancement in employees' skills and knowledge.
Sharing Culture	Develop knowledge sharing culture inside the organisation and motivate and reward the employees who share the knowledge

Nonaka and Takeuchi {20} highlighted that knowledge management systems help organisations to acquire new knowledge, store the knowledge in the database and share it with employees. TL has been recognized as a significant influencing factor within KMS and innovation systems across a range of industries. However, there is a lack of research linking transformational leadership, knowledge sharing, and innovation within higher education, specifically within developing countries {25}, {4}. The knowledge management system can play a vital role in improving the knowledge of school teachers in Thailand. A proper database to acquire new knowledge and share it with all teachers can make it easy for them to get new knowledge. This can also help educators to access knowledge from their own homes. To develop and implement this potentially revolutionary system, school leaders have to adopt transformational leadership styles. A new method of teaching and new methods of learning will enable school teachers to upgrade their knowledge as per 21st-century requirements.

## 2.4 Employees Training

Training can take the organisation to a destination within a specific time frame {26}. Due to rapid changes in technology, an organisation must equip itself with new knowledge and skills; in this regard, training could be an excellent source to upgrade the employee's KSA. Training is a significant factor in lifting the efficiency and effectiveness of employees and the organisation {27}. The concept of training itself is not new; its roots go back to 1400 years ago to the Prophet Muhammad's (Peace Be Upon Him) time. During this era, as Azmi {28} notes "Caliph Ali was sent for training when he was appointed as a judge as he was young and did not possess any knowledge about judiciary", while women were trained for treating injured soldiers and providing appropriate services to the soldiers such as preparing meals and others.

Literature suggests, to defines "training [as] a well-structured procedure by which people learn knowledge and skills for a specific purpose". Tim and Brinkerhoff {29}, meanwhile, claim that human capital development is the result of training and development and education. Zigon {30} similarly defines training as a process whereby an individual's behaviour is modified and Oforegbunam et al. {26} defined it as a process through which "skills, talents, and knowledge of employees are enhanced". Therefore, despite formal education, training can help with human capital development. In this study, a training variable is observed as a moderating variable between the 360-degree PA system and HCD.

## 2.5- 360-Degree Performance Appraisal

In the field of industrial/organisational psychology, performance appraisal has become a leading research topic {31}. It is defined in different ways by researchers, for instance, Griffin and Ebert {32} describe performance appraisal as a "formal evaluation of an employee's job performance in order to determine the degree to which the employee is performing effectively". The history of the performance appraisal process itself dates back thousands of years. In the past, the performance appraisal system was conventionally used as an assessment tool of employees' performance; currently, however, it is used to bridge the gap between desired performance and actual employee performance and further provide appropriate training. The 360-degree appraisal is a comprehensive appraisal technique constituted by factoring in and amalgamating all forms of appraisal techniques. It includes contributions to feedback from subordinates, managers, peers, customers, suppliers {33}. Sharma {34} defines PA as a core tool for employee "career development" since it identifies staff training needs and consequently provides the means by which employee KSAs may be upgraded. This research is aimed at identifying the role of the PA system with the help of moderating variable Training and HCD.

## 2.6 Human Capital Development

The words "intangible" and "intellectual capital" were initially used by Diksi in 1896 and Galbrais in 1969 respectively {35}. Human Capital Development or HCD is the amalgamation of "employee's knowledge, skills, abilities, commitment, ideas and health which can add economic value to the organisation" ({36}, {37}, {38} {39} {40}. Bart et al. {41} mainly define human capital as "the collective knowledge, education, skills, attitudes, and experiences of a firm's employees". It is through knowledge, skills, and the deployment of abilities that the human becomes converted into capital. Human capital development in today's digital era plays a vital role in the economic development of any country since this capital also gives a competitive advantage to nations or organisations {2}. Researchers found a significant and positive relationship between human capital and organization performance {42}, {43}, {44}, {45}. As stated by Lall {46}, Singapore has taken the initiative in the human capital development program, intending to upgrade skills and knowledge to achieve the industrial targets. The educational system is extended towards the national industrial policy, science and technology-oriented fields {47}. This is the reason that Singapore has a world top-class education system.

## 2.7 Hypothesis Development

Researchers have explored the role of transformational leadership in changing the working environment, further, TL is positively associated with KMS ({48} {3}, {4} {49} & {50}). Therefore, this research assumes, H1a: TL has a significant and positive impact on the knowledge management system. Similarly, this study also hypothesised, H1b; KMS mediate the relationship between TL and human capital development. Laka-Mathebula {51} found a positive relationship between TL and Human Resource Practices. Therefore, this study hypothesised, H2a: TL has a significant and positive impact on 360-degree performance appraisal and H2b: 360-degree performance appraisal system has a significant and positive impact on HCD. Ishak

et al. {24} identified the role of Knowledge management in HCD and organisation performance effectiveness. A study conducted by Zhao {52} in China suggests that knowledge management and organisational learning culture build teacher professional development. Therefore, this study hypothesis, H3: KMS has a significant and positive impact on human capital development. Olufemi's {53} study in the banking sector found a significant positive relationship between training and human capital development. Hence this study hypothesises, H4: training moderate the relationship between 360-degree and human capital development.

**TABLE 2**  
**THEORETICAL JUSTIFICATION OF THE HYPOTHESIS**

Hypothesis	References
TL and Knowledge Management system	Song, et al. (2012) & Crawford (2005) Politis (2002); (Khan, Bilal, Mateen & Haq, 2017); Khan, Sentosa & Salman, (2018)
TL and 360 Degree performance appraisal	Laka-Mathebula (2004)
KMS and Human capital development	Ishak et al. (2010) & Zhao (2009)
360 Degree Performance appraisal and Human capital development	Baniya (2004); Olufemi (2009) & Sharma (2012)

## 3. RESEARCH METHODOLOGY

This section discusses research methods undertaken in the course of the research. The methods undertaken can be found briefly described in the following sections.

### 3.1 Research Design

This study employs a quantitative method, the purpose of which is to test its hypothesis. A casual dependency case quantitative method is used to test this Data collection is conducted in a natural environment through a closed-ended

questionnaire and using a cross-sectional approach. Furthermore, to test the structural model, SMART PLS version 3 is used to analyse data.

### 3.2 Questionnaire Design

A 5-Likert questionnaire is adopted in this study as a survey instrument survey. It is constructed based upon past studies with constitutive items detailed within table 3.

**TABLE 3**  
**ITEMS**

Constructs	Items	Reference
Transformational Leadership	16	
(a) Charismatic Style (4 items)		Castiglione, (2006) {54}
CS1		
CS2		
CS3		
CS4		
b) Intellectual Stimulation		
IS1		
IS2		
IS3		
IS4		
c) Inspirational Motivation		
IM1		
IM2		
IM3		
IM4		
d) individual consideration		
IC1		
IC2		
IC3		
IC4		
Knowledge Management System	15	Rene'e Filius, Jan A. de Jong, Erik C. Roelofs, (2000)
<b>a)</b> Knowledge Acquisition		
KA1		
KA2		
KA3		
KA4		
KA5		
<b>b)</b> Knowledge Storing		
KS1		
KS2		
KS3		
KS4		
KS5		
<b>c)</b> Knowledge Distribution		
KD1		
KD2		
KD3		
KD4		
KD5		
Training	5	Audience, T., Service, P., & Service, P. (2004.)
TR1		
TR2		
TR3		
TR4		
TR5		
Performance Appraisal	6	To, Q, (2004).
PA1		
PA2		
PA3		
PA4		
PA5		
PA6		
Human Capital Development	6	Bontis, (1998) (55)
HCD1		
HCD2		
HCD4		
HCD5		
HCD6		

### 3.3 Participation and Sampling Plan

The respondents (school leaders (director/policymakers) of this research survey were chosen from within Public and Private sector schools, located in Bangkok, Lampang and Ranong province. A probability sampling technique was used in this study, and the sampling technique was a simple random sampling method: the sample size was 320. To evaluate the reflective measurements model, this study examined outer loadings, the composite reliability method for its internal consistency, and the average variance extracted (AVE) for convergent validity. At the outset, the convergent validity of the measurement model was confirmed using factor loadings, while to confirm for internal consistency composite reliability analysis methods were used. This study used SmartPLS 3.2.8 to test the model and justify the hypotheses. A bootstrapping technique was directed through 3000 iterations to detect the statistical significance of the path coefficients {56}.

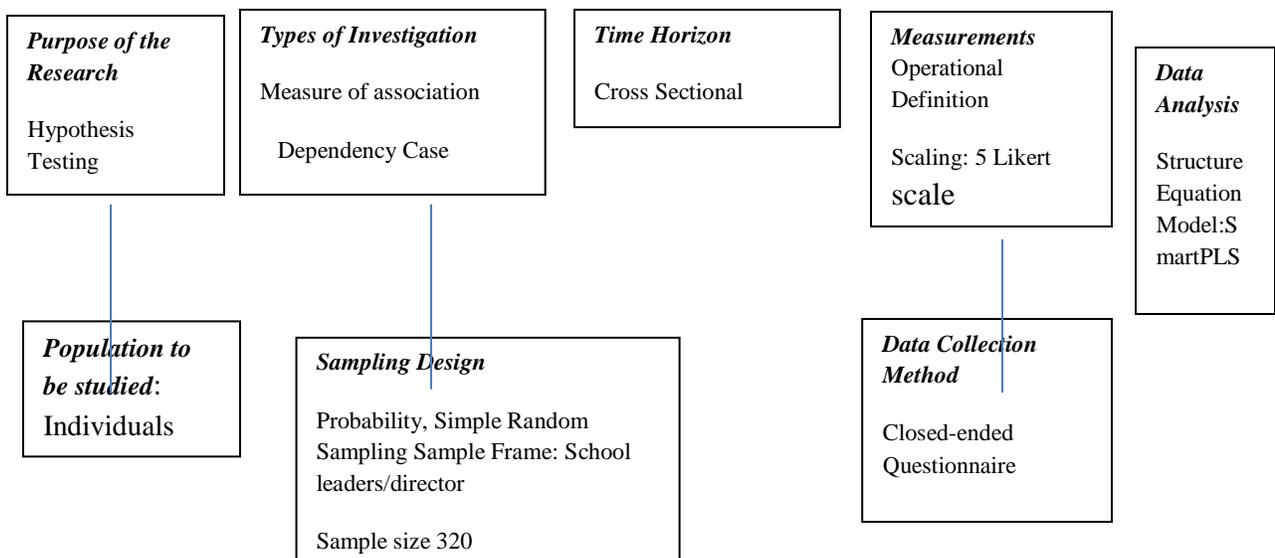


Fig. 2. Research design

## 4. Results and Findings

This section discusses the results and findings of the research.

### 4.1 Measurement Model Assessment:

Measurement model assessment was firstly done by assessing construct reliability and validity. The results indicate that Cronbach's alpha coefficients of all items ranging from 0.782 to 0.932 were higher than the proposed value of 0.7 {57}. Additionally, for testing construct reliability all the composite reliability (CR) values of all the items ranging from 0.871 to 0.941 were found to be higher than

the proposed value of 0.7 {58}, {59}, which satisfactorily established that construct reliability was fulfilled as shown in Table 4. Therefore, the achieved Cronbach's Alpha and CR for all constructs were considered to be sufficiently error-free. Factor loading methods were also used to assess indicator reliability. Hair et al. {60} suggest factor loading should be above 0.50: in this research factors loading for all the indicators were above 0.50 as mentioned in Figure 2. Table 4 results indicate that all AVE values were higher than the proposed value of 0.50 {60} ranging from 0.511 to 0.787. Hence there was no problem with the AVE, of all constructs since its value stands above 0.50.

**TABLE 4:**  
**CONSTRUCT RELIABILITY AND VALIDITY**

Constructs	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
360-Degree Performance Appraisal	0.823	0.858	0.871	0.536
Charismatic Style (Second order)	0.910	0.910	0.937	0.787
Human Capital Development	0.917	0.922	0.936	0.709
Inspirational Motivation (Second order)	0.854	0.869	0.903	0.703
Intellectual Stimulation (Second order)	0.782	0.805	0.860	0.608
Knowledge Acquisition (Second order)	0.872	0.876	0.908	0.664
Knowledge Distribution (Second order)	0.828	0.844	0.881	0.602
Knowledge Management System (Second order)	0.932	0.934	0.941	0.517
Knowledge Storing (Second order)	0.845	0.846	0.889	0.617
Training	0.774	0.844	0.844	0.524
Transformational_ Leadership	0.934	0.939	0.943	0.511
individual consideration	0.717	0.723	0.824	0.541

To assess the discriminant validity of the measurement, the model the Fornell-Larcker method was used. Table 3 shows the square root of the AVEs on the diagonals, as represented by the bolded values, and the values are higher than the correlations between constructs. This indicates that the constructs are strongly related to their

respective indicators, compared to other constructs of the model {61}, {56}. Hence, the results show a good discriminant validity. Furthermore, the correlation between exogenous constructs is less than 0.85 {62}: therefore, discriminant validity is successfully obtained.

**TABLE 5**  
**DISCRIMINANT VALIDITY FORNELL-LARCKER CRITERION**

Constructs	360 PA	CS	HCD	IM	IS	KA	KD	KMS	KS	TR	TL	IC
360-Degree Performance Appraisal	0.732											
Charismatic Style (2 <sup>nd</sup> Order)	0.547	0.887										
Human Capital Development	0.846	0.523	0.842									
Inspirational Motivation (2 <sup>nd</sup> Order)	0.590	0.678	0.582	0.839								
Intellectual Stimulation (2 <sup>nd</sup> Order)	0.629	0.679	0.629	0.864	0.780							
Knowledge Acquisition (2 <sup>nd</sup> Order)	0.589	0.606	0.603	0.644	0.652	0.815						
Knowledge Distribution (2 <sup>nd</sup> Order)	0.720	0.644	0.705	0.673	0.718	0.614	0.776					
Knowledge Management System	0.716	0.703	0.730	0.751	0.778	0.903	0.864	0.719				
Knowledge Storing (2 <sup>nd</sup> Order)	0.643	0.666	0.681	0.728	0.749	0.831	0.759	0.954	0.785			
Training	0.722	0.406	0.734	0.478	0.547	0.435	0.578	0.558	0.508	0.724		
Transformational Leadership	0.667	0.848	0.664	0.923	0.924	0.755	0.754	0.853	0.813	0.535	0.715	
individual consideration (2 <sup>nd</sup> Order)	0.592	0.566	0.622	0.684	0.707	0.786	0.615	0.784	0.729	0.463	0.817	0.736

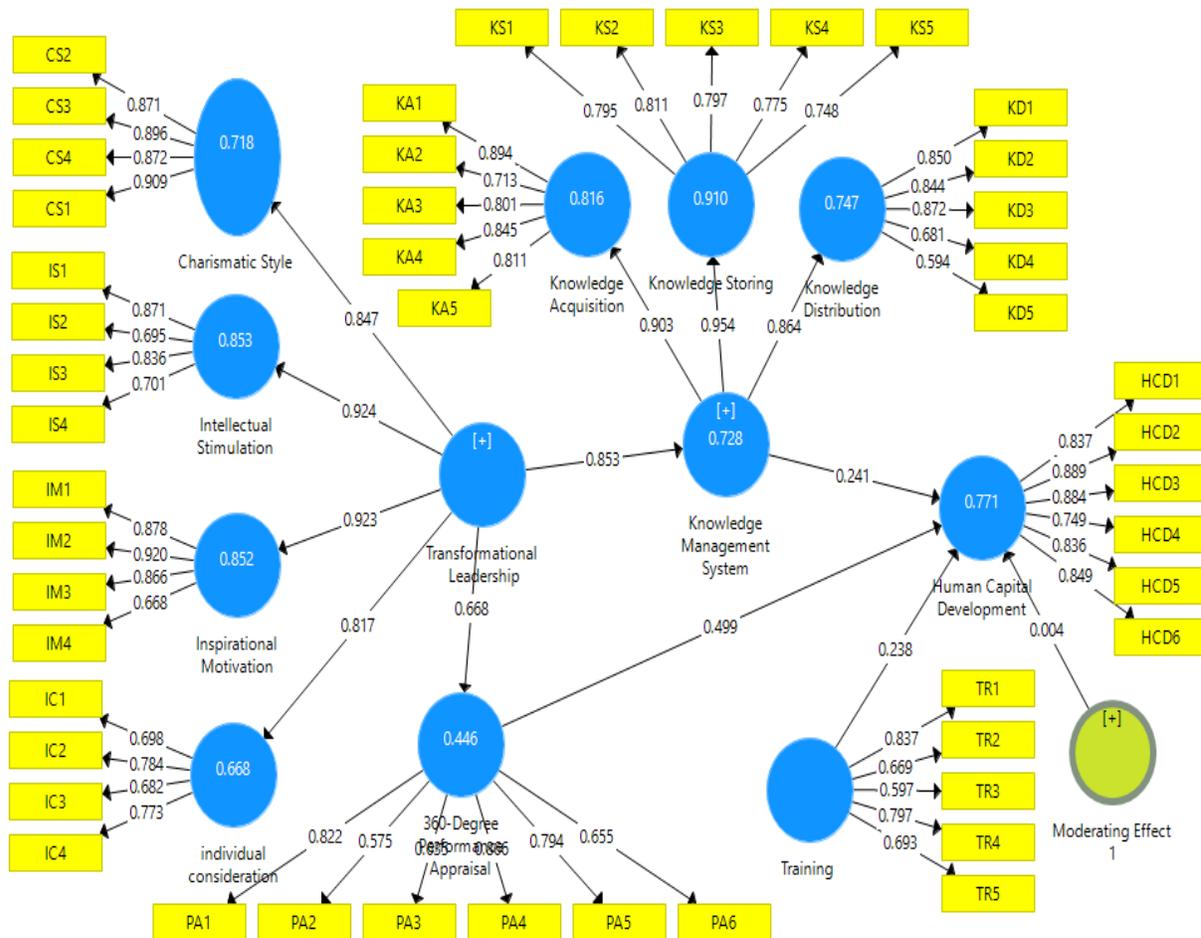


Fig .3. Measurement Model

### 4. 2 Structure Equation Modeling

Researchers Hair, Hult, Ringle & Sarstedt {63} asserted that to assess SEM, beta ( $\beta$ ),  $R^2$  and t values should be used. They also advise reporting the effect sizes ( $f^2$ ) and the predictive relevance ( $Q^2$ ). Sullivan & Feinn (2012) {64} stated that merely relying upon the p-value might not explain the effect size. The structural model assessment as shown in Figure 4 and Table 6, reveals the results of hypothesis tests. In this study, all hypotheses are accepted since a value of  $p < 0.005$  was obtained. This corroborates

H1a where “transformational leadership has a significant and positive impact on knowledge management system” and “Transformational leadership significantly predicts knowledge management system” through ( $\beta=0.853$ ;  $t=44.437$ ;  $p < 0.001$ ). Knowledge management systems significantly mediate the relationship between transformational leadership and human capital development; hence, H1b is also supported ( $\beta=0.206$ ;  $t=5.011$ ;  $p < 0.001$ ).

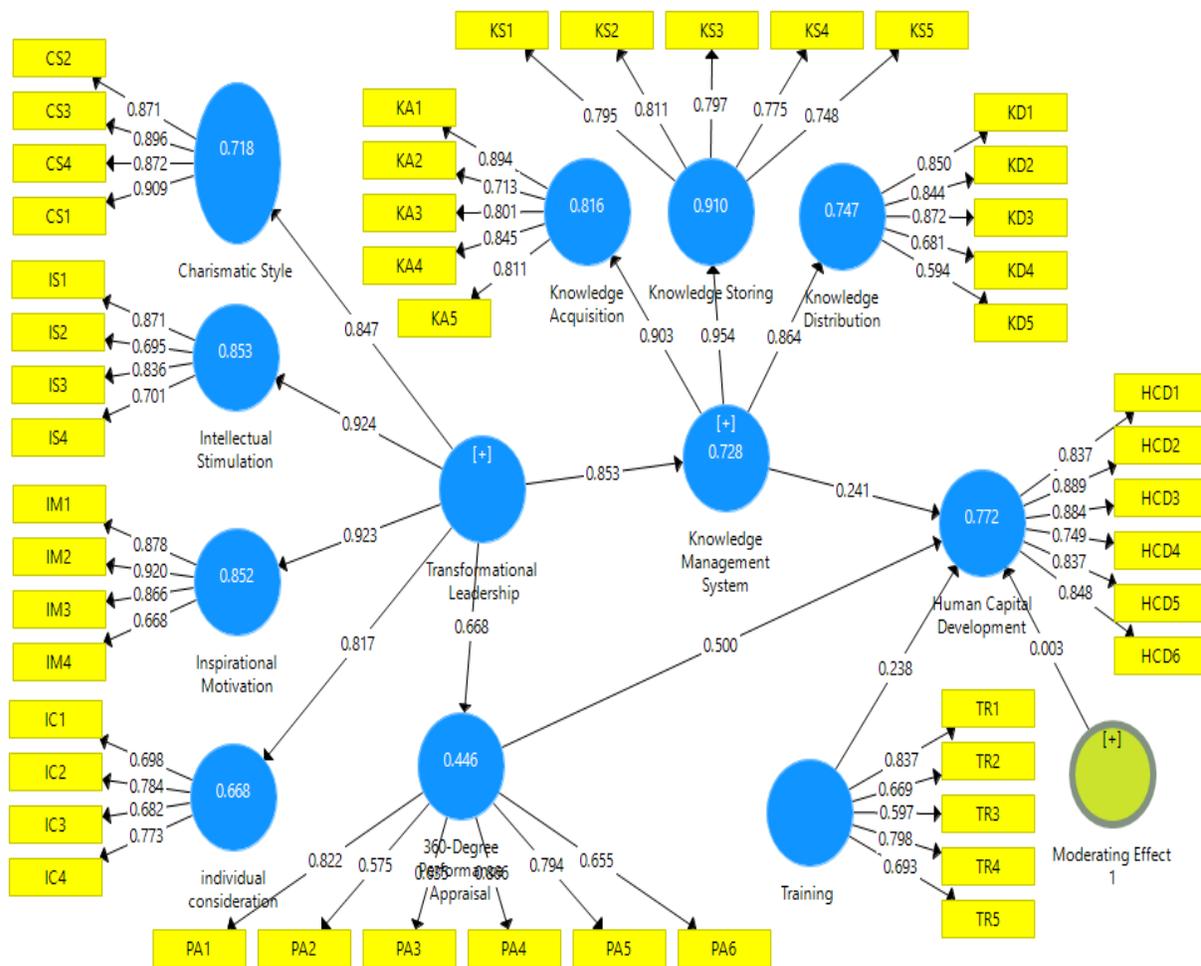


Fig.4. Structural model assessment

Transformational leadership significantly and positively predicts 360-degree performance appraisal. In this regard, H2a is supported ( $\beta=0.668=19.945$ ;  $p < 0.001$ ). 360-degree performance appraisal system significantly and positively predicts human capital development; hence, H2a is likewise supported ( $\beta=0.5$ ;  $t=7.979$ ;  $p < 0.001$ ). Knowledge management systems significantly and positively predict human capital development; hence H3 is supported ( $\beta=0.241$ ;  $t=5.093$ ;  $p < 0.001$ ). Training significantly and positively moderates the relationship between 360-degree and human capital development, hence H4 is supported ( $\beta=0.003$ ;  $t=3.001$ ;  $p < 0.001$ ). Training significantly predicts human capital development ( $\beta=0.238$ ;  $t=3.527$ ;  $p < 0.001$ ). Hair et al., {63} suggest that in the case of testing mediating

effects, researchers should use the bootstrapping method of Preacher & Hayes {63}. Table 7 displays the result of the bootstrapping analysis, indicating that the indirect effect  $\beta = 0.206$  was significant with a t-value of 5.011. This study can, therefore, conclude that the mediation effect of the knowledge management system is statistically significant when determining the impact of transformational leadership upon human capital development. The overall 77 % variance in outcome variable human capital development. The R<sup>2</sup> values also attained a satisfactory power level as recommended by Cohen & Chin (1998) {65}, {56}.

TABLE 6  
STRUCTURAL PATH ANALYSIS RESULT

Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ((O/STDEV))	P Values	Decision
360-Degree Performance Appraisal -> Human Capital Development	0.5	0.502	0.063	7.979	0.000	Supported
Knowledge Management System -> Human Capital Development	0.241	0.237	0.047	5.093	0.000	Supported
Moderating Effect 1 -> Human Capital Development	0.003	0.0101	0.001	3.105	0.000	Supported
Training -> Human Capital Development	0.238	0.242	0.068	3.527	0.000	Supported
Transformational Leadership -> 360-Degree Performance Appraisal	0.668	0.668	0.033	19.945	0.000	Supported
Transformational Leadership -> Knowledge Management System	0.853	0.853	0.019	44.437	0.000	Supported

**TABLE 7**  
**MEDIATION**

Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values	Decision
Transformational_ Leadership -> Knowledge Management System -> Human Capital Development	0.206	0.202	0.041	5.011	0.000	Supported

The Effect size  $f^2$  describes whether an “exogenous latent construct” has a substantial, moderate or weak effect on an “endogenous latent construct” {66}. Cohen {65} recommends a magnitude of  $f^2$  at 0.35 (showing large effects), 0.15 (showing medium effects) and 0.02 (showing

small effects). The result of  $f^2$ , as mentioned in Table 9, reveals a range of effect sizes between large effects and medium-size effects within this study. The blindfolding procedure is used in this study to examine the power of the proposed research model concerning predictive relevance.

**TABLE 8**  
**EFFECT SIZE**

Constructs	360-Degree PA	HCD	KMS
360-Degree Performance Appraisal		0.365	
Human Capital Development			
Knowledge Management System		0.123	
Training		0.117	
Transformational_ Leadership	0.805		2.681

As suggested by Hair et al. {63} the “blindfolding procedure” should only be used on endogenous constructs with a reflective measurement. If the value of  $Q^2$  is greater than 0, then the “predictive relevance of the proposed model exists for a certain endogenous construct” {63}. As Table 9 shows all the values of  $Q^2$  range from 0.370 to 0.501, this, therefore, indicates that there is satisfactory “predictive

relevance” for the proposed model to function. For the “ $Q^2$  values”, Hair et al. {63} propose values of 0.35 (large), 0.15 (medium) and 0.02 (small) as a relative measure of predictive relevance. The result of this study shows that one endogenous construct has a large degree of predictive relevance, while the remaining have medium degrees of predictive relevance.

**TABLE 9**  
**PREDICTIVE RELEVANCE ( $Q^2$ )**

	SSO	SSE	$Q^2 (=1-SSE/SSO)$
360-Degree Performance Appraisal		5890	2984.432
Human Capital Development		1890	870.296
Knowledge Management System		4725	2978.955

**TABLE 10**  
**MODERATION EFFECT (STAGE 1)**

Constructs:	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	P Values
360-Degree Performance appraisal -> Human capital Development	0.844	0.846	0.016	51.296	0
Transformational Leadership -> 360-Degree Performance appraisal	0.672	0.676	0.035	18.995	0

The Measurement and structural model evaluation criteria, as discussed earlier, also applies when testing moderator models {63}. In this research, the two stages approach is used to determine whether the moderating variable (training) increases or decreases the relationship between exogenous (360-degree performance appraisal) and endogenous variables (Human capital development). In the

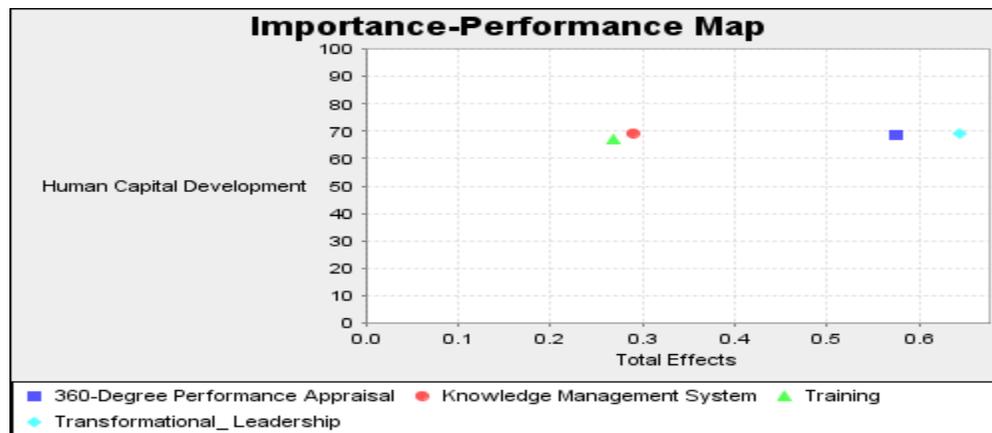
first stage, the direct relationship between 360-degree performance appraisal and human capital development was found to be significant and positive ( $\beta=0.844$ ;  $t=51.296$ ;  $p<0.001$ ). The study, therefore, moved to the second stage by adding the moderator variable, since the researchers further identified that the direct relationship between training and human capital was also significant and positive.

**TABLE 11**  
**MODERATION EFFECT (STAGE 2)**

Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ((O/STDEV))	P Values	Decision
Moderating Effect 1 -> Human Capital Development	0.003	0.0101	0.001	3.105	0.000	Supported

By adding a moderator variable (training) between exogenous variable 360-degree performance appraisal and endogenous variable (human capital development), it was observed and established that the relationship was significant and positive. Table 11 shows the results for the moderating effect ( $\beta=0.003$ ;  $t=3.105$ ;  $p < 0.001$ ) It has been observed that the moderating variable training significantly and positively moderated the relationship between 360-degree performance appraisal and human capital development. By comparing the beta value, it was observed that the direct effect was stronger than the moderating

variable. As revealed in Figure 5, this study “plotted the total effects scores and index values” in a priority map. Through this, it can be perceived that transformational leadership constitutes a very important factor in determining human capital development due to its relatively higher importance values compared to other constructs within the proposed model. 360-degree performance appraisal is the second important factor in determining human capital development. The knowledge management system is of third importance whilst training is fourth.



**Fig.5. Importance-Performance Map Analysis IPMA**

## 5. Conclusion and Discussions and Limitation

Based on its extension of transformational leadership and human capital theory's scope, this study improves the understanding of the roles played by TL, Knowledge management system and 360-degree performance appraisal within the process of human capital development. As per UNESCO's latest report on Thailand's education system, Thailand came 54th out of a total of 70 assessed countries, classified by subject, {1}. The current study framework is consequently useful for improving Thailand's education system. The quality of the School education systems provides a strong foundation for students' future: if the foundation level of students is weak then, naturally, they might not be in a position to pursue further education. To achieve quality standards within schools, knowledgeable teachers can play an important role. When rapid changes in technology occur, the school education system is also affected and forced to adapt. To cope with broader future challenges, human capital must be urgently developed. The findings of this study show that transformational leadership has a significant influence on human capital development by implementing a knowledge management system and 360-degree performance appraisal. Due to advancements in information technology, a functional knowledge management database is crucial. In Thailand, many schools are in disadvantaged places, and an online database of knowledge management can play a vital role in human capital development. This database would

potentially offer access to the retrieval of contemporary, up-to-date and authentic knowledge, with resource forms including online video lectures, activities, e-books and other educational material. It has also been noted that TL has a relationship with knowledge management and creativity. Crawford {50} identified the relationship between transformational leadership and knowledge management. In a study conducted by Song et al. {49} in Korea, the researcher explored the positive relationship between TL and KMS. Thus the current results obtained concerning transformational leadership and Knowledge Management system are corroborated by past literature. Furthermore, knowledge management is significant and positively related to human capital development, with the results obtained being similar to those detailed within Khan, Sentosa, and Salman's previous study {4}. There is an urgent requirement for a new generation of computational theories and tools to assist humans in extracting useful information from the promptly growing volumes of digital data {67}, Knowledge Management system can be used to store the knowledge and the access should be given to the teachers improve their knowledge and skills. The 360-Performance appraisal systems are widely used to assess the employee's performance; in today's competitive business environment it is challenging to hire new staff again and again because the concept of talent management is also essential for organisational success; it can increase employee's loyalty to the organisation. This appraisal

system can judge employee performance thoroughly and identify the deficiencies within employee performance which in turn necessitate further training. If an employee's performance is lower and the organisation identifies training needs for employees, this will help employees to develop their skills, which can further improve the performance of employees and organisations alike. The findings of this study reveal that 360-degree performance appraisal has a significant and positive relationship with human capital development; the relationship is also significantly moderated by the variable of training. Once an organisation completes the appraisal system, in the event of if there exists any deficiency in required skills, then it can arrange suitable training sessions which can help to develop the employee's skills. Whilst this study has obtained its aim and objectives, there are few unavoidable limitations around scope and scale, which are necessary to briefly discuss within this section in order that future scholarship might properly build upon this study in seeking to analyse key factors and recommend policy. First, research can be generalised only to the Thailand school education system, since, due to limited resources, data were collected only from schools. With respect to the research method, only the mono method was used in this study: in future researchers can potentially use mixed-method to test the model and thus support and build upon its findings with more rigour. Other variables can also contribute to human capital development; therefore, in future studies, researchers can also test other leadership styles, for instance, transactional leadership and its relationship with human capital development.

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