

Relationship Between Technology Leadership, ICT Facility, Competency, Commitments Towards Effectiveness of School Management Tasks In Schools

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Abstract - Previous studies more engaged to the level of technology leadership and the characteristics of technological leadership practiced by leaders in the school, while the factors of a more comprehensive which include facilities for ICT, competence, and commitment of teachers in the practices of applying ICT in the management which contributes a great impact on the management duties of teachers in schools has not been studied in Malaysia. The purpose of this study is to identify whether there is a positive relationship between technology leadership, ICT facilities, competence, commitment and practice of applying ICT teachers with effective management duties of teachers in schools using ICT. This quantitative study involves 370 teachers in secondary schools in the Kedah state which were selected randomly. The findings from the analysis of the study using the smartPLS show that there is a significant relationship between the leadership of technology by principals in school and the effectiveness of teacher-management tasks using computers in management tasks. Leadership that practices high technology leadership features will have a positive impact on the effectiveness of ICT integration within the organization. Further study can be conducted with integrating UTAUT model to identify critical factors that contributing technology leadership in schools.

Keywords: Technology Leadership; ICT Facilities; Competence; Commitment; Effectiveness of Duties Tract

INTRODUCTION

In Malaysia, the widespread use of ICT began with the existence of the Multimedia Super Corridor (MSC) in 1996 in line with the government's goal of making Malaysia a developed nation by 2020. In education organizations, ICT usage began in 1999 when the Ministry of Education Malaysia (KPM) introduced 'Bestari' schools. Initially 88 schools were selected for a Pilot Project. In 2009, 50 schools in rural areas were made Rural Pilot Smart Schools. Under the plan to innovate the education system in Malaysia, the government intends to preserve all government primary and secondary schools in Malaysia by 2010. In the planning of school preservation, the government has devised various plans towards the preservation. In 2012, 1BestariNet was introduced to strengthen the use of ICT in schools. However the noble intention of the Malaysian government will not succeed without commitment of the school leaders.

The optimum benefits of ICT integration, especially computer technology in schools, are largely dependent on the principal's sensitivity towards the development of current technology[1]. The same opinion was also presented by Simkins [2] and Sim[3], efficient school leadership can determine the quality of school development and the support of the administration affects the management of technology at school. Without an important role played by principals as a technology leader in school as well as accessible ICT, the high competence and commitment of teachers will affect the implementation of every ICT innovation done at school. The study conducted by Tan in Taiwan showed that there was a positive relationship with the performance expectation (competence), business expectation (commitment), social influence (technology leadership) and ICT facilitative with the level of ICT usage in schools.

There have been numerous studies conducted on the leadership of principals and teachers in the school. The results of the study were more focused on the level of technology leadership practices implemented in schools. Similar findings were obtained through the study of Aishah Tamby Omar, Sabariah Sharif, and George Tamaki[4] at the secondary school in Kudat, Sabah to highlight some issues in the management and administration of ICT. Based on previous studies, the level of technology leadership in the school is low and medium. Most of the previous studies related to technology leadership in schools, the respondents of the study were principals who were leaders in the school. In this study, respondents are teachers who evaluate the characteristics of technology leadership practiced by principals at school. Hence the real situation in the school can be identified whether the characteristics of technology leadership that are being implemented in the school can be shared with the vision and values by teachers who play an important role as an implementing agent in the school.

Literature Review

Facilities in school are among the factors that need to be taken into account in integrating ICT in schools. According to Anderson and Dexter, among the indicators that need to be present in the features of the administrator's leadership, technology are the potential to improve the ICT's facilitation in school, including providing ICT infrastructure, providing support assistance in helping to implement ICT while providing ICT skills training to teachers in school. The study conducted by Lokman Mohd Tahir on the role played by technology leaders in the school namely the principal in providing ICT facilitations at the school is still moderate level. The perfect facilitation achievement facilitates teachers to carry out management tasks using ICT.

There are also studies conducted to assess the level of competence and commitment of teachers to apply technology in teaching and learning such as the study conducted by Mohd Jasmy Abd. Rahman and Ros Azura Jantan, Gomathi, Andre and Paul. The findings from the study show that teachers' competence and commitment to apply ICT in teaching and learning in schools is still in the low and medium level. Most of the studies are more involving the use of computer technology in teaching and learning without involving the role of teachers in carrying out school management tasks which are also an important task of a teacher. This opinion is supported by a study conducted by Irfan and Nurullizam that finds the pattern of ICT research in teacher education to focus on delivery systems, learning environments and learning outcomes without involving management tasks. These management tasks are not effectively managed as a burden to teachers in schools.

Various management tasks have been carried out by teachers in schools, including data entry through the Executive Comprehensive System (SME), School Examination Analysis System (SAPS), Discipline Discipline System System (SSDM) and others. Management tasks by these teachers have become increasingly challenging as the Ministry of Education Malaysia introduced the School Based Assessment System (PBS) in 2011. This PBS system involves extensive data entry through computer use. The computer is said to be an information management tool that provides a lot of opportunities in collecting and managing various assessment data [5]. Teachers feel overwhelmed with the necessary management tasks. Without the high competence and commitment of perfect teachers and facilitation will affect the implementation of every innovation done at school.

Based on this statement, it is desirable to conduct a study to find out the extent of the relationship between the level of technology leadership practices by principals, school facilitation in ICT, competence, commitment and practice that has been done in the teacher to apply the computer with the effectiveness of the task using ICT in schools based on evaluation and Teachers' perceptions in school. This is in line with the government's goal of improving productivity, excellence, and effectiveness in the management system using ICT. A more holistic approach involves aspects of technological leadership, ICT facilitation, teacher practice and job-effectiveness needs to be identified to transform technology into educational organizations so that implementation can be carried out more effectively.

Research Objectives

- i. To identify the relationship between the technology leadership factor with the effectiveness of school management tasks Using ICT.
- ii. To identify the relationship between the influence of computer technology facilitative with the effectiveness of school management tasks Using ICT.
- iii. To identify the relationship between teachers' competency in using computer technology with the effectiveness of school management tasks Using ICT.
- iv. To identify the relationship between teachers' commitment to apply computer technology with the effectiveness of school management tasks Using ICT.

This study does not only take into account the role factors played by technology leadership by principals, ICT facilitators as well as the competence and commitment of teachers in carrying out computer-based tasks at school but also outcomes, the effectiveness of computer-based tasks. In this study, the Unified Theory of Acceptance and Use of Technology (UTAUT) model by Venkatesh et al. [6] has been adopted which relates to the factors that influence the attitude of teachers in applying the computer. Based on UTAUT, independent variables that play an external role (extrinsic) are the technological leadership (social influence) and the facilitation of computer technology in the school. Internal influences (intrinsic) are the influence of the users (teachers) themselves - the competence and commitment of the teachers, which are then linked to the effectiveness of the task in management at the school.

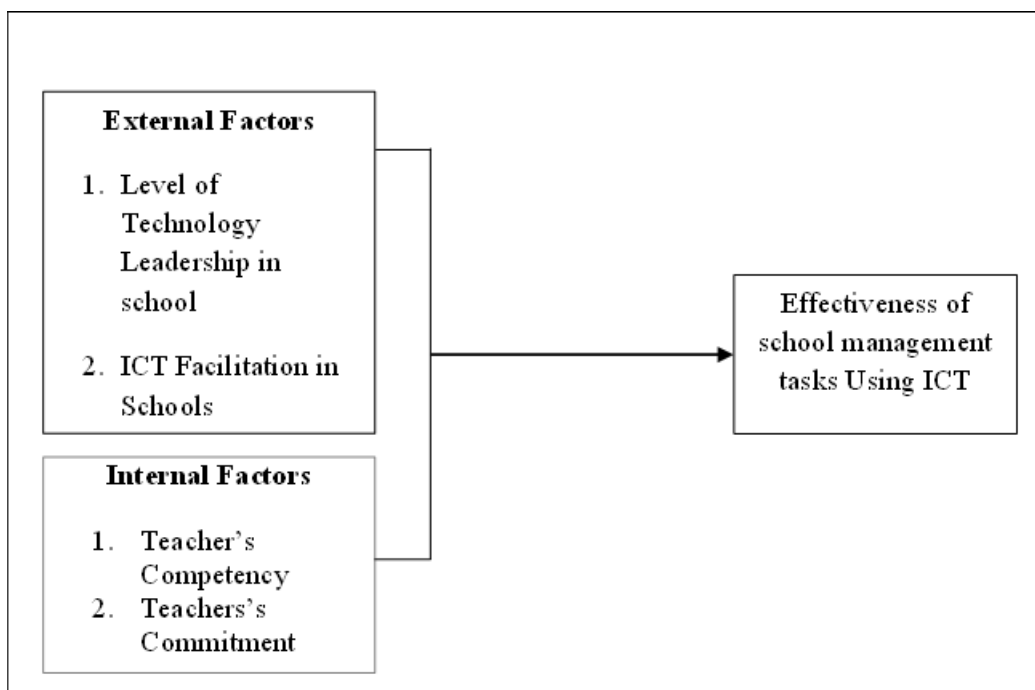


Figure 1. The study framework, the relationship between technology leadership, ICT facilitation, competence, commitment of teachers with management tasks the effectiveness of school management tasks Using ICT.

METHOD

Quatitative research design is used to find answers to answer questions or research problems. This study uses cross sectional design to see the relationship between the three variables. Quantitative methods were used to collect responses from respondents and studies were conducted in January 2015. Population in this study was assistant teachers working in Kedah. The state of Kedah is located in the northern part of Peninsular Malaysia, divided into eight districts namely Kota Setar, Kubang Pasu, Kuala Muda / Yan, Padang Terap, Pendang, Baling / Sik, Kulim / Bandar Baharu, and Langkawi.

Table 1 Number of teachers in Kedah based on gender

Gender	Male	Female	Total
Number of Teachers	4,013 (34%)	7,941(66%)	11,954(100%)
Sample	124 (34%)	246 (66%)	370 (100%)

Research Instruments

Instrument is a measuring tool used to provide the information needed to understand the variables studied. In research, instrumentation processes include not only the selection and design of instruments but also the procedures and conditions in which the instances are governed. In this study, several existing instruments relating to technology leadership based on the characteristics constructed by ISTE in NEST-A have been altered in addition to other instruments constructed based on the TAM model and perceptual instruments on the effectiveness of the modified Perception of Technology on Job Effectiveness (PTJE) tasks that have been used.

Table 2 The distribution of research instrument instruments

Variable	Dimension	Resource	Total
	Section A	Demography	8
	Section B		12

Independent Variable	I. Technology Leadership in Schools	<i>National Technology Administrator (NETS-A)</i>	<i>Educational Standard for</i>	
	II. ICT Facilitation in Schools	<i>Unified Theory of Acceptance and Use of Technology (UTAUT)</i>		8
	III. Teacher Competence	<i>Perception of Technology on Job Effectiveness (PTJE)</i>		8
	IV. Teachers' Commitment	<i>Unified Theory of Acceptance and Use of Technology (UTAUT)</i>		7
Dependent Variable	Section C The effectiveness of school management tasks Using ICT.	<i>Perception of Technology on Job Effectiveness (PTJE)</i>		4
Total				47

The pilot study was conducted to evaluate the reliability of which is done through an analysis of SPSS version 17.0 Alpha Cronbach's values for each dimension are as follows:

Table 3 Cronbach's Alpha value for each dimension

Dimension	Cronbach Alpha
Technology leadership In School	0.890
Facilitation	0.896
Competence	0.820
Commitment	0.709
The effectiveness of school management tasks Using ICT.	0.786

Findings

SmartPLS Data Analysis

This study was conducted using primary data. The data collected then analyzed using Partial Least Square (PLS) was first developed by Herman Wold.

Reliability Indicator

Reliability indicators can be specified as the value for the outer model or model of the relationship between the indicator measuring the constructs. The indicator reliability level is said to be high when the loading value with construct > 0.7. However, for exploratory studies the value of loading > 0.6 is sufficient (Hair et al., 2014). For loading values < 0.6 it is necessary to refine the data which is to drop the indicator to improve the level of reliability of the assessed indicators. After the cleaning indicators that are > 0.6 used in this study as shown in the following Table 4.

Table 4 Indicator reliability after cleaning

	ICT Facilitation	Technology leadership	Teachers' Commitment	Teachers' Competency	Effectiveness
FC1	0.779				
FC2	0.837				
FC3	0.791				
FC4	0.815				
FC5	0.829				
FC6	0.797				
FC7	0.820				
FC8	0.690				
KMT1			0.692		
KMT2			0.762		
KMT3			0.795		

KMT4	0.687	
KMT6	0.731	
KMT7	0.713	
KPT1		0.744
KPT2		0.788
KPT3		0.825
KPT5		0.756
KPT7		0.727
KT1	0.686	
KT11	0.763	
KT12	0.768	
KT2	0.815	
KT3	0.712	
KT4	0.730	
KT6	0.708	
KT7	0.699	
KT8	0.759	
KT9	0.784	
TGS1		0.659
TGS10		0.694
TGS11		0.732
TGS12		0.744
TGS13		0.780
TGS15		0.741
TGS2		0.688
TGS3		0.732
TGS7		0.657
TGS9		0.695

Composite Reliability

Reliability composite (Composite reliability) is a measure of internal consistency reliability and construct a measure can be assessed based on two types of measure that are internal consistency and Cronbach Alpha (Ghozali, 2006). Anyhow unlike composite reliability, Cronbach Alpha makes the same assumption in a loading indicator. In the context of smartPLS, composite reliability is better recognized and suited to more appropriate reliability criteria.

Table 5 Computability reliability findings

	Composite Reliability
School ICT Facilitation	0.932
Technology Leadership	0.925
Teachers' Commitment	0.873
Teacher Competence	0.878
Effectiveness	0.912

Based on Table 5, the reliability value of the overall composite construct, the lowest value is 0.873 for the teacher's commitment and the highest is 0.932 for the ICT facilitation in the school. The recommended value of composite reliability for exploratory type studies is > 0.60 while for theory validation is > 0.70 . From the findings, it shows that the value of its reliability is acceptable, especially for this research.

Convergent validity

Discriminant validity of the measurement model with reflective indicators was assessed by measurement of cross loading constructs. If the construct correlation with the item of measurement is greater than the other constructs measure, then it indicates that latent constructs show a better value finding than others. In this study convergent validity established.

Discriminant validity

If the AVE of each construct is larger than the correlation between the construct with other constructs then said to have the good discriminant validity. These measurements can be used to measure the latent variable component score reliability and the results are more conservative than the composite reliability. According to Fornnel and Larcker, values for average variance extracted (AVE) need > 0.50. The value of AVE for each construct exceeds 0.50, reflecting that the constructs of the study have met the convergent validity criteria. In addition, the value of the AVE value shown in diagonal is greater than the correlation between the other constructs shown non-diagonal. This shows that the results of this analysis have reached the discretionary set of validity test criteria.

Table 6 The AVE findings from the data in the smartPLS analysis

	<i>AVE</i>
School ICT Facilitation	0.633
Technology Leadership	0.553
Teachers' Commitment	0.534
Teacher Competence	0.591
Effectiveness	0.509

Table 6 shows the results of the testing of factors for each study construct. The factor load factor for each item is greater than 0.5, indicating that items for each construct have reached the standard of validity and reliability analysis set.

Fornel Larcker Criterion

Fornel Larcker Criterion validity is the measurement of discriminant (discriminant validity) comparing the square root of the average variance extracted for each construct correlation with all other constructs in the model.

Table 7 Fornel Larcker Criterion

	ICT Facilitation	Technolog y leadership	Teachers' Commitment	Teachers' Competenc y	Effectiveness
School ICT Facilitation	0.796				
Technology Leadership	0.566	0.743			
Teachers' Commitment	0.217	0.327	0.731		
Teacher Competence	0.297	0.424	0.516	0.769	
Effectiveness	0.441	0.610	0.493	0.567	0.713

Table 7, explains that the latent variable technology leadership found the AVE is 0.566 and the square root is 0.743, the AVE of teachers commitment is 0.217 and the power of two is 0.743, the AVE Teachers competency 0.297 and the squared 0.769 onwards the AVE perception 0.441 and squares is 0.713. From this findings, all AVE values for each variable latent are lower than the square values of each variable. Therefore this finding indicates the discriminant validity is strong.

Estimate for Path Coefficients

The estimate for path model in this study was purified by drop indicator value <0.60 for each construct. Fillers are made to reinforce every construct in the model. The estimate for the path coefficients, which represent the path coefficients The magnitude of the relationship or influence of latent construction. It was done with the bootstrapping procedure.

Table 8 Estimate for path coefficients

	ICT Facilitation	Technology Leadership	Teachers' Commitment	Teachers' Competency	Effectiveness
School ICT Facilitation					0.109
Technology Leadership					0.364
Teachers' Commitment					0.210
Teacher Competence					.273

Refer to Table 8, it can deduce that the value of path coefficients for facilitation ICT in schools is 0.109, 0.364 for technology leadership, teachers' commitment is 0.210, and 0.273 teachers' competence.

Coefficient of determination (R² Ratings)

Rating of R² is the number of variants that describe endogenous latent variables in a model of a relationship model. For example, the R² will describe the percentage change in the latent variable endogenous in conjunction with an exogenous latent variable. The value of R² = 0.67 categorised as robust, R² = 0.33 are classified as medium and R² = 0.19 is classified as poor[7]. R² values were analyzed through SmartPLS in this study, is 0.528. R² findings on the effectiveness of management tasks by teachers using ICT 0.528 is classified in the moderate level.

Table 9 Hypothesis Testing

Hypothesis	Relationship	Coefficient (β)	t value	Result
H ₁	Technology leadership -> Effectiveness	0.364	8.127	0.000*
H ₂	Facilitation → Effectiveness	0.109	2.515	0.012*
H ₃	Commitment -> Effectiveness	0.210	3.650	0.000*
H ₄	Competency → Effectiveness	0.273	6.065	0.000*

The findings from the analysis of the study using the smartPLS show that there is a significant relationship between the leadership of technology by principals in school and the effectiveness of teacher-management tasks using computers in management tasks. This finding is in line with the findings of Chang, et al.[7] which studies on 1,880 teachers in primary schools in Taiwan found that professors who practice high technology leadership qualities can enhance effective ICT integration. Nordin and Norazah examine how far three dimensions of technology are vision and leadership, learning and teaching and professional practice and gender differences. The findings show that the principals' leadership level in the school is moderate. Findings in terms of gender differences show no significant difference. Hence, it can be concluded that leadership of technology leaders in the country is at a moderate level resulting in the effectiveness of ICT utilization as well as moderate.

DISCUSSION

The Importance of Technology Leadership with the Effectiveness of Teacher's Assignments Using Computers

This finding demonstrates that leadership factors play an important role in bringing to every innovation implemented in schools including ICT implementation, especially computers at school. Based on the Role Model, Responsibility and Objectives of ICT Integration by Flanagan and Jacobson, leaders play an important role in determining the effectiveness of ICT integration in schools. School leaders play a role in leading the school community, including teachers, students, and staff in implementing ICT implementation can be implemented effectively either in learning and teaching or management systems in schools.

Based on the Flanagan and Jacobsen models, the effectiveness of ICT integration also includes equality of assumptions, vision visions, ubiquitous networks and professional development effectiveness. The equality of assists involves the ICT facilitation available in the school, the ICT infrastructure provided beside its level of applicability. School leaders also play an effective professional development. With effective professional development teachers' competence will enhance the implementing of ICT.

The findings of the study on leadership roles in significant ICT integration with the effectiveness of this task are also in line with the Leadership Anderson and Dexter models. This model contains eight indicators on technology leadership that provides effective integration of technology either involving ICT integration in teaching and learning as well as management systems in schools. Among the outcomes of this model are teachers integrating ICT in school. The role of school leaders is crucial in determining the effectiveness of teacher management tasks using ICT in schools.

Another ICT integration model that emphasizes the role of school leaders is the model introduced by ISTE, NEST-A. NEST-A outlines some of the roles that school leaders should play to ensure the effectiveness of ICT implementation at school. Therefore, the findings of this study show that school leaders as technology leaders are

significant with the effectiveness of ICT use in school management systems. This finding is also consistent with the findings of the previous study. Among them is the study of Chang, et al [7] which is the leadership of a school that practices high-tech leadership features can enhance effective ICT integration. The findings are also in line with the findings of Chang, HI [7] that there is a significant relationship between technology leadership and teacher's computer literacy and teaching effectiveness. However, this study focuses on the effectiveness of teacher duties in the school management system.

The conclusion can be said that school leaders play an important role in ICT integration in schools. Leadership that practices high technology leadership features will have a positive impact on the effectiveness of ICT integration within the organization. The findings show that there is a significant relationship between technology leadership and the perception of the effectiveness of teacher management tasks in school.

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