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**KEPIMPINAN TEKNOLOGI PENGETUA DAN  
PENGINTEGRASIAN TEKNOLOGI GURU  
DI SEKOLAH MENENGAH KEBANGSAAN DI NEGERI KEDAH**



**RAAMANI A/P THANNIMALAI**

**IJAZAH DOKTOR FALSAFAH  
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Awang Had Salleh  
Graduate School  
of Arts And Sciences

Universiti Utara Malaysia

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Assoc. Prof. Dr.Yahya Don

Tandatangan  
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Nama Penyelea/Penyelea-penyelea:  
(*Name of Supervisor/Supervisors*)

Assoc. Prof. Dr. Arumugam a/l Raman

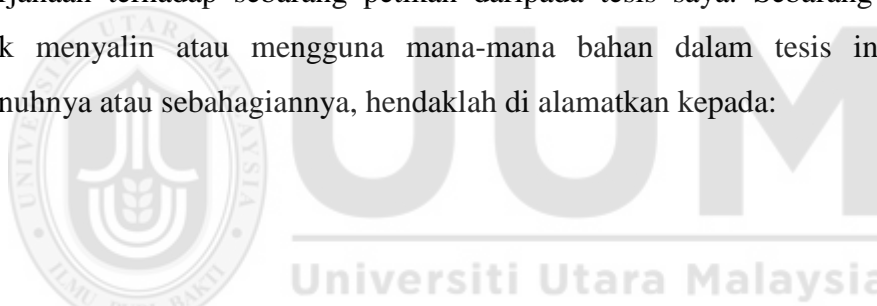
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Dekan Awang Had Salleh Graduate School of Arts and Sciences,

UUM College of Arts and Sciences,

Universiti Utara Malaysia,

06010 UUM Sintok,

Kedah Darul Aman.

## Abstrak

Pelan Pembangunan Pendidikan Malaysia (2013-2025) menuntut bahawa pengintegrasian ICT di sekolah perlu dilaksanakan berdasarkan piawaian yang dicadangkan oleh Persatuan Antarabangsa Teknologi Pendidikan (*ISTE*). Kajian lepas hanya menyelidik hubungan antara Kepimpinan Teknologi Pengetua (secara keseluruhan) dengan Pengintegrasian Teknologi Guru. Tambahan pula, hampir tiada kajian yang dijalankan untuk melihat kesan lima konstruk *ISTE-Standards for Administrators* (2014) secara berasingan terhadap Pengintegrasian Teknologi Guru di bilik darjah. Selain itu, faktor keperluan Pembangunan Profesional dalam ICT tidak diberi perhatian khusus dalam kajian lepas. Kajian ini bertujuan mengukur tahap, kesan dan hubungan Kepimpinan Teknologi Pengetua terhadap Pengintegrasian Teknologi Guru. Selain itu, kesan setiap konstruk *ISTE* juga diukur terhadap Pengintegrasian Teknologi Guru. Kajian kuantitatif ini telah menggunakan tiga instrumen piawai. Instrumen *Principals Technology Leadership Assessment* yang berasaskan *ISTE-Standards for Administrators* (2014) dan *Survey of Technology Experiences* digunakan untuk pengetua manakala instrumen *Learning with ICT: Measuring ICT Use in the Curriculum Instrument* telah digunakan untuk guru. Dalam kajian tinjauan rentas ini, seramai 88 orang pengetua dan 645 orang guru telah dipilih sebagai responden secara pensampelan rawak sistematik daripada sekolah menengah kebangsaan yang sama di negeri Kedah. Dapatan kajian menunjukkan tahap Kepimpinan Teknologi Pengetua dan Pengintegrasian Teknologi Guru berada pada tahap yang tinggi. Namun begitu, kelima-lima konstruk *ISTE-Standards for Administrators* (2014) iaitu Kepimpinan Visionari, Budaya Pembelajaran Era Digital, Kecemerlangan Amalan Profesional, Penambahbaikan Sistemik dan Kewarganegaraan Digital, tidak mempunyai hubungan yang signifikan dengan Pengintegrasian Teknologi Guru. Pembangunan Profesional Pengetua juga tidak memberikan kesan moderator terhadap hubungan antara kelima-lima konstruk Kepimpinan Teknologi Pengetua dengan Pengintegrasian Teknologi Guru. Kajian ini telah menyumbang idea dan saranan kepada sistem pendidikan negara dengan mencadangkan bahawa Kementerian Pendidikan mereka bentuk satu piawaian untuk teknologi pendidikan supaya boleh dijadikan rujukan untuk pemimpin teknologi di sekolah. Kajian ini juga telah menyediakan panduan untuk menyelidik masa hadapan mengkaji kesan lima konstruk *ISTE Standards for Administrators* (2014) ke atas Pengintegrasian Teknologi Guru. Kajian lanjut tentang Pembangunan Profesional efektif untuk pemimpin teknologi sekolah perlu dilakukan. Dapatan ini telah menambah nilai kepada perkembangan Teori Transformasional dan Model Anderson dan Dexter.

**Kata kunci:** Kepimpinan teknologi pengetua, Pengintegrasian teknologi guru, Pembangunan profesional pengetua, *ISTE*, PLS-SEM

## Abstract

The Malaysian Education Blueprint (2013-2025) demands that ICT integration in schools be implemented based on the standards proposed by *International Society for Technology in Education (ISTE)*. Previous studies only researched the relationship between Principals' Technology Leadership (as a whole) and Teachers' Technology Integration. Furthermore, almost no studies have been conducted to see the effect of the five ISTE-Standards for Administrators (2014) constructs separately on Teachers' Technology Integration in classrooms. In addition, Professional Development needs of principals in ICT have not been emphasized in previous studies. This research measures the level, effect and relationship between Principals' Technology Leadership and Teachers' Technology Integration. Besides this, the effect of each construct of ISTE towards Teachers' Technology Integration is also measured. This quantitative research used three standard instruments. The *Principals' Technology Leadership Assessment* based on ISTE-Standards for Administrators (2014) and *Survey of Technology Experiences'* were used for principals' while the *Learning with ICT instruments: Measuring ICT Use in the Curriculum* was used for teachers. In this cross-sectional survey, a total of 88 principals and 645 teachers were selected through systematic random sampling from the same national secondary schools in Kedah. Findings showed that Principals' Technology Leadership and Teachers' Technology Integration were at high levels. Nevertheless, the relationships of the five constructs of the ISTE-Standards for Administrators (2014), which are Visionary Leadership, Digital Age Learning Culture, Excellence in Professional Practice, Systematic Improvement and Digital Citizenship with Teachers' Technology Integration were insignificant. Principals' Professional Development did not have a moderating effect on the relationship between the five constructs of Principals' Technology Integration and Teachers' Technology Integration. This study will contribute to the education system by suggesting that the Ministry of Education designs a standard for education technology so that it can be a reference for technology leaders in schools. This study will contribute to the education system by suggesting that the Ministry of Education designs a standard for education technology so that it can be a reference for technology leaders in schools. Further studies on effective Professional Development for school technology leaders should be carried out. The findings contribute to the development of the Transformational Theory and the Anderson and Dexter's Model.

**Keywords:** Principals' technology leadership, Teachers' technology integration, Principals' Professional development, ISTE, PLS-SEM

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## Senarai Kandungan

Kebenaran Mengguna	ii	
Abstrak	iii	
Abstract	iv	
Penghargaan	v	
Senarai Isi Kandungan	vi	
Senarai Jadual	vii	
Senarai Rajah	viii	
Senarai Lampiran	ix	
Senarai Singkatan	x	
<b>BAB SATU PENGENALAN</b>	<b>1</b>	
1.1	Pendahuluan	1
1.2	Penyataan Masalah	10
1.3	Objektif Kajian	14
1.4	Persoalan Kajian	15
1.5	Hipotesis Kajian	17
1.6	Kerangka Konseptual Kajian	21
1.7	Kepentingan Kajian	23
1.8	Kelompangan Kajian	25
1.9	Definisi	28
1.9.1	Definisi Istilah	28
1.9.1.1	Pengintegrasian Teknologi Guru	29
1.9.1.2	Kepimpinan Teknologi Pengetua	29
1.9.1.3	Pembangunan Profesional	30
1.9.1.4	Pengetua	31
1.9.1.5	Gaya Kepimpinan Pengetua	32
1.9.2	Definisi Operasional	32
1.9.2.1	Pengintegrasian Teknologi Guru	32
1.9.2.2	Kepimpinan Teknologi Pengetua	33
1.9.2.2.1	Kepimpinan Visionari	34
1.9.2.2.2	Budaya Pembelajaran Era Digital	34
1.9.2.2.3	Kecemerlangan Amalan Profesional	35



1.9.2.2.4	Penambahbaikan Sistemik	35
1.9.2.2.5	Kewarganegaraan Digital	36
1.9.2.3	Pembangunan Profesional	36
1.9.2.4	Pengetua	36
1.9.2.5	Sekolah Menengah Kebangsaan (Kerajaan)	37
1.9.3	Persatuan Antarabangsa untuk Teknologi dalam Pendidikan ( <i>International Standards for Technology in Education-Standards for Administrators, 2014</i> )	37
1.9.3.1	Kepimpinan Visionari	38
1.9.3.2	Budaya Pembelajaran Era Digital	39
1.9.3.3	Kecemerlangan Amalan Profesional	39
1.9.3.4	Penambahbaikan Sistemik	40
1.9.3.5	Kewarganegaraan Digital	41
1.10	Batasan Kajian	42
1.11	Rumusan	43
<b>BAB DUA</b>	<b>TINJAUAN LITERATUR</b>	<b>45</b>
2.1	Pendahuluan	45
2.2	Kepimpinan Teknologi	45
2.2.1	Model Kepimpinan Teknologi Flanagan dan Jacobsen (2003)	48
2.2.2	Model Anderson dan Dexter (2005)	50
2.2.3.1	Perubahan Infrastruktur	54
2.2.3.2	Perubahan Organisasi dan Dasar	55
2.2.3.3	Perubahan Pedagogi dan Pembelajaran	55
2.2.3.4	Perubahan Budaya	56
2.2.3.5	Kompetensi Pemimpin Teknologi	56
2.2.3	Model Lanjutan Kepimpinan Teknologi Davies (2010)	57
2.2.4	Model Kepimpinan Teknologi Arafeh (2014)	58
2.2.5	Latar Belakang Teori Kepimpinan Teknologi	61
2.2.6	Kepimpinan Teknologi dalam Abad ke 21	61
2.3	Kajian tentang Kepimpinan Teknologi	62
2.4	Kajian yang Mengaitkan Kepimpinan dengan Teknologi	74
2.5	Kepimpinan	76

2.5.1	Kepimpinan Transformasional	79
2.5.2	Teori-Teori Kepimpinan Transformasional	80
2.5.2.1	Kajian tentang Kepimpinan Transformasional	81
2.5.2.2	Kepimpinan Transformasional dalam ICT	84
2.5.2.2.1	Kajian tentang Kepimpinan Transformasional dalam ICT	85
2.5.3	Kepimpinan Distributif	86
2.5.3.1	Kajian tentang Kepimpinan Distributif sebagai moderator antara Kepimpinan Teknologi dengan Pengintegrasian Teknologi	87
2.6	Pengintegrasian Teknologi	88
2.7	Kajian Tentang Pengintegrasian Teknologi	89
2.8	Kajian yang mengaitkan Kepimpinan Teknologi dengan Pengintegrasian Teknologi	90
2.9	Pembangunan Profesional	98
2.9.1	Model 'Teacher Change' Guskey (1986)	100
2.9.2	Teori Pembangunan Profesional Guskey (1996)	101
2.9.2.1	Merancang Pembangunan Profesional	101
2.9.2.2	Kandungan, Konteks dan Proses	102
2.10	Kajian tentang Pembangunan Profesional	103
2.11	Perkembangan ICT Dalam Sistem Pendidikan Malaysia	113
2.12	Jurang Dalam Kajian Lepas	114
2.13	Rumusan	115
<b>BAB TIGA METODOLOGI KAJIAN</b>		<b>117</b>
3.1	Pendahuluan	117
3.2	Reka bentuk kajian	118
3.3	Pensampelan	120
3.3.1	Populasi Dan Saiz Sampel Kajian	120
3.3.2	Teknik Pensampelan	122
3.4	Model Kajian	126
3.5	Variabel Kajian	127
3.5.1	Variabel Tidak Bersandar	127

3.5.2	Variabel Bersandar	130
3.5.3	Variabel Moderator	131
3.6	Instrumen Kajian	133
3.6.1	Instrumen Kajian Untuk Pengetua	134
3.6.1.1	Bahagian A: Demografi Pengetua	134
3.6.1.2	Bahagian B: Pembangunan Profesional	134
3.6.1.3	Bahagian C: Kepimpinan Teknologi Pengetua	135
3.6.2	Instrumen Kajian Untuk Guru	136
3.6.3	Kesahan	139
3.6.3.1	Kesahan Muka	140
3.6.3.2	Kesahan Kandungan	140
3.6.3.3	Kesahan Konstruk	142
3.6.4	Kaedah Terjemahan Instrumen	143
3.7	Analisis Kebolehpercayaan Instrumen	144
3.8	Kajian Rintis	145
3.9	Prosedur Pengumpulan Data	150
3.10	Prosedur Menganalisis Data	151
3.10.1	Statistik Deskriptif	152
3.10.1.1	Analisis Statistik Deskriptif Pengetua	153
3.10.1.2	Analisis Statistik Deskriptif Guru	154
3.10.2	Statistik Inferensi	155
3.10.2.1	Analisis Data <i>PLS-SEM</i>	155
3.10.2.1.1	Model Luaran/Model Pengukuran	156
3.10.2.1.2	Model Dalaman /Model Struktural	158
3.11	Rumusan	159
<b>BAB EMPAT DAPATAN KAJIAN</b>		<b>161</b>
	Pendahuluan	161
4.2	Pengumpulan Data	161
4.2.1	Kadar Pulangan	161
4.2.2	Pengimbasan Data dan Analisis Permulaan.	163
4.2.3	Gabungan Data	164
4.2.4	Pentaksiran Data Terpencil (Outliers)	165

4.2.5	Ujian Normaliti	166
4.2.6	Ujian Multikolinearan	167
4.2.7	Ujian <i>Non-Response Bias</i>	168
4.2.8	Ujian <i>Common Method Variance (CMV)</i>	168
4.3	Analisis Deskriptif	169
4.3.1	Ciri Demografi Responden	169
4.3.2	Analisis Deskriptif	171
4.3.2.1	Analisis Deskriptif : Persoalan Kajian Pertama	172
4.3.2.2	Analisis Deskriptif : Persoalan Kajian Kedua	173
4.3.2.3	Analisis Deskriptif : Persoalan Kajian Ketiga	176
4.4	Analisis Inferensi Menggunakan SmartPLS	179
4.4.1	Penilaian Model Pengukuran	181
4.4.1.1	Penilaian Kebolehpercayaan Konstruk dan Kesahan Konvergen	181
4.4.1.2	Ringkasan Penilaian Model Pengukuran Secara Grafik	186
4.4.2	Pengukuran Model Struktural	188
4.4.2.1	Penilaian Kekolinearan Model Struktural	189
4.4.2.2	Penilaian Analisis Lintasan ( <i>Partial Least Squares</i> )	189
4.4.2.3	Rajah Model Struktural Keseluruhan	195
4.4.2.4	Penilaian Pekali Penentuan ( <i>Coefficient Determination</i> )	196
4.4.3	Penilaian Kesan Saiz	198
4.4.4	Penilaian Stone-Geisser Predictive Relevance	199
4.4.5	Penilaian Kesan Moderator	200
4.4.6	Ringkasan Dapatan Penilaian Model Struktural	204
4.5	Rumusan	207
<b>BAB LIMA PERBINCANGAN DAN CADANGAN</b>		<b>209</b>
5.1	Pendahuluan	209
5.2	Ringkasan Kajian	209
5.3	Gambaran Keseluruhan Dapatan Kajian	211

5.3.1	Persoalan Kajian Pertama	211
5.3.2	Persoalan Kajian Kedua	214
5.3.3	Persoalan Kajian Ketiga	215
5.3.4	Persoalan Kajian Keempat (a)	218
5.3.5	Persoalan Kajian Keempat (b)	220
5.3.6	Persoalan Kajian Keempat (c)	221
5.3.7	Persoalan Kajian Keempat (d)	221
5.3.8	Persoalan Kajian Keempat (e)	222
5.3.9	Persoalan Kajian Kelima	223
5.4	Sumbangan Kajian	224
5.4.1	Sumbangan Bidang Ilmu	224
5.4.2	Sumbangan Praktikal	227
5.4.3	Sumbangan Teoretikal	228
5.4.4	Sumbangan Metodologi	230
5.4.5	Sumbangan Kepada Pembuat Dasar	231
5.4.6	Sumbangan Kepada Pusat Latihan	232
5.4.7	Sumbangan Kepada Penyelidik	233
5.5	Batasan Kajian	233
5.6	Cadangan	234
5.6.1	Cadangan Kajian Akan Datang	235
5.7	Kesimpulan	237
	<b>RUJUKAN</b>	<b>240</b>

## Senarai Jadual

Jadual 2.1	Komponen-komponen Model Kepimpinan Teknologi Arafeh (2015)	60
Jadual 2.2	Ringkasan Tinjauan Literatur Kajian Mengenai Kepimpinan Teknologi Di Malaysia	72
Jadual 2.3	Ringkasan Tinjauan Literatur Mengenai Kepimpinan Teknologi Di Luar Negara	73
Jadual 2.4	Definisi Pemimpin dan Kepimpinan	78
Jadual 2.5	Ringkasan Tinjauan Mengenai Kepimpinan Teknologi Dan Hubungannya Dengan Pengintegrasian Teknologi Di Luar Negara	97
Jadual 3.1	Bilangan Sekolah Menengah Kebangsaan Di Negeri Kedah	120
Jadual 3.2	Jumlah Populasi Dan Sampel Guru Yang Bertugas Di Sekolah Menengah Kebangsaan Di Kedah	121
Jadual 3.3	Bilangan Sekolah Menengah Kerajaan, Bilangan Sampel Pengetua, Populasi Guru Dan Bilangan Sampel Guru Di Daerah-Daerah Mengikut PPD Di Negeri Kedah.	125
Jadual 3.4	Konstruk dan Item-Item dalam Instrumen Kepimpinan Teknologi Pengetua	128
Jadual 3.5	Item-item dalam Instrumen Pengintegrasian Teknologi	130
Jadual 3.6	Item-Item Pembangunan Profesional serta Konstruk ISTE (2014) yang Berkenaan	132
Jadual 3.7	Skala Likert Instrumen Kepimpinan Teknologi Pengetua	136
Jadual 3.8	Skala Likert Instrumen Pengintegrasian Teknologi Guru	137
Jadual 3.9	Taburan Konstruk Instrumen Kajian Untuk Pengetua	138
Jadual 3.10	Taburan Konstruk Instrumen Kajian Untuk Guru	139
Jadual 3.11	Nilai Cronbach's alpha	147
Jadual 3.12	Nilai Pekali Cronbach's alpha Bagi Setiap Dimensi Instrumen Kajian Rintis	148
Jadual 3.13	Item-Total Statistics: Nilai Pekali Cronbach's alpha bagi Kepimpinan Visionari Jika Item Dibuang	149
Jadual 3.14	Item asal daripada instrumen Pengetua untuk konstruk Kepimpinan Visionari	149
Jadual 3.15	Instrumen Pengetua untuk konstruk Kepimpinan Visionari selepas item dibuang	150
Jadual 3.16	Klasifikasi Min	153

Jadual 3.17	Analisis Statistik Deskriptif: Pengetua	154
Jadual 3.18	Analisis Statistik Deskriptif: Guru	154
Jadual 3.19	Variabel yang dianalisis dengan statistik PLS-SEM	159
Jadual 4.1	Maklumat Responden dan Kadar Pulangan	163
Jadual 4.2	Saiz Sampel	165
Jadual 4.3	Nilai Toleransi dan <i>Variance Inflated Factor</i> (VIF)	168
Jadual 4.4	Ciri Demografi Responden	170
Jadual 4.5	Ringkasan Analisis Deskriptif Variabel	171
Jadual 4.6	Skor Min Berdasarkan Tafsiran NETS-A	172
Jadual 4.7	Ringkasan Tafsiran Tahap Kepimpinan Teknologi Pengetua (KT)	173
Jadual 4.8	Ringkasan Tafsiran Keseluruhan Tahap Pengintegrasian Teknologi Guru (PT)	174
Jadual 4.9	Statistik Deskriptif untuk Item-Item Pengintegrasian Teknologi Guru	175
Jadual 4.10	Data Tinjauan Mengikut Sekolah	176
Jadual 4.11	Keputusan ANOVA.	177
Jadual 4.12	Ringkasan Model	178
Jadual 4.13	Anggaran Parameter (Coefficients <sup>a</sup> ).	178
Jadual 4.14	Nilai <i>Cronbach's alpha</i> , <i>Composite Reliability</i> , <i>Average Variance Extracted (AVE)</i> dan Kesahan Konvergen	183
Jadual 4.15	Nilai <i>Cross-Loading</i>	184
Jadual 4.16	Kriteria <i>Fornell dan Larcker</i>	186
Jadual 4.17	Nilai Kekolinearan Model Struktural	189
Jadual 4.18	Keputusan Penilaian Model Struktural (Kesan Langsung)	190
Jadual 4.19	Keputusan Penilaian Model Struktural (Kesan Moderator)	193
Jadual 4.20	Penilaian Pekali Penentuan, $R^2$	197
Jadual 4.21	Penilaian Kesan Saiz, $f^2$ .	198
Jadual 4.22	Penilaian Stone-Geisser Predictive Relevance, $Q^2$	200
Jadual 4.23	Ringkasan Dapatan Penilaian Model Struktural	205

## Senarai Rajah

Rajah 1.1	Kerangka konseptual kajian: Kepimpinan Teknologi Pengetua dan Pengintegrasian Teknologi Guru di sekolah menengah di negeri Kedah.	22
Rajah 1.2	Konstruk International Society for Technology in Education- Standards for Administrators (2014)	42
Rajah 2.1	Model Pengintegrasian ICT Flanagan dan Jacobsen (2003)	50
Rajah 2.2	Model Kepimpinan Teknologi Anderson dan Dexter (2005)	52
Rajah 2.3	Model Kepimpinan Teknologi Davies (2010)	58
Rajah 2.4	Model Kepimpinan Teknologi Arafeh (2015)	59
Rajah 2.5	Model 'Teacher Change' Guskey (1986)	101
Rajah 4.1	Plot Histogram dan Kebarangkalian Normal	167
Rajah 4.2	Ringkasan Prosedur Penilaian Model SEM <i>SmartPLS</i> . Sumber: Henseler et al. (2009)	180
Rajah 4.3	Penilaian Model Pengukuran	187
Rajah 4.4	Penilaian Model Struktural Keseluruhan	196
Rajah 4.5	Kesan interaksi Pembangunan Profesional Pengetua (PP) dan Kepimpinan Visionari (KV) terhadap Pengintegrasian Teknologi Guru (PT)	202
Rajah 4.6	Kesan interaksi Pembangunan Profesional Pengetua (PP) dan Budaya Pembelajaran Era Digital (BP) terhadap Pengintegrasian Teknologi Guru (PT)	202
Rajah 4.7	Kesan interaksi Pembangunan Profesional Pengetua (PP) dan Kecemerlangan Amalan Profesional (KP) terhadap Pengintegrasian Teknologi Guru (PT)	203
Rajah 4.8	Kesan interaksi Pembangunan Profesional Pengetua (PP) dan Penambahbaikan Sistemik (PS) terhadap Pengintegrasian Teknologi Guru (PT)	203
Rajah 4.9	Kesan interaksi Pembangunan Profesional Pengetua (PP) dan Kewarganegaraan Digital (KD) terhadap Pengintegrasian Teknologi Guru (PT)	204



## **Senarai Lampiran**

Lampiran A	Instrumen Kajian - Pengetua	276
Lampiran B	Instrumen Kajian - Guru	284
Lampiran C	Kelulusan Menjalankan Kajian oleh Bahagian Perancangan dan Penyelidikan, Kementerian Pendidikan Malaysia	288
Lampiran D	Kebenaran Menjalankan Kajian oleh Jabatan Pendidikan Negeri Kedah	289
Lampiran E	Kebenaran untuk Menjalankan Kajian Rintis Di Sekolah – Sekolah Menengah Kebangsaan di Negeri Perlis	290
Lampiran F	Permohonan Data Pengetua Dan Guru Sekolah Menengah Kebangsaan Di Negeri Kedah Untuk Tujuan Kajian	291
Lampiran G	Gabungan Data Pengetua dan Guru	292
Lampiran H	Keputusan Akhir Analisis Statistik Kajian Rintis	293
Lampiran I	Sijil Terjemahan Instrumen oleh MPWS Proofreading dan Translation	296
Lampiran J	Keputusan Akhir Analisis Statistik Deskriptif Kajian Sebenar	297
Lampiran K	Keputusan Akhir Analisis Statistik Inferensi PLS-SEM Kajian Sebenar	299

## Senarai Singkatan

AVE	<i>Average Variance Extracted</i> Purata Varians Terekstrak
BECTA	<i>British Educational Communications and Technology Agency</i> Agensi Teknologi dan Komunikasi pendidikan British
CFA	<i>Confirmatory Factor Analysis</i> <i>Analisis Faktor Konfirmatori</i>
CMV	<i>Common Method Variance</i> Varins Kaedah Biasa
EPRD	<i>Educational Planning and Research Development</i> Bahagian Perancangan dan Penyelidikan Dasar Pendidikan
IAB	Institut Aminudin Baki
ICT	<i>Information and Communication Technology</i> Teknologi Maklumat dan Komunikasi
ISTE	<i>International Society for Technology in Education</i> Persatuan Antarabangsa bagi Teknologi Pendidikan
KOMPAS	Kompetensi Pemimpin Sekolah
KPM	Kementerian Pendidikan Malaysia
Mc REL	Mid-continent Research for Education and Learning Penyelidikan Pertengahan –Benua untuk Pendidikan dan Pembelajaran
NETS-A	<i>National Education Technology Standards- Administrator</i> Piawiaan Pendidikan Teknologi Kebangsaan –Pentadbir
NKRA	<i>National Key Result Area</i> Bidang Keberhasilan Utama Negara
NPQEL	<i>National Professional Qualification for Educational Leaders</i> Kelayakan Profesional Kepimpinan Pendidikan Kebangsaan
OECD	Organization for Economic Co-operation and Development Pertubuhan Pembangunan dan Kerjasama Ekonomi
PCA	<i>Principle Components Analysis</i>
PdPc	Pembelajaran dan Pemudah caraan
PG/B	Pengetua/Guru Besar
PIPP	Pelan Induk Pembangunan Pendidikan

PISA	<i>Programme for International Student Assessment</i> Program Penilaian Murid Antarabangsa
PPPM	Pelan Pembangunan Pendidikan Malaysia
SEM	<i>Structural Equation Modeling</i> Model Persamaan Struktural
SmartPLS	Smart - <i>Partial Least Square</i>
SMK	Sekolah Menengah Kebangsaan
SPSS	<i>Statistical Package for the Social Sciences</i> Pakej statistik untuk Sains Sosial
TALIS	<i>Teaching and Learning International Survey</i> Tinjauan Pengajaran dan Pembelajaran Antarabangsa
TIMMS	<i>Trends in International Mathematics and Science Study</i> Kajian Tren Sains dan Matematik di Peringkat Kebangsaan
TSSA	<i>Technology Standards for School Administrators</i> Piawai Teknologi untuk Pentadbir Sekolah
UNESCO	<i>The United Nations Educational, Scientific and Cultural Organization</i> Persatuan Pendidikan, Saintifik dan Kebudayaan Bangsa-Bangsa Bersatu
VIF	<i>Variance Inflation Factor</i> Faktor Inflasi Varians
VLE Frog	<i>Virtual Learning Enviroment Frog</i> Persekitaran Pembelajaran Maya Frog

# BAB SATU

## Pengenalan

### 1.1 Pendahuluan

Sistem pendidikan di negara kita telah mengalami perubahan pesat seiring dengan pembangunan teknologi pada abad ke-21. Hal ini berlaku disebabkan proses pengintegrasian teknologi dalam sistem pendidikan di negara kita telah mendorong pemimpin sekolah (pengetua) dan guru-guru mentransformasikan diri mengikut perubahan zaman. Sehubungan itu, pemimpin sekolah dan guru-guru wajar melengkapkan diri dengan kemahiran Teknologi Maklumat dan Komunikasi yang lebih dikenali sebagai *Information and Communication Technology* (ICT). Justeru, usaha dan inisiatif melengkapkan diri dengan kemahiran ICT wajar dilakukan dengan penuh dedikasi. Hal sedemikian penting agar hasrat murni anjakan ketujuh dalam Pelan Pembangunan Pendidikan Malaysia (PPPM, 2013-2025) iaitu *Memfaatkan ICT Bagi Meningkatkan Kualiti Pembelajaran* yang telah memasuki gelombang kedua (2016-2020) dapat direalisasikan dengan jayanya (Kementerian Pendidikan Malaysia, 2013).

Selain itu, usaha dan inisiatif memanfaatkan dan melengkapkan diri dengan kemahiran ICT turut menjadi kesinambungan kepada dasar-dasar kerajaan yang telah dibentangkan sebelum ini umpamanya Pelan Strategik Interim 2011-2020 (*Ministry of Education*, 2012). Menerusi Pelan Strategik Interim 2011-2020 (*MOE*, 2012), setiap warga pendidik wajar menekankan kepentingan mengintegrasikan kemahiran ICT semasa proses pembelajaran dan pemudahcaraan (PdPc) di samping memantapkan sistem pengurusan dan pentadbiran di sekolah menggunakan kemudahan ICT.

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## RUJUKAN

- Aesaert, K., Van Nijlen, D., Vanderlinde, R., Tondeur, J., Devlieger, I., & van Braak, J. (2015). The contribution of pupil, classroom and school level characteristics to primary school pupils' ICT competences: A performance-based approach. *Computers & Education, 87*, 55–69.
- Ahmad, A. R., Salleh, M. J., Awang, M. M., & Mohamad, N. A. (2013). Investigating best practice and effectiveness of leadership wisdom among principals of excellent secondary school Malaysia: Perceptions of senior assistants. *International Education Studies, 6*(8), 38-46.
- Ainley, J., Enger, L., & Searle, D. (2008). Students in a digital age: Implications of ICT for teaching and learning. Dalam J. Voogt & G. Knezek (Eds.), *International handbook of information technology in primary and secondary education* (ms. 63 – 80). New York: Springer.
- Ainley, M., Hidi, S., & Berndorff, D. (2002). Interest, learning and the psychological processes that mediate their relationship. *Journal of Educational Psychology, 94*(3), 545–56.
- Ainsworth, A. (2010). *Hypotesis test: Two related samples*. [Dokumen pdf]. Diperoleh daripada [www.csun.edu/~ata20315/psy320/Lecture10\\_RelatedSampleTest.pdf](http://www.csun.edu/~ata20315/psy320/Lecture10_RelatedSampleTest.pdf)
- Albion, P. (2006). Technology leadership, kertas kerja dibentangkan di the 17th International Conference of the Society for Information Technology & Teacher Education, Orlando, FL: Center for Information Technology in Education Publishing.
- Alenezi, A. (2016). Technology leadership in Saudi schools. *Education and Information Technologies, 22*(3), 1121-1132. <http://dx.doi.org/10.1007/s10639-016-9477-x>.
- Alkrdem, M. (2014). Technological leadership behaviour of high school head teachers in Asir Region, Saudi Arabia. *Journal Of International Education Research, 10*(2), 95-100. <http://dx.doi.org/10.19030/jier.v10i2.8510>.
- Almekhlafi, A. G., & Almeqdadi, F. A. (2010). Teachers' perceptions of technology integration in the United Arab Emirates school classrooms. *Journal of Educational Technology & Society, 13*(1), 165-175.
- Alvarez, C. C. (2010). *Principal leadership: Factors sustaining successful school innovation* (Disertasi kedoktoran). Diperoleh daripada ProQuest Dissertations and Theses database. (UMI No. 3438316).
- Anastasi, A., & Urbina, S. (1997). *Psychological testing* (7th ed.). Upper Saddle River, NJ: Prentice-Hall.
- Anderson, R., & Dexter, S. (2005). School technology leadership: An empirical investigation of prevalence and effect. *Educational Administration Quarterly, 41*(1), 49-82.

- Anderson, R.E., & Dexter, S. L. (2000). *School technology leadership: Incidence and Impact* (Teaching, Learning, and Computing: 1998 National Survey, Rep. NO.6). UC Irvine, Centre for Research on information Technology and Organizations.
- Anthony, S., & Said, H. (2010). *Educational Leadership Preparation Program for Aspiring Principals in Malaysia*. Malaysia: Edu Press.
- Anthony, S., Said, H., Mohamad, I., & Mokhtar, M. (2015). Self-efficacy belief as a practical and parsimonious evaluation criterion in school leadership training. *Mediterranean Journal of Social Sciences*, 6(1), 20-29.
- Arafeh, S. (2015). Educational technology leadership for education leaders: An integrated technology leadership model. Dalam N. M. Haynes, S. Arafeh, & C. McDaniels (Eds.), *Educational leadership: Perspectives on preparation and practice* (ms. 253-269.) Lanham, MD: University Press of America.
- Arokiasamy, A. R. R., Abdullah, A. G. K., & Ismail, A. B. (2014). Correlation between cultural perceptions, leadership style and ICT usage by school principals in Malaysia. *Turkish Online Journal of Educational Technology*, 13(3), 27-40.
- Arumugam Raman, Yahya Don, & Abd Latif Kasim, (2014). The relationship between principals' technology leadership and teachers' technology use in Malaysian secondary schools. *Asian Social Science*, 10(18), 30.
- Ary, D., Jacobs, L. C., & Razavieh, A. (2002). *Introduction to Research in Education* (6th ed.). Belmont: Wadsworth.
- Atan, H., Azli, N., Rahman, Z., and Idrus, R. (2002). Computers in distance education: Gender differences in self perceived computer competencies. *Journal of Educational Media*, 27(3), 123-135.
- Avolio, B. (2000). *Full leadership development: Building the vital forces in organizations*. London: Sage.
- Avolio, B., & Bass, B. M. (1999). *Full leadership development: Building the vital*
- Awalt, C., & Jolly, D. (1999). An inch deep and a mile wide: Electronic tools for savvy administrators. *Journal of Educational Technology & Society*, 2(3), 97-105.
- Aziah Ismail, Abdul Ghani Kanesan Abdullah & Abdullah Saad. (2008). Amalan kepimpinan transformasional dan kapasiti kepimpinan di dua buah sekolah kluster di Malaysia. *Kertas Kerja dibentangkan dalam Seminar Nasional Pengurusan dan Kepimpinan Pendidikan ke-15*.
- Babbie, E. (1990). *Survey Research Methods* (2nd ed.). Belmont, California: Wadsworth Publishing Company.
- Badri, M., Alnuaimi, A., Mohaidat, J., Yang, G., & Al Rashedi, A. (2016). Perception of teachers professional development needs, impacts, and barriers: The Abu Dhabi case. *SAGE Open*, 6(3), 1-15.  
<http://dx.doi.org/10.1177/2158244016662901>

- Bailey, G. D. (1997). What technology leaders need to know: The essential top 10 concepts for technology integration in the 21st century. *Learning and Leading with Technology*, 25(1), 57-62.
- Bailey, G. D., & Lumley, D. (1994). *Technology staff development programs: A leadership sourcebook for school administrators*. New York: Scholastic.
- Banoglu, K. (2011). School principals' technology leadership competency and technology coordinatorship. *Educational Sciences-Theory & Practice*, 11(1), 208-213.
- Barnes, C. A., Camburn, E., Sanders, B. R., & Sebastian, J. (2010). Developing instructional leaders: Using mixed methods to explore the black box of planned change in principals' professional practice. *Educational Administration Quarterly*, 46(2), 241-279.
- Barnett, K., McCormick, J., & Conners, R. (2001). Transformational leadership in schools—panacea, placebo or problem?. *Journal of Educational Administration*, 39(1), 24-46.
- Barron, B & Darling-Hammond, L. (2010). Prospects and challenges for inquiry-based approaches to learning. Dalam Dumont, H., Istance, D. and Benavidespp, F. (Eds), *The Nature of Learning: Using Research to Inspire Practice* (ms. 199-225). Paris, France: OECD.
- Bass, B. M. (1985). *Leadership and performance beyond expectations*. New York: The Free Press.
- Bass, B. M. (1990). From transactional to transformational leadership: Learning to share the vision. *Organizational dynamics*, 18(3), 19-31.
- Bass, B. M. (1998). *Transformational leadership: Industrial, military, and educational impact*. Psychology Press.
- Bass, B. M., & Avolio, B. J. (1990). *Transformational leadership development: Manual for the multifactor leadership questionnaire*. Palo Alto, CA: Consulting Psychologist Press.
- Bass, B. M., & Avolio, B. J. (1994). *Improving organizational effectiveness through transformational leadership*. Thousand Oaks, CA: Sage.
- Bass, B. M., & Avolio, B. J. (1994). Shatter the glass ceiling: Women may make better managers. *Human resource management*, 33(4), 549-560.
- Bass, B. M., & Bass, R. (2008). *The Bass handbook of leadership: Theory, research, and managerial applications*. New York, NY: Free Press.
- Bass, B. M., Avolio, B. J., Jung, D. I., & Berson, Y. (2003). Predicting unit performance by assessing transformational and transactional leadership. *Journal of applied psychology*, 88(2), 207.
- Baumgartner, H., & Weijters, B. (2012). Commentary on “common method bias in marketing: Causes, mechanisms, and procedural remedies”. *Journal of Retailing*, 88(4), 563–566.



- Bennett, C.K. (1996). Schools, technology, and educational leadership: framework for chang. *NASSP Bulletin*, 80(577) 57-65.
- Bennett, N., Wise, C., Woods, P. & Harvey, J.A. (2003). Distributed leadership [Dokumen pdf]. Diperoleh daripada [www.ncsl.org.uk/media/3C4/A2/distributed-leadership-literature-review.pdf](http://www.ncsl.org.uk/media/3C4/A2/distributed-leadership-literature-review.pdf)
- Betts, S. (2003). Does the use of ICT affect quality in learning science at key stage 3?. *Studies in Teaching and Learning*, 19, 217-223. <https://doi.org/10.18052/www.scipress.com/ILSHS.19.217>
- Beytekin, O. F. (2014). High school administrators' perceptions of their technology leadership preparedness. *Educational Research and Review*, 9(14), 441-446.
- Billheimer, D. M. (2007). *A study of West Virginia principals : Technology standards, professional development, and effective instructional technology leaders* (Disertasi kedoktoran, Marshall University Graduate College). Diperoleh daripada <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.886.4542&rep=rep1&type=pdf>
- Binkley, N. (1997). Principals' role in policy change: Mediating language through professional beliefs. *Journal of Educational Administration*, 35(1), 56-73.
- Bizzell, B. E. (2011). *Professional development of school principals in the rural Appalachian region of Virginia* (Disertasi kedoktoran, Virginia Polytechnic Institute and State University). [https://vtechworks.lib.vt.edu/bitstream/handle/10919/26464/Bizzell BE D 2011.pdf](https://vtechworks.lib.vt.edu/bitstream/handle/10919/26464/Bizzell_BE_D_2011.pdf) sequence 2 is Allowed y
- Blair, L. A. (2000). Strategies for success: Implementing a comprehensive school reform program [Dokumen pdf]. <http://www.sedl.org/pubs/change46/strategies.pdf>
- Bredeson, P. (2000). The school principal's role in teacher professional development. *Journal Of In-Service Education*, 26(2), 385-401. <http://dx.doi.org/10.1080/13674580000200114>
- Brislin, R.W. (1980) *Translation and content analysis of oral and written material*. Dalam H. C. Triandis dan J. W. Berry (Eds.). *Handbook of cross-cultural psychology: Methodology* (ms. 389-444). Boston: Allyn & Bacon.
- Brislin, R. W., & Triandis, H. C. (1980). *Handbook of cross-cultural-psychology: Social psychology*. Needham Heights, MA: Allyn & Bacon.
- Brislin, R.W. (1986). The wording and translation of research instruments. Dalam W.J. Lonner dan J.W. Berry (Eds.), *Field Methods in Cross-Cultural Research*. BeverlyHills, CA: Sage Publications.
- British Educational Communications and Technology Agency (BECTA). (2005). The BECTA review: Evidence on the progress of ICT in education. ICT in schools research and evaluation series [Dokumen pdf]. Diperoleh daripada [http://www.becta.org.uk/page\\_documents/research/becta\\_review\\_feb05](http://www.becta.org.uk/page_documents/research/becta_review_feb05)

- Brockmeier, L., Sermon, J., & Hope, W. (2005). *Principals' relationship with computer technology*. NASSP Bulletin, 89(643), 45–63.
- Bruce-Davis, M. N., Gubbins, E. J., Gilson, C. M., Villanueva, M., Foreman, J. L., & Rubenstein, L. (2014). STEM high school administrators', teachers', and students' perceptions of curricular and instructional strategies and practices. *Journal of Advanced Academics*. August 2014, 25(3), 272-306.
- Brundrett, M., & Crawford, M. (2008). *Developing school leaders: An international perspective*. London: Routledge.
- Brundrett, M., Slavikova, L., Karabec, S., Murden, B., Dering, A., and Nicolaido, M. (2006). Educational leadership development in England and the Czech Republic: Comparing perspectives. *School Leadership and Management*, 26(2), 93-106.
- Buckner, K. G. (1997). Introduction. Bulletin: *The National Association of Secondary School Principals*, 81, (585) 1-2.
- Bull, P. (2009). Self-efficacy and technology integration: Perceptions of first year teaching fellows to technology integration in education. Dalam I. Gibson et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2009* (ms.1768-1776). Chesapeake, VA: AACE.
- Burns, G. M. (1978). *Leadership*. New York: Harper & Row.
- Bush, T. (2008). *Leadership and management development in education*. London: Sage.
- Bush, T. (2011). *Theories of educational leadership and management* (4th ed.). London: SAGE.
- Bush, T., & Jackson, D. (2002). A preparation for school leadership: International perspectives. *Educational Management and Administration*, 30(4), 417-429.
- Byrom, E., & Bingham, M. (2001). *Factors influencing the effective use of technology for teaching and learning: Lessons learnt from the SEIR\*TEC intensive site schools* (2nd ed.). Greensboro, NC: University of North Carolina.
- Cakir, R. (2012). Technology integration and technology leadership in schools as learning organizations. *Turkish Online J. Educ. Technol.* 11(4):273-282.
- Chan, L. J., Hong, J. C., Horn, J. S., Chang, S. H., & Chu, H. C. (2006). Factors influencing technology integration in teaching a Taiwanese perspective. *Innovations in Education and Training International*, 43(1),57-68.
- Chang, I. H. (2003). Assessing the dimensions of principals' effective technology leadership: An application of structural equation modeling. *Educational Policy Forum*, 6(1), 111-141.

- Chang, I. H. (2012). The effect of principals' technological leadership on teachers' technological literacy and teaching effectiveness in Taiwanese elementary schools. *Educational Technology & Society*, 15(2), 328-340.
- Chang, I., & Wu, Y. (2008). A study of the relationships between principals' technology leadership and teachers' teaching efficiency. *Journal of Educational Research and Development*, 4(1), 171-193.
- Chang, K-E., Lan, Y-J. & Chang, C-M. (2010). Mobile-device-supported strategy for Chinese reading comprehension. *Innovations in Education and Teaching International*, 47(1), 69-84.
- ChanLin, L. J., Hong, J. C., Horng, J. S., Chang, S. H., & Chu, H. C. (2006). Factors influencing technology integration in teaching – a Taiwanese perspective. *Innovations in Education and Training International*, 43(1), 57-68.
- Checkley, K. (2000). *The contemporary principal: New skills for a new age*. Education Update, 42(3), 1-8.
- Cheng, Y. (2004). *A study of the relationship between principals' instructional leadership and school effectiveness in elementary schools in Miaoli County* (Tesis yang tidak diterbitkan). National Taichung Teachers College, Taiwan.
- Chernick, M. R. (2008). *Bootstrap methods: A guide for practitioners and researchers* (2<sup>nd</sup> ed.). Hoboken, New Jersey: John Wiley & Sons Inc.
- Chin, J. M. (2010). *Theory and application of educational leadership*. Taipei, TW: Wunan
- Chin, W. W. (2010). How to write up and report PLS analyses. Dalam V. E. Vinzi, W. W. Chi, J. Henseler, & H. Wang. (Eds.). *Handbook of partial least squares concept, methods and applications* (ms. 655-690). Berlin: Springer.
- Chin, W. W., & Newsted, P. R. (1999). Structural equation modelling analysis with small samples using partial least squares. Dalam Hoyle, R. H. (Ed.), *Statistical strategies for small sample research* (ms. 307–341). Thousand Oaks, California: Sage.
- Christie, P., & Lingard, B. (2001). Capturing complexity in educational leadership, kertas kerja dibentangkan di American Educational Research Association, 10-14 April, Seattle, WA.
- Christiensen, C., Horn, M., & Johnson, C. (2008). *Disrupting class: How disruptive innovation will change the way the world learns*. McGraw Hill, Toronto.
- Churchill Jr, G. A. (1979). A paradigm for developing better measures of marketing constructs. *Journal of marketing research*, 16(1), 64-73.
- Cohen, W.A. (1990). *The art of the leader*. Engle-wood Cliffs, NJ: Prentice Hall.
- Costello, R.W. (1997). The leadership role in making the technology connection. *T.H.E. Journal*, 25(4), 58-62.

- Costellow, T. D. (2011). *The preferred principal: Leadership traits, behaviors, and gender characteristics school teachers desire in a building leader* (Disertasi kedokteran, Western Kentucky University). Diperoleh daripada <https://digitalcommons.wku.edu/cgi/viewcontent.cgi?article=1008&context=diss>
- Cotton, K. (2003). *Principals and student achievement*. Virginia USA, ASCD.
- Courville, K. (2011). Technology and Its Use in Education: Present Roles and Future Prospects. *Online Submission*.
- Cox, M., Webb, M., Abbott, C., Blakeley, B., Beauchamp, T., & Rhodes, V. (2003). ICT and pedagogy: A review of the research literature. ICT in Schools Research and Evaluation Series [Dokumen pdf]. Diperoleh daripada [http://mirandanet.ac.uk/wp-content/uploads/2016/04/ict\\_pedagogy.pdf](http://mirandanet.ac.uk/wp-content/uploads/2016/04/ict_pedagogy.pdf)
- Creighton, T. (2003). *The principal as technology leader*. Thousand Oaks, CA: Corwin Press Inc.
- Creswell, J. W. (2002). *Educational research: Planning, conducting, and evaluating quantitative*. Upper Saddle River, NJ: Prentice Hall.
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed method approaches* (2<sup>nd</sup> ed.). Thousand Oaks, CA: Sage.
- Creswell, J. W. (2005). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (2<sup>nd</sup> ed.). Upper Saddle River, NJ: Pearson Education.
- Creswell, J. W. (2009). *Research Design : Qualitative, quantitative and mixed method approaches* (3<sup>rd</sup> ed.). Thousand Oaks, CA: Sage.
- Creswell, J. W. (2010). *Mapping the developing landscape of mixed methods research*. SAGE Handbook of mixed methods in social & behavioral research, 2, 45-68.
- Creswell, J. W. (2014). *Educational research: planning, conducting, and evaluating quantitative and qualitative research* (4<sup>th</sup> ed.). Harlow, UK: Pearson Dede.
- Creswell, J. W, Clark, V. L., Gutman, M. L., & Hanson, W. E. (2003). *Designing and conducting mixed-methods research*. Thousand Oaks, CA: Sage.
- Cronbach, L.J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16, 297-334.
- Crowther, F., Kaagan, S., Ferguson, M., & Hann, L. (2009). *Developing teacher leaders: How teacher leadership enhances school success*. Thousand Oaks, CA: Corwin Press.
- Cuban, L. (2001). *Oversold and underused: Computers in the classroom*. Cambridge, MA: Harvard University Press.

- Daniel, P. T., & Nance, J. P. (2002). The role of the administrator in instructional technology policy. *BYU Educ. & LJ*, 211.
- Dares, J.C. (2006). *Beginning the principalship: A practical guide for new school leaders*. Thousand Oaks, CA: Corwin Press.
- Datnow, A., & Castellano, M. E. (2001). Managing and guiding school reform: Leadership in success for all schools. *Educational Administration Quarterly*, 37(2), 219-249.
- Davies, B., Ellison, L., & Bowring-Carr, C. (2005). *School leadership in the 21st century: developing a strategic approach*. Psychology Press.
- Davies, P. M. (2010). On school educational technology leadership. *Management in Education*, 24(2), 55-61. doi:10.1177/0892020610363089
- Deal, T. and Peterson, K. (1990). *The principal's role in shaping school culture*. [Washington, D.C.]: U.S. Dept. of Education, Office of Educational Research and Improvement, Programs for the Improvement of Practice.
- Deluga, R. J., & Souza, J. (2011). The effects of transformational and transactional leadership styles on the influencing behaviour of subordinate police officers. *Journal of Occupational Psychology*, 64(1), 49-55. Diperoleh daripada <http://dx.doi.org/10.1111/j.2044-8325.1991.tb00540.x>
- Department of Education Training and Youth Affairs (DETYA). (2000). Good practice and leadership in the use of ICT in school, edNA Online, Adelaide. Diperoleh daripada <http://www.edna.edu.au/sibling/leadingpractice>
- Desimone, L. M., Porter, A. C., Garet, M. S., Yoon, K. S., & Birman, B. F. (2002). Effects of professional development on teachers' instruction: Results from a three-year longitudinal study. *Educational evaluation and policy analysis*, 24(2), 81-112.
- Dexter, S. (2011). School technology leadership: Artifacts in systems of practice. *Journal of School Leadership*, 21(2), 166-189.
- Dexter, S. (2008). Leadership for IT in schools. Dalam J. Voogt, & G. Knezek (Eds), *International Handbook of Information Technology in Primary and Secondary Education* (ms. 541-554). New York, NY: Springer.
- Dexter, S. (April, 2007). Show me the leadership: The impact of distributed technology leadership teams' membership and practices at four laptop schools, kertas kerja dibentangkan di the 88th Annual Meeting of the American Educational Research Association, April 2007, Chicago, IL.
- Dexter, S. L. (1999). The importance of leadership when implementing technologically focused innovations: Systemic reform or Cargo Cult? Paper presented by 1999 Annual Meeting of the American Educational Research Association, Montreal, Canada.
- Diamantopoulos, A., & Siguaw, J. A. (2006). Formative vs. reflective indicators in measure development: Does the choice of indicators matter?. *British Journal of Management*, 13, 263-282.

- Dictionary, C. E. (1990). *Chambers English Dictionary*, Edinburgh, W. & R. Chambers Ltd.
- Dimmock, C. (1999). Principals and school restructuring: conceptualising challenges as dilemmas. *Journal of Educational Administration*, 37(5), 441-462. Diperoleh daripada <https://doi.org/10.1108/09578239910288414>
- Dockstader, J. (1999). Teachers of the 21st century know the what, why, and how of technology. *THE journal*, 26(6), 73-75.
- Duarte, P.A.O. & Raposo, M.L.B. (2010). A PLS model to study brand preference an applicxation to the mobile phone market, dalam Vinzi, V.E. (Ed.): *Handbook of Partial Least Squares: Concepts, methods, and applications*, ms.449–485, Springer, New York.
- Dubrin, A. (2007). *Leadership: Research findings,practise, and skills* (5th ed.). Boston. M.A: Houghton Mifflin Company.
- Dugger, W., Jr. (2007). The status of technology education in the United States. *Technology Teacher*, 67(1), 14-21.
- Dunham, C. (2012). *Principals Roles and Responsibilities in Technology Integration in Rural Georgia* (Disertasi kedoktoran, Georgia Southern University). Diperoleh daripada <https://digitalcommons.georgiasouthern.edu/cgi/viewcontent.cgi?article=1788&context=etd>
- Edwards, G., & Gill, R. (2012). Transformational leadership across hierarchical levels in UK manufacturing organizations. *Leadership & Organization Development Journal*, 33(1), 25-50.
- Elliott, A. C., & Woodward, W. A. (2007). *Statistical analysis quick reference guidebook: With SPSS examples*. Sage.
- Ellis, H., Havard, B., Hastings, N., & McArthur, A. (2016). Educational Leaders As Technology Leaders: Technology Literacy Skill Development, kertas kerja dibentangkan di Society for Information Technology & Teacher Education International Conference, Mac 2016, Chesapeake, VA: Association for the Advancement of Computing in Education (AACE).
- Elmore, R. (2006). Breaking the cartel. *Phi Delta Kappan*, 87(7), 517-518.
- Ertmer, P.A., Bai, H., Dong, C., Khalil, M., Park, S.H. & Wang, L. (2002). Technology leadership: shaping administrators' knowledge and skills through an online professional development course, kertas kerja dibentangkan di Association for the Advancement of Computing in Education (AACE) 13th International Conference of Society for Information Technology and Teacher Education (SITE), Nashville, TN: Association for the Advancement of Computing in Education (AACE).
- Esplin, N. L. (2017). *Utah Elementary School Principals' Preparation as Technology Leaders*. All Graduate Theses and Dissertations. 5774. <https://digitalcommons.usu.edu/etd/5774>

- Evers, A., Van der Heijden, B., & Kreijns, K. (2016). Organisational and task factors influencing teachers' professional development at work. *European Journal Of Training And Development*, 40(1), 36-55. <http://dx.doi.org/10.1108/ejtd-03-2015-0023>
- Falk, R. F., & Miller, N. B. (1992). *A primer for soft modeling*. University of Akron Press.
- Fauzi Hussin, Jamal Ali & Mohd Saifoul Zamzuri Noor. (2014). *Kaedah penyelidikan dan analisis SPSS*. Sintok: Universiti Utara Malaysia Press.
- Feldner, L. M. C. (2003). *The role of the school administrators in supporting teachers in the integration of educational technology into K-12 classrooms* (Disertasi kedoktoran yang tidak diterbitkan). University of North Dakota, Grand Forks, ND.
- Field, A. (2009). *Discovering statistics using SPSS* (3<sup>rd</sup> ed.). London: Sage Publications.
- Fischer, M. A. (2014). *Exploring the relationship between authentic leadership and project outcomes and job satisfaction with information technology professionals*. (Disertasi kedoktoran). Diperoleh daripada <http://eric.ed.gov/?q=information on technology leadership&id=ED556924>
- Fisher, D. M., & Waller, L. R. (2013). The 21st century principal: A study of technology leadership and technology integration in Texas K-12 schools. *The Global E Learning Journal Volume*, 2(4), 1-44.
- Flanagan, L. & Jacobsen, M. (2003). Technology leadership for the twenty-first century principal. *Journal of Educational Administration*, 41(2), 124-42.
- Fletcher, G.H. (2009). A matter of principals. *Transforming Education through Technology*, 36(5), 22-28.
- Florida Department of Education. (2006). Florida principal leadership standards. Diperoleh daripada <http://www.floridaschoolleaders.org/fpls.aspx>
- Fong, S. F., Ch'ng, P. E., & Por, F. P. (2013). Development of ICT competency standard using the Delphi Technique. *Procedia - Social and Behavioral Sciences*, 103, 299-314.
- Ford, J. I. (2000). *Identifying technology leadership competencies for Nebraska's K-12 technology leaders* (Disertasi Kedoktoran yang tidak diterbitkan). University of Nebraska- Lincoln, Nebraska.
- Fowler, Jr. Floyd J. (1993) *Survey Research Methods* (2nd ed.). London: Sage Publications.
- Fraenkel, J., Wallen, N., & Hyun, H. (2011). *How to design and evaluate research in education* (8th ed.). New York, NY: McGraw-Hill.
- Fraenkel, J.R., & Wallen, N.E. (1990). *How to design and evaluate research in education*. New York, NY: McGraw-Hill.

- Frey, Lawrence R., Carl H. Botan, & Gary L. Kreps. (2000). *Investigating Communication: An Introduction to Research Methods* (2nd ed.). Boston: Allyn and Bacon.
- Fullan, M (2001a). *Leading in a culture of change*. San Francisco, CA: Jossey-Bass.
- Fullan, M., & Steigelbauer, S. (1991). *The new meaning of educational change* (2nd ed.). New York: Teachers College Press,
- Garet, M., Porter, A., Desimone, L., Birman, B. and Suk Yoon, K. (2001). What makes professional development effective?. Results from a national sample of teachers. *American Educational Research Journal*, 38(4), 915-945.
- Gay, L. R., & Airasian, P. (2003). *Educational research: Competencies for analysis and application* (7<sup>th</sup> ed.). Upper Saddle River, NJ: Pearson Education.
- Gay, L., & Airasian, P. (2000). *Educational research: Competencies for analysis and application* (6th ed.). Columbus, OH: Merrill.
- Gay, L., Mills, G., & Airasian, P. (2006). *Educational research: Competencies for analysis and applications*. New Jersey: Pearson Education, Inc.
- Gay, L., R., & Airasian, P. (2006). *Educational research: Competencies for analysis and application* (8th ed.). Columbus, OH: Merrill.
- Geisser, S. (1974). A predictive approach to the random effect model. *Biometrika*, 61(1), 101.
- Ghozali, I. 2006. *Structural Equation Modeling; Metode alternatif dengan PLS*. Semarang: Badan Penerbit Undip.
- Gilley, A., Gilley, J. W., & McMillan, S. (2009). Organizational change: Motivation, communication, and leadership effectiveness. *Performance Improvement Quarterly*, 21(4), 75-94.
- Gilman, D. A., & Lanman-Givens, B. (2001). Where have all the principals gone? *Educational leadership*, 58(8), 72-74.
- Ginsberg, R. and McCormick, V. (1998). Computer use in effective schools. *Journal of Staff Development*, 19(1), 22-25.
- Glatthorn, A. A. (2000). *The principal as curriculum leader: Shaping what is taught and tested*. Thousand Oaks, CA: Corwin Press.
- Gosmire, D., & Grady, M. L. (2007). A bumpy road: Principal as technology leader. *Principal Leadership*, 7(6), 16-21.
- Gotz, O., Liehr-Gobbers, K., & Krafft, M. (2010). Evaluation of Structural Equation Models using the Partial Least Squares (PLS) Approach. In V. E. Vinzi, W. W. Chin, J. Henseler, & H. Wang (Eds.), *Handbook of Partial Least Squares Concept, Methods and Applications* (pp. 691–711). Springer Berlin Heidelberg.



- Grady, M. L. (2011). *Leading the technology-powered school*. Thousand Oaks, CA: Corwin Press.
- Grant, C. M. (1996). Professional development in a technological age: New definitions, old challenges, new resources. Diperoleh daripada <http://ra.terc.edu/publications>
- Greaves, T., Hayes, J., Wilson L., Gielniak, M., & Peterson, R. (2010). The technology factor: Nine keys to student achievement and cost-effectiveness [Dokumen pdf].
- Grey-Bowen, J. E. (2010). *A study of technology leadership among Elementary Public School Principals in Miami-Dade County* (Disertasi kedoktoran). Didapati daripada ProQuest Dissertations and Theses databases. (UMI No. 3427096).
- Grissom, J. A., & Harrington, J. R. (2010). Investing in administrator efficacy: An examination of professional development as a tool for enhancing principal effectiveness. *American Journal of Education*, 116(4), 583-612.
- Gronn, P. (2008). The future of distributed leadership. *Journal of Educational Administration*, 46(2), 141-58.
- Gurr, D. (2000). School principals and information and communication technology. Paper presented at the International Learning Conference 2000, Melbourne, Australia. Diperoleh daripada [http://staff.edfac.unimelb.edu.au/~davidmg/papers/Gurr\\_Conf\\_Paper.pdf](http://staff.edfac.unimelb.edu.au/~davidmg/papers/Gurr_Conf_Paper.pdf)
- Gurr, D., Drysdale, L., & Mulford, B. (2005). Successful principal leadership: Australian case studies. *Journal of Educational Administration*, 43(6), 539–551.
- Gurr, D., Drysdale, L., & Mulford, B. (2006). Models of successful principal leadership. *School Leadership & Management*, 26(4), 371-395.
- Guskey, T. R. (1986). Staff development and the process of teacher change. *Educational researcher*, 15(5), 5-12.
- Guskey, T. R. (1996). Reporting on student learning. Lessons from the past—prescriptions for the future. In T. Guskey. (Ed.), *Communicating student learning: The 1996 ASCD yearbook* (pp. 13-24). Alexandria, VA: Association of Supervision and Curriculum Development.
- Guskey, T. R. (1997). Research needs to link professional development and student learning. *Journal of staff development*, 18, 36-41.
- Guskey, T. R. (1999). Apply time with wisdom. *Journal of Staff Development*, 20(2), 10 - 15.
- Guskey, T. R. (1999). Moving from means to ends. *Journal of Staff Development*, 20(2), 48.

- Guskey, T. R. (2001). Helping standards make the grade. *Educational Leadership*, 59(1), 20.
- Guskey, T. R. (2002). Professional development and teacher change. *Teachers and teaching*, 8(3), 381-391.
- Guskey, T. R. (2003). What makes professional development effective?. *Phi delta kappan*, 84(10), 748-750.
- Guskey, T., & Sparks, D. (1996). Exploring the relationship between staff development and improvements in student learning. *Journal of Staff Development*, 77(4), 34-48.
- Hadjithoma-Garstka, C. (2011). The role of principal's leadership style in the implementation of ICT policy. *British Journal of Educational Technology*, 42(2), 311- 326.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice*, 19, 139-151.
- Hair J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1995), *Multivariate data analysis with readings*. New Jersey: Prentice Hall.
- Hair J. F., Anderson J., Tatham R. L., & Black, W. C. (1998). *Multivariate data analysis* (5th ed.). Upper Saddle River, NJ: Prentice Hall.
- Hair, J. F., Money, A. H., Samouel, P., & Page, M. (2007). *Research methods for business*. West Sussex: John Wiley & Sons Ltd.
- Hair, J. F., Black, W.C., Babin, B.J., & Anderson, R.E. (2010). *Multivariate data analysis* (7<sup>th</sup> ed.). Upper Saddle River, New Jersey: Prentice Hall.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2013). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Los Angeles: Sage.
- Hair , J. F., Hult, G.T., Ringle, C.M., & Sarstedt, M.(2014) *A primer on partial least squares structural equation modeling (PLS-SEM)*. Los Angeles: Sage
- Hair, J.F., Black, W.C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis with reading*. New Jersey: Prentice Hall.
- Hair, J. F., Black, W.C., Babin, B.J., & Anderson, R.E. (2014). *Multivariate data analysis* (7<sup>th</sup> ed.). Upper Saddle River, New Jersey: Prentice Hall.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2<sup>nd</sup> ed.). Thousand Oaks, California: Sage.
- Hall, G. E. & Hord, S. M. (2011). Implementation: Learning builds the bridge between research and practice. *Journal of Staff Development*, 32(4), 52-57.

- Hallinger, P. (1992). The evolving role of American principals: From managerial to instructional to transformational leaders. *Journal of Educational Administration*, 30(3), 35-49.
- Hallinger, P. (2013). A conceptual framework for systematic reviews of research in educational leadership and management. *Journal of Educational Administration*, 51(2), 126-149. Diperoleh daripada <https://doi.org/10.1108/09578231311304670>
- Hallinger, P., & Heck, R. (2009). Distributed leadership in schools: Does system policy make a difference?. Dalam A. Harris (Ed.), *Distributed Leadership* (ms. 101-117). New York, NY: Springer Science Business.
- Hamilton, B. (2007). *Philosophy of integration: IT's elementary! Integrating technology in the primary grades*. Eugene, OR: ISTE.
- Hamsha, I. (2011). *Evaluation of Multimedia Super Corridor (MSC Malaysia) contribution in Malaysia economy*. (Disertasi kedoktoran, Ritsumeikan Asia Pasific University). Diperoleh daripada <http://r-cube.ritsumei.ac.jp/bitstream/10367/3642/1/51209604.pdf>
- Hamzah, M. I. M., Juraime, F., Hamid, A. H. A., Nordin, N., & Attan, N. (2014). Technology leadership and its relationship with school-Malaysia Standard of Education Quality (School-MSEQ). *International Education Studies*, 7(13), 278-285
- Harris, A., Jones, M., Sharma, S., & Kannan, S. (2013). Leading educational transformation in Asia: Sustaining the knowledge society. *Asia Pacific Journal of Education*, 33(2), 212–221. doi:10. 1080/02188791.2013.782802
- Harris, J., Mishra, P., & Koehler, M. (2009). Teachers' technological pedagogical content knowledge and learning activity types: curriculum-based technology integration reframed. *Journal of Research on Technology in Education*, 41(4), 393-416.
- Harrison, C., Comber, C., Fisher, T., Haw, K., Lewin, C., Lunzer, E., et al. (2002). Impact 2: The impact of information and communication technologies on pupil learning and attainment [Dokumen pdf]. Diperoleh daripada [http://www.becta.org/uk/page\\_documents/research/ImpaCT2\\_strand1\\_report.pdf](http://www.becta.org/uk/page_documents/research/ImpaCT2_strand1_report.pdf)
- Hasliza Hashim, Siti Munira Mohd Nasri, & Zarina Mustafa. (2016). Cabaran yang dihadapi oleh guru dalam pelaksanaan persekitaran pembelajaran maya frog di bilik darjah. *Asia Pacific Journal of Educators and Education*, 31, 115–129. <http://dx.doi.org/10.21315/apjee2016.31.7>
- Hayden, T., & Barton, R. (2008). First do no harm: Factors influencing teachers' ability and willingness to use their subject teaching. *Computer & Education*, 51, 439-447.
- Haynes, N. M., Arafeh, S., & McDaniels, C. (2014). *Educational Leadership: Perspectives on Preparation and Practice*. United State: University Press of America.

- Haynes, N. M., Arafeh, S., & McDaniels, C. (2015). *Educational Leadership: Perspectives on Preparation and Practice*. United State: University Press of America.
- Hemsworth, D., Muterera, J., & Baregheh, A. (2013). Examining Bass's transformational leadership in public sector executives: A psychometric properties review. *Journal of Applied Business Research*, 29(3), 853-862.
- Henke, K. (2010). Learning in the 21st century: A national report of technological learning. Diperoleh daripada <http://www.21stcenturyskills.com>
- Hennessy, S., Ruthven, K., & Brindley, S. (2005). Teacher perspectives on integrating ICT into subject teaching: commitment, constraints, caution, and change. *Journal of curriculum studies*, 37(2), 155-192.
- Henry, G. T. (1990). *Practical Sampling*. London: Sage Publications.
- Henseler, J. F., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least square modeling in international marketing. *New Challenges to International Marketing Advances in International Marketing*, 20, 277-319.
- Henseler, J., Dijkstra, T. K., Sarstedt, M., Ringle, C. M., Diamantopoulos, A., Straub, D. W... Calantone, R. J. (2014). Common beliefs and reality about partial least squares: comments on Rönkkö & Evermann (2013). *Organizational Research Methods*, 17(2), 182-209.
- Hess, F., & Kelly, A. (2007). Learning to lead: What gets taught in principal-preparation programs. *The Teachers College Record*, 109(1), 244-274.
- Hew, K. F., & Brush, T. (2007). Integrating technology into K-12 teaching and learning: Current knowledge gaps and recommendations for future research. *Education Technology Research & Development*, 55, 223-252.
- Hew, K., & Tan, C. (2016). Predictors of information technology integration in secondary schools: Evidence from a large scale study of more than 30,000 Students. *PLOS ONE*, 11(12), 1-20. <http://dx.doi.org/10.1371/journal.pone.0168547>
- Hildreth, P. M., & Kimble, C. (2002). The duality of knowledge. *Information Research*, 8(1), 1-18.
- Hirsh, S. (2009). A new definition. *Journal of Staff Development*, 30(4), 10-16.
- Hochberg, E. D., & Desimone, L. M. (2010). Professional development in the accountability context: Building capacity to achieve standards. *Educational Psychologist*, 45(2), 89-106.
- Holland, L. (2000). A different divide: preparing tech-savvy leaders. *Leadership*, 30(1), 8-12.
- Honey, M., Culp, K. M., & Carrigg, F. (2000). Perspectives on technology and education research: Lessons from the past and present. *Journal of Educational Computing Research*, 23(1), 5-14.

- Hope, W. C., & Pigford, A. B. (2001). The principal's role in educational policy implementation. *Contemporary Education*, 72(1), 44-47.
- Houchens, G. W., & Keedy, J. L. (2009). Theories of practice: Understanding the practice of educational leadership. *Journal of Thought*, 44(3), 49-61, 110.
- Howell, J. M., & Frost, P. J. (1989). A laboratory study of charismatic leadership. *Organizational Behavior and Human Decision Processes*, 43(2), 243-269. Diperoleh daripada [http://dx.doi.org/10.1016/0749-5978\(89\)90052-6](http://dx.doi.org/10.1016/0749-5978(89)90052-6).
- Hsieh, C-C., & Hsiao, W-C. (2013). The study on the relationship between principals' technology leadership and student learning achievement in elementary school: School ICT use as a mediator. *Journal of Educational Theory and Practice*, 27, 291-324.  
<http://dx.doi.org/10.4236/ce.2016.77096>
- Huang, H. (2004). A study of elementary school principals' instructional leadership strategies in elementary schools in Taipei County (Disertasi yang tidak diterbitkan). National Taiwan Normal University, Taiwan.
- Hughes, J. E., McLeod, S., Dikkers, A. G., Brahier, B., & Whiteside, A. (2005). School technology leadership: Theory to practice. *Academic Exchange Quarterly*, 9(2), 51-55.
- Hughes, M., & Zachariah, S. (2001). An investigation into the relationship between effective administrative leadership styles and the use of technology. *International Electronic Journal For Leadership in Learning*, 5(5), 1-12.
- Hussein, A. (2012). *Mission of public education in Malaysia: The challenge of transformation*. Kuala Lumpur: University of Malaya Press.
- Hussin, F., Ali, J., & Noor, M. S. Z. (2014). *Kaedah penyelidikan & analisis data SPSS*. Pulau Pinang: Universiti Utara Malaysia Press.
- IAB. (2010). *Competency standards for Malaysian school principals*. Malaysia. Kuala Lumpur: Institute of Aminuddin Baki, Ministry of Education.
- IAB. (2014). *NPQEL Menjana kepemimpinan masa hadapan: Menggilap permata [NPQEL generating future leaders: Enhancing gems]*. Kuala Lumpur: Institute of Aminuddin Baki, Ministry of Education.
- Imam Ghozali, & Hengky Latan. (2015). *Partial least squares: Konsep, teknik dan aplikasi menggunakan program SmartPLS 3.0 untuk penelitian empiris*. Semarang: Badan Penerbit Universitas Diponegoro.
- Inkpen, K. M., Ho-Ching, W., Kuederle, O., Scott, S., & Shoemaker, G. (1999). This is fun! We're all best friends and we're all playing: Supporting children's synchronous collaboration, kertas kerja dibentangkan di the Computer Support for Collaborative Learning Conference, Stanford, CA.

- Inkster, C. D. (1998). *Technology leadership in elementary school principals: A comparative case study* (Disertasi kedoktoran yang tidak diterbitkan). University of Minnesota, Minnesota.
- International Society for Technology in Education (ISTE). (2014). ISTE standards administrators [Dokumen pdf]. Diperoleh daripada <http://www.iste.org/standards.pdf>
- International Society for Technology in Education. (2009). National education technology standards for administrators [Dokumen Pdf]. Diperoleh daripada <http://www.iste.org/docs/pdfs/nets-a-standards.pdf>
- Ishak Sin. & Nor Asikin Salleh. (2003). Era globalisasi: Pendidikan dan cabaran. *Jurnal Pengurusan dan Kepimpinan Pendidikan*, 13(1), 19-28.
- ISTE. (2002). National educational technology standards for administrators [Dokumen pdf]. Diperoleh daripada <http://cnets.iste.org/administartors.pdf>
- ISTE. (2009). International Society of Technical Educators. (2009). International Society Of Technical Educators National Educational Technology Standards For Administrators. Diperoleh Daripada [http://cnets.iste.org/administrators/a\\_stands.html](http://cnets.iste.org/administrators/a_stands.html)
- Jabatan Audit Negara. (2014). Audit negara Malaysia. Diperoleh daripada <https://www.audit.gov.my>
- Jabatan Audit Negara. 2014. Keberkesanan program kelayakan profesional pemimpin pendidikan kebangsaan (NPQEL) ambilan 1 tahun 2013. Jabatan Pembangunan Pengurus, Pemimpin dan Eksekutif Pendidikan (JPPPEP) (2013) [Dokumen pdf]. Diperoleh daripada [www.astroawani.com/.../laporan-ketua-audit-negara-tim-tegur-per](http://www.astroawani.com/.../laporan-ketua-audit-negara-tim-tegur-per)
- Jabatan Pendidikan Negeri Kedah. (2017). Data pengurusan sistem sekolah. 30 Jun 2017
- Jakes, D. (2004). Effective staff development in technology. Not necessarily a oxymoron [Dokumen pdf]. Diperoleh daripada [http://www.archive.techlearning.com/techlearning/pdf/events/techforum/chi04/vault/1/Jakes\\_Presentation2.pdf](http://www.archive.techlearning.com/techlearning/pdf/events/techforum/chi04/vault/1/Jakes_Presentation2.pdf)
- Jamieson-Proctor, R. M., Burnett, P. C., Finger, G., and Watson, G. (2006). ICT integration and teachers' confidence in using ICT for teaching and learning in Queensland state schools, *Australasian Journal of Educational Technology*, 22(4), 511-530.
- Jamieson-Proctor, R. M., Watson, G., Finger, G., Grimbeek, P., & Burnett, P.C. (2007). Measuring the use of information and communication technologies (ICTs) in the classroom. *Computers in the Schools*, 24(1/2), 167-184.

- Jamieson-Proctor, R., Finger, G., & Albion, P. (2010). Auditing the TPACK capabilities of final year teacher education students: Are they ready for the 21st century?, kertas kerja dibentangkan di the 2010 Australian Computers in Education Conference (ACEC 2010), Melbourne, Australia, 6-9 April 2010, Melbourne, Australia: Australian Council for Computers in Education Publishing.
- Jamieson-Proctor, R., Watson, G., & Finger, G. (2003). Information and communication technologies (ICTs) curriculum integration performance measurement [Dokumen pdf]. Diperoleh daripada [https://www.researchgate.net/profile/Peter\\_Grimbeek/publication/29465923\\_Measuring\\_the\\_Use\\_of\\_Information\\_and\\_Communication\\_Technologies\\_ICTs\\_in\\_the\\_Classroom/links/09e415111d3c36c3ad000000/Measuring-the-Use-of-Information-and-Communication-Technologies-ICTs-in-the-Classroom.pdf](https://www.researchgate.net/profile/Peter_Grimbeek/publication/29465923_Measuring_the_Use_of_Information_and_Communication_Technologies_ICTs_in_the_Classroom/links/09e415111d3c36c3ad000000/Measuring-the-Use-of-Information-and-Communication-Technologies-ICTs-in-the-Classroom.pdf)
- Jamieson-Proctor, R., Watson, G., Finger, G., & Grimbeek, P.M. (2005). *An external evaluation of Education Queensland's ICT Curriculum Integration Performance Measurement Instrument*. Brisbane, Qld: Griffith University.
- Jimenez, E., Nguyen, V., & Patrinos, H. A. (2012). Stuck in the Middle? Human Capital Development and Economic Growth in Malaysia and Thailand [Dokumen pdf]. Diperoleh daripada <http://www.eaber.org/sites/default/files/paftad/chp%208%20Malaysia%20Thailand%20final.pdf>
- Johnston, M., & Cooley, N. (2001). *What we know about: Supporting new models of teaching and learning through technology*. Arlington, VA: Educational Research Service.
- Jones, M., Adams, D., Hwee Joo, M. T., Muniandy, V., Perera, C. J., & Harris, A. (2015). Contemporary challenges and changes: principals' leadership practices in Malaysia. *Asia Pacific Journal of Education*, 35(3), 353-36.
- Jung, D. I., & Sosik, J. J. (2002). Transformational leadership in work groups: The role of empowerment, cohesiveness, and collective-efficacy on perceived group performance. *Small Group Research*, 33(3), 313-336. Diperoleh daripada <http://dx.doi.org/10.1177/10496402033003002>
- Kadela, T. (2002). *Technology leadership of elementary principals: Standards competencies, and integration* (Disertasi kedoktoran, Seton Hall University, New Jersey). Diperoleh daripada <http://scholarship.shu.edu/cgi/viewcontent.cgi?article=2490&context=dissertations>
- Kamaruzaman Moidunny. (2014). *Keberkesanan program kelayakan profesional kepengetuaan kebangsaan (NPQEL)* (Tesis doktor falsafah yang tidak diterbitkan). Universiti Kebangsaan Malaysia.

- Kang, M., Heo, H., & Kim, M. (2011). The impact of ICT use on new millennium learners' educational performance. *Interactive Technology and Smart Education*, 8(1), 18-27.
- Kearsley, G., & Lynch, W. (1992). Educational Leadership in the age of technology: The new skills. *Journal of Research on Computing in Education*, 25 (1), 50-60.
- Keith, D. L. (2011). Principal desirability for professional development. *Academy of Educational Leadership Journal*, 15(2), 95.
- Kementerian Kewangan Malaysia. (2014). Kementerian kewangan. Diperoleh daripada <https://www.researchgate.net/.../57e20c3808aed96fbbb>
- Kementerian Pendidikan Malaysia. (2013). *Pelan pembangunan pendidikan Malaysia 2013-2025 (Pendidikan prasekolah hingga lepas menengah)*. Putrajaya: KPM.
- Kementerian Pendidikan Malaysia. Pelan Induk Pembangunan Pendidikan 2006-2010 [Dokumen pdf]. Diperoleh daripada [http://www.academia.edu/19684754/PELAN\\_INDUK\\_PEMBANGUNAN\\_PENDIDIKAN\\_PIPP](http://www.academia.edu/19684754/PELAN_INDUK_PEMBANGUNAN_PENDIDIKAN_PIPP)
- Kerlinger, F. N. (1986). *Foundations of behavioural research*. New York, NY: Holt, Rinehart & Winston.
- Kerlinger, F. N., & Lee, H. B. (2000). *Foundations of behavioral research* (4th ed.). Holt, NY: Harcourt College Publishers.
- Kincaid, T. and Feldner, L. (2002). Leadership for technology integration: The role of principals and mentors. *Educational Technology & Society*, 5(1), 75-80.
- Knapp, M. S. (2003). Professional development as a policy pathway. *Review of Research in Education*, 27, 109-157.
- Koh, W. L., Steers, R. M., & Terborg, J. R. (1995). The effects of transformational leadership on teacher attitudes and student performance in Singapore. *Journal of Organisational Behaviour*, 16, 319 – 333.
- Kowch, E. (2009). New capabilities for cyber charter school leadership: An emerging imperative for integrating Educational Technology and Educational Leadership knowledge. *Tech Trends Special Edition*, 53(1), 40-49.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining size for research activities. *Educational and Psychological Measurement*, 30, 607-610.
- Kurland, H., Peretz, H., & Hertz-Lazarowitz, R. (2010). Leadership style and organizational learning: The mediate effect of school vision. *Journal of Educational Administration*, 48(1), 7-30. <http://dx.doi.org/10.1108/09578231011015395>



- Lafont, S.L.B. *The relationship between principals' technology leadership and the teachers' use of technology*. Ph.D. thesis, Southeastern Louisiana University. Diperoleh pada April 27, 2018 from <https://www.learntechlib.org/p/121481/>.
- Lai, A. (2011). Transformational-transactional leadership theory. *AHS Capstone Projects. Paper, 17*.
- Lai, K. W., & Pratt, K. (2004). Information and communication technology (ICT) in secondary schools: The role of the computer coordinator. *British Journal of Educational Technology, 35*(4), 461-475.
- Langran, E. (2006). *Technology leadership: how principals, technology coordinators, and technology interact in K-12 Schools* (Disertasi kedoktoran, University of Virginia, United States). Diperoleh daripada <https://www.learntechlib.org/p/36178/>
- Laporan Kiraan Permulaan Banci Penduduk dan Perumahan Malaysia (2010). Jabatan Perangkaan Malaysia, Putrajaya.
- Latham, B. (2007). Sampling: what is it? [Dokumen pdf]. Diperoleh daripada [www.webpages.acs.ttu.edu/riatham/.../Sampling\\_Methodology\\_Paper.pdf](http://www.webpages.acs.ttu.edu/riatham/.../Sampling_Methodology_Paper.pdf)
- Law, N., Yuen, H. K., Ki, W. W., Li, S. C., & Lee, Y. (1999). SITES – Hong Kong SAR Report. Hong Kong: Centre for IT School and Teacher Education, University of Hong Kong [Dokumen pdf]. Diperoleh daripada [https://www.researchgate.net/profile/Sandy\\_Li4/publication/237131841\\_Second\\_International\\_Information\\_Technology\\_in\\_Education\\_Study\\_Hong\\_Kong\\_SAR\\_Report/links/0c96053b9f19049bc0000000/Second-International-Information-Technology-in-Education-Study-Hong-Kong-SAR-Report.pdf](https://www.researchgate.net/profile/Sandy_Li4/publication/237131841_Second_International_Information_Technology_in_Education_Study_Hong_Kong_SAR_Report/links/0c96053b9f19049bc0000000/Second-International-Information-Technology-in-Education-Study-Hong-Kong-SAR-Report.pdf)
- Lawless, K.A., & Pellegrino, J.W. (2007). Professional development in integrating technology into teaching and learning: Knowns, unknowns and ways to pursue better questions and answers, *Review of Educational Research, 77*(4), 575-614.
- LeBaron, J. (2009). *Research report for GeSCI meta-review of ICT in education*. Cullowhee, NC: Global e-School and Communities Initiative, GeSCI.
- Leithwood, K. (1994). Leadership for school restructuring. *Educational Administration Quarterly, 30*, 498-518.
- Leithwood, K. , & Jantzi, D. (1990). Transformational leadership: How principals can help reform school cultures. *School Effectiveness and School Improvement, 1*(4), 249-280.
- Leithwood, K. , Jantzi, D., & Dart, B. (1993). Toward a multilevel conception of policy implementation processes based on commitment strategies. In S. B. Bacharach & R. T. Ogawa (Eds.), *Advances in research and theories of school management and educational policy* (Vol. 2, pp. 241-271). Greenwich, CT: JAI.

- Leithwood, K., & Jantzi, D. (2005). Transformational leadership. Dalam Davies, B. (Ed.), *The Essentials of School Leadership* (ms. 31-43). Thousand Oaks, CA: Sage Publications Inc.
- Leithwood, K., & Jantzi, D. (2006). Transformational school leadership for large-scale reform: Effects on students, teachers, and their classroom practices. *School Effectiveness and School Improvement*, 17(2), 201-227.
- Leithwood, K., Louis, K. S., Anderson, S., & Wahlstrom, K. (2004). *How leadership influences student learning*. New York: The Wallace Foundation.
- Leithwood, K., Mascall, B., & Strauss, T. (2009). What we have learned and where we go from here. . In Leithwood, K., Mascall, B., and Strauss, T. (Eds.), *Distributed Leadership According to the Evidence*. New York: Routledge.
- Leithwood, K.A. & Riehl, C. (2003). *What we know about successful school leadership*. Philadelphia, PA: Laboratory for Student Success, Temple University.
- Leithwood, K.A., & Sun, J. (2012) The nature and effects of transformational school leadership: A meta-analytic review of unpublished research. *Educational Administration Quarterly*, 48(3), 387-423
- Leonard, L., & Leonard, P. (2006). Leadership for technology integration: Computing the reality. *Alberta Journal of Educational Research*, 52(4). Diperoleh dari <http://ajer.synergiesprairies.ca/ajer/index.php/ajer/article/view/576/561>
- Leong Mei Wei, Chua Yan Piaw, & Sathiamoorthy Kannan. (2016). Relationship between principal technology leadership practices and teacher ICT competency. *Malaysian Online Journal Of Educational Management*, 4(3), 13-36. doi: 10.22452/mojem.vol4no3.2
- Leong Mei Wei, Chua Yan Piaw, Sathiamoorthy Kannan, Shafinaz A. Moulod (2016). Relationship between teacher ICT competency and teacher acceptance and use of School Management System (SMS). *Malaysian Online Journal Of Educational Management*, 4(4), 36-52.
- Leong, M. W. (2010). *Principal technology leadership and the level of ict application of teachers at a secondary school in Seremban district*. (Tesis yang tidak diterbitkan). Universiti Malaya, Kuala Lumpur.
- Levin, J. A., & Datnow, A. (2012). The principal role in data-driven decision making: Using case-study data to develop multi-mediator models of educational reform. *School Effectiveness and School Improvement*, 23(2), 179-201. doi: 10.1080/09243453.2011.599394
- Levine, A. (2005). *Educating school leaders* (Penerbitan). The Education Schools Project

- Li, Q., & Ma, X. (2010). A meta-analysis of the effects of computer technology on school students' mathematics learning. *Educational Psychology Review*, 22(3), 215-243. <http://dx.doi.org/10.1007/s10648-010-9125-8>
- Lingard, B., Ladwig, J., Mills, M., Bahr, M., Chant, D., & Warry, M. (2001). *The Queensland school reform longitudinal study*. Brisbane, Australia: Education Queensland. Markauskaite.
- Locke, L. F., Spirduso, W. W., & Silverman, S. J. (2007). *Proposals that work: A guide for planning dissertations and grant proposals* (5th ed.). Thousand Oaks, CA: Sage
- Louis, K. S. (1994). Beyond managed change: Rethinking how schools impress. *School Effectiveness and School Improvement*, 5, 2-24.
- Lu, H. Y. (2013). *Technology integration and pedagogical innovations in Malaysia Higher Education Institutions* (Tesis doktor falsafah yang tidak diterbitkan). University of Malaya, Kuala Lumpur.
- Lussier, R.N. & Achua, C.F. (2010). *Leadership: Theory, application, & skill development* (5th Ed.). Mason, OH: South-Western.
- Lutz, J. A. (2008). *The professional development of school principals* (Disertasi kedoktoran). Boleh didapati daripada Proquest Dissertations and Theses database. (UMI No. 304819960).
- Macaulay, L. S. (2009). *Elementary principals as technology instructional leaders*. (Doctoral dissertation). Diperoleh daripada [http://www.iste.org/Content/NavigationMenu/Research/NECC\\_Research\\_Paper\\_Archives/NECC2009/](http://www.iste.org/Content/NavigationMenu/Research/NECC_Research_Paper_Archives/NECC2009/)
- Machado, L. J., & Chung, C. J. (2015). Integrating technology: The principals' role and effect. *International Education Studies*, 8(5), 43-53.
- MacNealy, M. S. (1999). *Strategies for empirical research and writing*. Boston: Allyn & Bacon.
- Marks, H. M., & Printy, S. M. (2003). Principal leadership and school performance: An integration of transformational and instructional leadership. *Educational Administration Quarterly*, 39(3), 370-397. DOI: 10.1177/0013161X03253412
- Marzano, R. J., Waters, T., & McNulty, B. A. (2005). *School leadership that works: From research to results*. Alexandria, VA: Association for Supervision and Curriculum Development
- Mas Nida, M. K., Wong, S. L., & Ayub, A. F. (2011). Enhancing Teachers' Professional Development Through Laptops. Dalam S. L. Wong, M. K. Mas Nida, S. Abu Daud & T. Othman (Eds.), *Technology & education: Issues, empirical research and applications*. Serdang: Universiti Putra Malaysia Press.

- Maslowski, R. (2001). *School culture and school performance: An explorative study into the organizational culture of secondary schools and their effects*. Enschede: Twente University Press (TUP).
- Mayer, R. (2010). Learning with technology. Dalam Dumont, H., Istance, D. and Benavidespp, F. (Eds), *The Nature of Learning: Using Research to Inspire Practice* (ms. 179-196). Paris, France: OECD Publishing.
- McCull-Kennedy, J. R., & Anderson, R. D. (2002). Impact of leadership style and emotions on subordinate performance. *The Leadership Quarterly*, 13(5), 545-559.
- McLeod, S. (2005). *Principals technology leadership assessment* [Dokumen pdf]. Center for the Advanced Study of Technology Leadership in Education. Diperoleh daripada <http://schooltechleadership.org/research/projects/ptla/>
- McLeod, S. (2008). Educational technology leadership. *Technology & Learning*, 28 (11), 4.
- McLeod, S., & Richardson, J. W. (2011). The dearth of technology coverage. *Journal of School Leadership*, 21(2), 216-240.
- McLeod, S., & Richardson, J. W. (2013). Supporting effective technology integration and implementation. Dalam M. Militello and J. I. Friend (Eds.), *Principal 2.0: Technology and educational leadership*. Charlotte, NC: Information Age Publishing
- McLeod, S., Bathon, J. M., & Richardson, J. W. (2011). Studies of technology tool usage are not enough: A response to the articles in this special issue. *Journal of Research on Leadership Education*, 6(5), 288-297.
- Means, B. (2010). Technology and education change: Focus on student learning, *Journal of Research on Technology and Education*, 42(3), 285-30.
- Metcalf, W. B. (2012). *K-12 principals' perceptions of their technology leadership preparedness*. (Disertasi kedoktoran, Georgia Southern University). Diperoleh daripada <https://digitalcommons.georgiasouthern.edu/cgi/viewcontent.cgi?article=1400&context=etd>
- Michael, S. (1998). Best practices in information technology (IT) management: Insights from K-12 schools' technology audits. *International Journal of Educational Management*, 12(6), 277-288.
- Michelle Jones, Donnie Adams, Mabel Tan Hwee Joo, Vasu Muniandy, Corinne Jaqueline Perera & Alma Harris (2015). Contemporary challenges and changes: Principals' leadership practices in Malaysia. *Asia Pacific Journal of education*, 35(3), 353-365, doi: 10.1080/02188791.2015.1056591

- Miller, M. L. (2008). A mixed-methods study to identify aspects of technology leadership in elementary schools (Disertasi kedoktoran, Regent University). ProQuest.
- Miller, Makrakis, V., & Sawada, T. (1996). Gender, computers and other school subjects among Japanese and Swedish students, *Computers in Education*, 26,(4), 225-231.
- Mills, S., & Tincher, R. (2003). Be the technology: A developmental model for evaluating technology integration. *Journal of Research on Technology in Education*, 35(3), 382-401.
- Ministry of Education. (2012). *Preliminary Report: Malaysia Education Blueprint*, Kuala Lumpur, Malaysia: Ministry of Education.
- Mitgang, L. D. (2008). Becoming a leader: Preparing school principals for today's schools. *Perspective*, 1(11).
- Mohd. Izham Mohd Hamzah, Faridah Juraime, Aida Hanim A. Hamid, Norazah Nordin & Noraini Attan. (2014). Technology leadership and its relationship with school-Malaysia Standard of Education Quality (School-MSEQ). *International Education Studies*, 7(13), 278-285.
- Mohd. Izham Mohd Hamzah, Faridah Juraime, Azlin Norhaini Mansor. (2016). Malaysian principals' technology leadership practices and curriculum management. *Creative Education*, 7, 922-930.
- Mohd. Izham Mohd Hamzah, Norazah Nordin, Kamaruzaman Jusoff, Rusnah Abd Karim dan Yusma Yusof. (2010). A quantitative analysis of malaysian secondary school technology leadership. *Management Science and Engineering*. 4 (2), 124-130.
- Mueller, J., Wood, E., Willoughby, T., Ross, C., & Specht, J. (2008). Identifying discriminating variables between teachers who fully integrate computers and teachers with limited integration. *Computers & Education*, 51(4), 1523-1537. <http://dx.doi.org/10.1016/j.compedu.2008.02.003>.
- Murray, C. (2004). Dalam Ed Tech, leaders matter most. (cover story). *eSchool News*, 7(7), 1-25.
- Mustamin, & Yasin, M. (2012). The competence of school principals: What kind of need competence for school success?. *Journal of Education and Learning*, 6(1), 33-42.
- Myunghee Kang, Heeok Heo, & Minjeong Kim. (2011). The impact of ICT use on new millennium learners' educational performance. *Interactive Technology and Smart Education*, 8(1),18 – 27.
- National Center for Education Statistics. (2010). Rural education in America. U. S. Department of Education, Institute of Educational Sciences. Diperoleh daripada <http://nces.ed.gov/surveys/ruraled/page2.asp>

- Neufeld, D. J., Dong, L., & Higgins, C. (2007). Charismatic leadership and user acceptance of information technology. *European Journal of Information Systems*, 16(4), 494-510.
- Ng, F. S., David, & Jeanne, M. H. (2012). How leadership for an ICT reform is distributed within a school. *International Journal of Educational Management*, 26(6), 529-549. <https://doi.org/10.1108/09513541211251370>
- Ng, W. (2008). Transformational leadership and the intergration of information and communications technology into teaching. *The Asia-Pacific Education Researcher*, 17(1), 1-14.
- Ng, W. L. (2004). Transformational leadership and integration of information and communications technology in teaching: pre-service teachers' perspectives, kertas kerja dibentangkan di the Global Conference on Excellence in Education and Training, Singapore.
- Noe, R. (2013). *Employee training and development* (6th ed.). London: McGraw-Hill Education.
- Noraini Abdullah, Hamidon Khalid & Mohd. Izham Mohd. Hamzah (2015). Amalan Kepimpinan Teknologi Pengetua dalam pengintegrasian ICT di sekolah menengah kebangsaan di Malaysia. Proceeding of the 3rd Global Summit on Education GSE 2015. Kuala Lumpur : Malaysia
- Noraini Abdullah, Hamidon Khalid, & Mohd Izham Mohd Hamzah. (2015). *Proceeding of the 3 rd Global Summit on Education GSE 2015 (e-ISBN 978-967-0792-01-1), 9-10 March 2015, Kuala Lumpur, MALAYSIA.* <http://WorldConferences.net>
- Noraini Idris. (2013). *Penyelidikan dalam pendidikan* (2nd ed.). Shah Alam, Selangor: McGraw Hill Education.
- North Central Regional Educational Laboratory (NCREL) and METIRI Group (2003), enGauge 21st Century Skills: *Literacy in the Digital Age*, Boleh didapati daripada <http://pict.sdsu.edu/>
- Northouse, P. (2007). *Leadership : Theory and Practice* (4th ed.). London: Sage Publications.
- Northouse, P. G. (2013). *Leadership: Theory and practice* (6th ed.). Thousand Oaks, CA: SAGE.
- Nulty, D. D. (2008). The adequacy of response rates to online and paper surveys: What can be done?. *Assessment and Evaluation in Higher Education*, 33(3), 301-314.
- Nunnally, J. C. (1978). *Psychometric theory*, (2nd ed). New York: McGraw-Hill.
- O'Dwyer, L. M., Russell, M., & Bebell, D. J. (2004). Identifying teacher, school, and district characteristics associated with elementary teachers' use of technology: A multilevel perspective. *Education Policy Analysis Archives*, 12(48), 1-33.

- Odumeru, J. A., & Ogbonna, I. G. (2013). Transformational vs. transactional leadership theories: Evidence in literature. *International Review of Management and Business Research*, 2(2), 355.
- OECD (2009). Education at a glance: OECD Indicators. Diperoleh daripada <http://www.oecd.org/education/skills-beyond-school/educationataglance2009oecdindicators.htm>
- OECD. (2013). TALIS Report. Diperoleh daripada <https://www.oecd.org/edu/school/TALIS-2013-Executive-Summary>
- Oppenheim, A. N. (1992). *Questionnaire design, interviewing and attitude measurement*. London, UK: Pinter Publisher Ltd.
- Othman Talib. (2013). *Asas penulisan tesis, penyelidikan & statistik* (1st ed.). Serdang, Selangor: Penerbit Universiti Putra Malaysia.
- Oubre, A. J. (2007). *Technology leadership proficiency among school administrators in the twenty-first century schools* (Disertasi kedoktoran yang tidak diterbitkan). The University of Southern Mississippi, Hattiesburg.
- Pacific Policy Research Center. (2010). 21st century skills for students and teachers at Kamehameha Schools [Dokumen pdf]. Diperoleh daripada <http://www.ksbe.edu/spi>
- Page-Jones, A. B. (2008). *Leadership behavior and technology activities: The relationship between principals and technology use in schools*. (Doctoral dissertation, University of Central Florida Orlando, Florida).
- Palant, J. (2001). *SPSS survival guide*. Australia: Allen & Unwin.
- Pallant, J. (2005). *SPSS survival manual*. Crown Nest, NSW: Allen & Unwin.
- Pallant, J. (2016). *SPSS survival manual* (6<sup>th</sup> ed.). England, UK: Open University Press.
- Papa, R. (2011). *Technology leadership for school improvement*. Thousand Oaks: Sage Publications.
- Passey, D., Rogers, C., Machell, J., McHugh, G., & Allaway, D. (2003). The motivational effect of ICT on pupils [Dokumen pdf]. Diperoleh daripada <http://www.dfes.gov.uk/research/data/uploadfiles/rr523new.pdf>
- Peled, Y., Kali, Y., & Dori, Y. (2011). School principals' influence on science teachers' technology implementation: A retrospective analysis. *International Journal of Leadership in Education*, 14(2), 229-245. <http://dx.doi.org/10.1080/13603124.2010.524249>
- Pelgrum, W. J., & Law, N. (2003). *Organizational change and leadership ICT in education around the world: Trends, problems and prospects*. Paris: United Nations Educational, Scientific and Cultural Organization.
- Persaud, B. (2006). *School administrators' perspective on their leadership role in technology integration*. Yayinlanmamis, Walden University, United States.

- Peter, J. P. (1981). Construct validity: A review of basic issues and marketing practices. *Journal of marketing research*, 133-145.
- Peterson, K. (2002). The professional development of principals: Innovations and opportunities. *Educational Administration Quarterly*, 38(2), 213-32.
- Peterson, K. D. (2000). *Teacher evaluation: A comprehensive guide to new directions and practices* (2nd ed.). Thousand Oaks, CA: Corwin Press.
- Pisapia, J. R., Knutson, K., & Coukos, E. D. (1999). The impact of computers on student performance and teacher behavior, kertas kerja dibentangkan di the Annual Meeting of the Florida Educational Research Association, Deerfield Beach, FL. (ERIC Document Reproduction Service No. ED 438323).
- Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, 12, 531-544.
- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, 63, 539-569.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *The Journal of Applied Psychology*, 88(5), 879-903.
- Podsakoff, P. M., MacKenzie, S. B., Moorman, R. H., & Fetter, R. (1990). Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors. *The leadership quarterly*, 1(2), 107-142.
- Portin, B., Schneider, P., DeArmond, M., & Gundlach, L. (2003). *Making sense of leading schools: A study of the school principalship*. Seattle, WA: Center on Reinventing Public Education.
- Potts, M. (1998). *An A-Z of Training and Development*. London: Kogan Page LTD.
- Prensky, M. (2010). *Teaching digital natives: Partnering for real learning*. Thousand Oaks, CA: Corwin.
- Prensky, M. (2013). Our brains extended. *Educational Leadership*, 70(6), 22-27.
- Printy, S. (2010). Principals' influence on instructional quality: Insights from US schools. *School Leadership & Management*, 30(2), 112-126. doi:10.1080/13632431003688005
- Printy, S. (2010). Principals' influence on instructional quality: Insights from US schools. *School Leadership & Management*, 30(2), 111-126. doi:10.1080/13632431003688005
- Rahimah Ahmad, & Ghavifekr, S. (2014). School leadership for the 21st century: A conceptual overview. *Malaysian Online Journal of Educational Management (MOJEM)*, 2(4), 48-61.



- Rauch, C.F. and Behling, O. (1984). Functionalism: Basis for an alternate approach to the study of leadership. *Leaders and Managers: International Perspectives on Managerial Behavior and Leadership*, 45-62. Diperoleh dari <http://dx.doi.org/10.1016/B978-0-08-030943-9.50012-7>
- Ravitch, D. (2010). Why public schools need democratic governance. *Phi Delta Kappan*, 91(6), 24-27.
- Resnick, L., Spillane, J., Goldman, P., & Rangel, E. (2010). Implementing innovation: From visionary models to everyday practice. Dalam Dumont, H., Istance, D. and Benavidespp, F.(Eds), *The Nature of Learning: Using Research to Inspire Practice* (ms. 285-336), Paris, France: OECD Publishing.
- Richardson, J. W., & McLeod, S. (2011). Technology leadership in Native American schools. *Journal of Research in Rural Education*, 26(7), 1-14.
- Richardson, J. W., Bathon, J., Flora, K. L., & Lewis, W. D. (2012). NETS-A scholarship: A review of published literature. *Journal of Research on Technology in Education*, 45(2), 131-151. <https://doi.org/10.1080/15391523.2012.10782600>
- Richardson, W. (2012). Preparing students to learn without us. *Educational Leadership*, 69(5), 22-26.
- Ringle, C. M., Sarstedt, M., & Straub, D. W. (2012). A critical look at the use of PLS-SEM in MIS Quarterly. *MIS Quarterly*, 36(1), iii–xiv.
- Ringstaff, C., & Kelley, L. (2002). The learning return on our educational technology investment: A review of findings from research [Dokumen pdf]. Diperoleh dari [http://www.wested.org/online\\_pubs/learning\\_return.pdf](http://www.wested.org/online_pubs/learning_return.pdf)
- Ritchie, D. (1996). The Administrative Role in the Integration of Technology. *NASSP Bulletin*, 80, 42-52.
- Rivard, L. R. (2010). *Enhancing education through technology: Principal leadership for technology integration in schools* (Disertasi kedokteran, Wayne State University). Diperoleh dari [https://digitalcommons.wayne.edu/cgi/viewcontent.cgi?article=1146&context=oa\\_dissertations](https://digitalcommons.wayne.edu/cgi/viewcontent.cgi?article=1146&context=oa_dissertations)
- Robinson, B. (1994). Technology leadership in the English educational system: From computer systems to systematic management of computers. Dalam G. Kearsley & W. Lynch (Eds), *Educational technology: Leadership perspectives* (ms. 137-152). Englewood Cliffs, NJ: Educational Technology.
- Robinson, J. P., Shaver, P. R., & Wrightsman, L. S. (1991). *Measures of personality and social psychological Attitudes*. New York, NY: Academic Press.
- Rodeghier, M. (1996). *Survey with confidence: A practical guide to survey research using SPSS*. Chicago; SPSS Inc.
- Rogers, E. (2003). *Diffusions of innovations*. New York, NY: Free Press.

- Rogers, P. L. (1999). *Barriers to adopting emerging technologies in education*. Richmond, VA: Virginia Commonwealth University.
- Rogers, P. L. (2000). Barriers to adopting emerging technologies in education. *Journal of Educational Computing Research*, 22, 455-472.
- Rorrer, A. K. & Skrla, L. (2005). Leaders as policy mediators: The reconceptualization of accountability. *Theory into Practice*, 44(1), 53-62.
- Rossafri, M., & Balakrishnan, M. (2007). Translating technology leadership to create excellent instructional leadership. *Educational Leadership and Management Journal*, 17(2), 91-103.
- Rowold, J., & Heinitz, K. (2007). Transformational and charismatic leadership: Assessing the convergent, divergent and criterion validity of the MLQ and the CKS. *The Leadership Quarterly*, 18(2), 121-133.
- Rusnah, A. K. (2007). *Pentadbir sebagai pemimpin teknologi: Kajian di sekolah-sekolah menengah di Negeri Sembilan*. Bangi: Universiti Kebangsaan Malaysia.
- Rutkowski, D., Rutkowski, L., & Sparks, J. (2011). Information and communications technologies support for 21st century teaching: An international analysis. *Journal of School Leadership*, 21(2), 190-215.
- Sabariah Sharif dan Rohani Abdullah. (2006). Kepimpinan pengetua sebagai agen perubahan dalam inovasi komputer dalam pengajaran dan pembelajaran. *Konvensyen Teknologi Pendidikan ke-19*, Jilid 2 896-902.
- Salant, P., & Dillman, D.A. (1994). *How to conduct your own survey*. New York: John Wiley.
- Salazar, P. S. (2007). The professional development needs of rural high school principals: A seven-state study. *The Rural Educator*, 28(3), 20-27.
- Salkind, N. J. (2012). *Exploring research* (8<sup>th</sup> ed.). New Jersey: Pearson Education Limited.
- Samancıoğlu, M., Bağlıbel, M., Kalman, M., & Sincar, M. (2015). The Relationship between Technology Leadership Roles and Profiles of School Principals and Technology Integration in Primary School Classrooms. *Journal of Educational Science Research*, 5(2), 77-96. <http://dx.doi.org/10.12973/jesr.2015.52.5>
- Sandholtz, J. H., Ringstaff, C., & Dwyer, D. C. (1997). *Teaching with technology: Creating student-centered classrooms*. New York: Teachers College, Columbia University.
- Sarstedt, M., Ringle, C. M., Henseler, J., & Hair, J. F. (2014). On the emancipation of PLS-SEM: A commentary on Rigdon (2012). *Long Range Planning*, 47(3), 154-160.

- Sathiamoorthy Kannan. (2013). *Kepimpinan Teknologi Pengetua* [Dokumen pdf]. Diperoleh dari [http://www.iab.edu.my/kict2013/Dr%20Shatia\\_Kepimpinan%20Teknologi.pdf](http://www.iab.edu.my/kict2013/Dr%20Shatia_Kepimpinan%20Teknologi.pdf).
- Sathiamoorthy, K., Leong, M. W., & Mohd Jamil, S. (2011). Principal technology leadership and teachers' ICT applications in two different school settings in Malaysia. Paper presented at the *International Conference on Application of ICT in Economy and Education (ICAICTEE)*, UNWE, Sofia, Bulgaria.
- Schiller, J. (2002). Interventions by school leaders in effective implementation of Information and Communications Technology: Perceptions of Australian principals. *Technology, Pedagogy and Education*, 11(3), 289-301.
- Schiller, J. (2003). Working with ICT: Perceptions of Australian principals. *Journal of Educational Administration*, 41(2), 171-85.
- Schrum, L., Galizio, L. M., & Ledesma, P. (2011). Educational leadership and technology integration: An investigation into preparation, experiences, and roles. *Journal of School Leadership*, 21(2), 241-261.
- Scott, G. (2005). *Educator perceptions of principal technology leadership competencies* (Disertasi kedoktoran, University of Oklahoma). Diperoleh dari <https://www.bluehogreport.com/wp-content/uploads/Suggs-Original-Source-Material-OU-Dissertation.pdf>
- Seezink, A. & Poell, R. F. (2010). Continuing professional development needs of teachers in schools for competence-based vocational education: A case study from The Netherlands, *Journal of European Industrial Training*, 34(5), 455-474, <https://doi.org/10.1108/03090591011049819>
- Sekaran, U. (2000). *Research methods for business: A skill business approach* (3<sup>rd</sup> ed) New York: JohnWiley and Sons.
- Sekaran, U. (2003). *Research methods for business: A skill business approach* (4<sup>th</sup> ed) New York: JohnWiley and Sons.
- Sekaran, U. (1992). *Research method for business: A skill building approach* (2<sup>nd</sup> ed). New York: John Wiley & Sons Inc.
- Sekaran, U. (1999). *Research method for business: A skill building approach* (3<sup>rd</sup> ed). New York: John Wiley & Sons Inc.
- Senge, P. M. (1990). *The fifth discipline. The art and practice of the learning organization*. London, England: Random House.
- Sharp, W. L. (1998). School administrators need technology too. *T.H.E. Journal*, 26(2), 75-76
- Sharp, W. L., & Walter, J. K. (1994). *The principal as school manager*. Lancaster, PA: Technomic.

- Sheppard, B. & Brown, J. (2014). Leadership for a new vision of public school classrooms Technologysmart and learner-centered. *Journal of Educational Administration*, 52(1), 84 – 96.
- Sheppard, B. (2000). Organizational learning and the integration of information and communication technology in teaching and learning, kertas kerja dibentangkan di the Annual Conference of the American Educational Research Association, New Orleans, LA, April 2000.
- Sheppard, B., & Brown, J. (2011). Partnerships and leadership: Transforming classrooms through technology. Dalam Boufooy-Bastick, B. (Ed.), *The International Handbook of Cultures of Teacher Education: Comparative International Issues in Curriculum and Pedagogy, Analytics, Strasbourg* (ms. 151-190).
- Sheppard, B., & Dibbon, D. (2011). Improving the capacity of school system leaders and teachers to design productive learning environments. *Leadership and Policy in Schools*, 10(2), 1-21.
- Sheppard, B., Brown, J., & Dibbon, D. (2009). *School district leadership matters*. New York, NY: Springer.
- Sheppard, B., Seifert, T., & Brown, J. (2011). *Distributed leadership and student use of computer technology in support of their in-school learning: Investigating the Connections*, Annual Conference of the American Educational Research Association, New Orleans, LA, April.
- Shieh, R. S., Chang, W., & Tang, J. (2010). The impact of implementing technology-enabled active learning (TEAL) in university physics in Taiwan. *The Asia-Pacific Education Researcher*, 19(3), 401-415.
- Silins, H. (1992). Effective leadership for school reform. Alberta. *Journal of Educational Research*, 38(4), 317-334.
- Silins, H. C. (1994). The relationship between transformational and transactional leadership and school improvement outcomes. *School effectiveness and school improvement*, 5(3), 272-298.
- Silver, M., Lochmiller, C. R., Copland, M. A., & Tripps, A. M. (2009). Supporting new school leaders: Findings from a university-based leadership coaching program for new administrators. *Mentoring & Tutoring: Partnership in Learning*, 17(3), 215-232.
- Sincar, M. (2013). Challenges school principals facing in the context of technology leadership. *Educational Sciences: Theory & Practice*, 13(2), 1273-1284.
- Sincar, M., & Aslan, B. (2011). Elementary teachers' views about school administrators' technology leadership roles. *Gaziantep University Journal of Social Sciences*, 10(1), 571- 595.

- Smylie, M.A., Conley, S. and Marks, H.M. (2002). Exploring new approaches to teacher leadership for school improvement. Dalam Murphy, J. (Ed.), *The Educational Leadership Challenge: Redefining Leadership for the 21st Century* (ms. 162-188). United State: John Wiley & Sons, Inc.
- Snyder, T.D., Dillow, S.A., & Hoffman, C.M. (2009). *Digest of Education Statistics 2008* (NCES 2009-020). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.
- Spanneut, G., Tobin, J., & Ayers, S. (2012). Identifying the professional development needs of public school principals based on the interstate school leader licensure consortium standards. *NASSP Bulletin*, 96(1), 67-88.
- Sparks, K., Faragher, B., & Cooper, C. (2001). Well-being and occupational health in the 21st century workplace. *Journal Of Occupational And Organizational Psychology*, 74(4), 489-509. doi: 10.1348/096317901167497
- Spector, P. E. (2011). The relationship of personality to counterproductive work behavior (CWB): An integration of perspectives. *Human Resource Management Review*, 21(4), 342-352.
- Spillane, J. (2005). Distributed leadership. *The Educational Forum*, 69(2), 143-150.
- Spillane, J., Halverson, R., & Diamond, J. (2001). Investigating school leadership practice: A distributed perspective. *Educational Researcher*, 30(3), 23-28.
- Spillane, J.P. (2005). Primary school leadership practice: How the subject matters. *School Leadership & Management*, 25(4), 383-97.
- Steinberg, W.J. (2008). *Statistics alive!* Thousand Oaks, CA: Sage.
- Stone, M. (1974). Cross-validatory choice and assessment of statistical predictions. *Journal of the Royal Statistical Society*, 36, 111-147.
- Storey, J. (2004). Changing theories of leadership and leadership development. Dalam: Storey, John ed. *Leadership in organizations: Current issues and key trends*. London, UK: Routledge, ms. 11–37.
- Stuart, L. H., Mills, A. M., & Remus, U. (2009). School leaders, ICT competence and championing innovations. *Computers & Education*, 53 (4), 733-741.
- Suraya, W. H., & Yunus, J. N. (2012). Principal leadership styles in high-academic performance of selected secondary schools in Kelantan Darulnaim. *International Journal of Independent Research and Studies*, 1(2), 57–67.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5<sup>th</sup> ed.). New York: Pearson.
- Tamim, Rana M., Robert M. Bernard, Eugene Borokhovski, Philip C. Abrami, & Richard F. Schmid (2011). What forty years of research says about the impact of technology on learning: A second-order meta-analysis and validation study. *Review of Educational Research*, 81(1), 4-28.

- Tan, S. C. (2010). School technology leadership: Lessons from empirical research. Dalam C.H. Steel, M.J. Keppell, P. Gerbic & S. Housego (Eds.). *Curriculum, technology & transformation for an unknown future*. Proceedings Ascilite Sydney 2010 (ms.896-906). Diperoleh daripada <http://ascilite.org.au/conferences/sydney10/procs/Seng-chee-tan-full.pdf>
- Tapscott, D. & Williams, A. (2010). *Macrowikinomics: Rebooting business and the world (Kobo Reader)*. Toronto: Penguin.
- Technology Standards for School Administrators. (2001). Technology standards for school administrators (TSSA). Diperoleh daripada <http://cnets.iste.org/tssa/docs/tssa.pdf>. TSSA Collaborative/ISTE
- Tiessen, E., & Ward, D. (1997). Collaboration by design: Context, structure and medium. *Journal of Interactive Learning Research*, 8(2), 175–198.
- TIMMS. (2011). About TIMSS 2011 [Dokumen pdf]. Diperoleh daripada [https://timssandpirls.bc.edu/timss2011/downloads/T11\\_IR\\_Mathematics\\_Full\\_Book.pdf](https://timssandpirls.bc.edu/timss2011/downloads/T11_IR_Mathematics_Full_Book.pdf)
- Tondeur, J., Devos, G., Houtte, M. V., Braak, J., & Valcke, M. (2009). Understanding structural and cultural school characteristics in relation to educational change: The case of ICT integration. *Educational Studies*, 35(2), 223-235.
- Tooms, A., Acomb, M. & McGlothlin, J. (2004). The paradox of integrating handheld technology in schools: theory vs. practice. *T.H.E. Journal*, 32(4), 14-24.
- U.S. Department of Education, National Center for Education Statistics. (2005). *The Condition of Education 2005 (NCES 2005–094)*. Washington, DC: U.S. Government Printing Office.
- U.S. Department of Education. (2010). National education technology plan 2010 [Dokumen pdf]. Diperoleh daripada <http://www.ed.gov/sites/default/files/netp2010.pdf>
- U.S. Department of Education. (2016). National education technology plan 2016 [Dokumen pdf]. Diperoleh daripada <http://tech.ed.gov/files/2015/12/NETP16.pdf>
- UNESCO (2011). Transforming education: The power of ICT policies [Dokumen pdf]. Diperoleh daripada <http://unesdoc.unesco.org/images/0021/002118/211842e.pdf>
- UNESCO-UIS. (2014). Information and communication technology (ICT) in education in Asia : A comparative analysis of ICT integration and e-readiness in schools across Asia [Dokumen pdf]. Diperoleh daripada [http://uis.unesco.org/sites/default/files/documents/information-communication-technologies-education-asia-ict-integration-e-readiness-schools-2014-en\\_0.pdf](http://uis.unesco.org/sites/default/files/documents/information-communication-technologies-education-asia-ict-integration-e-readiness-schools-2014-en_0.pdf)
- Ury, G. G. (2003). *Missouri public school principals' computer usage and conformity to technology standards*. Dissertation Abstracts International, 64(05A), 1489.

- Vaill, P. (1998). *Spirited leading and learning*. San Francisco: Jossey- Bass.
- Valdez, G. (2004). Critical issue: Technology leadership, enhancing positive educational change. <http://www.ncrel.org/sdrs/areas/issues/educatrs/leadershp/le700.htm>
- Verardi, V., & Croux, C. (2009). Robust Regression in Stata. *The Stata Journal*, 9(3), 439–453.
- Wahdain, E. A., & Ahmad, M. N. (2014). User acceptance of Information Technology: Factors, theories and applications. *Journal of Information Systems Research and Innovation*, 6, 17-25.
- Wang, C. (2010). Technology leadership among school principals: A technology-coordinator's perspective. *Asian Social Science*, 6(1), 51-54.
- Wang, S. (2013). *Technology integration and foundations for effective leadership*. Hershey, PA: IGI Global.
- Watson, MS., & Chileshe, N. (2004). Establishing a valid methodology for measuring the effectiveness of total quality management (TQM) development [Dokumen pdf]. Diperoleh daripada [https://www.researchgate.net/profile/Nicholas-Chileshe/publication/262301315.Establishing\\_a\\_valid\\_methodology\\_for\\_measuring\\_the\\_effectiveness\\_of\\_total\\_quality\\_management\\_TQM\\_deployment\\_initiatives/links/541e52c80cf203f155c04ccb/Establishing-a-valid-methodology-for-measuring-the-effectiveness-of-total-quality-management-TQM-deployment-initiatives.pdf?origin=publication\\_list](https://www.researchgate.net/profile/Nicholas-Chileshe/publication/262301315.Establishing_a_valid_methodology_for_measuring_the_effectiveness_of_total_quality_management_TQM_deployment_initiatives/links/541e52c80cf203f155c04ccb/Establishing-a-valid-methodology-for-measuring-the-effectiveness-of-total-quality-management-TQM-deployment-initiatives.pdf?origin=publication_list)
- Wei, L. M., Piaw, C. Y., & Kannan, S. (2017). Relationship between principal technology leadership practices and teacher ICT competency. *MOJEM: Malaysian Online Journal of Educational Management*, 4(3), 13-36.
- Weiss, M.L. (2011). *Technology leadership: Today's higher education CIO*. Boulder, CO: EDUCAUSE Center for Applied Research.
- White, M.M., Parks, J. M., Gallagher, D.G, Tetrault, L.A., & Wakabayashi, M. (1995). Validity evidence for the organizational commitment questionnaire in Japanese corporate culture. *Educational and Psychological Measurement*, 55(2), 278-290.
- Whitehead, K. (2003). The South Australian curriculum, standards, and accountability framework: A fillip for middle schooling?. Dalam M. Brennan (Ed.), *Education futures and new citizenships: Proceedings of the 2001 National Biennial Conference of the Australian Curriculum Studies Association*, Australian Curriculum Studies Association, Canberra. Mill Valley, CA: University Science Books.
- Wu, H. (2004). *A study of the elementary school principals' curriculum leadership in elementary schools Taipei City* (Tesis yang tidak diterbitkan). National Chungcheng University, Taiwan.

- Yammarino, F., Spangler, W., & Bass, B. (1993). Transformational leadership and performance: A longitudinal investigation. *The Leadership Quarterly*, 4(1), 81-102.
- Yee, D. L. (2000). Images of school principals' information and communications technology leadership. *Technology, Pedagogy and Education*, 9(3), 287-302.
- Young, M. D. (2010). From the director: Why not use research to inform leadership certification and program approval? *UCEA Review*, 51(2), 1-3.
- Yu, C., & Durrington, V. A. (2006). Technology standards for school administrators: An analysis of practicing and aspiring administrators' perceived ability to perform the standards. *NASSP Bulletin*, 90(4), 301-317.
- Yu, H., Leithwood, K., & Jantzi, D. (2002). The effects of transformational leadership on teachers' commitment to change in Hong Kong. *Journal of Educational Administration*, 40(4/5), 368-389.
- Yuen, A. H. K., Law, N., & Wong, K.C. (2003). ICT implementation and school leadership: case studies of ICT integration in teaching and learning. *Journal of Educational Administration*, 41(2), 171-85.
- Yukl, G. (1999). An evaluation of conceptual weaknesses in transformational and charismatic leadership theories. *The leadership quarterly*, 10(2), 285-305.
- Yukl, G. (2013). *Leadership in organizations* (8th ed.). Upper Saddle River, NJ: Pearson.
- Yukl, G., Kennedy, J., Srinivas, E. S., Cheosakul, A., Peng, T. K., & Tata, J. (2001, August). Cross-cultural comparison of influence behavior: A preliminary report. Dalam *Academy of Management Proceedings*. 2001(1), ms. D1-D6. Briarcliff Manor, NY 10510: Academy of Management.
- Zacharatos, A., Barling, J., & Kelloway, E. K. (2000). Development and effects of transformational leadership in adolescents. *The Leadership Quarterly*, 11(2), 211-226.
- Zahidi, S. & Rosli (2001). Dalam Zahidi Salleh. (2002). *Faktor-faktor yang Mempengaruhi Sikap Guru-guru Teknikal Terhadap Penggunaan Komputer Di Sekolah Menengah Teknik, Nibong*. Universiti Teknologi Malaysia. Diperoleh daripada SMDA Gajah - academia.edu
- Zainuddin Abu Bakar. (2008). *Kemahiran ICT di Kalangan Guru-Guru Pelatih IPTA Di Malaysia*. Universiti Teknologi Malaysia.
- Zainudin Awang. (2015). *SEM made simple*. Bangi, Selangor: MPW Rich Publication Sdn Bhd.
- Zhao, Y., Yan, B., & Lei, J. (2008). The logic and logic model of technology evaluation. Dalam Voogt, J. and Knezek, G. (Eds), *International Handbook of Information Technology in Primary and Secondary Education* (ms. 633-653). New York, NY: Springer Science Business.



Zulkifley Mohamed & Rozie Rosli (2014). Pembangunan model berstruktur bermasalah multikolinearan dan data pencilan. *EDUCATUM - Journal of Science, Mathematics and Technology*, 1(1),38-52. ISSN 2289-7070



## Lampiran A

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COLLEGE OF ARTS AND SCIENCES  
UNIVERSITI UTARA MALAYSIA

### INSTRUMEN

### PENGETUA

Assalamualaikum wbt dan Salam Sejahtera,

Tuan/Puan yang dihormati,

Untuk makluman tuan/puan, saya ialah pelajar Falsafah Pendidikan, Universiti Utara Malaysia (UUM). Saya sedang menjalankan kajian mengenai Kepimpinan Teknologi Pengetua dan Pengintegrasian Teknologi Guru di Sekolah Menengah Kebangsaan di Negeri Kedah : Pembangunan Profesional sebagai faktor Moderator. Sukacita dimaklumkan bahawa tuan/puan telah terpilih untuk menjadi responden bagi kajian ini. Justeru, menjadi harapan saya agar tuan/puan dapat memberi kerjasama dengan melengkapkan borang soal selidik ini. Anda berhak memilih jawapan mengikut kefahaman dan keikhlasan diri anda sendiri. Maklumat yang dikumpulkan adalah SULIT dan hasil kajian akan digunakan untuk pelaporan akademik sahaja.

Kerjasama dan kesudian tuan/puan meluangkan masa menjawab soal selidik ini amat dihargai dan didahului dengan ucapan terima kasih.

#### Maklumat Penyelidik

Nama Pelajar : Raamani Thannimalai  
No. Matrik : 902222  
E-mel : traamani@yahoo.com

Nama Penyelia: Prof.Madya Dr.Arumugam Raman

## INSTRUMEN KAJIAN

### ARAHAN:

Item ID1 adalah untuk kegunaan penyelidik sahaja. Oleh itu tuan diminta tidak memberi sebarang respons mengenainya.

ID1  ( Untuk kegunaan penyelidik sahaja)

### BAHAGIAN A

### BAHAGIAN A

Item JT2 hingga PG4 adalah berkaitan dengan demografi tuan, sila tandakan (/) pada ruangan yang disediakan di hujung item berkenaan. Segala maklumat yang diberikan adalah SULIT dan hanya digunakan untuk tujuan kajian ini sahaja. Kerjasama tuan dalam menjawab soal selidik ini didahului dengan ucapan terima kasih.

#### JT 2. Jantina

- |   |           |     |
|---|-----------|-----|
| 1 | Lelaki    | ( ) |
| 2 | Perempuan | ( ) |

#### UM 3. Umur

- |   |                      |     |
|---|----------------------|-----|
| 1 | Kurang dari 45 tahun | ( ) |
| 2 | Lebih dari 45 tahun  | ( ) |

#### PG 4. Pengalaman Sebagai Pengetua

- |   |                     |     |
|---|---------------------|-----|
| 1 | Kurang dari 1 tahun | ( ) |
| 2 | 2-10 tahun          | ( ) |
| 3 | 11-20 tahun         | ( ) |
| 4 | Lebih dari 21 tahun | ( ) |

## BAHAGIAN B

### ARAHAN:

- a. Pernyataan di bawah ialah berkaitan dengan **Pembangunan Profesional** Pengetua.
- b. Sila baca pernyataan di bawah dengan teliti dan fikirkan keperluan dan minat tuan bagi setiap pernyataan di bawah ini.
- c. Pernyataan di bawah ini tiada yang betul atau salah. Sila beri respons tuan dengan ikhlas. Sila tandakan (/) pada sama ada **Ya** atau **Tidak**.

	<i>Adakah anda melaksanakan aktiviti Pembangunan Profesional berikut di sekolah?</i>	<b>Ya</b>	<b>Tidak</b>
PP1	Pengintegrasian teknologi untuk membentuk visi di peringkat sekolah/daerah.		
PP2	Rancangan penambahbaikan berasaskan kajian untuk membentuk sekolah berteknologi canggih.		
PP3	Mewujudkan jawatankuasa ICT di sekolah.		
PP4	Amalan efektif integrasi teknologi untuk memperbaiki pengajaran.		
PP5	Teknologi untuk guru bagi memperbaiki pengajaran murid.		
PP6	Latihan bersama guru untuk integrasi teknologi yang berkesan.		
PP7	Kaedah menyimpan rekod pekerja dan murid dengan menggunakan sistem pengurusan berasaskan teknologi.		
PP8	Penggunaan e-mel untuk berkomunikasi dengan pihak berkepentingan: guru, ibu bapa, komuniti atau rakan sekerja.		
PP9	Penggunaan telekomunikasi atau laman web sekolah untuk berkomunikasi atau berkolaborasi dengan orang lain.		
PP10	Latihan ICT peringkat sekolah untuk perkongsian idea dan sumber.		
PP11	Peruntukan kewangan / sumber untuk menyokong pelaksanaan rancangan ICT sekolah.		

	<i>Adakah anda melaksanakan aktiviti Pembangunan Profesional berikut di sekolah?</i>	<b>Ya</b>	<b>Tidak</b>
PP12	Perkhidmatan sokongan ICT yang bersesuaian untuk program seperti VLE Frog.		
PP13	Penggunaan teknologi untuk menganalisis data dan meningkatkan pembelajaran murid contohnya SAPS dan APDM.		
PP14	Bimbingan guru dalam perkembangan kemahiran ICT contohnya Headcount dan SAPS.		
PP15	Kemahiran penggunaan teknologi sebagai kriteria penilaian prestasi guru.		
PP16	Peruntukan bahan sumber ICT untuk guru supaya memenuhi keperluan murid.		
PP17	Mewujudkan dasar berkaitan keselamatan, hak cipta dan penggunaan ICT contohnya berkongsi maklumat peribadi, Facebook dan Blog.		
PP18	Amalan sihat dan selamat tentang berkaitan penggunaan teknologi.		

## BAHAGIAN C

### ARAHAN:

- Pernyataan-pernyataan di bawah adalah berkaitan dengan **Kepimpinan Teknologi Pengetua**.
- Sila baca pernyataan-pernyataan di bawah dengan teliti dan fikirkan kekerapan bagi setiap pernyataan di bawah ini.
- Bulatkan salah satu daripada lima nombor bagi menggambarkan Kepimpinan Teknologi Pengetua tuan mengenai diri tuan berdasarkan maksud seperti berikut.

<b>KOD</b>	<b>Keterangan</b>
1	Tidak pernah
2	Jarang-jarang
3	Kadang-kadang
4	Kerap-kali
5	Sangat kerap

Pernyataan berikut **tiada yang betul atau salah**. Sila beri respons tuan dengan **ikhlas**.

	<b>I. KEPIMPINAN VISIONARI</b>	<b>Tidak pernah</b>	<b>Jarang-jarang</b>	<b>Kadang-kadang</b>	<b>Kerap-kali</b>	<b>Sangat kerap</b>
	<b>Sejauh manakah tuan:-</b>					
KV1	Mendorong dan memudah cara pencapaian matlamat pembelajaran serta amalan instruksional warga sekolah dengan menggunakan sumber digital?	1	2	3	4	5
KV2	Terlibat dalam melaksana dan berkomunikasi tentang perancangan strategik berasaskan teknologi?	1	2	3	4	5

	<b>11. BUDAYA PEMBELAJARAN ERA DIGITAL</b>	<b>Tidak pernah</b>	<b>Jarang-jarang</b>	<b>Kadang-kadang</b>	<b>Kerap-kali</b>	<b>Sangat kerap</b>
	<b>Sejauh manakah tuan:-</b>					
BP1	Memastikan inovasi instruksional berfokuskan penambahbaikan pembelajaran digital secara berterusan?	1	2	3	4	5
BP2	Menjadi teladan dan mempromosikan penggunaan teknologi untuk pembelajaran berkesan?	1	2	3	4	5
BP3	Menyediakan persekitaran yang lengkap dengan sumber teknologi untuk aktiviti berpusatkan murid?	1	2	3	4	5

BP4	Memastikan amalan efektif dalam kajian teknologi dan penerapannya merentas kurikulum?	1	2	3	4	5
BP5	Mengambil bahagian dalam komuniti pembelajaran yang merangsang inovasi, kreativiti serta kolaborasi era digital?	1	2	3	4	5

	<b>111. KECEMERLANGAN AMALAN PROFESIONAL</b>	<b>Tidak pernah</b>	<b>Jarang-jarang</b>	<b>Kadang-kadang</b>	<b>Kerap-kali</b>	<b>Sangat kerap</b>
	<b>Sejauh manakah tuan:-</b>					
KP1	Mengagihkan masa, sumber dan akses untuk memastikan kelancaran pembangunan profesional tentang pengintegrasian teknologi?	1	2	3	4	5
KP2	Memudah cara dan melibatkan diri dalam komuniti pembelajaran yang menyokong pentadbiran sekolah tentang penggunaan teknologi?	1	2	3	4	5
KP3	Berkomunikasi dan berkolaborasi dengan pihak-pihak berkepentingan dengan menggunakan peralatan digital?	1	2	3	4	5
KP4	Mengikuti perkembangan pendidikan dan trend terkini penggunaan teknologi untuk meningkatkan pembelajaran murid?	1	2	3	4	5

	<b>1V. PENAMBAHBAIKAN SISTEMIK</b>	<b>Tidak pernah</b>	<b>Jarang-jarang</b>	<b>Kadang-kadang</b>	<b>Kerap-kali</b>	<b>Sangat kerap</b>
	<b>Sejauh manakah tuan:-</b>					
PS1	Memimpin perubahan untuk mencapai matlamat pembelajaran melalui penggunaan teknologi dan media?	1	2	3	4	5
PS2	Bersedia berkolaborasi dengan pihak-pihak berkepentingan untuk memperbaiki prestasi guru serta pembelajaran murid?	1	2	3	4	5
PS3	Bersedia merekrut pegawai kompeten dalam teknologi untuk mencapai matlamat akademik?	1	2	3	4	5
PS4	Mewujudkan perkongsian strategik untuk menyokong penambahbaikan sistemik berasaskan teknologi?	1	2	3	4	5
PS5	Mewujudkan dan mengekalkan infrastruktur teknologi untuk menyokong pengurusan pengajaran dan pembelajaran?	1	2	3	4	5



		Tidak pernah	Jarang-jarang	Kadang-kadang	Kerap-kali	Sangat kerap
	<b>V. KEWARGANEGARAAN DIGITAL</b>					
	<b>Sejauh manakah tuan :-</b>					
KD1	Memastikan akses sama rata kepada peralatan dan sumber digital untuk semua murid?	1	2	3	4	5
KD2	Mewujudkan dasar penggunaan teknologi dan maklumat digital yang selamat serta beretika?	1	2	3	4	5
KD3	Melaksanakan dasar penggunaan ICT untuk berinteraksi sosial di kalangan warga sekolah?	1	2	3	4	5
KD4	Bersedia untuk berkolaborasi dalam isu global melalui penggunaan peralatan ICT?	1	2	3	4	5

**TERIMA KASIH ATAS KESUDIAN DAN KERJASAMA TUAN/PUAN**

**TAMAT**

## Lampiran B



G			
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COLLEGE OF ARTS AND SCIENCES  
UNIVERSITI UTARA MALAYSIA

## INSTRUMEN

### GURU

Assalamualaikum wbt dan Salam Sejahtera,

Tuan/Puan yang dihormati,

Untuk makluman tuan/puan, saya ialah pelajar Falsafah Pendidikan, Universiti Utara Malaysia (UUM). Saya sedang menjalankan kajian mengenai Kepimpinan Teknologi Pengetua dan Pengintegrasian Teknologi Guru di Sekolah Menengah Kebangsaan di Negeri Kedah : Pembangunan Profesional sebagai faktor Moderator. Sukacita dimaklumkan bahawa tuan/puan telah terpilih untuk menjadi responden bagi kajian ini. Justeru, menjadi harapan saya agar tuan/puan dapat memberi kerjasama dengan melengkapkan borang soal selidik ini. Anda berhak memilih jawapan mengikut kefahaman dan keikhlasan diri anda sendiri. Maklumat yang dikumpulkan adalah SULIT dan hasil kajian akan digunakan untuk pelaporan akademik sahaja.

Kerjasama dan kesudian tuan/puan meluangkan masa menjawab soal selidik ini amat dihargai dan didahului dengan ucapan terima kasih.

Maklumat Penyelidik

Nama Pelajar : Raamani Thannimalai  
No. Matrik : 902222  
E-mel : traamani@yahoo.com

Nama Penyelia: Prof. Madya Dr. Arumugam Raman

## INSTRUMEN KAJIAN

### ARAHAN:

Item ID1 adalah untuk kegunaan penyelidik sahaja. Oleh itu, tuan diminta tidak memberi sebarang respons mengenainya.

ID1  ( Untuk kegunaan penyelidik sahaja)

### ARAHAN:

- Pernyataan-pernyataan di bawah adalah berkaitan dengan **Pengintegrasian Teknologi** di kalangan murid sekolah menengah.
- Sila baca pernyataan-pernyataan di bawah dengan teliti dan fikirkan tahap pengintegrasian teknologi di bilik darjah di sekolah tuan.
- Bulatkan salah satu daripada lima nombor bagi menggambarkan keadaan sebenar di sekolah anda.

KOD	Keterangan
1	Tidak pernah
2	Jarang-jarang
3	Kadang-kadang
4	Kerap-kali
5	Sangat kerap

Pernyataan berikut **tiada yang betul atau salah**. Sila beri respons tuan dengan **ikhlas**.

		Tidak pernah	Jarang-jarang	Kadang-kadang	Kerap-kali	Sangat kerap
	<i>Saya menggunakan ICT dalam bilik darjah supaya murid:</i>					
PT2	memperoleh ilmu untuk mengikuti perkembangan Teknologi Abad ke-21.	1	2	3	4	5
PT3	menjadi cekap dalam mata pelajaran yang dipelajarinya.	1	2	3	4	5
PT4	mengabung pelbagai ilmu yang mereka terima.	1	2	3	4	5
PT5	membina pengetahuan sendiri secara aktif melalui kolaborasi dengan rakan sebaya dan dengan orang lain.	1	2	3	4	5
PT6	membina dengan aktif pengetahuan yang mengintegrasikan bidang kurikulum.	1	2	3	4	5
PT7	membentuk pemahaman yang mendalam mengenai topik yang berkaitan dengan bidang kurikulum yang dipelajari.	1	2	3	4	5
PT8	membentuk pemahaman saintifik tentang dunia.	1	2	3	4	5
PT9	bermotivasi untuk melaksanakan tugas kurikulum.	1	2	3	4	5
PT10	merancang dan mengurus projek-projek kurikulum.	1	2	3	4	5
PT11	mengintegrasikan media berlainan untuk menghasilkan produk yang sesuai.	1	2	3	4	5
PT12	melibatkan diri secara berterusan dalam aktiviti kurikulum.	1	2	3	4	5
PT13	memantapkan proses pembelajaran.	1	2	3	4	5
PT14	mendemonstrasikan apa yang telah dipelajari.	1	2	3	4	5
PT15	menjalani penilaian formatif dan sumatif.	1	2	3	4	5

		Tidak pernah	Jarang-jarang	Kadang-kadang	Kerap-kali	Sangat kerap
	<i>Saya menggunakan ICT dalam bilik darjah supaya murid:</i>					
PT16	menyedari implikasi global teknologi berasaskan ICT terhadap masyarakat	1	2	3	4	5
PT17	memupuk persefahaman antara budaya berlainan melalui aplikasi laman sosial seperti Whatsapp, Facebook, e-mel dan e-sidang.	1	2	3	4	5
PT18	menaksir secara kritikal nilai-nilai sendiri dan nilai masyarakat.	1	2	3	4	5
PT19	berkomunikasi dengan masyarakat tempatan dan global.	1	2	3	4	5
PT20	belajar secara berdikari mengikut kemampuan sendiri.	1	2	3	4	5
PT21	memahami dan melibatkan diri dalam ekonomi berasaskan pengetahuan (k-ekonomi) yang sentiasa berubah.	1	2	3	4	5

**TERIMA KASIH ATAS KESUDIAN DAN KERJASAMA TUAN/PUAN**

**TAMAT**

**Lampiran C**



KEMENTERIAN PENDIDIKAN MALAYSIA  
MINISTRY OF EDUCATION MALAYSIA  
BAHAGIAN PERANCANGAN DAN PENYELIDIKAN DASAR PENDIDIKAN  
EDUCATIONAL PLANNING AND RESEARCH DIVISION  
ARAS 1-4, BLOK E8  
KOMPLEKS KERAJAAN PARCEL E  
PUSAT PENTADBIRAN KERAJAAN PERSEKUTUAN  
62604 PUTRAJAYA



KEMENTERIAN  
PENDIDIKAN  
MALAYSIA

Telefon : 03-8884 6500  
Faks : 03-8884 6439  
Laman Web : www.moe.gov.my

Ruj. Kami : KPM.600-3/2/3 Jld 49 (99)

Tarikh : 13 Julai 2017

Raamani A/P Thannimalai  
K.P.:640910025238

2601, Taman Lumba Kuda  
05250 Alor Setar  
Kedah

Tuan,

**KELULUSAN UNTUK MENJALANKAN KAJIAN DI SEKOLAH, INSTITUT PENDIDIKAN GURU, JABATAN PENDIDIKAN NEGERI DAN BAHAGIAN DI BAWAH KEMENTERIAN PENDIDIKAN MALAYSIA**

Perkara di atas adalah dirujuk.

2. Sukacita dimaklumkan bahawa permohonan tuan untuk menjalankan kajian seperti di bawah telah diluluskan.

**"Kepimpinan Teknologi dan Hubungannya dengan Pengintegrasian Teknologi di Sekolah Menengah Negeri Kedah : Pembangunan Profesional sebagai Faktor Moderasi"**

3. Kelulusan ini adalah berdasarkan kepada kertas cadangan penyelidikan dan instrumen kajian yang dikemukakan oleh tuan kepada Bahagian ini. Walau bagaimanapun kelulusan ini bergantung kepada kebenaran Jabatan Pendidikan Negeri dan Pengetua / Guru Besar yang berkenaan.

4. Surat kelulusan ini sah digunakan bermula dari **20 Julai 2017 hingga 20 Disember 2017.**

5. Tuan juga mesti menyerahkan senaskhah laporan akhir kajian dalam bentuk *hardcopy* bersama salinan *softcopy* berformat Pdf di dalam CD kepada Bahagian ini. Tuan diingatkan supaya mendapat kebenaran terlebih dahulu daripada Bahagian ini sekiranya sebahagian atau sepenuhnya dapatan kajian tersebut hendak dibentangkan di mana-mana forum, seminar atau diumumkan kepada media massa.

Sekian untuk makluman dan tindakan tuan selanjutnya. Terima kasih.

**"BERKHIDMAT UNTUK NEGARA"**

Saya yang menurut perintah,

**(DR SHAMSUDIN BIN MOHAMAD)**

Ketua Unit  
Sektor Penyelidikan dan Penilaian  
b.p. Pengarah  
Bahagian Perancangan dan Penyelidikan Dasar Pendidikan  
Kementerian Pendidikan Malaysia



CERTIFIED TO ISO 9001:2008  
CERT. NO: AR 3166

## Lampiran D



**KEMENTERIAN PENDIDIKAN MALAYSIA**  
JABATAN PENDIDIKAN NEGERI KEDAH  
KOMPLEKS PENDIDIKAN, JALAN STADIUM  
05604 ALOR SETAR  
KEDAH DARULAMAN

Telefon : 04-740 4000  
Faks : 04-740 4342  
Laman Web : www.moe.gov.my

“MUAFAKAT KEDAH”

Ruj Kami : JPK. SPS.UPP 600-1/1/2Jld.3(S8)  
Tarikh : 6 Ogos 2017

Raamani a/p Thannimalai  
2601, Taman Lumba Kuda  
05250 Alor Setar  
Kedah Darul Aman

Tuan,

**Kebenaran Untuk Menjalankan Kajian/ Soal Selidik di Jabatan Pendidikan Negeri /  
Pejabat Pendidikan Daerah dan Sekolah – Sekolah di Negeri Kedah Darul Aman**

Saya dengan hormatnya diarah merujuk kepada perkara tersebut di atas.

2. Dimaklumkan bahawa permohonan tuan/puan untuk menjalankan kajian yang bertajuk  
“Kepimpinan Teknologi dan Hubungannya dengan Pengintegrasian Teknologi di Sekolah  
Menengah Negeri Kedah : Pembangunan Profesional sebagai Faktor Moderasi ” telah  
diluluskan.

3. Kelulusan ini adalah berdasarkan kepada apa yang terkandung di dalam cadangan  
penyelidikan yang tuan/puan kemukakan ke Kementerian Pendidikan Malaysia. Tuan/Puan  
dikehendaki mengemukakan senaskah laporan akhir kajian setelah selesai kelak dan diingatkan  
supaya mendapat kebenaran terlebih dahulu daripada Jabatan ini sekiranya sebahagian atau  
sepenuhnya dapatan kajian tersebut hendak dibentangkan di mana-mana forum, seminar atau  
diumumkan kepada media.

4. Kebenaran ini adalah tertakluk kepada persetujuan Pengetua/ Guru Besar sekolah berkenaan  
dan adalah sah bermula dari 20 Julai 2017 hingga 20 Disember 2017.

Sekian, terima kasih.

“BERKHIDMAT UNTUK NEGARA ”  
“MUAFAKAT KEDAH ”  
“PENDIDIKAN CEMERLANG KEDAH TERBILANG ”

Saya yang menurut perintah,

(**ABDULLAH BIN ABDULL MANAF, bck.**)  
Penolong Pengarah Kanan ( Ketua Unit)  
Unit Perhubungan dan Pendaftaran  
Sektor Pengurusan Sekolah  
b.p. Pengarah Pendidikan Negeri Kedah Darul Aman

“1 Malaysia: Rakyat Didahulukan, Pencapaian Diutamakan”

Sila catatkan rujukan Jabatan ini apabila berhubung





## Lampiran E

Raamani Thannimalai,  
2601, Taman Lumba Kuda,  
05250 Alor Setar,  
Kedah Darul Aman.

14 JULAI 2017

Tuan Pengetua,  
Semua Sekolah-sekolah Menengah Kebangsaan di Negeri Perlis.

### MEMOHON KEBENARAN MENJALANKAN KAJIAN RINTIS

Dengan segala hormatnya, perkara di atas dirujuk.

2. Saya, Raamani A/P Thannimalai, pelajar Doktor Falsafah (PhD) Universiti Utara Malaysia ingin memohon kebenaran untuk menjalankan kajian rintis dalam kalangan di sekolah tuan bagi menyempurnakan tesis bertajuk "***Kepimpinan Teknologi dan Pengintegrasian Teknologi di Sekolah Menengah: Pembangunan Profesional sebagai faktor moderator***".

3. Untuk makluman tuan, saya telah pun membuat permohonan menjalankan kajian di sekolah daripada Bahagian Perancangan dan Penyelidikan Dasar Pendidikan, Kementerian Pendidikan Malaysia. Saya sertakan juga surat pengesahan dari Universiti Utara Malaysia.

4. Sehubungan itu, saya memilih sekolah ini kerana ia menepati kriteria serta bidang kajian yang dicadangkan. Maklumat permohonan saya adalah seperti berikut:

Instrumen kajian	:	Soal selidik untuk Pengetua dan Guru
Responden	:	Pengetua dan 20 orang guru
Kriteria pemilihan guru:		Berstatus tetap dan berkhidmat di sekolah ini melebihi satu tahun.
Tempoh pengutipan data :		Satu minggu

5. Saya berharap permohonan saya akan dipertimbangkan dan saya dahului dengan ucapan ribuan terima kasih.

Sekian, terima kasih.

Yang benar,



[RAAMANI A/P THANNIMALAI]

Tel : 012-4887776

E-mel : traamani@yahoo.com



## Lampiran F

Raamani A/P Thannimalai,  
2601, Taman Lumba Kuda,  
05250 Alor Setar,  
Kedah Darul Aman.

17 OGOS 2017

Pengarah,  
Jabatan Pendidikan Negeri Kedah,  
Jalan Stadium,  
05604 Alor Setar,  
Kedah Darul Aman.

Yang Berbahagia Datin Paduka,

### MEMOHON DATA PENGETUA DAN GURU SEKOLAH MENEGAH KEBANGSAAN DI NEGERI KEDAH UNTUK TUJUAN KAJIAN PhD

Dengan segala hormatnya, perkara di atas adalah dirujuk.

2. Dimaklumkan bahawa saya, Raamani A/P Thannimalai (No. K/P : 640910-02-5238). Pegawai Perkhidmatan Pendidikan Siswazah, sedang mengikuti pengajian program Falsafah Pendidikan di Universiti Utara Malaysia dalam semester kedua. Sebagai keperluan pengijazahan, saya perlu melengkapkan kajian bertajuk seperti berikut :

**'Kepimpinan Teknologi Dan Hubungannya Dengan Pengintegrasian Teknologi di Sekolah-Sekolah Menengah Kebangsaan Harian Biasa Di Kedah Darul Aman: Pembangunan Profesional sebagai Faktor Mediator'**

3. Sehubungan itu, saya memerlukan data berkenaan bilangan pengetua dan nama sekolah di setiap daerah, serta bilangan guru di setiap sekolah dalam daerah-daerah di negeri Kedah Darul Aman.

4. Bersama ini saya sertakan salinan surat kelulusan JPN (JPK.SPS.UPP-1/1/2Jld.3 (58) bertarikh 6 OGOS 2017, surat kelulusan EPRD (KPM.600-3/2/3 Jld 49 (93) dan Pengesahan Pelajar Program Doktor Falsafah (UUM/CAS/SEML/PP/P-77/3) untuk rujukan Datin Paduka.

5. Kerjasama dan kebenaran daripada pihak Yang Berbahagia Datin Paduka' amat saya hargai dan didahului dengan ucapan jutaan terima kasih.

Sekian, terima kasih.

Yang benar,



[RAAMANI A/P THANNIMALAI]

## Lampiran G

School ID	Teachers (N)	TTI Score	MEAN	Standard Deviation	PTL Score	Pro Dev
1	8	449	56.13	21.75	83.00	1
2	10	636	63.6	17.82	80.00	1
3	10	426	42.6	12.41	79.00	1
4	10	743	74.3	13.98	76.00	1
5	11	906	82.36	7.53	93.00	1
6	10	884	88.4	7.86	78.00	1
7	10	708	7.8	14.34	82.00	1
8	10	712	71.2	14.63	80.00	1
9	9	644	71.56	9.67	80.00	1
10	10	723	72.3	12.43	68.00	0
.	.	.	.	.	.	.
.	.	.	.	.	.	.
89	10	748	74.8	14.99	80.00	1
90	10	526	52.6	10.83	74.00	1



UUM

Universiti Utara Malaysia

## Lampiran H

### Keputusan Akhir Analisis Statistik Kajian Rintis

#### Instrumen Kepimpinan Teknologi Pengetua Untuk Pengetua

Kebolehpercayaan Kepimpinan Teknologi Pengetua Secara Keseluruhan

##### Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.933	.931	21

Kebolehpercayaan Untuk Konstruk Kepimpinan Visionari

##### Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.620	.642	3

##### Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
KV23	7.6154	2.256	.323	.456	.659
KV24	7.9231	1.244	.726	.592	.041
KV25	7.3846	1.423	.338	.369	.721

Kebolehpercayaan Untuk Konstruk Kepimpinan Visionary Selepas Item KV 25  
Dibuang

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.721	.746	2

Kebolehpercayaan Untuk Konstruk Budaya Pembelajaran Era Digital

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.796	.792	5

Kebolehpercayaan Untuk Konstruk Kecemerlangan Amalan Profesional

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.872	.870	4

Kebolehpercayaan Untuk Konstruk Penambahbaikan Sistemik

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.812	.824	5

## Kebolehpercayaan Untuk Konstruk Kewarganegaraan Digital

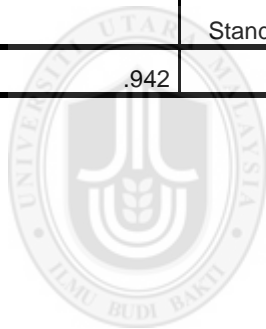
### Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.892	.891	4

## Instrumen Pengintegrasian Teknologi Untuk Guru

### Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.942	.962	20



UUM  
Universiti Utara Malaysia

## Lampiran I

### Sijil Terjemahan Instrumen oleh MPWS

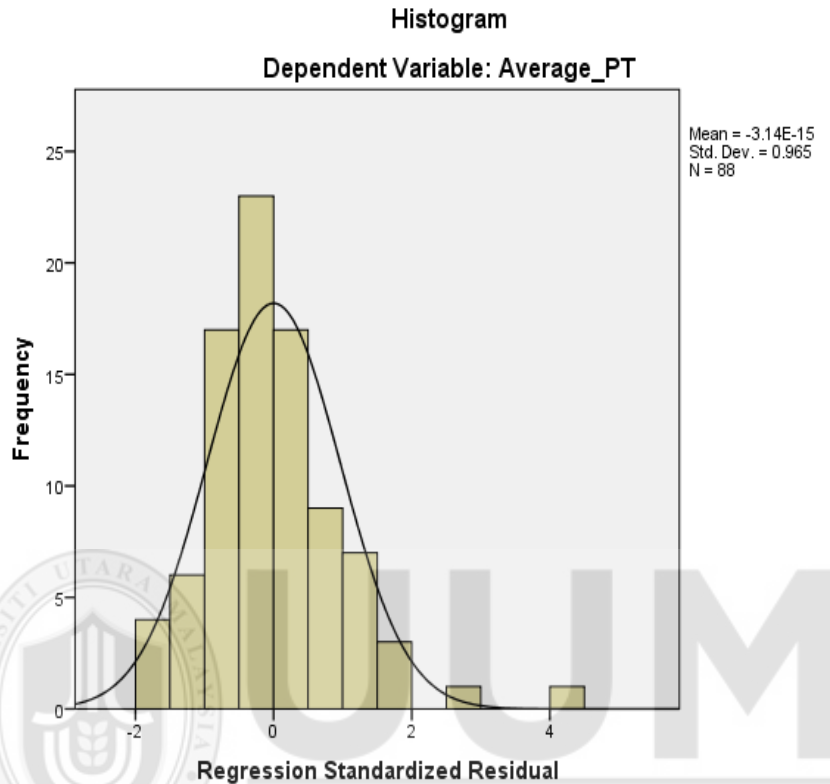
#### Proofreading dan Translation



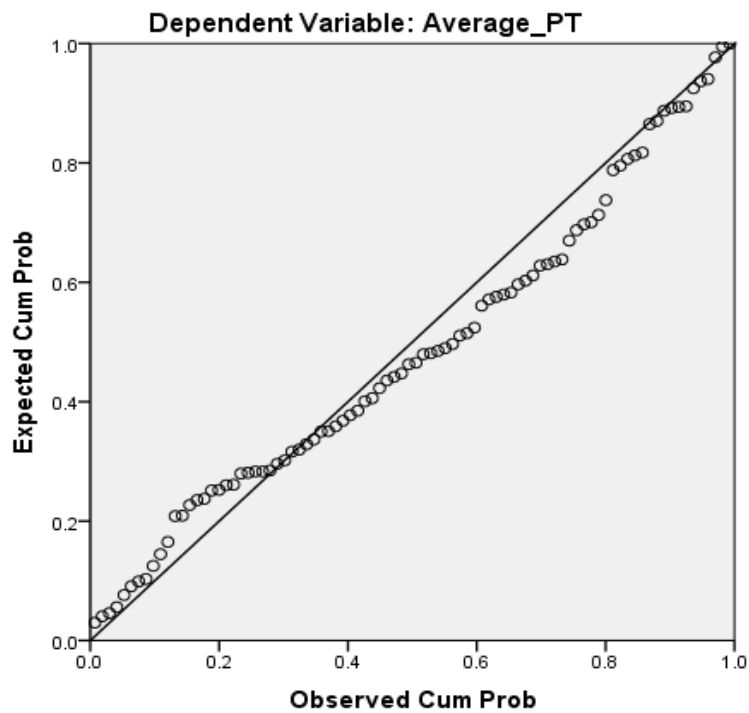
## Lampiran J

### KEPUTUSAN AKHIR ANALISIS STATISTIK DESKRIPTIF

#### KAJIAN SEBENAR



Normal P-P Plot of Regression Standardized Residual



## Ringkasan Model

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.301 <sup>a</sup>	.090	.080	173.26829	.364

a. Predictors: (Constant), PTL

b. Dependent Variable: TTI

## Anggaran Parameter (Coefficients<sup>a</sup>)

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-52.537	193.201		-.272	.786
	PTL	7.866	2.692	.301	2.922	.004

a. Dependent Variable: TTI

## Keputusan ANOVA

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	256380.607	1	256380.607	8.540	.004 <sup>b</sup>
	Residual	2581883.290	86	30021.899		
	Total	2838263.898	87			

a. Dependent Variable: TTI

b. Predictors: (Constant), PTL



## Lampiran K

### KEPUTUSAN AKHIR ANALISIS STATISTIK INFERENSI

#### PLS-SEM KAJIAN SEBENAR

#### Construct Reliability and Validity

Konstruk	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
BP	0.810	0.909	0.832	0.509
KD	0.811	0.903	0.870	0.626
KP	0.729	0.876	0.874	0.776
KV	0.624	0.749	0.832	0.715
Moderating Effect PP (KV-> PT)	0.722	1.000	0.688	0.359
Moderating Effect PP (BP->PT)	0.904	1.000	0.894	0.392
Moderating Effect PP (KD->PT)	0.900	1.000	0.705	0.205
Moderating Effect PP (KP->PT)	0.838	1.000	0.585	0.418
Moderating Effect PP (PS->PT)	0.878	1.000	0.130	0.143
PP	0.708	0.722	0.782	0.478
PS	0.798	0.836	0.838	0.517
PT	0.940	0.946	0.946	0.510

#### Discriminant Validity

#### Fornell-Larcker Criterion

	BP	KD	KP	KV	Moderating Effect PP (KV-> PT)	Moderating Effect PP (BP->PT)	Moderating Effect PP (KD->PT)	Moderating Effect PP (KP->PT)	Moderating Effect PP (PS->PT)	PP	PS	PT
BP	0.714											
KD	0.457	0.791										
KP	0.499	0.691	0.881									
KV	0.712	0.452	0.474	0.845								
Moderating Effect PP (KV-> PT)	-0.054	-0.101	-0.041	-0.062	0.599							
Moderating Effect PP (BP->PT)	-0.155	-0.082	-0.116	-0.148	0.880	0.626						
Moderating Effect PP (KD->PT)	0.239	0.204	0.177	0.145	-0.678	-0.752	0.452					
Moderating Effect PP (KP->PT)	0.183	0.063	0.126	-0.013	-0.427	-0.434	0.792	0.646				
Moderating Effect PP (PS->PT)	0.124	0.052	-0.039	-0.003	-0.635	-0.508	0.505	0.486	0.378			
PP	0.193	0.169	0.124	0.141	-0.884	-0.848	0.653	0.419	0.683	0.691		
PS	0.524	0.693	0.691	0.466	-0.097	-0.101	0.116	0.002	0.025	0.109	0.719	
PT	0.246	0.270	0.166	0.157	-0.139	-0.164	0.178	0.126	0.213	0.171	0.216	0.714

## Heterotrait-Monotrait Ratio (HTMT)

	BP	KD	KP	KV	Moder	Moder	Moder	Moder	Moder	PP	PS	PT
BP												
KD	0.701											
KP	0.806	0.907										
KV	1.060	0.652	0.759									
Moderating Effect PP (KV-> PT)	0.269	0.163	0.195	0.235								
Moderating Effect PP (BP->PT)	0.304	0.229	0.232	0.345	0.976							
Moderating Effect PP (KD->PT)	0.271	0.444	0.301	0.262	0.996	0.895						
Moderating Effect PP (KP->PT)	0.210	0.194	0.208	0.216	0.901	0.976	0.807					
Moderating Effect PP (PS->PT)	0.232	0.196	0.140	0.191	1.047	0.853	0.963	0.755				
PP	0.336	0.255	0.326	0.342	1.133	1.049	1.040	0.870	1.099			
PS	0.775	0.865	0.896	0.753	0.126	0.199	0.292	0.104	0.306	0.275		
PT	0.224	0.276	0.210	0.225	0.163	0.177	0.151	0.146	0.203	0.214	0.222	

## Cross Loadings

	BP	KD	KP	KV	Moder	Moder	Moder	Moder	Moder	PP	PS	PT
BP1	0.892	0.351	0.401	0.602	-0.024	-0.147	0.231	0.179	0.077	0.143	0.458	0.255
BP2	0.852	0.323	0.389	0.564	0.052	-0.079	0.115	0.110	0.044	0.107	0.354	0.223
BP3	0.555	0.573	0.512	0.553	-0.158	-0.143	0.257	0.139	0.104	0.197	0.534	0.021
BP4	0.661	0.455	0.391	0.603	-0.294	-0.207	0.280	0.184	0.296	0.315	0.469	0.096
BP5	0.528	0.500	0.533	0.436	-0.040	-0.028	0.155	0.079	0.111	0.108	0.476	0.032
KD1	0.298	0.809	0.515	0.279	-0.045	0.022	0.183	0.033	0.033	0.087	0.526	0.201
KD2	0.471	0.872	0.605	0.441	-0.146	-0.122	0.100	0.032	0.092	0.211	0.622	0.300
KD3	0.319	0.735	0.609	0.225	-0.137	-0.181	0.324	0.277	0.076	0.187	0.545	0.122
KD4	0.307	0.742	0.485	0.441	0.037	0.018	0.142	-0.064	-0.070	0.017	0.496	0.157
KP2	0.512	0.615	0.817	0.473	-0.032	-0.067	0.142	0.111	0.012	0.086	0.571	0.103
KP4	0.409	0.620	0.941	0.396	-0.040	-0.126	0.167	0.114	-0.062	0.125	0.646	0.176
KV1	0.641	0.352	0.380	0.925	-0.073	-0.171	0.073	-0.088	0.015	0.159	0.382	0.160
KV2	0.569	0.456	0.460	0.757	-0.019	-0.054	0.215	0.120	-0.033	0.056	0.437	0.093
PP10	0.208	0.138	0.225	0.248	-0.735	-0.793	0.671	0.432	0.291	0.695	0.145	0.076
PP10 * BP1	-0.143	-0.059	-0.217	-0.076	0.289	0.469	-0.698	-0.680	-0.084	-0.338	-0.010	-0.006
PP10 * BP2	-0.011	-0.007	-0.126	0.066	0.216	0.461	-0.741	-0.688	-0.068	-0.254	0.050	0.000
PP10 * BP3	-0.110	-0.058	-0.115	-0.113	0.780	0.947	-0.803	-0.462	-0.335	-0.731	-0.059	-0.119
PP10 * BP4	-0.086	-0.090	-0.130	-0.185	0.860	0.890	-0.601	-0.260	-0.338	-0.772	-0.111	-0.089
PP10 * BP5	-0.111	0.018	-0.112	0.005	0.257	0.530	-0.765	-0.707	-0.078	-0.312	0.059	-0.053
PP10 * KD1	0.052	0.459	0.189	0.008	0.518	0.608	-0.374	-0.300	-0.194	-0.459	0.257	0.083
PP10 * KD2	0.001	0.038	0.024	-0.136	0.874	0.851	-0.452	-0.053	-0.378	-0.742	-0.044	-0.052
PP10 * KD3	-0.216	-0.038	-0.192	-0.100	0.335	0.593	-0.813	-0.715	-0.129	-0.391	-0.014	-0.055
PP10 * KD4	-0.002	0.307	0.085	0.040	0.647	0.685	-0.490	-0.404	-0.288	-0.582	0.160	0.025
PP10 * KP2	-0.164	-0.021	-0.146	-0.128	0.373	0.471	-0.587	-0.556	-0.119	-0.398	-0.011	-0.014
PP10 * KP4	-0.192	-0.029	-0.117	-0.103	0.467	0.682	-0.834	-0.697	-0.196	-0.493	0.008	-0.047
PP10 * KV1	0.003	-0.069	-0.040	-0.122	0.832	0.719	-0.312	0.011	-0.352	-0.699	-0.111	-0.060
PP10 * KV2	-0.171	-0.036	-0.201	-0.040	0.268	0.462	-0.689	-0.687	-0.089	-0.330	-0.002	-0.023
PP10 * PS1	-0.011	0.131	0.014	-0.034	0.656	0.713	-0.560	-0.409	-0.321	-0.656	0.204	-0.036
PP10 * PS2	-0.062	0.046	-0.026	-0.120	0.723	0.763	-0.638	-0.417	-0.289	-0.679	0.088	-0.029
PP10 * PS3	-0.035	0.037	-0.051	-0.084	0.253	0.152	-0.107	-0.153	-0.116	-0.221	0.034	0.018
PP10 * PS4	0.060	0.155	0.115	-0.046	0.653	0.691	-0.590	-0.407	-0.265	-0.581	0.314	0.011
PP10 * PS5	-0.032	-0.037	-0.016	-0.162	0.879	0.861	-0.463	-0.074	-0.384	-0.762	-0.029	-0.073

### Cross Loadings (Continue)

PP14	0.085	0.136	0.245	0.163	-0.567	-0.628	0.508	0.348	-0.084	0.542	0.116	0.018
PP14 * BP1	-0.106	-0.013	-0.031	0.034	0.204	0.444	-0.714	-0.535	-0.150	-0.263	0.052	-0.027
PP14 * BP2	0.045	0.021	-0.085	0.103	0.227	0.456	-0.732	-0.673	-0.111	-0.251	0.076	0.011
PP14 * BP3	-0.028	-0.042	-0.221	-0.104	0.666	0.784	-0.610	-0.500	-0.224	-0.606	-0.059	-0.086
PP14 * BP4	-0.044	-0.041	-0.071	-0.101	0.776	0.889	-0.614	-0.290	-0.560	-0.679	-0.077	-0.146
PP14 * BP5	-0.072	0.056	-0.069	0.037	0.253	0.524	-0.748	-0.695	-0.077	-0.302	0.094	-0.051
PP14 * KD1	0.165	0.513	0.216	0.096	0.361	0.454	-0.216	-0.217	0.084	-0.312	0.314	0.138
PP14 * KD2	0.056	0.088	0.048	-0.094	0.838	0.820	-0.421	-0.043	-0.278	-0.706	-0.003	-0.020
PP14 * KD3	-0.195	-0.017	-0.180	-0.087	0.323	0.583	-0.798	-0.707	-0.083	-0.380	0.005	-0.045
PP14 * KD4	0.126	0.360	0.108	0.147	0.485	0.523	-0.323	-0.324	0.024	-0.430	0.220	0.085
PP14 * KP2	-0.043	0.020	-0.190	-0.036	0.270	0.445	-0.506	-0.643	-0.276	-0.263	0.003	-0.067
PP14 * KP4	-0.055	-0.020	-0.200	-0.071	0.337	0.477	-0.538	-0.606	0.024	-0.341	0.005	0.000
PP14 * KV1	0.073	-0.045	0.031	-0.022	0.852	0.783	-0.352	0.044	-0.393	-0.703	-0.081	-0.080
PP14 * KV2	-0.080	-0.014	-0.236	0.037	0.221	0.455	-0.655	-0.743	-0.061	-0.272	0.016	-0.029
PP14 * PS1	0.122	0.168	0.030	0.069	0.491	0.549	-0.395	-0.327	0.000	-0.509	0.272	0.019
PP14 * PS2	0.019	0.092	-0.042	-0.021	0.443	0.549	-0.438	-0.439	-0.547	-0.381	0.089	-0.095
PP14 * PS3	0.086	-0.008	-0.024	0.023	0.019	-0.052	0.066	0.073	0.522	-0.034	0.044	0.107
PP14 * PS4	0.199	0.194	0.142	0.054	0.488	0.525	-0.430	-0.325	0.061	-0.425	0.395	0.071
PP14 * PS5	0.019	-0.012	-0.004	-0.123	0.839	0.827	-0.427	-0.063	-0.270	-0.726	0.019	-0.045
PP4	0.031	0.075	-0.039	0.011	-0.726	-0.521	0.408	0.229	0.770	0.814	0.018	0.173
PP4 * BP1	0.827	0.352	0.349	0.554	-0.330	-0.356	0.384	0.261	0.397	0.476	0.425	0.306
PP4 * BP2	0.781	0.324	0.332	0.512	-0.282	-0.307	0.288	0.203	0.388	0.466	0.327	0.279
PP4 * BP3	0.076	0.017	0.060	-0.080	0.783	0.761	-0.283	0.112	-0.288	-0.625	-0.041	-0.086
PP4 * BP4	0.041	-0.034	0.081	-0.023	0.913	0.743	-0.466	-0.208	-0.586	-0.761	-0.039	-0.143
PP4 * BP5	0.124	0.085	0.079	0.109	-0.003	0.009	0.078	0.194	-0.264	-0.306	0.143	-0.047
PP4 * KD1	0.184	0.505	0.386	0.185	0.511	0.405	-0.178	-0.148	-0.552	-0.548	0.351	0.010
PP4 * KD2	0.043	0.053	0.086	-0.081	0.872	0.787	-0.390	-0.005	-0.490	-0.770	-0.015	-0.075
PP4 * KD3	0.188	0.432	0.436	0.141	0.471	0.282	-0.100	0.008	-0.545	-0.505	0.349	-0.052
PP4 * KD4	0.078	0.142	-0.043	-0.081	-0.172	0.109	0.319	0.612	0.452	0.105	0.019	0.133
PP4 * KP2	0.126	0.113	0.031	-0.071	-0.248	0.040	0.346	0.656	0.527	0.190	0.036	0.132
PP4 * KP4	0.095	0.095	0.063	-0.103	-0.078	0.164	0.268	0.641	0.345	0.001	0.045	0.112
PP4 * KV1	0.043	-0.059	-0.063	-0.132	0.577	0.667	-0.145	0.319	-0.036	-0.466	-0.126	-0.012
PP4 * KV2	0.157	0.117	-0.028	0.047	-0.472	-0.169	0.456	0.614	0.700	0.460	0.038	0.174
PP4 * PS1	0.054	0.076	-0.019	-0.092	-0.151	0.061	0.194	0.315	0.595	0.361	-0.004	0.130
PP4 * PS2	0.073	0.081	0.021	-0.104	-0.005	0.178	0.127	0.321	0.522	0.240	0.002	0.123
PP4 * PS3	0.095	0.080	-0.055	-0.074	-0.273	0.027	0.320	0.604	0.490	0.232	0.028	0.114
PP4 * PS4	0.116	0.087	-0.014	-0.110	-0.146	0.127	0.269	0.611	0.435	0.079	0.103	0.125
PP4 * PS5	0.017	-0.020	0.058	-0.096	0.876	0.785	-0.390	-0.017	-0.517	-0.795	0.006	-0.100
PP9	0.288	0.196	0.183	0.143	-0.497	-0.685	0.471	0.350	0.329	0.688	0.131	0.106
PP9 * BP1	-0.131	-0.096	-0.160	-0.006	0.236	0.491	-0.591	-0.619	-0.171	-0.370	-0.021	-0.020
PP9 * BP2	-0.109	-0.017	-0.082	0.099	0.032	0.240	-0.288	-0.325	-0.102	-0.291	0.061	-0.028
PP9 * BP3	-0.137	-0.011	-0.078	-0.080	0.662	0.866	-0.642	-0.392	-0.395	-0.674	-0.067	-0.133
PP9 * BP4	-0.091	-0.113	-0.081	-0.111	0.763	0.887	-0.508	-0.229	-0.389	-0.766	-0.112	-0.108
PP9 * BP5	-0.048	0.057	-0.018	-0.022	0.219	0.402	-0.435	-0.407	-0.165	-0.171	-0.023	-0.053
PP9 * KD1	-0.054	0.046	0.070	0.008	0.133	0.195	0.029	-0.103	-0.105	-0.273	0.076	0.048
PP9 * KD2	-0.035	-0.015	0.045	-0.076	0.625	0.639	-0.245	-0.059	-0.313	-0.646	-0.013	-0.010
PP9 * KD3	-0.216	-0.004	-0.155	-0.080	0.319	0.599	-0.795	-0.709	-0.140	-0.405	0.019	-0.055
PP9 * KD4	-0.014	0.354	0.188	0.190	0.413	0.546	-0.270	-0.317	-0.305	-0.524	0.237	0.024
PP9 * KP2	-0.123	0.049	-0.006	0.020	0.360	0.631	-0.777	-0.686	-0.176	-0.453	0.092	-0.050
PP9 * KP4	-0.200	-0.005	-0.023	-0.038	0.416	0.680	-0.772	-0.673	-0.241	-0.531	0.065	-0.048
PP9 * KV1	0.108	-0.027	0.048	0.020	0.851	0.774	-0.349	0.041	-0.383	-0.692	-0.063	-0.070
PP9 * KV2	-0.110	-0.041	-0.104	0.015	0.234	0.443	-0.528	-0.548	-0.168	-0.264	-0.038	-0.032
PP9 * PS1	0.107	0.113	0.104	-0.010	0.324	0.323	-0.203	-0.137	-0.200	-0.166	0.085	-0.004
PP9 * PS2	-0.095	0.043	0.074	0.022	0.484	0.644	-0.430	-0.331	-0.324	-0.662	0.169	-0.044
PP9 * PS3	-0.085	0.076	0.067	0.071	0.136	0.279	-0.095	-0.132	-0.348	-0.253	0.049	-0.082
PP9 * PS4	-0.106	0.052	0.068	0.004	0.208	0.364	-0.158	-0.167	-0.292	-0.353	0.107	-0.048
PP9 * PS5	0.047	0.015	0.060	-0.128	0.753	0.729	-0.365	-0.040	-0.350	-0.556	-0.001	-0.040

### Cross Loadings (Continue)

PS1	0.330	0.482	0.406	0.353	0.015	0.025	0.063	-0.052	-0.123	-0.081	0.631	0.059
PS2	0.443	0.563	0.606	0.386	0.005	-0.050	0.065	0.021	-0.010	0.012	0.714	0.142
PS3	0.367	0.439	0.433	0.429	0.030	0.026	-0.044	-0.099	-0.291	0.058	0.511	-0.011
PS4	0.455	0.519	0.587	0.323	0.015	-0.009	-0.002	-0.051	-0.018	0.055	0.828	0.145
PS5	0.397	0.578	0.522	0.399	-0.205	-0.167	0.170	0.031	0.085	0.195	0.855	0.228
PT10	0.105	0.179	0.009	0.011	-0.142	-0.154	0.111	0.072	0.255	0.138	0.105	0.693
PT11	0.168	0.266	0.229	0.114	-0.018	-0.052	0.120	0.100	0.027	0.070	0.197	0.755
PT12	0.215	0.206	0.138	0.208	-0.155	-0.181	0.094	0.030	0.280	0.157	0.182	0.763
PT13	0.147	0.140	0.084	0.102	-0.109	-0.121	0.169	0.035	0.010	0.134	0.110	0.607
PT14	0.067	0.160	0.167	-0.063	-0.129	-0.119	0.144	0.153	0.273	0.116	0.094	0.622
PT15	0.278	0.312	0.281	0.193	-0.154	-0.208	0.256	0.160	0.044	0.179	0.292	0.746
PT16	0.134	0.221	0.132	0.111	-0.143	-0.139	0.150	0.079	0.048	0.175	0.099	0.781
PT17	0.007	0.141	-0.068	0.006	-0.039	-0.044	0.092	0.058	-0.016	0.033	-0.037	0.661
PT18	0.137	0.220	0.150	0.049	-0.073	-0.116	0.118	0.156	0.260	0.119	0.222	0.602
PT20	-0.006	0.090	-0.056	-0.025	-0.011	-0.022	0.084	0.094	-0.028	0.016	-0.012	0.686
PT3	0.292	0.165	0.196	0.206	-0.115	-0.087	0.102	0.065	0.076	0.151	0.163	0.651
PT4	0.132	0.272	0.038	0.168	-0.041	-0.035	0.010	-0.051	0.011	0.074	0.103	0.777
PT5	0.226	0.134	0.004	0.168	0.000	-0.036	0.129	0.125	0.228	0.024	0.140	0.679
PT6	0.254	0.026	0.054	0.175	-0.065	-0.083	0.072	0.102	0.246	0.071	0.057	0.754
PT7	0.166	0.208	0.163	0.111	-0.120	-0.136	0.166	0.084	0.062	0.187	0.150	0.764
PT8	0.263	0.127	0.170	0.146	-0.145	-0.173	0.158	0.157	0.309	0.197	0.177	0.733
PT9	0.181	0.283	0.125	0.097	-0.123	-0.120	0.116	0.012	0.009	0.123	0.282	0.814

### Outer Loadings

	BP	KD	KP	KV	Moder	Moder	Moder	Moder	Moder	PP	PS	PT
BP1	0.892											
BP2	0.852											
BP3	0.555											
BP4	0.661											
BP5	0.528											
KD1		0.809										
KD2		0.872										
KD3		0.735										
KD4		0.742										
KP2			0.817									
KP4			0.941									
KV1				0.925								
KV2				0.757								
PP10										0.695		

Outer Loadings (Continue)

PP10 * BP1						0.465							
PP10 * BP2						0.456							
PP10 * BP3						0.939							
PP10 * BP4						0.882							
PP10 * BP5						0.525							
PP10 * KD1						-0.370							
PP10 * KD2						-0.447							
PP10 * KD3						-0.804							
PP10 * KD4						-0.485							
PP10 * KP2										-0.526			
PP10 * KP4										-0.659			
PP10 * KV1						0.913							
PP10 * KV2						0.294							
PP10 * PS1										-0.341			
PP10 * PS2										-0.306			
PP10 * PS3										-0.124			
PP10 * PS4										-0.281			
PP10 * PS5										-0.407			
PP14												0.542	
PP14 * BP1						0.440							
PP14 * BP2						0.452							
PP14 * BP3						0.777							
PP14 * BP4						0.880							
PP14 * BP5						0.520							
PP14 * KD1										-0.214			
PP14 * KD2										-0.417			
PP14 * KD3										-0.790			
PP14 * KD4										-0.320			
PP14 * KP2										-0.608			
PP14 * KP4										-0.574			
PP14 * KV1						0.934							
PP14 * KV2						0.242							
PP14 * PS1										0.000			
PP14 * PS2										-0.580			
PP14 * PS3										0.554			
PP14 * PS4										0.064			
PP14 * PS5										-0.286			
PP4												0.814	

Outer Loadings (Continue)

PP4 * BP5					0.009						
PP4 * KD1						-0.176					
PP4 * KD2						-0.386					
PP4 * KD3						-0.099					
PP4 * KD4						0.316					
PP4 * KP2							0.621				
PP4 * KP4							0.606				
PP4 * KV1				0.633							
PP4 * KV2				-0.518							
PP4 * PS1								0.631			
PP4 * PS2								0.554			
PP4 * PS3								0.520			
PP4 * PS4								0.461			
PP4 * PS5								-0.549			
PP9									0.688		
PP9 * BP1					0.487						
PP9 * BP2					0.238						
PP9 * BP3					0.858						
PP9 * BP4					0.879						
PP9 * BP5					0.398						
PP9 * KD1						0.028					
PP9 * KD2						-0.242					
PP9 * KD3						-0.787					
PP9 * KD4						-0.267					
PP9 * KP2								-0.649			
PP9 * KP4								-0.636			
PP9 * KV1				0.933							
PP9 * KV2				0.257							
PP9 * PS1								-0.212			
PP9 * PS2								-0.343			
PP9 * PS3								-0.369			
PP9 * PS4								-0.309			
PP9 * PS5								-0.371			
PS1									0.631		
PS2									0.714		
PS3									0.511		
PS4									0.828		
PS5									0.855		
PT10										0.693	
PT11										0.755	
PT12										0.763	
PT13										0.607	
PT14										0.622	
PT15										0.746	
PT16										0.781	
PT17										0.661	
PT18										0.602	
PT20										0.686	
PT3										0.651	
PT4										0.777	
PT5										0.679	
PT6										0.754	
PT7										0.764	
PT8										0.733	
PT9										0.814	

## Collinearity Statistics (VIF)

### Inner VIF Values

	BP	KD	KP	KV	Moder	Moder	Moder	Moder	Moder	PP	PS	PT
BP												2.727
KD												2.766
KP												2.716
KV												2.341
Moderating Effect PP (KV-> PT)												7.897
Moderating Effect PP (BP->PT)												8.310
Moderating Effect PP (KD->PT)												6.976
Moderating Effect PP (KP->PT)												4.078
Moderating Effect PP (PS->PT)												2.440
PP												6.964
PS												2.707
PT												

## R Square

	R Square	R Square Adjusted
PT	0.144	0.020

## f Square

	BP	KD	KP	KV	Moder	Moder	Moder	Moder	Moder	PP	PS	PT
BP												0.012
KD												0.034
KP												0.004
KV												0.002
Moderating Effect PP (KV-> PT)												0.003
Moderating Effect PP (BP->PT)												0.014
Moderating Effect PP (KD->PT)												0.001
Moderating Effect PP (KP->PT)												0.000
Moderating Effect PP (PS->PT)												0.027
PP												0.004
PS												0.000
PT												

### Path Coefficients

	BP	KD	KP	KV	Moderat	Moder	Moder	Moderat	Moderat	PP	PS	PT
BP												0.167
KD												0.284
KP												-0.095
KV												-0.064
Moderating Effect PP (KV-> PT)												0.135
Moderating Effect PP (BP->PT)												-0.321
Moderating Effect PP (KD->PT)												-0.069
Moderating Effect PP (KP->PT)												0.019
Moderating Effect PP (PS->PT)												0.223
PP												-0.154
PS												0.028
PT												

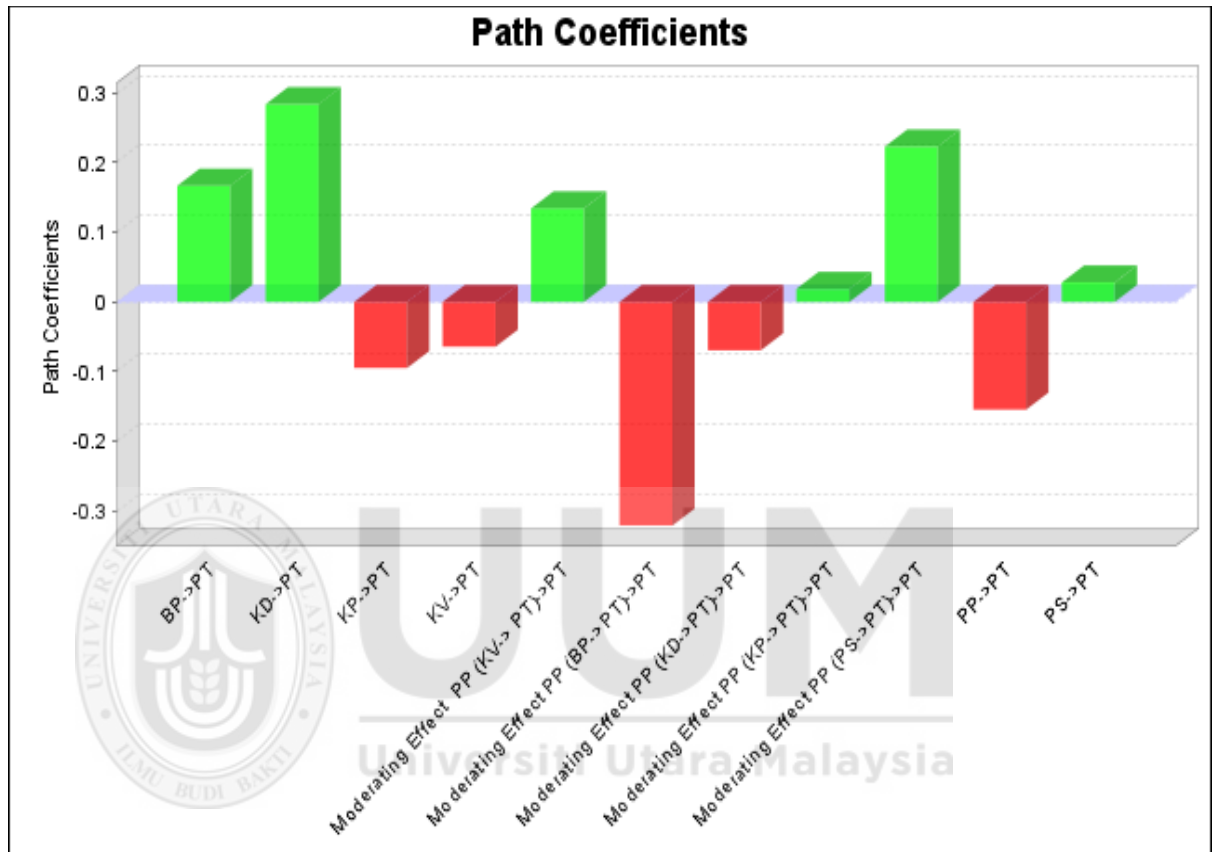
### Total Effects

	BP	KD	KP	KV	Moderat	Moder	Moder	Moderat	Moderat	PP	PS	PT
BP												0.167
KD												0.284
KP												-0.095
KV												-0.064
Moderating Effect PP (KV-> PT)												0.135
Moderating Effect PP (BP->PT)												-0.321
Moderating Effect PP (KD->PT)												-0.069
Moderating Effect PP (KP->PT)												0.019
Moderating Effect PP (PS->PT)												0.223
PP												-0.154
PS												0.028
PT												

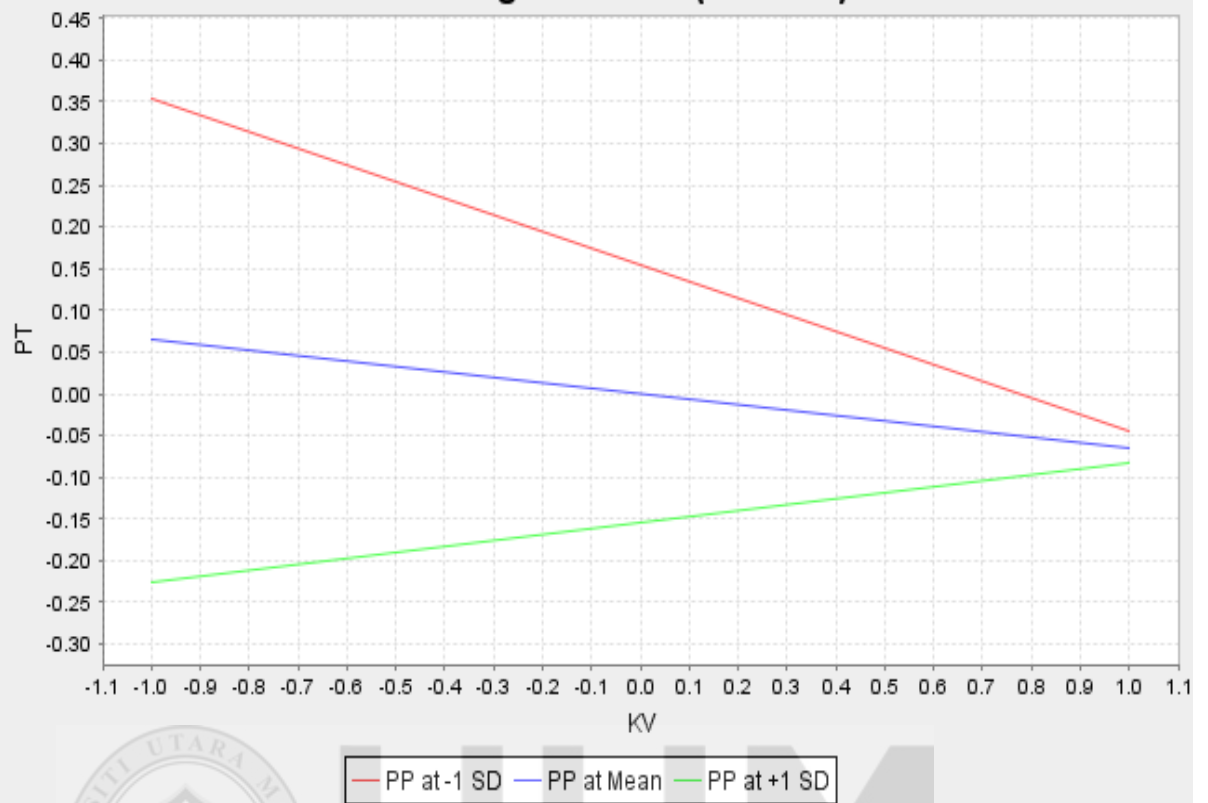


## Complete Chart

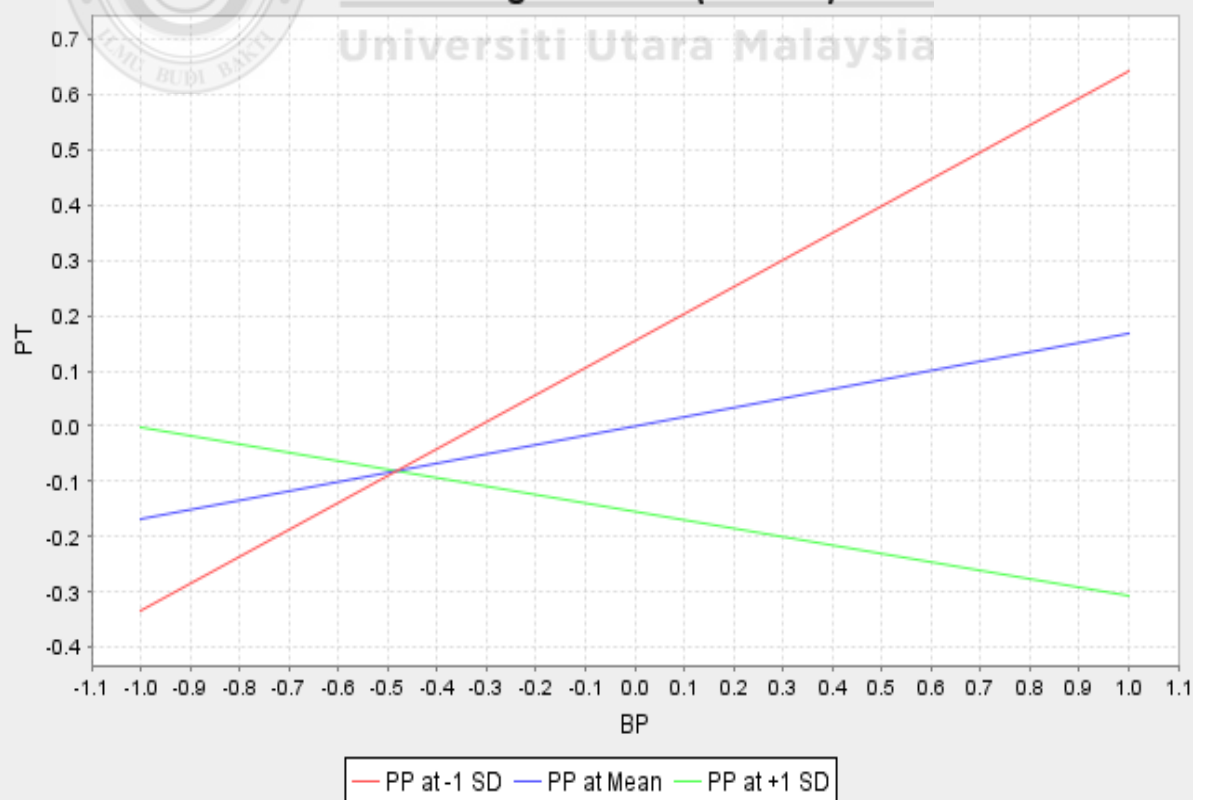
Keputusan Akhir Analisis Statistik Inferensi PLS-SEM Kajian Sebenar

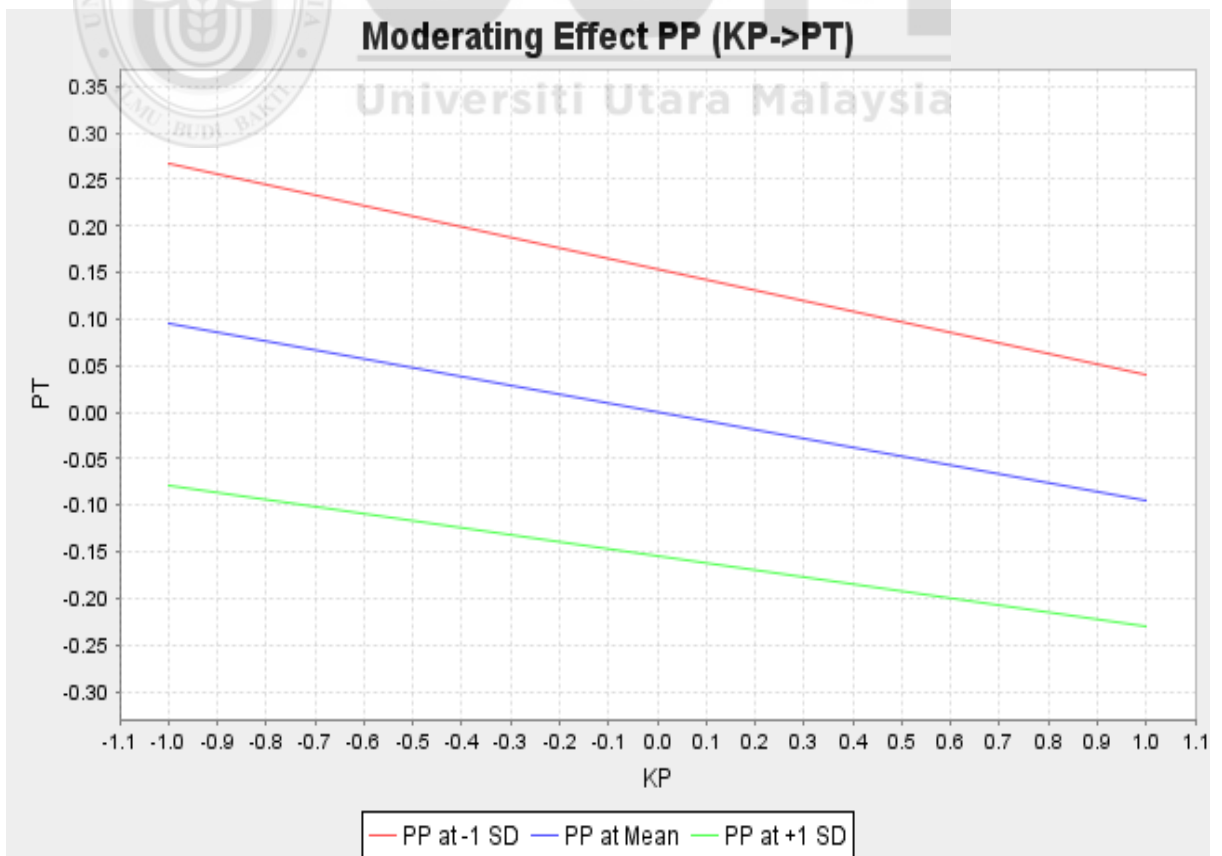
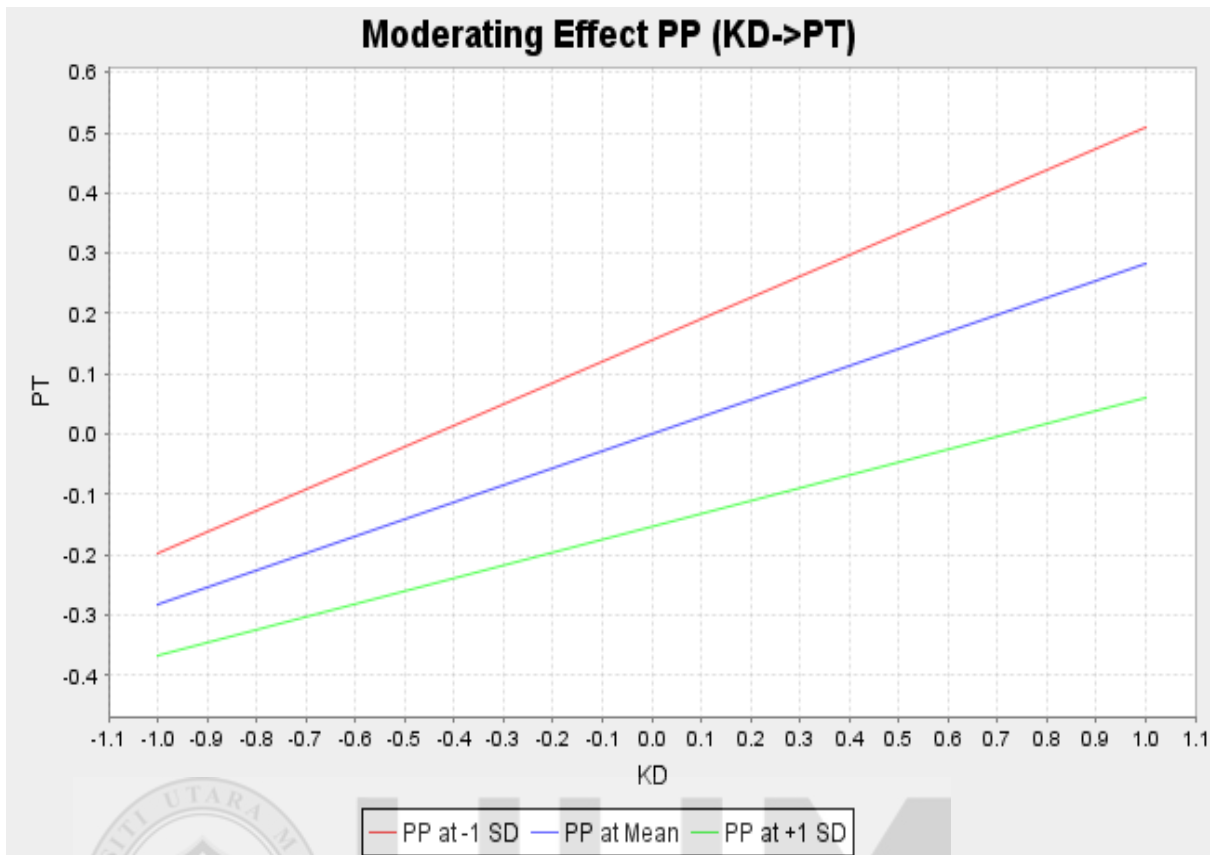


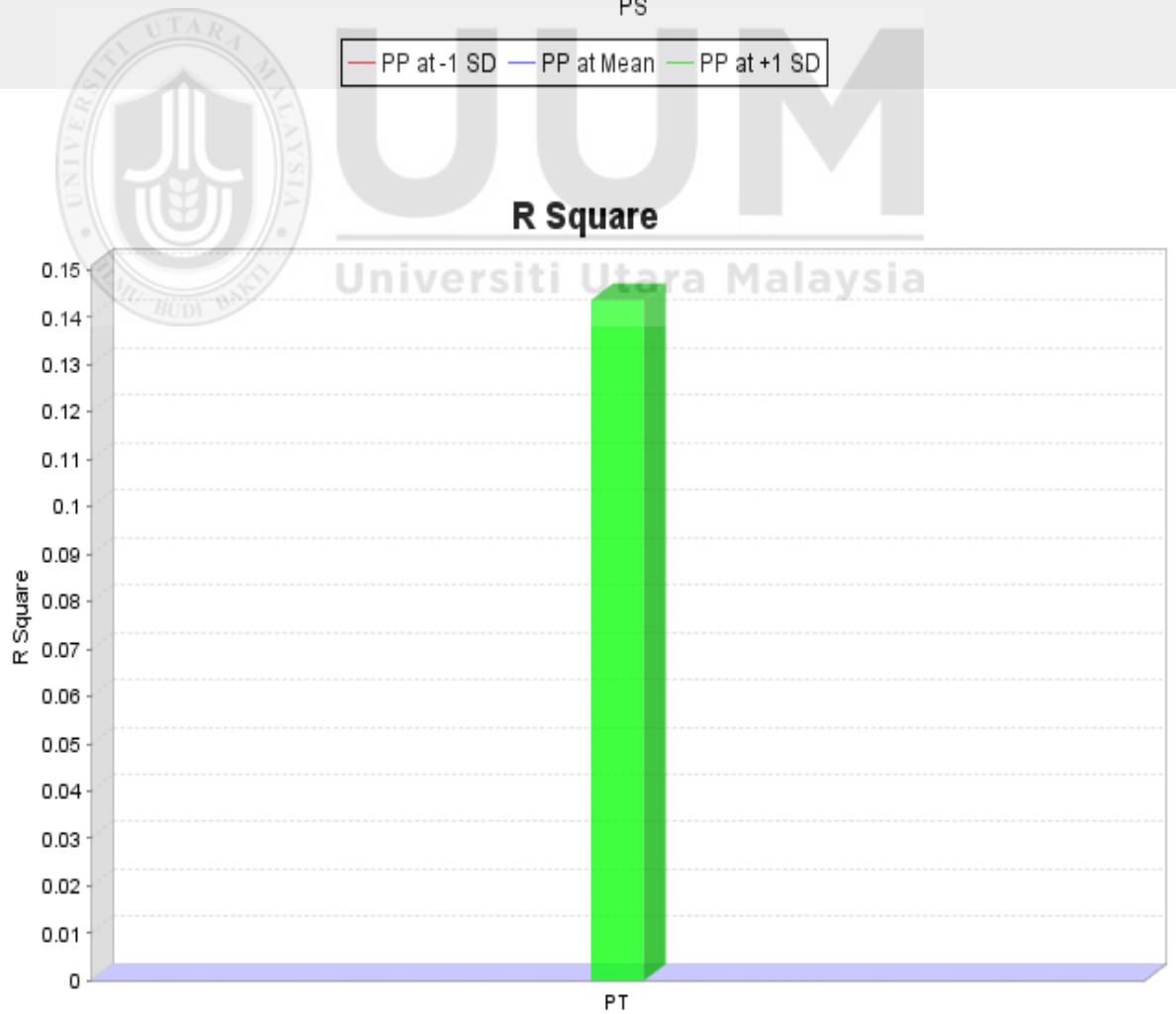
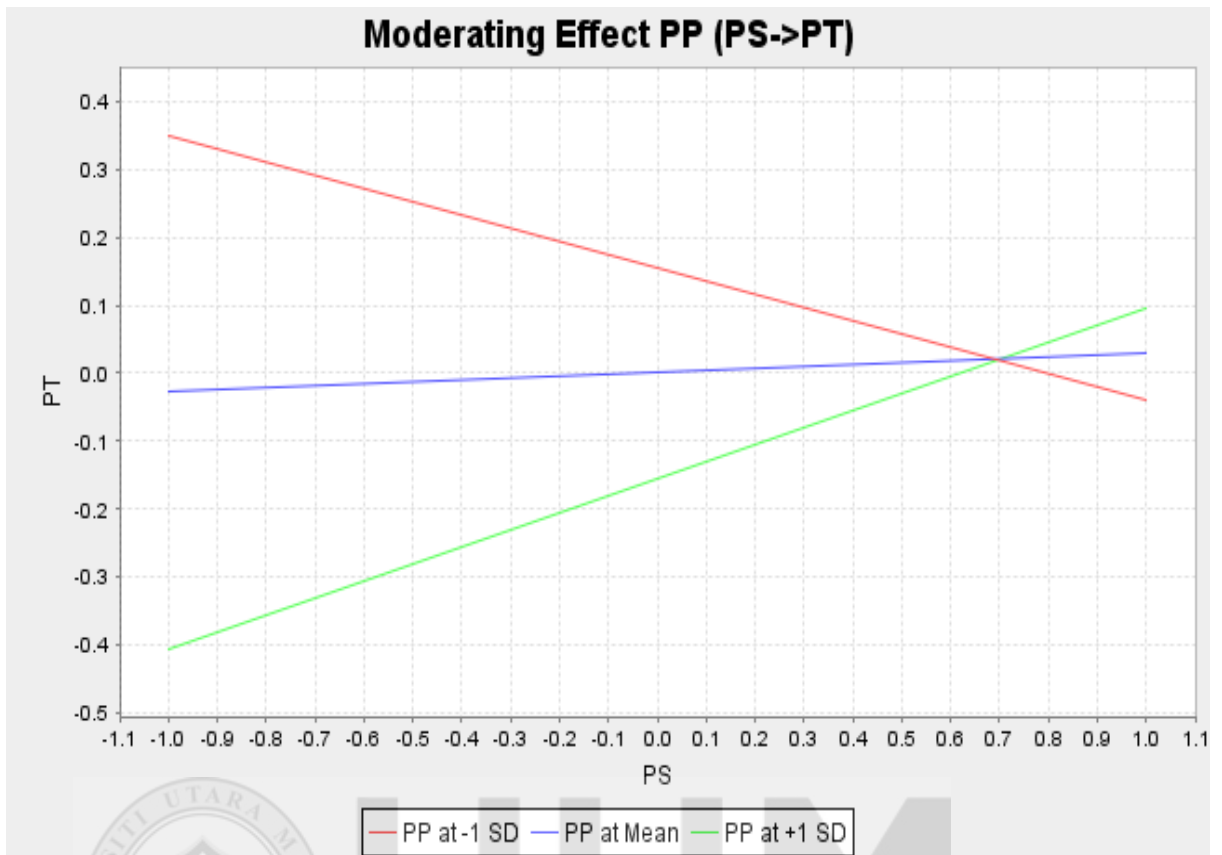
### Moderating Effect PP (KV-> PT)



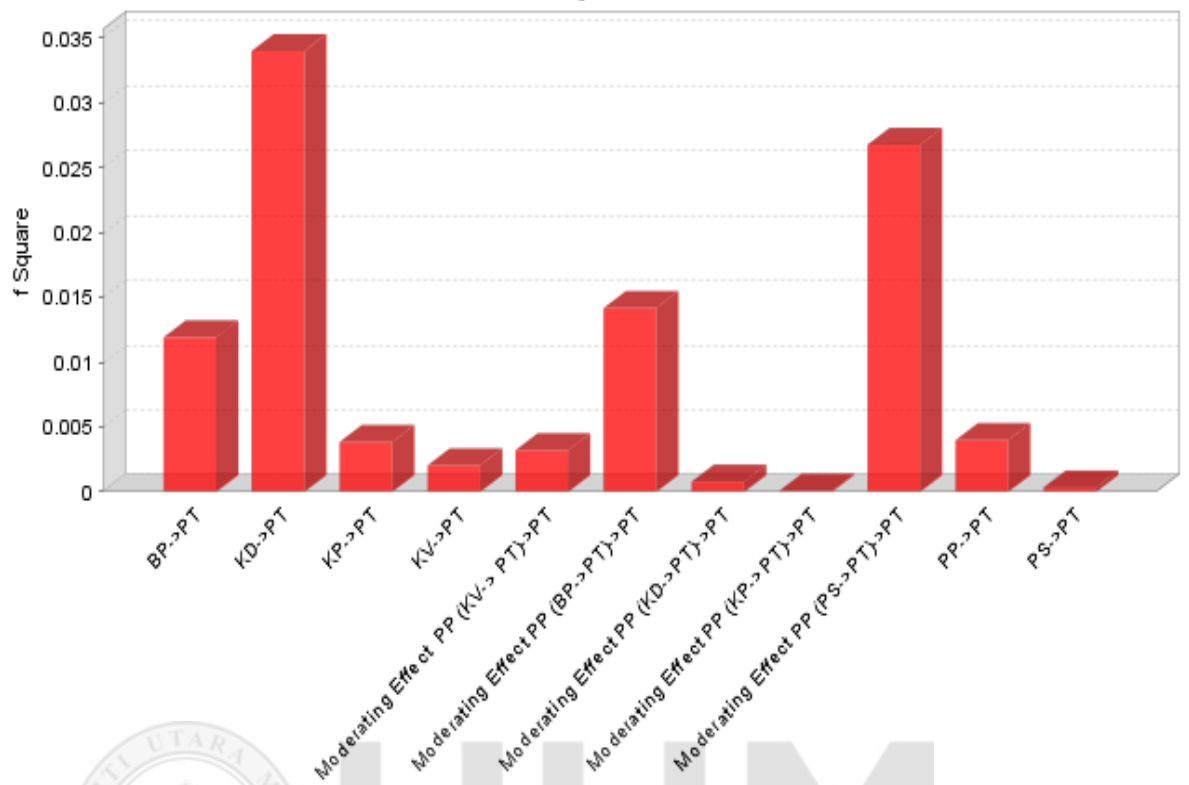
### Moderating Effect PP (BP->PT)



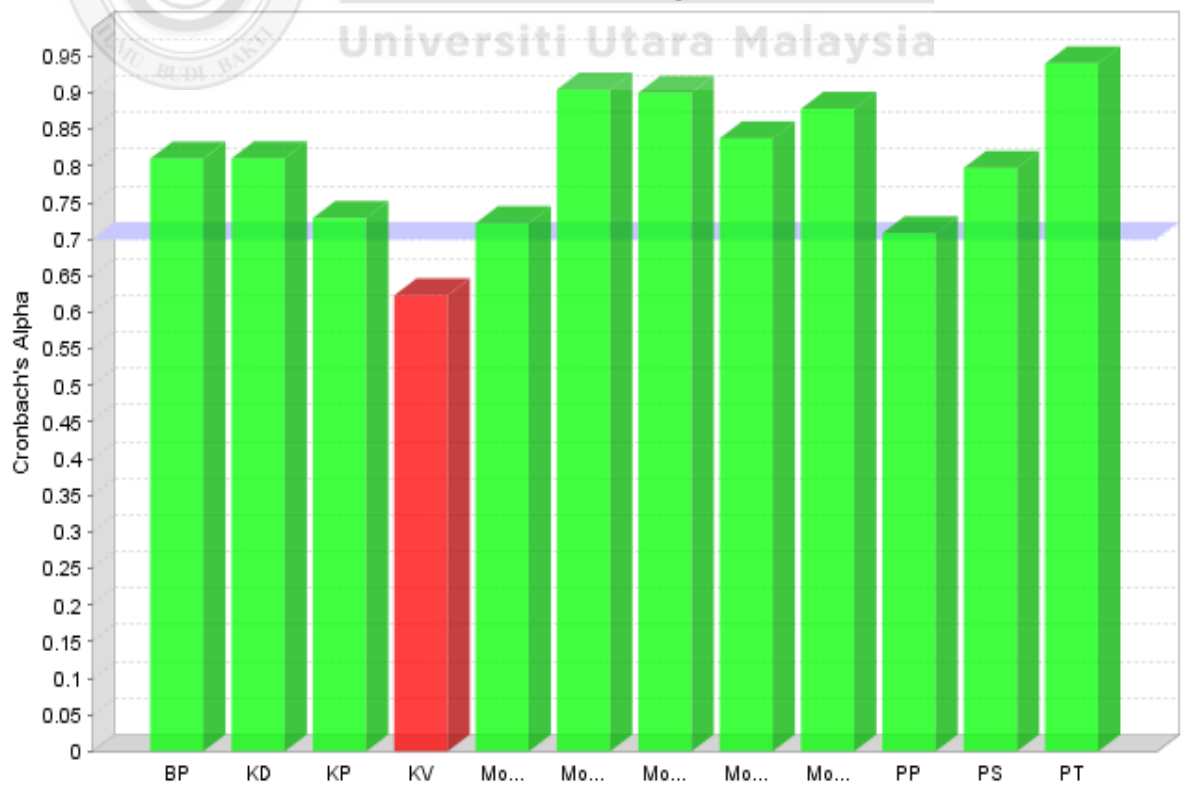




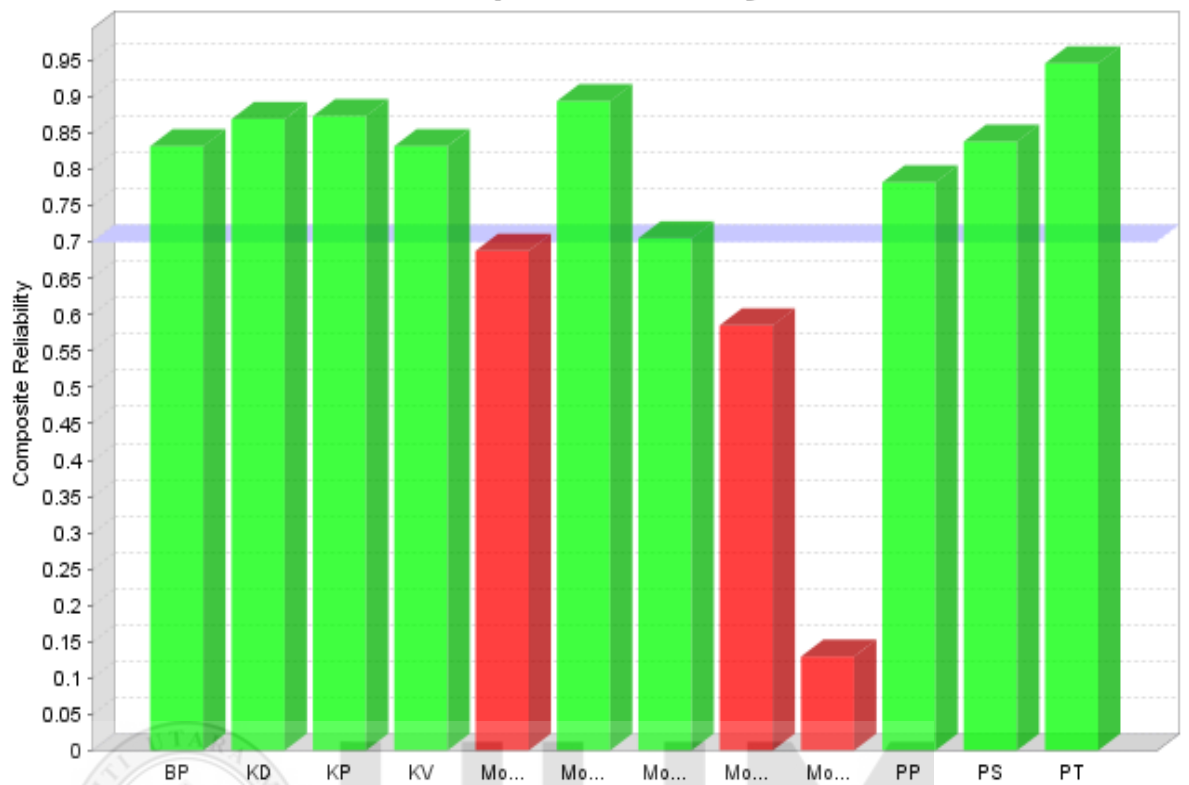
### f Square



**UUM**  
**Cronbach's Alpha**



### Composite Reliability



### Average Variance Extracted (AVE)

