

ภาคผนวก ช

ผลการวิเคราะห์ข้อมูล
ด้วยโปรแกรม LISREL 8.52

มหาวิทยาลัยราชภัฏสุราษฎร์ธานี

คำสั่งโมเดลโครงสร้างทักษะด้านสารสนเทศ สื่อ และเทคโนโลยีของนักเรียน
ระดับมัธยมศึกษาตอนต้น ในโรงเรียนสังกัดสำนักงานเขตพื้นที่การศึกษาประถมศึกษา
สกลนคร เขต 2 (IMTS)

DATE: 3/17/2019

TIME: 10:44

L I S R E L 8.52

BY

Karl G. J”reskog & Dag S”rbom

This program is published exclusively by

Scientific Software International, Inc.

7383 N. Lincoln Avenue, Suite 100

Lincolnwood, IL 60712, U.S.A.

Phone: (800)247-6113, (847)675-0720, Fax: (847)675-2140

Copyright by Scientific Software International, Inc., 1981-2002

Use of this program is subject to the terms specified in the

Universal Copyright Convention.

Website: www.ssicentral.com

The following lines were read from file C:\Users\Admin\Desktop\IMTS.LPJ:

TI

!DA NI=13 NO=350 NG=1 MA=CM

SY='C:\Users\Admin\Desktop\IMTS.dsf' NG=1

SE

1 2 3 4 5 6 7 8 9 10 11 12 13 /

MO NY=13 NK=1 NE=3 LY=FU,FI BE=FU,FI GA=FU,FI PH=SY,FR PS=DI,FR TE=SY,FI

LE

IL ML TL

LK

IMTS

FR LY(1,1) LY(2,1) LY(3,1) LY(4,2) LY(5,2) LY(6,2) LY(7,2) LY(8,3) LY(9,3)

FR LY(10,3) LY(11,3) LY(12,3) LY(13,3) GA(1,1) GA(2,1) GA(3,1) TE 1 1 TE 2 2
 FR TE 3 3 TE 4 4 TE 5 5 TE 6 6 TE 7 7 TE 8 8 TE 9 9 TE 10 10 TE 11 11 TE 12 12
 FR TE 13 13 TE 2 1 TE 4 3 TE 11 10 TE 13 12 TE 4 2 TE 13 10 TE 9 8 TE 7 6 TE 7 4
 FR TE 11 8 TE 13 9 TE 12 9 TE 6 4 TE 10 8 TE 5 3 TE 8 5

PD

OU ME=ML AM RS EF FS SC IT=250

TI

Number of Input Variables 13
 Number of Y - Variables 13
 Number of X - Variables 0
 Number of ETA - Variables 3
 Number of KSI - Variables 1
 Number of Observations 350

TI

Number of Iterations = 30

LISREL Estimates (Maximum Likelihood)

LAMBDA-Y			
	IL	ML	TL

A11	0.54	--	--
IU2	0.56	--	--
	(0.02)		
	25.15		
EI3	0.61	--	--
	(0.03)		
	19.83		
AM4	--	0.58	--

MA5	--	0.63	--
		(0.02)	
		26.06	
EM6	--	0.62	--
		(0.03)	
		24.24	
MC7	--	0.65	--
		(0.03)	
		23.74	
A8	--	--	0.55
M9	--	--	0.63
		(0.02)	
		26.91	
I10	--	--	0.59
		(0.02)	
		23.96	
E11	--	--	0.56
		(0.02)	
		25.64	
CR12	--	--	0.62
		(0.03)	
		22.14	
CO13	--	--	0.58
		(0.03)	
		21.05	

GAMMA

IMTS

IL 0.97

(0.05)

17.78

ML 0.99

(0.05)

20.46

TL 0.87

(0.05)

16.34

Covariance Matrix of ETA and KSI

	IL	ML	TL	IMTS
IL	1.00			
ML	0.97	1.00		
TL	0.84	0.86	1.00	
IMTS	0.97	0.99	0.87	1.00

PHI

IMTS

1.00

PSI

Note: This matrix is diagonal.

IL	ML	TL
0.05	0.01	0.25
(0.02)	(0.02)	(0.03)

2.21 0.80 8.20

Squared Multiple Correlations for Structural Equations

IL	ML	TL
-----	-----	-----
0.95	0.99	0.75

Squared Multiple Correlations for Reduced Form

IL	ML	TL
-----	-----	-----
0.95	0.99	0.75

THETA-EPS

	AI1	IU2	EI3	AM4	MA5	EM6
	-----	-----	-----	-----	-----	-----
AI1	0.14 (0.01) 10.73					
IU2	0.06 (0.01) 5.59	0.13 (0.01) 10.30				
EI3	--	--	0.11 (0.01) 9.76			
AM4	--	0.02 (0.01) 2.90	0.04 (0.01) 5.19	0.09 (0.01) 9.46		
MA5	--	--	0.01 (0.01) 1.89	--	0.07 (0.01) 9.71	

EM6	--	--	--	-0.02	--	0.06
			(0.01)		(0.01)	
			-3.53		7.63	
MC7	--	--	--	-0.02	--	0.00
			(0.01)		(0.01)	
			-3.87		0.12	
A8	--	--	--	--	0.01	--
				(0.00)		
				1.84		
M9	--	--	--	--	--	--
I10	--	--	--	--	--	--
E11	--	--	--	--	--	--
CR12	--	--	--	--	--	--
CO13	--	--	--	--	--	--

THETA-EPS

	MC7	A8	M9	I10	E11	CR12
--	-----	----	----	-----	-----	------

MC7	0.07					
	(0.01)					
	7.86					
A8	--	0.11				
		(0.01)				
		10.28				
M9	--	0.02	0.05			
		(0.01)	(0.01)			
		2.57	5.86			
I10	--	0.02	--	0.11		
		(0.01)		(0.01)		
		2.55		10.43		

E11	--	0.03	--	0.04	0.10	
		(0.01)		(0.01)	(0.01)	
		3.65		4.52	10.67	
CR12	--	--	-0.02	--	--	0.09
			(0.01)			(0.01)
			-3.06			8.11
CO13	--	--	-0.03	-0.02	--	0.00
			(0.01)	(0.01)		(0.01)
			-4.22	-3.31		0.28

THETA-EPS

CO13

CO13 0.10

(0.01)

8.50

Squared Multiple Correlations for Y – Variables

AI1	IU2	EI3	AM4	MA5	EM6
-----	-----	-----	-----	-----	-----

0.67	0.71	0.76	0.79	0.85	0.87
------	------	------	------	------	------

Squared Multiple Correlations for Y – Variables

MC7	A8	M9	I10	E11	CR12
-----	----	----	-----	-----	------

0.86	0.74	0.88	0.76	0.77	0.81
------	------	------	------	------	------

Squared Multiple Correlations for Y – Variables

CO13

0.78

Goodness of Fit Statistics

Degrees of Freedom = 46

Minimum Fit Function Chi-Square = 45.35 (P = 0.50)

Normal Theory Weighted Least Squares Chi-Square = 43.33 (P = 0.58)

Estimated Non-centrality Parameter (NCP) = 0.0

90 Percent Confidence Interval for NCP = (0.0 ; 16.56)

Minimum Fit Function Value = 0.13

Population Discrepancy Function Value (FO) = 0.0

90 Percent Confidence Interval for FO = (0.0 ; 0.047)

Root Mean Square Error of Approximation (RMSEA) = 0.0

90 Percent Confidence Interval for RMSEA = (0.0 ; 0.032)

P-Value for Test of Close Fit (RMSEA < 0.05) = 1.00

Expected Cross-Validation Index (ECVI) = 0.39

90 Percent Confidence Interval for ECVI = (0.39 ; 0.44)

ECVI for Saturated Model = 0.52

ECVI for Independence Model = 41.48

Chi-Square for Independence Model with 78 Degrees of Freedom = 14450.00

Independence AIC = 14476.00

Model AIC = 133.33

Saturated AIC = 182.00

Independence CAIC = 14539.15

Model CAIC = 351.94

Saturated CAIC = 624.07

Normed Fit Index (NFI) = 1.00

Non-Normed Fit Index (NNFI) = 1.00

Parsimony Normed Fit Index (PNFI) = 0.59

Comparative Fit Index (CFI) = 1.00

Incremental Fit Index (IFI) = 1.00

Relative Fit Index (RFI) = 0.99

Critical N (CN) = 548.91

Root Mean Square Residual (RMR) = 0.0059

Standardized RMR = 0.013

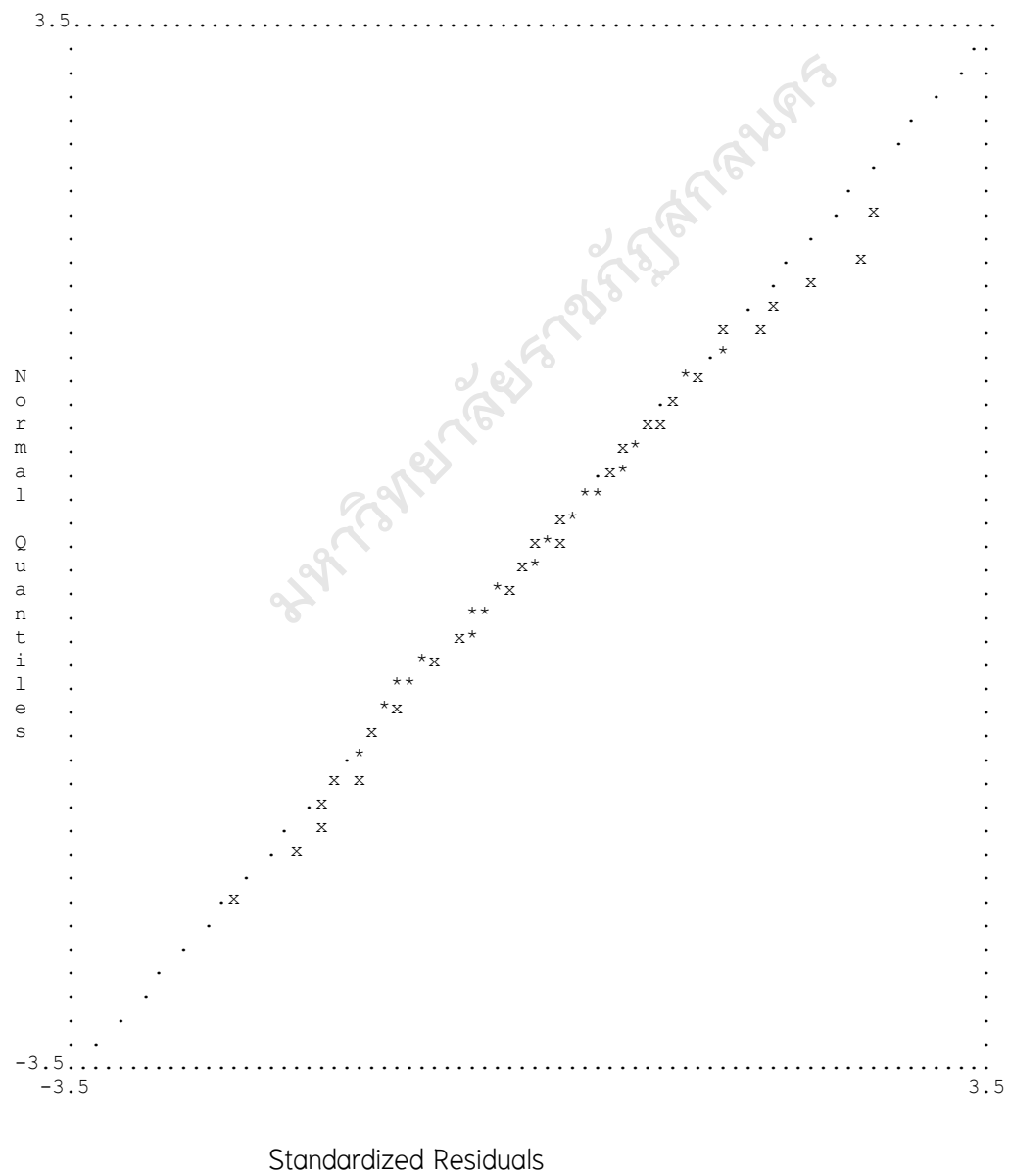
Goodness of Fit Index (GFI) = 0.98

Adjusted Goodness of Fit Index (AGFI) = 0.96

Parsimony Goodness of Fit Index (PGFI) = 0.50

TI

Qplot of Standardized Residuals



TI

Factor Scores Regressions

ETA

	AI1	IU2	EI3	AM4	MA5	EM6
IL	0.16	0.18	0.28	0.12	0.16	0.28
ML	0.08	0.01	-0.05	0.39	0.25	0.42
TL	0.01	0.00	0.00	0.02	0.02	0.03

ETA

	MC7	A8	M9	I10	E11	CR12
IL	0.26	-0.02	0.07	0.02	0.01	0.03
ML	0.39	-0.03	0.06	0.02	0.01	0.03
TL	0.03	-0.04	0.63	0.17	0.08	0.30

ETA

	CO13
IL	0.04
ML	0.03
TL	0.37

TI

Standardized Solution

LAMBDA-Y

	IL	ML	TL
AI1	0.54	--	--
IU2	0.56	--	--
EI3	0.61	--	--
AM4	--	0.58	--

MA5	--	0.63	--
EM6	--	0.62	--
MC7	--	0.65	--
A8	--	--	0.55
M9	--	--	0.63
I10	--	--	0.59
E11	--	--	0.56
CR12	--	--	0.62
CO13	--	--	0.58

GAMMA

IMTS

IL	0.97
ML	0.99
TL	0.87

Correlation Matrix of ETA and KSI

	IL	ML	TL	IMTS
IL	1.00			
ML	0.97	1.00		
TL	0.84	0.86	1.00	
IMTS	0.97	0.99	0.87	1.00

PSI

Note: This matrix is diagonal.

	IL	ML	TL
	0.05	0.01	0.25

TI

Completely Standardized Solution

LAMBDA-Y

	IL	ML	TL
	-----	-----	-----
A11	0.82	--	--
IU2	0.84	--	--
EI3	0.87	--	--
AM4	--	0.89	--
MA5	--	0.92	--
EM6	--	0.93	--
MC7	--	0.93	--
A8	--	--	0.86
M9	--	--	0.94
I10	--	--	0.87
E11	--	--	0.88
CR12	--	--	0.90
CO13	--	--	0.88

GAMMA

IMTS

IL	0.97
ML	0.99
TL	0.87

Correlation Matrix of ETA and KSI

	IL	ML	TL	IMTS
IL	1.00			
ML	0.97	1.00		
TL	0.84	0.86	1.00	
IMTS	0.97	0.99	0.87	1.00

PSI

Note: This matrix is diagonal.

	IL	ML	TL			
	0.05	0.01	0.25			
THETA-EPS						
	AI1	IU2	EI3	AM4	MA5	EM6
AI1	0.33					
IU2	0.13	0.29				
EI3	--	--	0.24			
AM4	--	0.04	0.09	0.21		
MA5	--	--	0.03	--	0.15	
EM6	--	--	--	-0.05	--	0.13
MC7	--	--	--	-0.05	--	0.00
A8	--	--	--	--	0.02	--
M9	--	--	--	--	--	--
I10	--	--	--	--	--	--
E11	--	--	--	--	--	--
CR12	--	--	--	--	--	--
CO13	--	--	--	--	--	--

THETA-EPS

	MC7	A8	M9	I10	E11	CR12
MC7	0.14					
A8	--	0.26				
M9	--	0.04	0.12			
I10	--	0.05	--	0.24		
E11	--	0.06	--	0.08	0.23	
CR12	--	--	-0.05	--	--	0.19
CO13	--	--	-0.07	-0.05	--	0.01

THETA-EPS

	CO13
CO13	0.22

TI

Total and Indirect Effects

Total Effects of X on ETA

	IMTS
IL	0.97 (0.05) 17.78
ML	0.99 (0.05) 20.46
TL	0.87 (0.05) 16.34

BETA*BETA' is not Pos. Def., Stability Index cannot be Computed

Total Effects of ETA on Y

	IL	ML	TL
AI1	0.54	--	--
IU2	0.56	--	--
	(0.02)		
	25.15		
EI3	0.61	--	--
	(0.03)		
	19.83		
AM4	--	0.58	--
MA5	--	0.63	--
	(0.02)		
	26.06		
EM6	--	0.62	--
	(0.03)		
	24.24		
MC7	--	0.65	--
	(0.03)		
	23.74		
A8	--	--	0.55
M9	--	--	0.63
		(0.02)	
		26.91	
I10	--	--	0.59
		(0.02)	
		23.96	

E11	--	--	0.56
			(0.02)
			25.64
CR12	--	--	0.62
			(0.03)
			22.14
CO13	--	--	0.58
			(0.03)
			21.05

Total Effects of X on Y

IMTS

A11	0.53
	(0.03)
	17.78
IU2	0.55
	(0.03)
	18.47
EI3	0.59
	(0.03)
	19.47
AM4	0.58
	(0.03)
	20.46
MA5	0.62
	(0.03)
	21.62

EM6	0.62
	(0.03)
	22.32
MC7	0.64
	(0.03)
	22.15
A8	0.48
	(0.03)
	16.34
M9	0.54
	(0.03)
	18.46
I10	0.51
	(0.03)
	16.66
E11	0.49
	(0.03)
	16.79
CR12	0.54
	(0.03)
	17.58
CO13	0.50
	(0.03)
	17.09

มหาวิทยาลัยราชภัฏสุราษฎร์ธานี

TI

Standardized Total and Indirect Effects

Standardized Total Effects of X on ETA

IMTS

IL	0.97
ML	0.99
TL	0.87

Standardized Total Effects of ETA on Y

	IL	ML	TL
	-----	-----	-----
AI1	0.54	--	--
IU2	0.56	--	--
EI3	0.61	--	--
AM4	--	0.58	--
MA5	--	0.63	--
EM6	--	0.62	--
MC7	--	0.65	--
A8	--	--	0.55
M9	--	--	0.63
I10	--	--	0.59
E11	--	--	0.56
CR12	--	--	0.62
CO13	--	--	0.58

Completely Standardized Total Effects of ETA on Y

	IL	ML	TL
	-----	-----	-----
AI1	0.82	--	--
IU2	0.84	--	--

EI3	0.87	--	--
AM4	--	0.89	--
MA5	--	0.92	--
EM6	--	0.93	--
MC7	--	0.93	--
A8	--	--	0.86
M9	--	--	0.94
I10	--	--	0.87
E11	--	--	0.88
CR12	--	--	0.90
CO13	--	--	0.88

Standardized Total Effects of X on Y

IMTS

A11	0.53
IU2	0.55
EI3	0.59
AM4	0.58
MA5	0.62
EM6	0.62
MC7	0.64
A8	0.48
M9	0.54
I10	0.51
E11	0.49
CR12	0.54
CO13	0.50

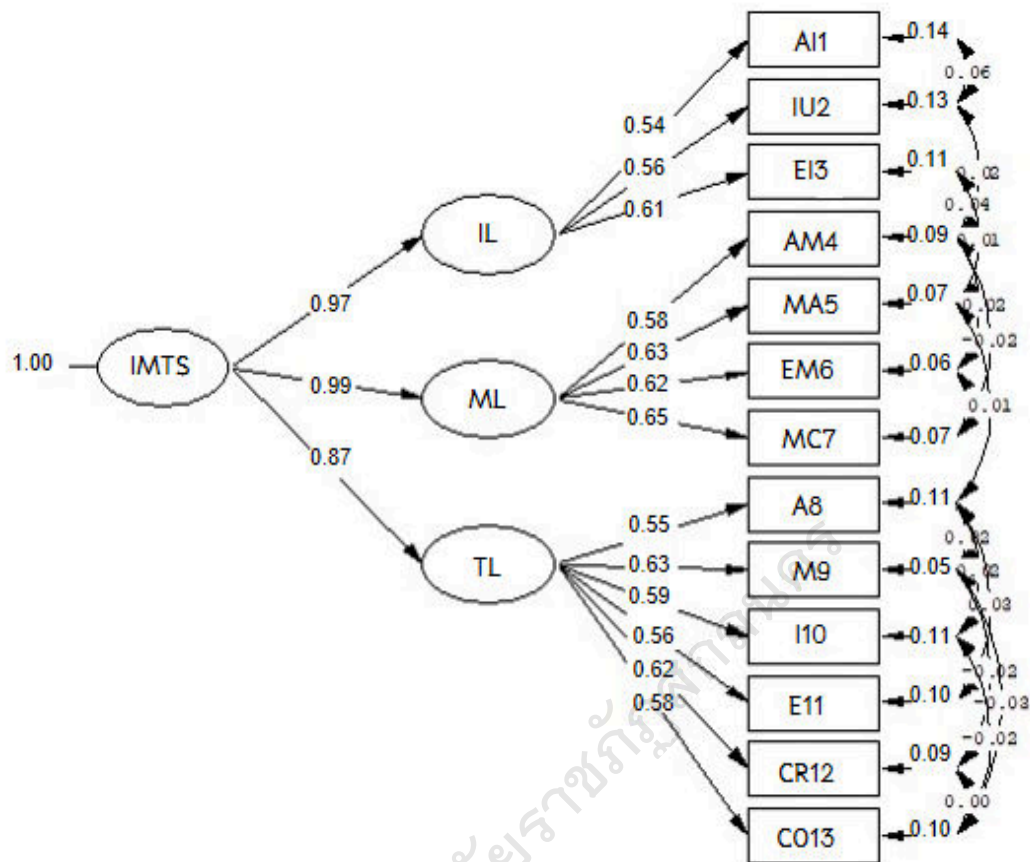
Completely Standardized Total Effects of X on Y

IMTS

A11	0.80
IU2	0.82
EI3	0.85
AM4	0.88
MA5	0.92
EM6	0.93
MC7	0.92
A8	0.74
M9	0.81
I10	0.75
E11	0.76
CR12	0.78
CO13	0.76

Time used: 0.031 Seconds

มหาวิทยาลัยราชภัฏสุราษฎร์ธานี



Chi-Square=43.33, df=46, P-value=0.58466, RMSEA=0.000

