



ภาคผนวก

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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ภาคผนวก ก
แบบสอบถามที่ใช้ในงานวิจัย

An Economic Analysis on the Travel Behavior of Foreign Tourists in Thailand

Dear Participants,

I am Nisanat Sereepong, a master student in the Faculty of Economics at Chiang Mai University, located in Chiang Mai, Thailand. I have designed this survey to evaluate the travel behavior of foreign tourists, as well as the satisfaction and opinions toward the public transportation system in Thailand. This survey will enable me to give some recommendations in order to enhance the services and quality of public transportation system. Therefore, your answers of the questionnaire will be a great help to Thailand and Thai people.

Please take a few minutes to answer the following questions. There will be no risk of helping me with this questionnaire. I will keep your response confidential and will not pass to third party. Your response to my questionnaire will be a great value to my research. By completing this survey, it will be taken that you grant me permission to use and amalgamate your data with others. My result will be published without identifying respondents.

If you have any questions regarding this research, please contact me or my supervisors. Our contact information is provided below.

Thank you for your consideration and participation in this research questionnaire.

Yours sincerely,

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Questionnaire

“An Economic Analysis on the Travel Behavior of Foreign Tourists in Thailand”
Please tick in the box representing your response, for the following questions.
Please specify your answers in the provided blanks below.

Part I: About Yourself

1. Gender: Male Female
2. Age (Please Specify): _____
3. Occupation: Business Owner Management
 Student Unemployed
 Government/military Housewife
 Retired Professional Related
 Construction Service
 Others (Please Specify) _____
4. Average Income per Month (in US\$) (Please Specify): _____
5. Nationality (Please Specify): _____
6. Number of Family Members (Please Specify): _____
7. Average transportation cost you spent in Thailand (in US\$): _____
8. Average goods and services cost you spent in Thailand (in US\$): _____
9. Average accommodation cost you spent in Thailand (in US\$): _____

Part II: About Your Satisfaction toward Time Spending in Thailand and Travel Cost

Please circle only ONE appropriate number that best represents your satisfaction on scale of 1-5.

Tourism	Satisfaction				
	Highly Disappointed → Extremely Satisfied				
1. Tourism relating to agriculture	1	2	3	4	5
2. Tourism relating to nature	1	2	3	4	5
3. Tourism relating to culture	1	2	3	4	5
4. Tourism relating to health care	1	2	3	4	5
5. Tourism relating to business	1	2	3	4	5

Your Cost of Travel	Satisfaction				
	Very Cheap → Very Expensive				
6. Transportation Cost within Thailand	1	2	3	4	5
7. Goods and Services Cost in Thailand	1	2	3	4	5
8. Accommodation Cost in Thailand	1	2	3	4	5

Please circle only ONE appropriate number that best represents your satisfaction on scale of 1-5. Please answer all of the transportation modes you have been traveled in Thailand.

Part III: About Your Satisfaction toward Bus Transportation within Thailand

How would you rate your satisfaction	Not Satisfied —————> Highly Satisfied				
I am satisfied with the bus ticket fees.	1	2	3	4	5
I am satisfied with the bus timetable.	1	2	3	4	5
I am satisfied with the time travel by bus.	1	2	3	4	5
I am satisfied with bus services.	1	2	3	4	5

Part IV: About Your Satisfaction toward Air Transportation within Thailand

How would you rate your satisfaction	Not Satisfied —————> Highly Satisfied				
I am satisfied with the air ticket fees.	1	2	3	4	5
I am satisfied with the airline timetable.	1	2	3	4	5
I am satisfied with the time travel by airplane.	1	2	3	4	5
I am satisfied with airline services.	1	2	3	4	5

Part V: About Your Satisfaction toward Train Transportation within Thailand

How would you rate your satisfaction	Not Satisfied —————> Highly Satisfied				
I am satisfied with the train ticket fees.	1	2	3	4	5
I am satisfied with the train timetable.	1	2	3	4	5
I am satisfied with the time travel by train.	1	2	3	4	5
I am satisfied with train services.	1	2	3	4	5

Part VI: About Your Satisfaction toward Boat Transportation within Thailand

How would you rate your satisfaction	Not Satisfied —————> Highly Satisfied				
I am satisfied with the boat ticket fees.	1	2	3	4	5
I am satisfied with the boat timetable.	1	2	3	4	5
I am satisfied with the time travel by boat.	1	2	3	4	5
I am satisfied with boat services.	1	2	3	4	5

ภาคผนวก ข

ผลการวิเคราะห์ครั้งที่ 1

DATE: 3/18/12

TIME: 19:38

L I S R E L 8.20

BY

Karl G. J'reskog & Dag S'rrom

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The following lines were read from file D:\THESIS\THESIS\RUN\LISREL.LS8:

PATH ANALYSIS FOR BEHAVIOR MODEL

DA NI=21 NO=400 MA=CM

LA

'Y2' 'Y3' 'Y4' 'Y6' 'Y7' 'Y8' 'Y10' 'Y11' 'Y12' 'Y14' 'Y15' 'Y16' 'X2' 'X3' 'X4' 'X7' 'X8' 'X9' 'X12' 'X13' 'X14'

KM

1.00

0.59 1.00

0.57 0.67 1.00

0.20 0.10 0.20 1.00

0.15 0.19 0.28 0.66 1.00

0.16 0.12 0.23 0.61 0.63 1.00

0.34 0.32 0.26 0.08 0.08 0.12 1.00
 0.17 0.41 0.25 0.05 0.00 0.03 0.61 1.00
 0.32 0.34 0.40 0.11 0.11 0.13 0.59 0.63 1.00
 0.26 0.24 0.24 0.28 0.19 0.24 0.16 0.10 0.18 1.00
 0.27 0.21 0.28 0.33 0.27 0.25 0.09 0.10 0.23 0.58 1.00
 0.26 0.27 0.42 0.27 0.20 0.24 0.12 0.10 0.29 0.50 0.60 1.00
 0.09 0.00 0.01 0.13 0.07 0.07 0.06 0.00 0.03 0.02 0.02 0.08 1.00
 0.08 0.09 0.04 0.09 0.12 0.10 0.01 0.11 0.01 0.02 0.04 0.03 0.13 1.00
 0.03 0.06 0.06 0.11 0.11 0.05 0.06 0.05 0.02 0.03 0.00 0.01 0.10 0.12 1.00
 0.29 0.39 0.28 0.06 0.07 0.09 0.32 0.34 0.24 0.08 0.09 0.07 0.08 0.04 0.02 1.00
 0.18 0.17 0.19 0.17 0.18 0.33 0.10 0.02 0.13 0.16 0.21 0.13 0.02 0.10 0.01 0.51 1.00
 0.17 0.18 0.22 0.20 0.14 0.22 0.14 0.11 0.11 0.08 0.15 0.16 0.05 0.02 0.01 0.46 0.60 1.00
 0.12 0.19 0.22 0.15 0.07 0.15 0.22 0.25 0.24 0.09 0.05 0.12 0.13 0.04 0.08 0.16 0.11 0.11 1.00
 0.12 0.07 0.18 0.20 0.17 0.26 0.20 0.11 0.17 0.13 0.04 0.13 0.15 0.03 0.07 0.06 0.12 0.08 0.55 1.00
 0.17 0.21 0.26 0.13 0.13 0.17 0.23 0.20 0.25 0.09 0.09 0.17 0.16 0.02 0.09 0.11 0.06 0.04 0.54 0.70 1.00
 SD
 0.94 1.02 1.08 0.81 0.85 0.89 0.91 1.09 1.00 0.81 0.84 0.98 13.26 3.40 7191.04 1.17 0.93 0.94 0.94 0.91 1.00
 MO NY=12 NX=9 NE=4 NK=3 C
 LX=FU,FI LY=FU,FI BE=SD,FI GA=FU,FR PH=SY,FR PS=SY,FR C
 TE=DI,FR TD=DI,FR
 FR LY(1,1) LY(2,1) LY(3,1) LY(4,2) LY(5,2) LY(6,2) LY(7,3) LY(8,3) LY(9,3) LY(10,4) LY(11,4) LY(12,4)
 FR LX(1,1) LX(2,1) LX(3,1) LX(4,2) LX(5,2) LX(6,2) LX(7,3) LX(8,3) LX(9,3)
 LE
 'BUS' 'PLANE' 'TRAIN' 'BOAT'
 LK
 'DEMOGRAPH' 'TIME' 'COST'
 PATH DIAGRAM
 OU ME SE TV PC RS EF MR MI FS SS SC AL ND=8 AD=OFF IT=1000 EP
 PATH ANALYSIS FOR BEHAVIOR MODEL
 Number of Input Variables 21
 Number of Y - Variables 12
 Number of X - Variables 9
 Number of ETA - Variables 4
 Number of KSI - Variables 3

Number of Observations 400

PATH ANALYSIS FOR BEHAVIOR MODEL

Covariance Matrix to be Analyzed

Y2	Y3	Y4	Y6	Y7	Y8
Y2 0.88360000					
Y3 0.56569200	1.04040000				
Y4 0.57866400	0.73807200	1.16640000			
Y6 0.15228000	0.08262000	0.17496000	0.65610000		
Y7 0.11985000	0.16473000	0.25704000	0.45441000	0.72250000	
Y8 0.13385600	0.10893600	0.22107600	0.43974900	0.47659500	0.79210000
Y10 0.29083600	0.29702400	0.25552800	0.05896800	0.06188000	0.09718800
Y11 0.17418200	0.45583800	0.29430000	0.04414500	--	0.02910300
Y12 0.30080000	0.34680000	0.43200000	0.08910000	0.09350000	0.11570000
Y14 0.19796400	0.19828800	0.20995200	0.18370800	0.13081500	0.17301600
Y15 0.21319200	0.17992800	0.25401600	0.22453200	0.19278000	0.18690000
Y16 0.23951200	0.26989200	0.44452800	0.21432600	0.16660000	0.20932800
X2 1.12179600	--	0.14320800	1.39627800	0.78897000	0.82609800
X3 0.25568000	0.31212000	0.14688000	0.24786000	0.34680000	0.30260000
X4*****					
X7 0.31894200	0.46542600	0.35380800	0.05686200	0.06961500	0.09371700
X8 0.15735600	0.16126200	0.19083600	0.12806100	0.14229000	0.27314100
X9 0.15021200	0.17258400	0.22334400	0.15228000	0.11186000	0.18405200
X12 0.10603200	0.18217200	0.22334400	0.11421000	0.05593000	0.12549000
X13 0.10264800	0.06497400	0.17690400	0.14742000	0.13149500	0.21057400
X14 0.15980000	0.21420000	0.28080000	0.10530000	0.11050000	0.15130000

Covariance Matrix to be Analyzed

Y10	Y11	Y12	Y14	Y15	Y16
Y10 0.82810000					
Y11 0.60505900	1.18810000				
Y12 0.53690000	0.68670000	1.00000000			
Y14 0.11793600	0.08829000	0.14580000	0.65610000		
Y15 0.06879600	0.09156000	0.19320000	0.39463200	0.70560000	

Y16 0.10701600 0.10682000 0.28420000 0.39690000 0.49392000 0.96040000
 X2 0.72399600 -- 0.39780000 0.21481200 0.22276800 1.03958400
 X3 0.03094000 0.40766000 0.03400000 0.05508000 0.11424000 0.09996000
 X4***** -- 70.47219200
 X7 0.34070400 0.43360200 0.28080000 0.07581600 0.08845200 0.08026200
 X8 0.08463000 0.02027400 0.12090000 0.12052800 0.16405200 0.11848200
 X9 0.11975600 0.11270600 0.10340000 0.06091200 0.11844000 0.14739200
 X12 0.18818800 0.25615000 0.22560000 0.06852600 0.03948000 0.11054400
 X13 0.16562000 0.10910900 0.15470000 0.09582300 0.03057600 0.11593400
 X14 0.20930000 0.21800000 0.25000000 0.07290000 0.07560000 0.16660000

Covariance Matrix to be Analyzed

X2	X3	X4	X7	X8	X9
-----	-----	-----	-----	-----	-----

X2*****

X3 5.8609200011.56000000

X4*****

X7 1.24113600 0.15912000***** 1.36890000

X8 0.24663600 0.3162000066.87667200 0.55493100 0.86490000

X9 0.62322000 0.0639200067.59577600 0.50590800 0.52452000 0.88360000

X12 1.62037200 0.12784000***** 0.17596800 0.09616200 0.09719600

X13 1.80999000 0.09282000***** 0.06388200 0.10155600 0.06843200

X14 2.12160000 0.06800000***** 0.12870000 0.05580000 0.03760000

Covariance Matrix to be Analyzed

X12	X13	X14
-----	-----	-----

X12 0.88360000

X13 0.47047000 0.82810000

X14 0.50760000 0.63700000 1.00000000

PATH ANALYSIS FOR BEHAVIOR MODEL

LAMBDA-Y

BUS	PLANE	TRAIN	BOAT
-----	-----	-----	-----

Y2 1.00000000 -- -- --

Y3 2.17019611 -- -- --

Y4 2.29785577 -- -- --
 Y6 -- 1.00000000 -- --
 Y7 -- 1.04938275 -- --
 Y8 -- 0.49943958 -- --
 Y10 -- -- 1.00000000 --
 Y11 -- -- 0.99816933 --
 Y12 -- -- 0.36630397 --
 Y14 -- -- -- 1.00000000
 Y15 -- -- -- 0.00001377
 Y16 -- -- -- 0.40330401

LAMBDA-X

DEMOGRAP TIME COST

 X211.24293592 -- --
 X3 3.45935149 -- --
 X4***** -- --
 X7 -- 1.21319212 --
 X8 -- 0.48217410 --
 X9 -- 0.48735858 --
 X12 -- -- 0.72098533
 X13 -- -- 0.61072851
 X14 -- -- 0.86288146

GAMMA

DEMOGRAP TIME COST

 BUS 0.58554716 0.16435374-0.43789399
 PLANE 2.65900108 0.05716686-2.21291398
 TRAIN 0.94393838 0.29593505-0.62909177
 BOAT 0.35081952 0.11163830-0.19790809

Covariance Matrix of ETA and KSI

BUS PLANE TRAIN BOAT DEMOGRAP TIME

 BUS 0.17895338
 PLANE 0.08876071 0.58219812

TRAIN 0.17546740 0.06404859 0.83190430

BOAT 0.14521855 0.22192296 0.15648484 0.98417143

DEMOGRAP 0.22522087 0.71160738 0.43606475 0.19407747 1.00000000

TIME 0.19222717 0.14895487 0.35277684 0.13832831 0.16352584 1.00000000

COST 0.10534563 0.14713655 0.25144750 0.12960499 0.88423770 0.15501162

Covariance Matrix of ETA and KSI

COST

COST 1.00000000

PHI

DEMOGRAP TIME COST

----- ----- -----

DEMOGRAP 1.00000000

TIME 0.16352584 1.00000000

COST 0.88423770 0.15501162 1.00000000

PSI

BUS PLANE TRAIN BOAT

----- ----- ----- -----

BUS 0.06161290

PLANE -0.28797005 -0.99288142

TRAIN -0.02774191 -0.55918350 0.47407057

BOAT 0.06559551 -0.01523235 0.01388490 0.92629240

Squared Multiple Correlations for Structural Equations

BUS PLANE TRAIN BOAT

----- ----- ----- -----

0.65570418 2.70540129 0.43013809 0.05880990

THETA-EPS

Y2 Y3 Y4 Y6 Y7 Y8

----- ----- ----- ----- ----- -----

0.70464662 0.19757410 0.22150089 0.07390188 0.08138101 0.64687656

THETA-EPS

Y10 Y11 Y12 Y14 Y15 Y16

----- ----- ----- ----- ----- -----

-0.00380430 0.35923880 0.88837625 -0.32807143 0.70560000 0.80032046

THETA-DELTA

X2	X3	X4	X7	X8	X9
-----	-----	-----	-----	-----	-----
49.42399178	-0.40711273	*****	-0.10293512	0.63240814	0.64608161

THETA-DELTA

X12	X13	X14
-----	-----	-----
0.36378015	0.45511068	0.25543559

PATH ANALYSIS FOR BEHAVIOR MODEL

LAMBDA-Y

BUS	PLANE	TRAIN	BOAT
-----	-----	-----	-----
Y2	0.42297188	--	--
Y3	0.91788115	--	--
Y4	0.97187571	--	--
Y6	--	0.76237507	--
Y7	--	0.80001554	--
Y8	--	0.38076265	--
Y10	--	--	0.91097509
Y11	--	--	0.90929338
Y12	--	--	0.33370003
Y14	--	--	1.00047947
Y15	--	--	0.00004625
Y16	--	--	0.40355162

LAMBDA-X

DEMOGRAP	TIME	COST
-----	-----	-----
X2	9.70859608	--
X3	2.98704883	--
X4	*****	--
X7	--	1.18698029
X8	--	0.47174509
X9	--	0.47683626
X12	--	0.56857857

X13 -- -- 0.48163306

X14 -- -- 0.68048120

GAMMA

DEMOGRAP TIME COST

BUS*****42.56576935*****

PLANE*****68.43424957

TRAIN*****

BOAT*****

Covariance Matrix of ETA and KSI

BUS PLANE TRAIN BOAT DEMOGRAP TIME

BUS 1.00000000

PLANE 0.27520896 1.00000000

TRAIN 0.45539183 0.09124711 1.00000000

BOAT 0.34361618 0.29010884 0.17253127 1.00000000

DEMOGRAP 0.48813040 0.85563646 0.43879779 0.17781705 1.00000000

TIME 0.37813092 0.10180079 0.33216449 0.12350595 0.14433582 1.00000000

COST 0.55769675 0.82003085 0.48632267 0.19247878 0.96830216 0.38701386

Covariance Matrix of ETA and KSI

COST

COST 1.00000000

PHI

DEMOGRAP TIME COST

DEMOGRAP 1.00000000

TIME 0.14433582 1.00000000

COST 0.96830216 0.38701386 1.00000000

PSI

BUS PLANE TRAIN BOAT

BUS 1.89430178

PLANE-0.63839059 0.47302891

TRAIN-0.92242908 0.16312103 1.68103990

BOAT-0.51147911 0.44178456 0.71514044 1.40113841

Squared Multiple Correlations for Structural Equations

BUS PLANE TRAIN BOAT

-0.89430178 0.52697109 -0.68103990 -0.40113841

THETA-EPS

Y2 Y3 Y4 Y6 Y7 Y8

0.70461106 0.19807837 0.22198343 0.07787877 0.08573249 0.64786134

THETA-EPS

Y10 Y11 Y12 Y14 Y15 Y16

-0.00075470 0.36238019 0.88880288 -0.34750586 0.70559897 0.79731831

THETA-DELTA

X2 X3 X4 X7 X8 X9

81.57136652 2.63758921*****-0.04567676 0.64163963 0.65540646

THETA-DELTA

X12 X13 X14

0.55968072 0.59567358 0.53603275

Goodness of Fit Statistics

Degrees of Freedom = 168

Normal Theory Weighted Least Squares Chi-Square = 4404.30203672 (P = 0.0)

Estimated Non-centrality Parameter (NCP) = 4236.30203672

Minimum Fit Function Value = 729.82653312

Population Discrepancy Function Value (F0) = 10.61729834

Root Mean Square Error of Approximation (RMSEA) = 0.25139253

Expected Cross-Validation Index (ECVI) = 11.35414044

ECVI for saturated Model = 1.15789474

ECVI for Independence Model = 12.02436316

Chi-Square for Independence Model with 210 Degrees of Freedom = 4755.72090000

Independence AIC = 4797.72090000

Model AIC = 4530.30203672

Saturated AIC = 462.00000000

Independence CAIC = 4902.54165549

Model CAIC = 4844.76430318

Saturated CAIC = 1615.02831038

Root Mean Square Residual (RMR) = 1.77747640

Standardized RMR = 0.17927807

Goodness of Fit Index (GFI) = 1.00

Adjusted Goodness of Fit Index (AGFI) = 1.00000000

Parsimony Goodness of Fit Index (PGFI) = 0.72727273

Normed Fit Index (NFI) = 0.6023168134

Non-Normed Fit Index (NNFI) = 0.7902932679

Parsimony Normed Fit Index (PNFI) = 0.4818534508

Comparative Fit Index (CFI) = 0.0

Incremental Fit Index (IFI) = 0.6243733480

Relative Fit Index (RFI) = 0.7553960168

Critical N (CN) = 1.29262609

PATH ANALYSIS FOR BEHAVIOR MODEL

Fitted Covariance Matrix

Y2	Y3	Y4	Y6	Y7	Y8
0.88351627					
0.38823791	1.04058417				
0.41107609	0.89206639	1.16652582			
0.08874477	0.19258290	0.20391163	0.65909452		
0.09312633	0.20209122	0.21397928	0.60991190	0.72575734	
0.04432292	0.09618412	0.10184217	0.29028395	0.30461603	0.79284154
0.17547014	0.38078356	0.40318324	0.06337155	0.06650037	0.03165045
0.17514622	0.38008061	0.40243894	0.06325456	0.06637760	0.03159203
0.06427661	0.13948514	0.14769038	0.02321368	0.02435980	0.01159390
0.14540966	0.31555003	0.33411233	0.22127779	0.23220286	0.11051557
0.00000672	0.00001459	0.00001544	0.00001023	0.00001073	0.00000511
0.05865218	0.12727970	0.13476696	0.08925422	0.09366093	0.04457737
2.00448947	4.34989463	4.60577814	6.33307166	6.64575208	3.16300627

X3 0.61672232 1.33833436 1.41706217 1.94849947 2.04470201 0.97316379
 X4*****
 X7 0.18984414 0.41197622 0.43621081 0.09212200 0.09667030 0.04600966
 X8 0.07545032 0.16373293 0.17336455 0.03661232 0.03841996 0.01828575
 X9 0.07626459 0.16549997 0.17523554 0.03700745 0.03883460 0.01848310
 X12 0.13412202 0.29105499 0.30817636 0.35545888 0.37300882 0.17753133
 X13 0.11361244 0.24654764 0.26105086 0.30110306 0.31596931 0.15038372
 X14 0.16051874 0.34833787 0.36882892 0.42541717 0.44642113 0.21247149

Fitted Covariance Matrix

Y10	Y11	Y12	Y14	Y15	Y16
0.82912092					
0.82834362	1.18919463				
0.30399241	0.30343123	1.00015859			
0.15724705	0.15695676	0.05760130	0.65345331		
0.00000727	0.00000726	0.00000266	0.00004627	0.70559897	
0.06342689	0.06330980	0.02323396	0.40374511	0.00001866	0.96017221
3.88085459	3.87369030	1.42159901	1.72718160	0.00007984	0.69667289
1.19402456	1.19182032	0.43738411	0.53140287	0.00002456	0.21434571
0.0080763670	0.47694416				
0.35917261	0.35850955	0.13156881	0.14666941	0.00000678	0.05916031
0.14274703	0.14248351	0.05228978	0.05829126	0.00000269	0.02351226
0.14428759	0.14402122	0.05285410	0.05892035	0.00000272	0.02376601
0.25189613	0.25143112	0.09227228	0.10949178	0.00000506	0.04416441
0.21337685	0.21298295	0.07816225	0.09274859	0.00000429	0.03741091
0.30147211	0.30091558	0.11043250	0.13104099	0.00000606	0.05285646

Fitted Covariance Matrix

X2	X3	X4	X7	X8	X9
0.0000505711	0.56004993				
1.66331328	0.51175247	1.36324545			
0.66105552	0.2033873066	0.87381273	0.55995212	0.86418305	

X9 0.66818976 0.2055822967.59552877 0.56599524 0.22494516 0.88277928
 X12 5.34512445 1.64453723***** 0.26119238 0.10380646 0.10492676
 X13 4.52776240 1.39305902***** 0.22125155 0.08793266 0.08888164
 X14 6.39710483 1.96820058***** 0.31259797 0.12423674 0.12557753

Fitted Covariance Matrix

X12 X13 X14

X12 0.88296231

X13 0.27384624 0.82764399

X14 0.38690703 0.32774225 0.99908742

Fitted Residuals

Y2 Y3 Y4 Y6 Y7 Y8

Y2 0.00008373

Y3 0.17745409-0.00018417

Y4 0.16758791-0.15399439-0.00012582

Y6 0.06353523-0.10996290-0.02895163-0.00299452

Y7 0.02672367-0.03736122 0.04306072-0.15550190-0.00325734

Y8 0.08953308 0.01275188 0.11923383 0.14946505 0.17197897-0.00074154

Y10 0.11536586-0.08375956-0.14765524-0.00440355-0.00462037 0.06553755

Y11-0.00096422 0.07575739-0.10813894-0.01910956-0.06637760-0.00248903

Y12 0.23652339 0.20731486 0.28430962 0.06588632 0.06914020 0.10410610

Y14 0.05255434-0.11726203-0.12416033-0.03756979-0.10138786 0.06250043

Y15 0.21318528 0.17991341 0.25400056 0.22452177 0.19276927 0.18689489

Y16 0.18085982 0.14261230 0.30976104 0.12507178 0.07293907 0.16475063

X2-0.88269347-4.34989463-4.46257014-4.93679366-5.85678208-2.33690827

X3-0.36104232-1.02621436-1.27018217-1.70063947-1.69790201-0.67056379

X4 0.00881636 0.04685260 0.04886455 0.05437049 0.06351583 0.02469148

X7 0.12909786 0.05344978-0.08240281-0.03526000-0.02705530 0.04770734

X8 0.08190568-0.00247093 0.01747145 0.09144868 0.10387004 0.25485525

X9 0.07394741 0.00708403 0.04810846 0.11527255 0.07302540 0.16556890

X12-0.02809002-0.10888299-0.08483236-0.24124888-0.31707882-0.05204133

X13-0.01096444-0.18157364-0.08414686-0.15368306-0.18447431 0.06019028

X14-0.00071874-0.13413787-0.08802892-0.32011717-0.33592113-0.06117149

Fitted Residuals

Y10	Y11	Y12	Y14	Y15	Y16
-----	-----	-----	-----	-----	-----
Y10-0.00102092					
Y11-0.22328462-0.00109463					
Y12 0.23290759 0.38326877-0.00015859					
Y14-0.03931105-0.06866676 0.08819870 0.00264669					
Y15 0.06878873 0.09155274 0.19319734 0.39458573 0.00000103					
Y16 0.04358911 0.04351020 0.26096604-0.00684511 0.49390134 0.00022779					
X2-3.15685859-3.87369030-1.02379901-1.51236960 0.22268816 0.34291111					
X3-1.16308456-0.78416032-0.40338411-0.47632287 0.11421544-0.11438571					
X4 0.03509924 0.04075043 0.00875466 0.01682733-0.00807636-0.00475216					
X7-0.01846861 0.07509245 0.14923119-0.07085341 0.08844522 0.02110169					
X8-0.05811703-0.12220951 0.06861022 0.06223674 0.16404931 0.09496974					
X9-0.02453159-0.03131522 0.05054590 0.00199165 0.11843728 0.12362599					
X12-0.06370813 0.00471888 0.13332772-0.04096578 0.03947494 0.06637959					
X13-0.04775685-0.10387395 0.07653775 0.00307441 0.03057171 0.07852309					
X14-0.09217211-0.08291558 0.13956750-0.05814099 0.07559394 0.11374354					

Fitted Residuals

X2	X3	X4	X7	X8	X9
-----	-----	-----	-----	-----	-----
X2-0.00060444					
X3*****-0.00004993					
X4 0.09245569 0.23617440-0.00187553					
X7-0.42217728-0.35263247 0.00594970 0.00565455					
X8-0.41441952 0.11281270 0.00285927-0.00502112 0.00071695					
X9-0.04496976-0.14166229 0.00024723-0.06008724 0.29957484 0.00082072					
X12-3.72475245-1.51669723 0.04180180-0.08522438-0.00764446-0.00773076					
X13-2.71777240-1.30023902 0.03096271-0.15736955 0.01362334-0.02044964					
X14-4.27550483-1.90020058 0.04857198-0.18389797-0.06843674-0.08797753					

Fitted Residuals

X12	X13	X14
-----	-----	-----
X12 0.00063769		

X13 0.19662376 0.00045601

X14 0.12069297 0.30925775 0.00091258

Summary Statistics for Fitted Residuals

Smallest Fitted Residual = -23.13913057

Median Fitted Residual = 0.00024723

Largest Fitted Residual = 0.49390134

Stemleaf Plot

-23|1

-22|

-21|

-20|

-19|

-18|

-17|

-16|

-15|

-14|

-13|

-12|

-11|

-10|

-9|

-8|

-7|

-6|

-5|9

-4|9533

-3|972

-2|73

-1|9775533200

0|9875444433322222221111111111111111111111110000000000000000+59

0|111111111111111111111111111111111112222222222222222223333+06

Standardized Residuals

Y2 Y3 Y4 Y6 Y7 Y8

```

-----
Y2 0.00225301
Y311.56192131 --
Y4 -- -- --
Y6 1.55990521 -- -- --
Y7 0.66493637 -- -- -5.56656639-0.06705365
Y8 1.86508955 0.29181831 2.77379893 3.24979807 3.45915585-0.01483455
Y10 8.00710626 -- -- -0.17196113-0.20934178 1.44786007
Y11-0.05201205 -- -- -0.73490952-2.94125139-0.05492047
Y12 5.05107586 4.78499486 6.89553788 1.39701134 1.47458192 2.10905541
Y14 2.04149280 -- -- -1.76002943-4.65027858 1.38165958
Y15 4.30404612 3.78693541 5.38247213 4.59863513 3.95859053 3.75619550
Y16 3.86915799 3.57096546 7.78857482 2.72600207 1.59041023 3.35248228
X2 -- -- -- -- -- *****
X3 -- -- -- -- *****
X4 -- -- -- -- -- --
X7 -- -- -- -- -- 1.51258631
X8 2.24031138 -- -- 2.32809355 2.72315077 5.35127406
X9 2.08928002 -- -- 2.93314929 1.91327732 3.47617795
X12-0.62047004-3.22015995-2.73648363-6.96299071-7.74298677-1.08079295
X13-0.23188329-4.28223591-2.04107281-3.46197354-3.80285037 1.21068413
X14-0.01625819-4.16883307-3.05075883-8.69824097-7.31362882-1.24436327

```

Standardized Residuals

```

Y10   Y11   Y12   Y14   Y15   Y16
-----
Y10 --
Y11 -- --
Y12 -- -- -0.00453852
Y14 -- -- 2.25959512 --
Y15 1.39133582 1.85167926 3.86552179 -- 0.00002059
Y16 1.15615211 1.14118730 5.42633845-1.8935914510.78203439 0.00593750
X2 -- -- -- -- --
X3 -- ***** 2.69236124-2.41022734
X4 -- -- -- -- --

```

X7 -- -- -- -- 1.78597562 --
 X8 -- -- 1.73845183 -- 3.28245493 2.15288044
 X9 -- -- 1.27525700 -- 2.36989350 2.80367135
 X12-1.60946728 0.10993725 2.86872968-0.88072055 0.79327320 1.35315293
 X13-1.05903449-2.19936372 1.60122932 0.06412877 0.61330898 1.58938903
 X14-2.36282058-1.89471127 3.07589844-1.27371780 1.52310097 2.33426627

Standardized Residuals

X2	X3	X4	X7	X8	X9
-----	-----	-----	-----	-----	-----
X2 --					
X3 --	--				
X4 --	--	--			
X7*****			-7.21157870	--	--
X8 --	2.46375984	--	--	0.03129127	
X9 --	-3.08875911	--	-7.43001693	7.35123280	0.03502456
X12 --	--	--	-1.85757839	-0.15795423	-0.15965317
X13 --	*****	--	-3.18910556	0.27677325	-0.41524105
X14 --	--	--	-3.81853684	-1.41699932	-1.81969816

Standardized Residuals

X12	X13	X14
-----	-----	-----
X12 0.03675778		
X13 4.04393378	0.00945913	
X14 2.51290936	6.83164346	0.02450874

Summary Statistics for Standardized Residuals

Smallest Standardized Residual = -55.70294431
 Median Standardized Residual = 0.00000000
 Largest Standardized Residual = 11.56192131

Stemleaf Plot

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 - 5|6
 - 5|
 - 4|75

- 4|
 - 3|6
 - 3|
 - 2|
 - 2|
 - 1|7
 - 1|421
 - 0|98777765
 - 0|4444333333222222222111111100+74
 0|111111111111222222222222222222333333333333333344444444
 0|5555577788

1|12

Largest Negative Standardized Residuals

Residual for	Y7 and	Y6	-5.56656639
Residual for	Y11 and	Y7	-2.94125139
Residual for	Y14 and	Y7	-4.65027858
Residual for	X2 and	Y8	-55.70294431
Residual for	X3 and	Y7	-35.63143015
Residual for	X3 and	Y8	-13.54030221
Residual for	X3 and	Y11	-17.33991386
Residual for	X3 and	Y12	-46.81834489
Residual for	X3 and	Y14	-11.37216399
Residual for	X7 and	X2	-11.99094689
Residual for	X7 and	X3	-7.21157870
Residual for	X9 and	X3	-3.08875911
Residual for	X9 and	X7	-7.43001693
Residual for	X12 and	Y3	-3.22015995
Residual for	X12 and	Y4	-2.73648363
Residual for	X12 and	Y6	-6.96299071
Residual for	X12 and	Y7	-7.74298677
Residual for	X13 and	Y3	-4.28223591
Residual for	X13 and	Y6	-3.46197354
Residual for	X13 and	Y7	-3.80285037
Residual for	X13 and	X3	-44.67084220

Residual for X13 and X7 -3.18910556

Residual for X14 and Y3 -4.16883307

Residual for X14 and Y4 -3.05075883

Residual for X14 and Y6 -8.69824097

Residual for X14 and Y7 -7.31362882

Residual for X14 and X7 -3.81853684

Largest Positive Standardized Residuals

Residual for Y3 and Y2 11.56192131

Residual for Y8 and Y4 2.77379893

Residual for Y8 and Y6 3.24979807

Residual for Y8 and Y7 3.45915585

Residual for Y10 and Y2 8.00710626

Residual for Y12 and Y2 5.05107586

Residual for Y12 and Y3 4.78499486

Residual for Y12 and Y4 6.89553788

Residual for Y15 and Y2 4.30404612

Residual for Y15 and Y3 3.78693541

Residual for Y15 and Y4 5.38247213

Residual for Y15 and Y6 4.59863513

Residual for Y15 and Y7 3.95859053

Residual for Y15 and Y8 3.75619550

Residual for Y15 and Y12 3.86552179

Residual for Y16 and Y2 3.86915799

Residual for Y16 and Y3 3.57096546

Residual for Y16 and Y4 7.78857482

Residual for Y16 and Y6 2.72600207

Residual for Y16 and Y8 3.35248228

Residual for Y16 and Y12 5.42633845

Residual for Y16 and Y15 10.78203439

Residual for X3 and Y15 2.69236124

Residual for X8 and Y7 2.72315077

Residual for X8 and Y8 5.35127406

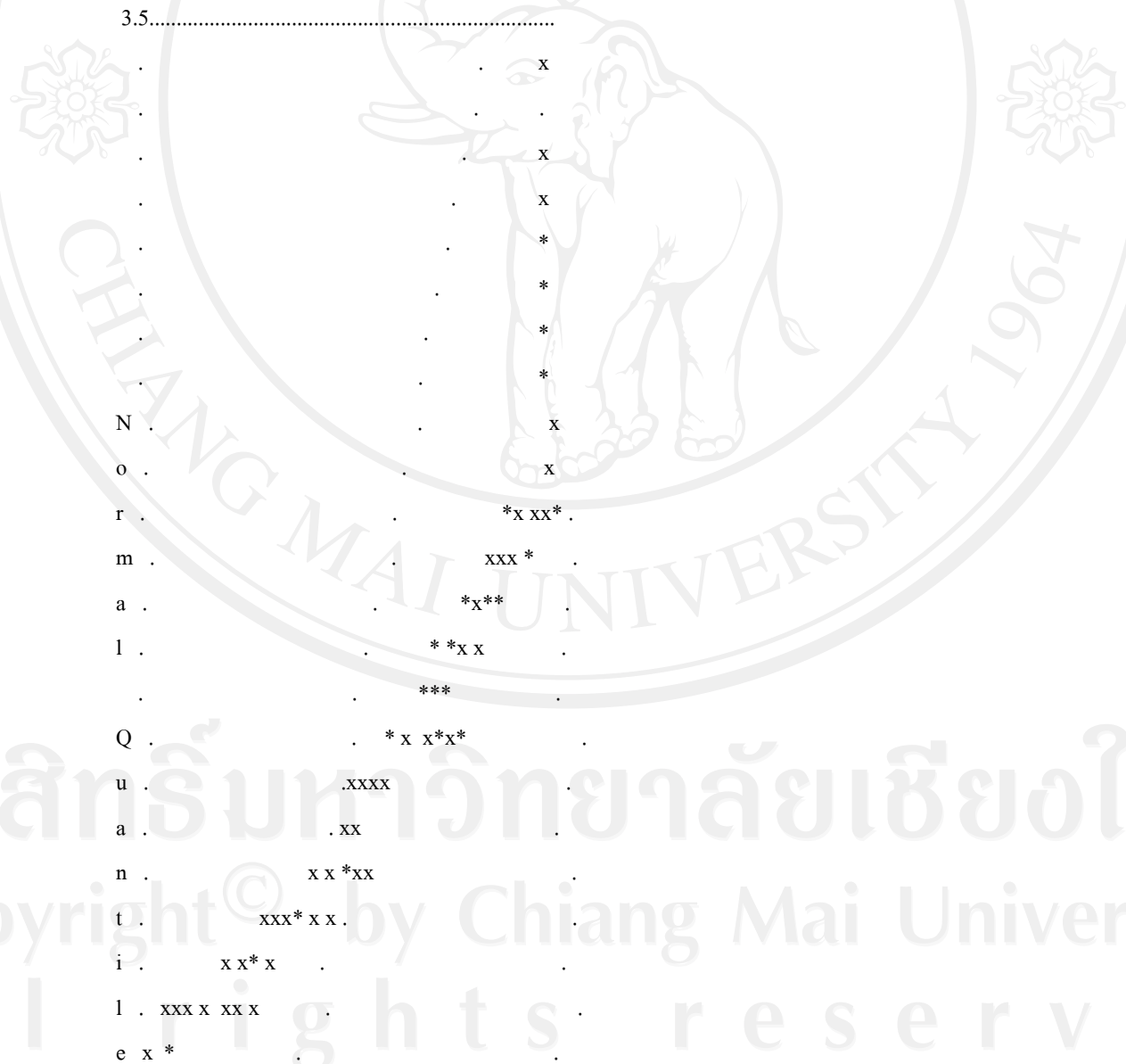
Residual for X8 and Y15 3.28245493

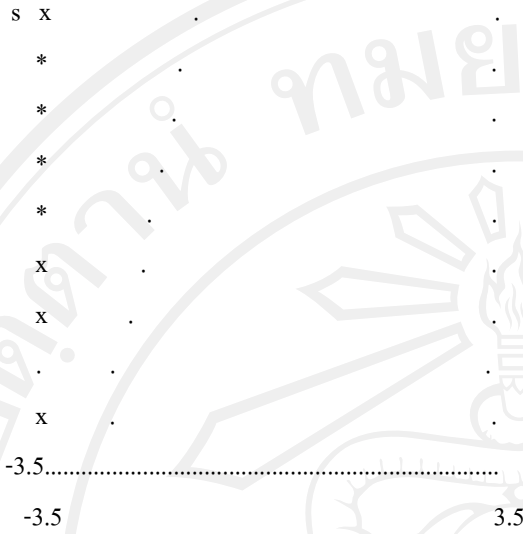
Residual for X9 and Y6 2.93314929

Residual for X9 and Y8 3.47617795
 Residual for X9 and Y16 2.80367135
 Residual for X9 and X8 7.35123280
 Residual for X12 and Y12 2.86872968
 Residual for X13 and X12 4.04393378
 Residual for X14 and Y12 3.07589844
 Residual for X14 and X13 6.83164346

PATH ANALYSIS FOR BEHAVIOR MODEL

Qplot of Standardized Residuals





PATH ANALYSIS FOR BEHAVIOR MODEL

Covariances

Y - ETA

	Y2	Y3	Y4	Y6	Y7	Y8
BUS	0.42297188	0.91788115	0.97187571	0.20981245	0.22017145	0.10478929
PLANE	0.11640565	0.25260912	0.26746891	0.76237507	0.80001554	0.38076265
TRAIN	0.19261794	0.41799558	0.44258426	0.06956452	0.07299910	0.03474349
BOAT	0.14533998	0.31539881	0.33395221	0.22117175	0.23209158	0.11046261

Y - ETA

	Y10	Y11	Y12	Y14	Y15	Y16
BUS	0.41485062	0.41408478	0.15196427	0.34378093	0.00001589	0.13866686
PLANE	0.08312384	0.08297039	0.03044916	0.29024794	0.00001342	0.11707389
TRAIN	0.91097509	0.90929338	0.33370003	0.17261400	0.00000798	0.06962527
BOAT	0.15717169	0.15688154	0.05757369	1.00047947	0.00004625	0.40355162

Y - KSI

	Y2	Y3	Y4	Y6	Y7	Y8
DEMOGRAP	0.20646543	0.44804569	0.47440208	0.65231591	0.68452246	0.32579440
TIME	0.15993875	0.34707924	0.36749626	0.07761038	0.08144221	0.03876194
COST	0.23589004	0.51189933	0.54201192	0.62517108	0.65603742	0.31223712

Y - KSI

Y10 Y11 Y12 Y14 Y15 Y16

DEMOGRAP 0.39973386 0.39899593 0.14642684 0.17790230 0.00000822 0.07175836

TIME 0.30259357 0.30203497 0.11084330 0.12356516 0.00000571 0.04984102

COST 0.44302784 0.44220998 0.16228589 0.19257106 0.00000890 0.07767512

X - ETA

X2 X3 X4 X7 X8 X9

BUS 4.73906088 1.45806934***** 0.44883395 0.17838141 0.18030653

PLANE 8.30702877 2.55582788***** 0.12083553 0.04802402 0.04854231

TRAIN 4.26011053 1.31071043***** 0.39427270 0.15669696 0.15838807

BOAT 1.72635387 0.53114820***** 0.14659912 0.05826332 0.05889211

X - ETA

X12 X13 X14

BUS 0.31709442 0.26860519 0.37950215

PLANE 0.46625197 0.39495397 0.55801558

TRAIN 0.27651265 0.23422908 0.33093343

BOAT 0.10943931 0.09270414 0.13097819

X - KSI

X2 X3 X4 X7 X8 X9

DEMOGRAP 9.70859608 2.98704883***** 0.17132377 0.06808971 0.06882455

TIME 1.40129814 0.43113813***** 1.18698029 0.47174509 0.47683626

COST 9.40085459 2.89236584***** 0.45937782 0.18257189 0.18454224

X - KSI

X12 X13 X14

DEMOGRAP 0.55055586 0.46636634 0.65891142

TIME 0.22004779 0.18639867 0.26335566

COST 0.56857857 0.48163306 0.68048120

PATH ANALYSIS FOR BEHAVIOR MODEL

First Order Derivatives

LAMBDA-Y

BUS	PLANE	TRAIN	BOAT
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Y2-0.07182653	0.59442288	0.00654563	-0.14723067
---------------	------------	------------	-------------

Y3-0.14455105	-0.28359286	-0.22783865	0.01669955
---------------	-------------	-------------	------------

Y4-0.20058542	-0.64390627	-0.12375168	-0.08781477
---------------	-------------	-------------	-------------

Y6 0.14414508	0.10618916	0.06875399	0.04857865
---------------	------------	------------	------------

Y7 0.07906895	0.09406463	0.07837006	0.09844053
---------------	------------	------------	------------

Y8-0.17904928	0.04290324	-0.08383685	-0.21980104
---------------	------------	-------------	-------------

Y10 0.15205508	-0.14577349	0.13267029	0.06612857
----------------	-------------	------------	------------

Y11 0.12358049	0.12186952	0.12120640	0.10167389
----------------	------------	------------	------------

Y12 0.11035400	1.57617734	0.07340271	-0.14316644
----------------	------------	------------	-------------

Y14 0.11013934	-0.15548813	0.03347892	0.05130197
----------------	-------------	------------	------------

Y15 1.59906978	3.82195609	1.68204560	0.00082754
----------------	------------	------------	------------

Y16 0.04449090	0.92915482	0.20343042	-0.00612276
----------------	------------	------------	-------------

LAMBDA-X

DEMOGRAP	TIME	COST
----------	------	------

-----	-----	-----
-------	-------	-------

X2-0.00122025	6.69102349	1.67450913
---------------	------------	------------

X3 0.00442433	2.32960735	0.58602083
---------------	------------	------------

X4 0.00105906	-0.07352101	-0.01743198
---------------	-------------	-------------

X7-0.46525708	-0.01072064	-0.43615669
---------------	-------------	-------------

X8 0.70756460	-0.00292931	0.65852733
---------------	-------------	------------

X9 0.46381470	-0.00107166	0.43195206
---------------	-------------	------------

X12-0.02590206	0.11236684	0.00417557
----------------	------------	------------

X13-0.05136108	0.19845504	0.00282655
----------------	------------	------------

X14-0.07615375	0.30567082	0.00537442
----------------	------------	------------

BETA

BUS	PLANE	TRAIN	BOAT
-----	-------	-------	------

-----	-----	-----	-----
-------	-------	-------	-------

BUS-0.35800538	-0.63467725	-0.32663144	-0.13229127
----------------	-------------	-------------	-------------

PLANE 0.10497373	0.17254508	0.08319165	0.03209709
------------------	------------	------------	------------

TRAIN 0.28771444	0.50398955	0.25556599	0.10491823
------------------	------------	------------	------------

BOAT 0.12822047	0.21957599	0.11566743	0.04885576
-----------------	------------	------------	------------

GAMMA

DEMOGRAP	TIME	COST
----------	------	------

-----	-----	-----
-------	-------	-------

BUS-0.74058743-0.10405258-0.71641895		
--------------------------------------	--	--

PLANE 0.20316045 0.03388595 0.19785401		
--	--	--

TRAIN 0.58904133 0.08158490 0.56951191		
--	--	--

BOAT 0.25737117 0.03991618 0.24989999		
---------------------------------------	--	--

PHI

DEMOGRAP	TIME	COST
----------	------	------

-----	-----	-----
-------	-------	-------

DEMOGRAP*****		
---------------	--	--

TIME*****-1.78153935		
----------------------	--	--

COST*****14.44824663*****		
---------------------------	--	--

PSI

BUS	PLANE	TRAIN	BOAT
-----	-------	-------	------

-----	-----	-----	-----
-------	-------	-------	-------

BUS-0.00028306			
----------------	--	--	--

PLANE-0.00017516 0.00103398			
-----------------------------	--	--	--

TRAIN-0.00007172-0.00235945-0.00125649			
--	--	--	--

BOAT 0.00096218-0.00136346 0.00170754 0.00139304			
--	--	--	--

THETA-EPS

Y2	Y3	Y4	Y6	Y7	Y8
----	----	----	----	----	----

-----	-----	-----	-----	-----	-----
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Y2-0.00004187					
---------------	--	--	--	--	--

Y3-0.17745409 0.00009208					
--------------------------	--	--	--	--	--

Y4-0.16758791 0.15399439 0.00006291					
-------------------------------------	--	--	--	--	--

Y6-0.06353523 0.10996290 0.02895163 0.00149726					
--	--	--	--	--	--

Y7-0.02672367 0.03736122-0.04306072 0.15550190 0.00162867					
---	--	--	--	--	--

Y8-0.08953308-0.01275188-0.11923383-0.14946505-0.17197897 0.00037077					
--	--	--	--	--	--

Y10-0.11536586 0.08375956 0.14765524 0.00440355 0.00462037-0.06553755					
---	--	--	--	--	--

Y11 0.00096422-0.07575739 0.10813894 0.01910956 0.06637760 0.00248903					
---	--	--	--	--	--

Y12-0.23652339-0.20731486-0.28430962-0.06588632-0.06914020-0.10410610					
---	--	--	--	--	--

Y14-0.05255434 0.11726203 0.12416033 0.03756979 0.10138786-0.06250043					
---	--	--	--	--	--

Y15-0.21318528-0.17991341-0.25400056-0.22452177-0.19276927-0.18689489					
---	--	--	--	--	--

Y16-0.18085982-0.14261230-0.30976104-0.12507178-0.07293907-0.16475063

THETA-EPS

Y10 Y11 Y12 Y14 Y15 Y16

Y10 0.00051046

Y11 0.22328462 0.00054732

Y12-0.23290759-0.38326877 0.00007929

Y14 0.03931105 0.06866676-0.08819870-0.00132335

Y15-0.06878873-0.09155274-0.19319734-0.39458573-0.00000052

Y16-0.04358911-0.04351020-0.26096604 0.00684511-0.49390134-0.00011389

THETA-DELTA-EPS

Y2 Y3 Y4 Y6 Y7 Y8

X2 0.88269347 4.34989463 4.46257014 4.93679366 5.85678208 2.33690827

X3 0.36104232 1.02621436 1.27018217 1.70063947 1.69790201 0.67056379

X4-0.00881636-0.04685260-0.04886455-0.05437049-0.06351583-0.02469148

X7-0.12909786-0.05344978 0.08240281 0.03526000 0.02705530-0.04770734

X8-0.08190568 0.00247093-0.01747145-0.09144868-0.10387004-0.25485525

X9-0.07394741-0.00708403-0.04810846-0.11527255-0.07302540-0.16556890

X12 0.02809002 0.10888299 0.08483236 0.24124888 0.31707882 0.05204133

X13 0.01096444 0.18157364 0.08414686 0.15368306 0.18447431-0.06019028

X14 0.00071874 0.13413787 0.08802892 0.32011717 0.33592113 0.06117149

THETA-DELTA-EPS

Y10 Y11 Y12 Y14 Y15 Y16

X2 3.15685859 3.87369030 1.02379901 1.51236960-0.22268816-0.34291111

X3 1.16308456 0.78416032 0.40338411 0.47632287-0.11421544 0.11438571

X4-0.03509924-0.04075043-0.00875466-0.01682733 0.00807636 0.00475216

X7 0.01846861-0.07509245-0.14923119 0.07085341-0.08844522-0.02110169

X8 0.05811703 0.12220951-0.06861022-0.06223674-0.16404931-0.09496974

X9 0.02453159 0.03131522-0.05054590-0.00199165-0.11843728-0.12362599

X12 0.06370813-0.00471888-0.13332772 0.04096578-0.03947494-0.06637959

X13 0.04775685 0.10387395-0.07653775-0.00307441-0.03057171-0.07852309

X14 0.09217211 0.08291558-0.13956750 0.05814099-0.07559394-0.11374354

THETA-DELTA

X2	X3	X4	X7	X8	X9
-----	-----	-----	-----	-----	-----
X2 0.00030222					
X323.13913057	0.00002496				
X4-0.09245569	-0.23617440	0.00093776			
X7 0.42217728	0.35263247	-0.00594970	-0.00282727		
X8 0.41441952	-0.11281270	-0.00285927	0.00502112	-0.00035847	
X9 0.04496976	0.14166229	-0.00024723	0.06008724	-0.29957484	-0.00041036
X12 3.72475245	1.51669723	-0.04180180	0.08522438	0.00764446	0.00773076
X13 2.71777240	1.30023902	-0.03096271	0.15736955	-0.01362334	0.02044964
X14 4.27550483	1.90020058	-0.04857198	0.18389797	0.06843674	0.08797753

THETA-DELTA

X12	X13	X14
-----	-----	-----
X12-0.00031885		
X13-0.19662376	-0.00022800	
X14-0.12069297	-0.30925775	-0.00045629

PATH ANALYSIS FOR BEHAVIOR MODEL

Factor Scores Regressions

ETA

Y2	Y3	Y4	Y6	Y7	Y8
-----	-----	-----	-----	-----	-----
BUS 0.05643032	0.43561206	0.41156711	-0.03597072	-0.03428882	-0.00215959
PLANE-0.00220578	-0.01702742	-0.01608754	0.50190673	0.47843881	0.03013323
TRAIN-0.0000901	-0.00006954	-0.00006570	0.00060989	0.00058137	0.00003662
BOAT-0.01874917	-0.14473359	-0.13674457	-0.30267309	-0.28852085	-0.01817174

ETA

Y10	Y11	Y12	Y14	Y15	Y16
-----	-----	-----	-----	-----	-----
BUS 0.01811332	-0.00003765	-0.00000563	0.08992200	-0.00000205	-0.01580838
PLANE-0.07520225	0.00015633	0.00002339	0.08901644	-0.00000203	-0.01564918
TRAIN 1.10185775	-0.00229053	-0.00034273	-0.00044022	0.00000001	0.00007739
BOAT-0.18456839	0.00038368	0.00005741	2.03766560	-0.00004639	-0.35822362

ETA

X2 X3 X4 X7 X8 X9

BUS 0.00171460 0.01631469 0.00000028 0.03266185-0.00092408-0.00091443

PLANE 0.00366247 0.03484900 0.00000060 0.00643598-0.00018209-0.00018019

TRAIN-0.00002216-0.00021089 0.00000000-0.00025091 0.00000710 0.00000702

BOAT 0.00728267 0.06929585 0.00000118 0.01199442-0.00033935-0.00033581

ETA

X12 X13 X14

BUS 0.01494452 0.01189432 0.01867483

PLANE 0.02855152 0.02272412 0.03567828

TRAIN-0.00016152-0.00012855-0.00020183

BOAT 0.06132913 0.04881178 0.07663753

KSI

Y2 Y3 Y4 Y6 Y7 Y8

DEMOGRAP 0.00864780 0.06675641 0.06307159 0.30123458 0.28714960 0.01808537

TIME-0.00075449-0.00582428-0.00550279-0.00242447-0.00231111-0.00014556

COST 0.00883067 0.06816810 0.06440535 0.27512416 0.26226003 0.01651777

KSI

Y10 Y11 Y12 Y14 Y15 Y16

DEMOGRAP 0.22477346-0.00046726-0.00006991-0.17616439 0.00000401 0.03096987

TIME-0.01165477 0.00002423 0.00000363 0.00132885-0.00000003-0.00023361

COST 0.19191068-0.00039894-0.00005969-0.17380519 0.00000396 0.03055512

KSI

X2 X3 X4 X7 X8 X9

DEMOGRAP 0.00807186 0.07680513 0.00000131-0.07951896 0.00224977 0.00222629

TIME 0.00036420 0.00346543 0.00000006 0.90040358-0.02547447-0.02520853

COST 0.00774169 0.07366353 0.00000126 0.15310097-0.00433158-0.00428636

KSI

X12 X13 X14

 DEMOGRAP 0.06607961 0.05259268 0.08257378

TIME-0.00598522-0.00476363-0.00747919

COST 0.06078294 0.04837707 0.07595500

PATH ANALYSIS FOR BEHAVIOR MODEL

Standardized Solution

LAMBDA-Y

BUS PLANE TRAIN BOAT

 Y2 0.42297188 -- -- --

Y3 0.91788115 -- -- --

Y4 0.97187571 -- -- --

Y6 -- 0.76237507 -- --

Y7 -- 0.80001554 -- --

Y8 -- 0.38076265 -- --

Y10 -- -- 0.91097509 --

Y11 -- -- 0.90929338 --

Y12 -- -- 0.33370003 --

Y14 -- -- -- 1.00047947

Y15 -- -- -- 0.00004625

Y16 -- -- -- 0.40355162

LAMBDA-X

DEMOGRAP TIME COST

 X2 9.70859608 -- --

X3 2.98704883 -- --

X453.08798645 -- --

X7 -- 1.18698029 --

X8 -- 0.47174509 --

X9 -- 0.47683626 --

X12 -- -- 0.56857857

X13 -- -- 0.48163306

X14 -- -- 0.68048120

GAMMA

DEMOGRAP TIME COST

 BUS*****42.56576935*****

PLANE*****68.43424957

TRAIN*****

BOAT*****

Correlation Matrix of ETA and KSI

BUS PLANE TRAIN BOAT DEMOGRAP TIME

 BUS 1.00000000

PLANE 0.27520896 1.00000000

TRAIN 0.45539183 0.09124711 1.00000000

BOAT 0.34361618 0.29010884 0.17253127 1.00000000

DEMOGRAP 0.48813040 0.85563646 0.43879779 0.17781705 1.00000000

TIME 0.37813092 0.10180079 0.33216449 0.12350595 0.14433582 1.00000000

COST 0.55769675 0.82003085 0.48632267 0.19247878 0.96830216 0.38701386

Correlation Matrix of ETA and KSI

COST

 COST 1.00000000

PSI

BUS PLANE TRAIN BOAT

 BUS 1.89430178

PLANE-0.63839059 0.47302891

TRAIN-0.92242908 0.16312103 1.68103990

BOAT-0.51147911 0.44178456 0.71514044 1.40113841

Regression Matrix ETA on KSI (Standardized)

DEMOGRAP TIME COST

 BUS*****42.56576935*****

PLANE*****68.43424957

TRAIN*****

BOAT*****

PATH ANALYSIS FOR BEHAVIOR MODEL

Total and Indirect Effects

Total Effects of KSI on ETA

DEMOGRAP TIME COST

BUS*****42.56576935*****

0.00187401(0.00248857(0.00191644)

PLANE*****68.43424957

0.00181766(0.00249369(0.00186761)

TRAIN*****

0.00213315(0.00249714(0.00215584)

BOAT*****

0.00197643(0.00249588(0.00201273)

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

Total Effects of ETA on Y

BUS PLANE TRAIN BOAT

Y2 0.42297188 -- -- --

0.00250447)

Y3 0.91788115 -- -- --

0.00240746)

Y4 0.97187571 -- -- --

0.00241470)

Y6 -- 0.76237507 -- --

(0.00250628)

Y7 -- 0.80001554 -- --

(0.00006914)

Y8 -- 0.38076265 -- --

(0.00003513)

Y10 -- -- 0.91097509 --

(0.00250622)

Y11 -- -- 0.90929338 --

(0.00056295)

Y12 -- -- 0.33370003 --

(0.00190823)
 Y14 -- -- -- 1.00047947
 (0.00250628)
 Y15 -- -- -- 0.00004625
 (0.00250551)
 0.01845744
 Y16 -- -- -- 0.40355162
 (0.00174902)

Total Effects of KSI on Y

DEMOGRAP TIME COST

 Y266.1377063618.00412331*****
 0.39160853(0.10660703(0.41906081)
 Y3*****39.07031714*****
 0.37639728(0.10249078(0.40287650)
 Y4*****41.36863715*****
 0.37753014(0.10280321(0.40408706)
 Y6*****52.17256597
 0.15768125(0.04340713(0.17152138)
 Y7*****54.74846288
 0.00462123(0.00233126(0.00492656)
 Y8*****-6.5882404626.05720604
 0.00233257(0.00112990(0.00249024)
 Y10*****
 0.34206668(0.09230266(0.36814963)
 Y11*****
 0.07693043(0.02087217(0.08264335)
 Y12*****49.01826789
 0.26041858(0.07025458(0.28033358)
 Y14*****
 0.23406921(0.06333544(0.25162443)
 Y15-0.00431884-0.00116774 0.00464278
 0.23398919(0.06326686(0.25153965)
 -.01845744 -.01845744 0.01845744

Y16*****40.51440370

0.16333777(0.04417354(0.17559838)

PATH ANALYSIS FOR BEHAVIOR MODEL

Standardized Total and Indirect Effects

Standardized Total Effects of KSI on ETA

DEMOGRAP TIME COST

BUS*****42.56576935*****

PLANE*****68.43424957

TRAIN*****

BOAT*****

Standardized Total Effects of ETA on Y

BUS PLANE TRAIN BOAT

Y2 0.42297188 -- -- --

Y3 0.91788115 -- -- --

Y4 0.97187571 -- -- --

Y6 -- 0.76237507 -- --

Y7 -- 0.80001554 -- --

Y8 -- 0.38076265 -- --

Y10 -- -- 0.91097509 --

Y11 -- -- 0.90929338 --

Y12 -- -- 0.33370003 --

Y14 -- -- -- 1.00047947

Y15 -- -- -- 0.00004625

Y16 -- -- -- 0.40355162

Standardized Total Effects of KSI on Y

DEMOGRAP TIME COST

Y266.1377063618.00412331*****

Y3*****39.07031714*****

Y4*****41.36863715*****

Y6*****52.17256597

Y7*****54.74846288

Y8*****-6.5882404626.05720604

Y10*****

Y11*****

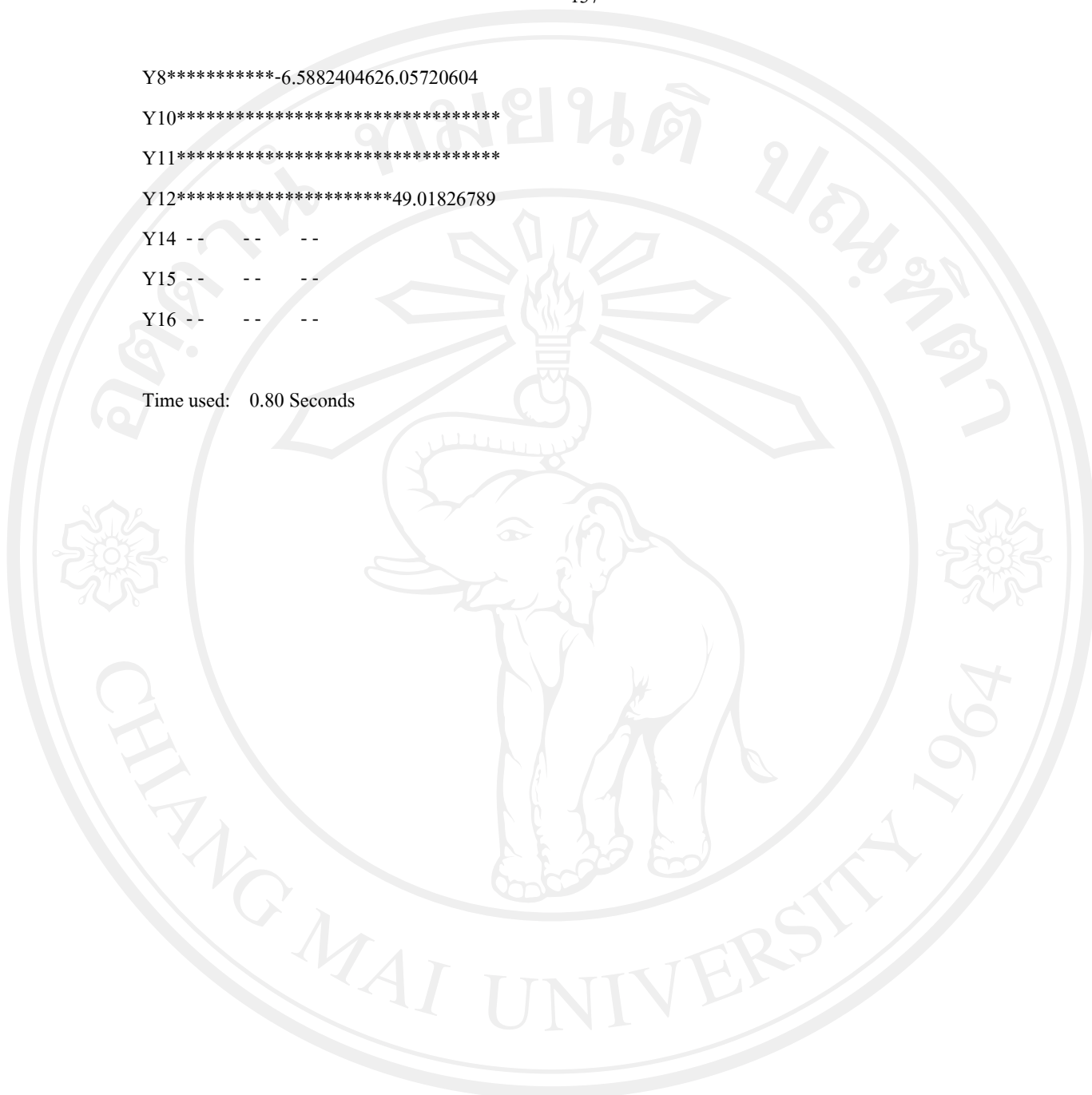
Y12*****49.01826789

Y14 -- -- --

Y15 -- -- --

Y16 -- -- --

Time used: 0.80 Seconds



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ภาคผนวก ค
ผลการวิเคราะห์หลังการปรับแก้แบบจำลอง

DATE: 3/21/12

TIME: 14:53

L I S R E L 8.20

BY

Karl G. J'reskog & Dag S'rrom

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The following lines were read from file D:\THESIS\THESIS\RUN\FOURTEEN.LS8:

PATH ANALYSIS FOR TRAVEL BEHAVIOR MODEL

DA NI=14 NO=400 MA=CM

LA

'Y3' 'Y4' 'Y7' 'Y8' 'Y11' 'Y12' 'Y14' 'Y15' 'X2' 'X3' 'X8' 'X9' 'X13' 'X14'

KM

1.00

0.67 1.00

0.19 0.28 1.00

0.12 0.23 0.63 1.00

0.41 0.25 0.00 0.03 1.00
 0.34 0.40 0.11 0.13 0.63 1.00
 0.24 0.24 0.19 0.24 0.10 0.18 1.00
 0.21 0.28 0.27 0.25 0.10 0.23 0.58 1.00
 0.00 0.01 0.07 0.07 0.00 0.03 0.02 0.02 1.00
 0.09 0.04 0.12 0.10 0.11 0.01 0.02 0.04 0.13 1.00
 0.17 0.19 0.18 0.33 0.02 0.13 0.16 0.21 0.02 0.10 1.00
 0.23 0.16 0.15 0.20 0.11 0.06 0.11 0.10 0.08 0.06 0.42 1.00
 0.07 0.18 0.17 0.26 0.11 0.17 0.13 0.04 0.15 0.03 0.12 0.21 1.00
 0.21 0.26 0.13 0.17 0.20 0.25 0.09 0.10 0.16 0.02 0.06 0.20 0.70 1.00
 SD
 1.02 1.08 0.85 0.89 1.09 1.00 0.81 0.84 13.26 3.40 0.93 0.98 0.91 1.00
 MO NY=8 NX=6 NE=4 NK=3 C
 LX=FU,FI LY=FU,FI BE=SD,FI GA=FU,FR PH=SY,FR PS=SY,FR C
 TE=DI,FR TD=DI,FR
 FR LY(1,1) LY(2,1) LY(3,2) LY(4,2) LY(5,3) LY(6,3) LY(7,4) LY(8,4)
 FR LX(1,1) LX(2,1) LX(3,2) LX(4,2) LX(5,3) LX(6,3)
 LE
 'BUS' 'PLANE' 'TRAIN' 'BOAT'
 LK
 'DEMOGRAPH' 'TIME' 'COST'
 PATH DIAGRAM
 OU ME SE TV PC RS EF MR MI FS SS SC AL ND=8 AD=OFF IT=1000 EP
 PATH ANALYSIS FOR TRAVEL BEHAVIOR MODEL
 Number of Input Variables 14
 Number of Y - Variables 8
 Number of X - Variables 6
 Number of ETA - Variables 4
 Number of KSI - Variables 3
 Number of Observations 400
 PATH ANALYSIS FOR TRAVEL BEHAVIOR MODEL

Covariance Matrix to be Analyzed

Y3	Y4	Y7	Y8	Y11	Y12
1.04040000					
0.73807200	1.16640000				
0.16473000	0.25704000	0.72250000			
0.10893600	0.22107600	0.47659500	0.79210000		
0.45583800	0.29430000	--	0.02910300	1.18810000	
0.34680000	0.43200000	0.09350000	0.11570000	0.68670000	1.00000000
0.19828800	0.20995200	0.13081500	0.17301600	0.08829000	0.14580000
0.17992800	0.25401600	0.19278000	0.18690000	0.09156000	0.19320000
--	0.14320800	0.78897000	0.82609800	--	0.39780000
0.31212000	0.14688000	0.34680000	0.30260000	0.40766000	0.03400000
0.16126200	0.19083600	0.14229000	0.27314100	0.02027400	0.12090000
0.22990800	0.16934400	0.12495000	0.17444000	0.11750200	0.05880000
0.06497400	0.17690400	0.13149500	0.21057400	0.10910900	0.15470000
0.21420000	0.28080000	0.11050000	0.15130000	0.21800000	0.25000000

Covariance Matrix to be Analyzed

Y14	Y15	X2	X3	X8	X9
0.65610000					
0.39463200	0.70560000				
0.21481200	0.22276800	*****			
0.05508000	0.11424000	5.86092000	11.56000000		
0.12052800	0.16405200	0.24663600	0.31620000	0.86490000	
0.08731800	0.08232000	1.03958400	0.19992000	0.38278800	0.96040000
0.09582300	0.03057600	1.80999000	0.09282000	0.10155600	0.18727800
0.07290000	0.08400000	2.12160000	0.06800000	0.05580000	0.19600000

Covariance Matrix to be Analyzed

X13	X14

```

-----
X13 0.82810000
X14 0.63700000 1.00000000
PATH ANALYSIS FOR TRAVEL BEHAVIOR MODEL

```

Initial Estimates (IV)

LAMBDA-Y

BUS	PLANE	TRAIN	BOAT
Y3	1.00000000	--	--
Y4	1.05882353	--	--
Y7	--	1.00000000	--
Y8	--	1.04705882	--
Y11	--	--	1.00000000
Y12	--	--	0.91743119
Y14	--	--	1.00000000
Y15	--	--	1.03703704

LAMBDA-X

DEMOGRAP	TIME	COST
X213	4.45957794	--
X3	0.43544605	--
X8	--	0.67085768
X9	--	0.57059495
X13	--	--
X14	--	--

GAMMA

DEMOGRAP	TIME	COST
BUS	0.03426422	0.19839906
PLANE	0.03616347	0.20349525
TRAIN	0.02061088	0.05904362

BOAT 0.00164331 0.13697728 0.03630637

Covariance Matrix of ETA and KSI

BUS PLANE TRAIN BOAT DEMOGRAP TIME

BUS 0.69706800

PLANE 0.17902627 0.45517500

TRAIN 0.38533136 0.05889865 0.74850300

BOAT 0.20128412 0.16429904 0.13102428 0.38053800

DEMOGRAP 0.00658100 0.06689929 0.01723292 0.01820763 1.00000000

TIME 0.23249813 0.22814704 0.10427265 0.14614433 0.07360297 1.00000000

COST 0.19029322 0.14541647 0.19864583 0.07072904 0.17854701 0.24916008

Covariance Matrix of ETA and KSI

COST

COST 1.00000000

PHI

DEMOGRAP TIME COST

DEMOGRAP 1.00000000

TIME 0.07360297 1.00000000

COST 0.17854701 0.24916008 1.00000000

PSI

BUS PLANE TRAIN BOAT

BUS 0.62319719

PLANE 0.11468136 0.39349487

TRAIN 0.33603769 0.01952463 0.70543271

BOAT 0.16251749 0.12765860 0.10950087 0.35792171

Squared Multiple Correlations for Structural Equations

BUS PLANE TRAIN BOAT

0.10597360 0.13550860 0.05754191 0.05943240

THETA-EPS

Y3 Y4 Y7 Y8 Y11 Y12

0.34333200 0.38491200 0.26732500 0.29307700 0.43959700 0.37000000

THETA-EPS

Y14 Y15

0.27556200 0.29635200

THETA-DELTA

X2 X3 X8 X9 X13 X14

-5.3326384511.37038674 0.41484998 0.63482141 0.36487209 0.12404027

PATH ANALYSIS FOR TRAVEL BEHAVIOR MODEL

Number of Iterations = 3

LISREL Estimates (Unweighted Least Squares)

LAMBDA-Y

BUS PLANE TRAIN BOAT

Y3 0.82136318 -- -- --

0.07787101)

Y4 0.90171928 -- -- --

0.10085912)

8.94038389

Y7 -- 0.67233640 -- --

(0.05759145)

Y8 -- 0.71397155 -- --

(0.07210781)

9.90144567

Y11 -- -- 0.71627630 --

(0.08803025)

8.13670641

Y12 -- -- 0.86398281 --

(0.09402953)

9.18842022

Y14 -- -- -- 0.60110710

(0.06962437)

8.63357282

Y15 -- -- -- 0.65662946

(0.14212087)

4.62021826

LAMBDA-X

DEMOGRAP TIME COST

X213.34636474 -- --

0.21319673)

X3 0.43947009 -- --

0.00792184)

X8 -- 0.38628212 --

(0.05343898)

7.22847095

X9 -- 0.81148245 --

(0.04742087)

X13 -- -- 0.72068277

(0.02961613)

X14 -- -- 0.88104075

(0.04073741)

GAMMA

DEMOGRAP TIME COST

 BUS-0.05202333 0.30065923 0.19552874

0.00700835(0.04597654(0.03730616)

***** 6.53940476 5.24119217

PLANE 0.03544869 0.38117700 0.14214733

0.00678716(0.04511704(0.03675936)

5.22290165 8.44862623 3.86696999

TRAIN-0.03724208 0.09225071 0.26621478

0.00712556(0.04681386(0.03880719)

***** 1.97058563 6.85993411

BOAT-0.00586092 0.28202964 0.05975509

0.00627400(0.04471461(0.03560952)

-.93416100 6.30732683 1.67806497

Covariance Matrix of ETA and KSI

BUS	PLANE	TRAIN	BOAT	DEMOGRAP	TIME	
1.00000000	0.32137464	0.54916505	0.39220748	0.00767297	0.34961729	
	1.00000000	0.10531675	0.39696314	0.09175164	0.42258379	
		1.00000000	0.25310044	0.01886933	0.16157334	
			1.00000000	0.02747314	0.29778822	
				1.00000000	0.07936230	
					1.00000000	
						0.27150352

 BUS 1.00000000

PLANE 0.32137464 1.00000000

TRAIN 0.54916505 0.10531675 1.00000000

BOAT 0.39220748 0.39696314 0.25310044 1.00000000

DEMOGRAP 0.00767297 0.09175164 0.01886933 0.02747314 1.00000000

TIME 0.34961729 0.42258379 0.16157334 0.29778822 0.07936230 1.00000000

COST 0.26762428 0.25213504 0.28443568 0.13525298 0.18327376 0.27150352

Covariance Matrix of ETA and KSI

COST

 COST 1.00000000

PHI

DEMOGRAP	TIME	COST
1.00000000		

 DEMOGRAP 1.00000000

TIME 0.07936230 1.00000000

0.00662327)

COST 0.18327376 0.27150352 1.00000000

0.00827614(0.05273477)

***** 5.14847256

PSI

BUS PLANE TRAIN BOAT

BUS 0.84295527

PLANE 0.14979450 0.79982798

0.02813422)

5.32428106

TRAIN 0.44595283 0.00262804 0.91007650

0.03604120(0.02780093)

***** 0.09453080

BOAT 0.27765810 0.26325338 0.19064608 0.90809386

0.02983967(0.02810147(0.02844701)

9.30500030 9.36795706 6.70179687

Squared Multiple Correlations for Structural Equations

BUS PLANE TRAIN BOAT

0.15704473 0.20017202 0.08992350 0.09190614

THETA-EPS

Y3 Y4 Y7 Y8 Y11 Y12

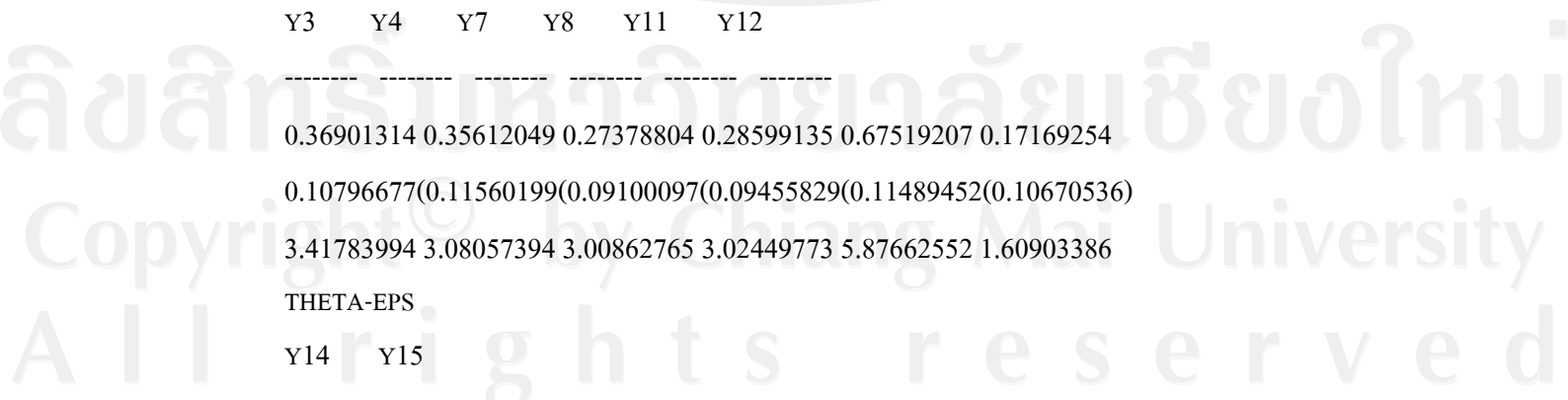
0.36901314 0.35612049 0.27378804 0.28599135 0.67519207 0.17169254

0.10796677(0.11560199(0.09100097(0.09455829(0.11489452(0.10670536)

3.41783994 3.08057394 3.00862765 3.02449773 5.87662552 1.60903386

THETA-EPS

Y14 Y15



0.29586492 0.27451709

0.10031136(0.10418003)

2.94946582 2.63502594

Squared Multiple Correlations for Y - Variables

Y3	Y4	Y7	Y8	Y11	Y12
-----	-----	-----	-----	-----	-----
0.64642081	0.69541998	0.62279019	0.64060003	0.43177312	0.81300345

0.64642081 0.69541998 0.62279019 0.64060003 0.43177312 0.81300345

Squared Multiple Correlations for Y - Variables

Y14	Y15
-----	-----
0.54980627	0.61098890

0.54980627 0.61098890

THETA-DELTA

X2	X3	X8	X9	X13	X14
-----	-----	-----	-----	-----	-----
-2.2987380111	3.6686786	0.79665419	0.35991208	0.31032199	0.22677916

-2.2987380111.36686786 0.79665419 0.35991208 0.31032199 0.22677916

5.69792499(0.07113825(0.09838628(0.09005529(0.08147821(0.10403811)

-.40343423 ***** 8.09720827 3.99656794 3.80865008 2.17977006

Squared Multiple Correlations for X - Variables

X2	X3	X8	X9	X13	X14
-----	-----	-----	-----	-----	-----
1.01307388	0.01670709	0.15775337	0.64659616	0.62598544	0.77390184

1.01307388 0.01670709 0.15775337 0.64659616 0.62598544 0.77390184

Goodness of Fit Statistics

Degrees of Freedom = 56

Normal Theory Weighted Least Squares Chi-Square = 166.34737174 (P = 0.00)

Estimated Non-centrality Parameter (NCP) = 110.34737174

Minimum Fit Function Value = 0.91374788

Population Discrepancy Function Value (F0) = 0.27655983

Root Mean Square Error of Approximation (RMSEA) = .0470274948D-01

Expected Cross-Validation Index (ECVI) = 0.66252474

ECVI for saturated Model = 0.52631579

ECVI for Independence Model = 4.79787544

Chi-Square for Independence Model with 91 Degrees of Freedom = 1886.35230000

Independence AIC = 1914.35230000

Model AIC = 264.34737174

Saturated AIC = 210.00000000

Independence CAIC = 1984.23280366

Model CAIC = 508.92913455

Saturated CAIC = 734.10377745

Root Mean Square Residual (RMR) = .043711104D-01

Standardized RMR = .051541163D-01

Goodness of Fit Index (GFI) = 0.99994135

Adjusted Goodness of Fit Index (AGFI) = 0.99989003

Parsimony Goodness of Fit Index (PGFI) = 0.53330205

Normed Fit Index (NFI) = 0.80672465

Non-Normed Fit Index (NNFI) = 0.92069477

Parsimony Normed Fit Index (PNFI) = 0.49644594

Comparative Fit Index (CFI) = 0.92811986

Incremental Fit Index (IFI) = 0.93140655

Relative Fit Index (RFI) = 0.89592755

Critical N (CN) = 92.39746150

PATH ANALYSIS FOR TRAVEL BEHAVIOR MODEL

Fitted Covariance Matrix

Y3	Y4	Y7	Y8	Y11	Y12
1.04365061	0.74063902	0.17747348	0.18846371	0.32308642	0.38971150
0.74063902	1.16921816	0.19483617	0.20690161	0.35469481	0.42783799
0.17747348	0.19483617	0.72582428	0.05071830	0.05385908	0.06117714
0.18846371	0.20690161	0.48002907	0.48002907	0.79574672	0.06496560
0.32308642	0.35469481	0.05071830	0.05385908	1.18824381	0.61885041
0.38971150	0.42783799	0.06117714	0.06496560	0.61885041	0.91815883
0.19364352	0.21258817	0.16043114	0.17036601	0.10897462	0.13144675

Y15 0.21152975 0.23222426 0.17524965 0.18610218 0.11904025 0.14358807
 X2 0.08411271 0.09234168 0.82331015 0.87429451 0.18038485 0.21758281
 X3 0.00276967 0.00304063 0.02711002 0.02878883 0.00593973 0.00716458
 X8 0.11092584 0.12177801 0.10974988 0.11654626 0.04470488 0.05392367
 X9 0.23302755 0.25582524 0.23055715 0.24483465 0.09391380 0.11328018
 X13 0.15841813 0.17391659 0.12216983 0.12973533 0.14682797 0.17710601
 X14 0.19366749 0.21261449 0.14935365 0.15860253 0.17949843 0.21651359

Fitted Covariance Matrix

Y14	Y15	X2	X3	X8	X9
-----	-----	-----	-----	-----	-----
Y14 0.65719466					
Y15 0.39470463	0.70567934				
X2 0.22040585	0.24076404	*****			
X3 0.00725754	0.00792790	5.86532816	11.56000182		
X8 0.06914551	0.07553226	0.40914931	0.01347250	0.94586807	
X9 0.14525748	0.15867445	0.85952073	0.02830236	0.31346116	1.01841585
X13 0.05859261	0.06400462	1.76281781	0.05804620	0.07558302	0.15878108
X14 0.07162996	0.07824619	2.15505960	0.07096196	0.09240087	0.19411120

Fitted Covariance Matrix

X13	X14
-----	-----
X13 0.82970565	
X14 0.63495089	1.00301196

Fitted Residuals

Y3	Y4	Y7	Y8	Y11	Y12
-----	-----	-----	-----	-----	-----
Y3-0.00325061					
Y4-0.00256702	-0.00281816				
Y7-0.01274348	0.06220383	-0.00332428			
Y8-0.07952771	0.01417439	-0.00343407	-0.00364672		

Y11 0.13275158-0.06039481-0.05071830-0.02475608-0.00014381
 Y12-0.04291150 0.00416201 0.03232286 0.05073440 0.06784959 0.08184117
 Y14 0.00464448-0.00263617-0.02961614 0.00264999-0.02068462 0.01435325
 Y15-0.03160175 0.02179174 0.01753035 0.00079782-0.02748025 0.04961193
 X2-0.08411271 0.05086632-0.03434015-0.04819651-0.18038485 0.18021719
 X3 0.30935033 0.14383937 0.31968998 0.27381117 0.40172027 0.02683542
 X8 0.05033616 0.06905799 0.03254012 0.15659474-0.02443088 0.06697633
 X9-0.00311955-0.08648124-0.10560715-0.07039465 0.02358820-0.05448018
 X13-0.09344413 0.00298741 0.00932517 0.08083867-0.03771897-0.02240601
 X14 0.02053251 0.06818551-0.03885365-0.00730253 0.03850157 0.03348641

Fitted Residuals

Y14	Y15	X2	X3	X8	X9
-----	-----	-----	-----	-----	-----
Y14-0.00109466					
Y15-0.00007263-0.00007934					
X2-0.00559385-0.01799604 0.00088617					
X3 0.04782246 0.10631210-0.00440816-0.00000182					
X8 0.05138249 0.08851974-0.16251331 0.30272750-0.08096807					
X9-0.05793948-0.07635445 0.18006327 0.17161764 0.06932684-0.05801585					
X13 0.03723039-0.03342862 0.04717219 0.03477380 0.02597298 0.02849692					
X14 0.00127004 0.00575381-0.03345960-0.00296196-0.03660087 0.00188880					

Fitted Residuals

X13	X14
-----	-----
X13-0.00160565	
X14 0.00204911-0.00301196	

Summary Statistics for Fitted Residuals

Smallest Fitted Residual = -0.18038485
 Median Fitted Residual = 0.00088617
 Largest Fitted Residual = 0.40172027

Stemleaf Plot

- 1|86
 - 1|1
 - 0|9988887666555
 - 0|44443333322221110000000000000000000000
 0|1111222233333344
 0|555555677777889

1|134
 1|6788
 2|
 2|7
 3|012
 3|
 4|0

Standardized Residuals

Y3	Y4	Y7	Y8	Y11	Y12	
Y3	--					
Y4	-0.17877383	--				
Y7	-0.32186822	1.50328884	--			
Y8	-2.01642942	0.34027211	-0.13133033	--		
Y11	--	--	-1.06731078	-0.52370817	--	
Y12	--	0.47538907	0.68745209	1.08466737	3.69475978	--
Y14	0.14349722	-0.08045403	-0.72323090	0.06594951	-0.47644706	0.33521038
Y15	-1.7777828	1.37630143	0.52671777	0.02548089	-0.68519993	1.27931927
X2	-2.16764264	1.34835463	--	--	-5.69143470	5.14980755
X3	6.18063943	2.87388173	6.39717588	5.47624298	8.02706491	0.53619713
X8	1.10592017	1.51790115	0.69762889	3.39462425	-0.50692023	1.40870263
X9	-0.09047148	-2.47321511	-2.54102719	-1.79282260	0.56993475	-1.37736990
X13	-2.17389707	0.06788064	0.20072360	1.75022972	-0.88774076	-0.51106455

X14 0.52537905 1.67036535-0.87086721-0.16519884 1.00196386 0.82819529

Standardized Residuals

Y14 Y15 X2 X3 X8 X9

 Y14 --
 Y15 -- --
 X2-0.18915189-1.03550071 0.02189119
 X3 0.95560491 2.12463605-0.66426066 --
 X8 1.07587182 1.91245812-5.75872762 6.04937759 --
 X9-1.37107921-2.18427327 -- 3.43158078 -- --

X13 0.78313715-0.71888023 -- 0.69550655 0.54501856 0.70968656

X14 0.02745877 0.12886746-3.67457278-0.05925975-0.78808670 0.05484248

Standardized Residuals

X13 X14

 X13 --
 X14 -- --

Summary Statistics for Standardized Residuals

Smallest Standardized Residual = -5.75872762

Median Standardized Residual = 0.00000000

Largest Standardized Residual = 8.02706491

Stemleaf Plot

- 5|87
 - 4|
 - 3|7
 - 2|552220
 - 1|884410
 - 0|9987777555532221111000000000000000000000000000000
 0|1111123355556777788
 1|00111334455789
 2|19

3|447

4|

5|15

6|024

7|

8|0

Largest Negative Standardized Residuals

Residual for X2 and Y11 -5.69143470

Residual for X8 and X2 -5.75872762

Residual for X14 and X2 -3.67457278

Largest Positive Standardized Residuals

Residual for Y12 and Y11 3.69475978

Residual for X2 and Y12 5.14980755

Residual for X3 and Y3 6.18063943

Residual for X3 and Y4 2.87388173

Residual for X3 and Y7 6.39717588

Residual for X3 and Y8 5.47624298

Residual for X3 and Y11 8.02706491

Residual for X8 and Y8 3.39462425

Residual for X8 and X3 6.04937759

Residual for X9 and X3 3.43158078

PATH ANALYSIS FOR TRAVEL BEHAVIOR MODEL

Qplot of Standardized Residuals

3.5.....

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PATH ANALYSIS FOR TRAVEL BEHAVIOR MODEL

Covariances

Y - ETA

Y3 Y4 Y7 Y8 Y11 Y12

BUS 0.82136318 0.90171928 0.21607187 0.22945235 0.39335391 0.47446916

PLANE 0.26396530 0.28978971 0.67233640 0.71397155 0.07543589 0.09099186

TRAIN 0.45106395 0.49519271 0.07080829 0.07519316 0.71627630 0.86398281

BOAT 0.32214478 0.35366105 0.26689277 0.28342039 0.18128985 0.21867443

Y - ETA

Y14 Y15

BUS 0.23575870 0.25753499

PLANE 0.23861736 0.26065769

TRAIN 0.15214047 0.16619321

BOAT 0.60110710 0.65662946

Y - KSI

Y3 Y4 Y7 Y8 Y11 Y12

DEMOGRAP 0.00630229 0.00691886 0.06168797 0.06550806 0.01351565 0.01630278

TIME 0.28716277 0.31525665 0.28411847 0.30171280 0.11573116 0.13959659

COST 0.21981673 0.24132197 0.16951957 0.18001725 0.20373453 0.24574753

Y - KSI

Y14 Y15

DEMOGRAP 0.01651430 0.01803967

TIME 0.17900261 0.19553652

COST 0.08130153 0.08881109

X - ETA

X2	X3	X8	X9	X13	X14
----	----	----	----	-----	-----

BUS 0.10240624 0.00337204 0.13505091 0.28370829 0.19287220 0.23578789

PLANE 1.22455090 0.04032210 0.16323656 0.34291933 0.18170938 0.22214125

TRAIN 0.25183696 0.00829251 0.06241289 0.13111393 0.20498789 0.25059942

BOAT 0.36666652 0.01207362 0.11503026 0.24164991 0.09747449 0.11916338

X - KSI

X2	X3	X8	X9	X13	X14
----	----	----	----	-----	-----

DEMOGRAP13.34636474 0.43947009 0.03065624 0.06440111 0.13208224 0.16147165

TIME 1.05919817 0.03487736 0.38628212 0.81148245 0.19566791 0.23920567

COST 2.44603851 0.08054334 0.10487696 0.22032035 0.72068277 0.88104075

PATH ANALYSIS FOR TRAVEL BEHAVIOR MODEL

First Order Derivatives

LAMBDA-Y

BUS	PLANE	TRAIN	BOAT
-----	-------	-------	------

Y3 0.01601048 0.16376797-0.01395267 0.05990357

Y4-0.00239052-0.11671632 0.00885229-0.03733070

Y7-0.00166716 0.06040724 0.01107104 0.02661414

Y8 0.02792025 0.05169743-0.00268449 0.02018786

Y11-0.04619933 0.23906310-0.03671167 0.07230363

Y12-0.08452173-0.29414075-0.16498974-0.14480475

Y14 0.00838650 0.02744789 0.00115367 0.01369017

Y15 0.00592621 0.02154779-0.00744675 0.00795376

LAMBDA-X

DEMOGRAP TIME COST

X2-0.01196110-0.05269853-0.01372969

X3-0.01479117-0.64483765-0.38919377

X8 2.02015146 0.01452129 0.29492054

X9-2.46642112-0.07285661-0.39874981

X13-0.65204892-0.07829356-0.11101709

X14 0.45016472 0.02383607 0.05692679

BETA

BUS PLANE TRAIN BOAT

BUS 0.01099484 0.02926763-0.00347793 0.01554077

PLANE 0.01881337 0.07752448 0.00552681 0.03230721

TRAIN-0.10611681-0.08289731-0.16884400-0.07331944

BOAT 0.00893251 0.03064803-0.00419627 0.01345193

GAMMA

DEMOGRAP TIME COST

BUS 0.14093489 0.03713598 0.01811216

PLANE 0.58784353 0.09224361 0.10196153

TRAIN-0.49700162-0.07163303-0.15337072

BOAT 0.16125712 0.04624870 0.03197647

PHI

DEMOGRAP TIME COST

DEMOGRAP-0.02238655

TIME-0.95834093 0.03989233

COST-0.07768522-0.01649827-0.01601003

PSI

BUS PLANE TRAIN BOAT

BUS 0.00414344

PLANE 0.00683768 0.00332927

TRAIN-0.01188362-0.01298678-0.07249769

BOAT 0.00327680 0.00271869-0.01376929 0.00024354

THETA-EPS

Y3 Y4 Y7 Y8 Y11 Y12

Y3 0.00162531

Y4 0.00256702 0.00140908

Y7 0.01274348-0.06220383 0.00166214

Y8 0.07952771-0.01417439 0.00343407 0.00182336

Y11-0.13275158 0.06039481 0.05071830 0.02475608 0.00007190

Y12 0.04291150-0.00416201-0.03232286-0.05073440-0.06784959-0.04092059

Y14-0.00464448 0.00263617 0.02961614-0.00264999 0.02068462-0.01435325

Y15 0.03160175-0.02179174-0.01753035-0.00079782 0.02748025-0.04961193

THETA-EPS

Y14 Y15

Y14 0.00054733

Y15 0.00007263 0.00003967

THETA-DELTA-EPS

Y3 Y4 Y7 Y8 Y11 Y12

X2 0.08411271-0.05086632 0.03434015 0.04819651 0.18038485-0.18021719

X3-0.30935033-0.14383937-0.31968998-0.27381117-0.40172027-0.02683542

X8-0.05033616-0.06905799-0.03254012-0.15659474 0.02443088-0.06697633

X9 0.00311955 0.08648124 0.10560715 0.07039465-0.02358820 0.05448018

X13 0.09344413-0.00298741-0.00932517-0.08083867 0.03771897 0.02240601

X14-0.02053251-0.06818551 0.03885365 0.00730253-0.03850157-0.03348641

THETA-DELTA-EPS

Y14 Y15

 X2 0.00559385 0.01799604
 X3-0.04782246-0.10631210
 X8-0.05138249-0.08851974
 X9 0.05793948 0.07635445
 X13-0.03723039 0.03342862
 X14-0.00127004-0.00575381

THETA-DELTA

X2 X3 X8 X9 X13 X14

X2-0.00044308
 X3 0.00440816 0.00000091
 X8 0.16251331-0.30272750 0.04048403
 X9-0.18006327-0.17161764-0.06932684 0.02900792
 X13-0.04717219-0.03477380-0.02597298-0.02849692 0.00080282
 X14 0.03345960 0.00296196 0.03660087-0.00188880-0.00204911 0.00150598

PATH ANALYSIS FOR TRAVEL BEHAVIOR MODEL

Factor Scores Regressions

ETA

Y3 Y4 Y7 Y8 Y11 Y12

BUS 0.39082782 0.44459694 0.02434541 0.02474988 0.02225379 0.10556123
 PLANE 0.02206675 0.02510264 0.51745681 0.52605356-0.00456905-0.02167336
 TRAIN 0.04669218 0.05311597-0.01057657-0.01075228 0.16343717 0.77526693
 BOAT 0.03312405 0.03768118 0.05099549 0.05184270 0.00620012 0.02941037

ETA

Y14 Y15 X2 X3 X8 X9

BUS 0.03023489 0.03559599-0.00077694 0.00000517 0.00784420 0.03647512
 PLANE 0.04219082 0.04967187 0.00102584-0.00000683 0.01263587 0.05875614
 TRAIN 0.01187422 0.01397970-0.00012766 0.00000085-0.00052467-0.00243970

BOAT 0.50007712 0.58874817 0.00001006-0.00000007 0.00618920 0.02877947

ETA

X13 X14

BUS 0.00868020 0.01452081

PLANE 0.01540687 0.02577363

TRAIN 0.01522299 0.02546603

BOAT-0.00287542-0.00481019

KSI

Y3 Y4 Y7 Y8 Y11 Y12

DEMOGRAP 0.00029786 0.00033884-0.00043389-0.00044110 0.00002333 0.00011064

TIME 0.03600869 0.04096268 0.06399451 0.06505768-0.00114791-0.00544512

COST 0.00831939 0.00946395 0.01629127 0.01656192 0.00695379 0.03298542

KSI

Y14 Y15 X2 X3 X8 X9

DEMOGRAP-0.00000352-0.00000415 0.07595703-0.00050580-0.00007673-0.00035681

TIME 0.02593334 0.03053170 0.00091881-0.00000612 0.14701251 0.68360031

COST-0.00251552-0.00296156 0.00230295-0.00001534 0.00474171 0.02204870

KSI

X13 X14

DEMOGRAP-0.00092118-0.00154101

TIME 0.02271077 0.03799209

COST 0.36954287 0.61819588

PATH ANALYSIS FOR TRAVEL BEHAVIOR MODEL

Standardized Solution

LAMBDA-Y

BUS PLANE TRAIN BOAT

Y3 0.82136318 -- -- --

Y4 0.90171928 -- -- --

Y7 -- 0.67233640 -- --

Y8 -- 0.71397155 -- --

Y11 -- -- 0.71627630 --

Y12 -- -- 0.86398281 --

Y14 -- -- -- 0.60110710

Y15 -- -- -- 0.65662946

LAMBDA-X

DEMOGRAP	TIME	COST
-----	-----	-----
X213.34636474	--	--
X3 0.43947009	--	--
X8 -- 0.38628212	--	--
X9 -- 0.81148245	--	--
X13 -- -- 0.72068277	--	--
X14 -- -- 0.88104075	--	--

GAMMA

DEMOGRAP	TIME	COST
-----	-----	-----
BUS-0.05202333	0.30065923	0.19552874
PLANE 0.03544869	0.38117700	0.14214733
TRAIN-0.03724208	0.09225071	0.26621478
BOAT-0.00586092	0.28202964	0.05975509

Correlation Matrix of ETA and KSI

BUS	PLANE	TRAIN	BOAT	DEMOGRAP	TIME
-----	-----	-----	-----	-----	-----
BUS 1.00000000					
PLANE 0.32137464	1.00000000				
TRAIN 0.54916505	0.10531675	1.00000000			

BOAT 0.39220748 0.39696314 0.25310044 1.00000000
 DEMOGRAP 0.00767297 0.09175164 0.01886933 0.02747314 1.00000000
 TIME 0.34961729 0.42258379 0.16157334 0.29778822 0.07936230 1.00000000
 COST 0.26762428 0.25213504 0.28443568 0.13525298 0.18327376 0.27150352

Correlation Matrix of ETA and KSI

COST

COST 1.00000000

PSI

BUS PLANE TRAIN BOAT

BUS 0.84295527

PLANE 0.14979450 0.79982798

TRAIN 0.44595283 0.00262804 0.91007650

BOAT 0.27765810 0.26325338 0.19064608 0.90809386

Regression Matrix ETA on KSI (Standardized)

DEMOGRAP TIME COST

BUS-0.05202333 0.30065923 0.19552874

PLANE 0.03544869 0.38117700 0.14214733

TRAIN-0.03724208 0.09225071 0.26621478

BOAT-0.00586092 0.28202964 0.05975509

PATH ANALYSIS FOR TRAVEL BEHAVIOR MODEL

Total and Indirect Effects

Total Effects of KSI on ETA

DEMOGRAP TIME COST

BUS-0.05202333 0.30065923 0.19552874

0.00035086(0.00230171)(0.00186764)

PLANE 0.03544869 0.38117700 0.14214733

0.00033978(0.00225868)(0.00184027)

TRAIN-0.03724208 0.09225071 0.26621478

0.00035672(0.00234362(0.00194279)

BOAT-0.00586092 0.28202964 0.05975509

0.00031409(0.00223853(0.00178271)

Total Effects of ETA on Y

	BUS	PLANE	TRAIN	BOAT
Y3	0.82136318	--	--	--
Y4	0.90171928	--	--	--
Y7	--	0.67233640	--	--
Y8	--	0.71397155	--	--
Y11	--	--	0.71627630	--
Y12	--	--	0.86398281	--
Y14	--	--	--	0.60110710
Y15	--	--	--	0.65662946

Y3 0.82136318 -- -- --

0.00389843)

Y4 0.90171928 -- -- --

0.00504927)

Y7 -- 0.67233640 -- --

(0.00288318)

Y8 -- 0.71397155 -- --

(0.00360991)

Y11 -- -- 0.71627630 --

(0.00440702)

Y12 -- -- 0.86398281 --

(0.00470736)

Y14 -- -- -- 0.60110710

(0.00348558)

Y15 -- -- -- 0.65662946

(0.00711494)

Total Effects of KSI on Y

	DEMOGRAP	TIME	COST
Y3	0.04273005	0.24695042	0.16060011
Y4	0.04691044	0.27111023	0.17631204
Y7	0.02383344	0.25627917	0.09557082

Y3-0.04273005 0.24695042 0.16060011

0.00035901(0.00220730(0.00178273)

Y4-0.04691044 0.27111023 0.17631204

0.00035851(0.00229025(0.00177617)

Y7 0.02383344 0.25627917 0.09557082

0.00027100(0.00169850(0.00131959)

Y8 0.02530935 0.27214953 0.10148915

0.00025130(0.00194238(0.00136890)

Y11-0.02667562 0.06607700 0.19068334

0.00030391(0.00173974(0.00188124)

Y12-0.03217652 0.07970303 0.23000499

0.00033013(0.00204027(0.00185097)

Y14-0.00352304 0.16953002 0.03591921

0.00018839(0.00167365(0.00110559)

Y15-0.00384845 0.18518897 0.03923695

0.00021117(0.00221071(0.00121647)

PATH ANALYSIS FOR TRAVEL BEHAVIOR MODEL

Standardized Total and Indirect Effects

Standardized Total Effects of KSI on ETA

DEMOGRAP TIME COST

BUS-0.05202333 0.30065923 0.19552874

PLANE 0.03544869 0.38117700 0.14214733

TRAIN-0.03724208 0.09225071 0.26621478

BOAT-0.00586092 0.28202964 0.05975509

Standardized Total Effects of ETA on Y

BUS PLANE TRAIN BOAT

Y3 0.82136318 -- -- --

Y4 0.90171928 -- -- --

Y7 -- 0.67233640 -- --

Y8 -- 0.71397155 -- --

Y11 -- -- 0.71627630 --

Y12 -- -- 0.86398281 --

Y14 -- -- -- 0.60110710

Y15 -- -- -- 0.65662946

Standardized Total Effects of KSI on Y

DEMOGRAP TIME COST

Y3-0.04273005 0.24695042 0.16060011

Y4-0.04691044 0.27111023 0.17631204

Y7 0.02383344 0.25627917 0.09557082

Y8 0.02530935 0.27214953 0.10148915

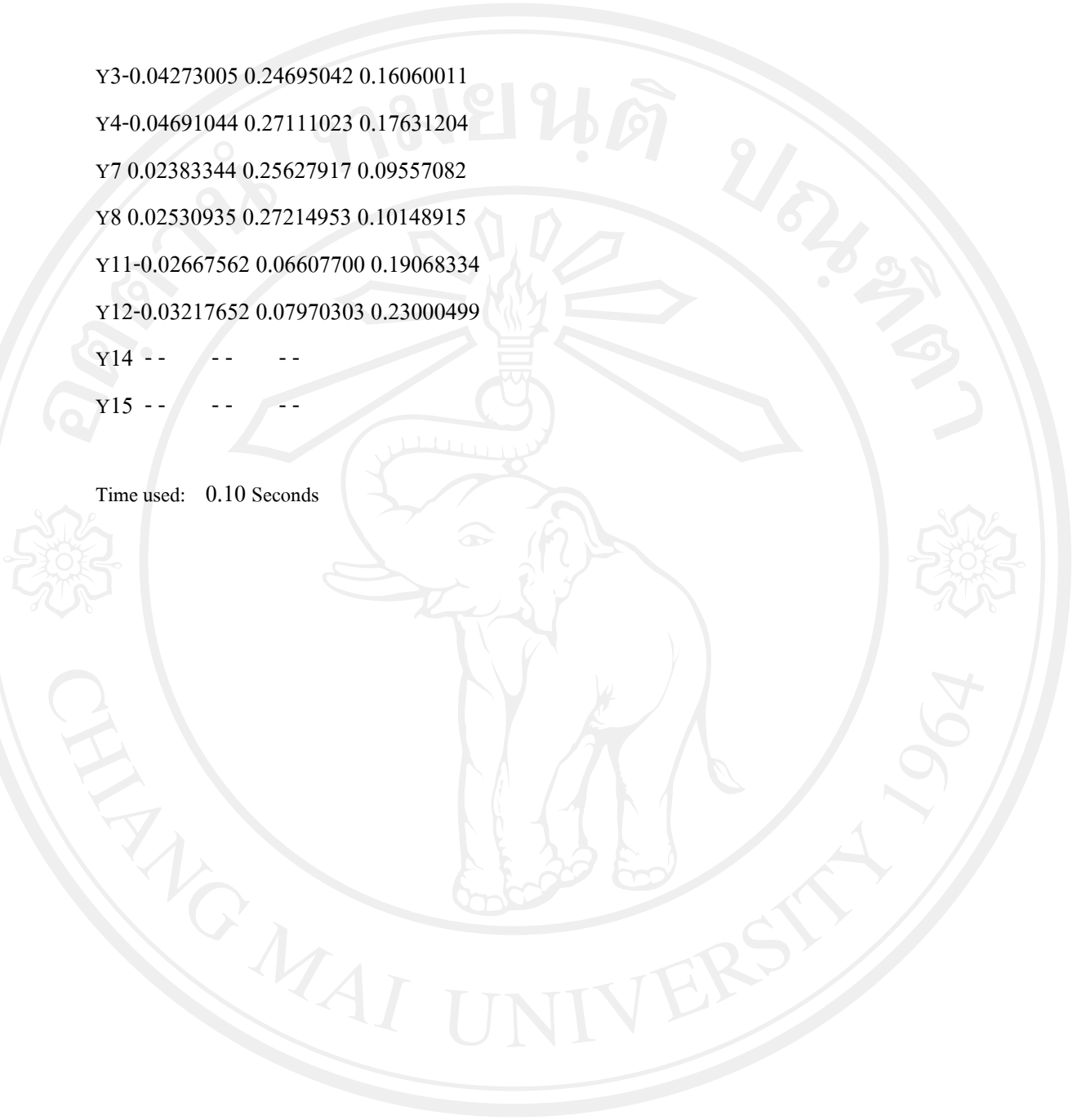
Y11-0.02667562 0.06607700 0.19068334

Y12-0.03217652 0.07970303 0.23000499

Y14 -- -- --

Y15 -- -- --

Time used: 0.10 Seconds



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ประวัติผู้เขียน

ชื่อ - สกุล

นางสาวนิศานาด เสรีพงศ์

วัน เดือน ปี เกิด

30 เมษายน 2531

ประวัติการศึกษา

สำเร็จการศึกษามัธยมศึกษาตอนปลาย
โรงเรียนเบญจมราชูทิศ จังหวัดนครศรีธรรมราช

สำเร็จการศึกษาระดับปริญญาตรี เศรษฐศาสตรบัณฑิต
คณะเศรษฐศาสตร์ มหาวิทยาลัยเชียงใหม่
ปีการศึกษา 2553 (เกียรตินิยมอันดับ 1)