A Comparative Analysis of Eight Areas
in Three Southeast Asian Countries

Yuichi Marumo†

Now, I start my presentation titled "A Comparative Analysis of Eight Areas in Three Southeast Asian Countries." Three Southeast Asian Countries contain Vietnam, Cambodia and Kingdom of Thailand. This Social Capital Project has conducted questionnaire survey in three countries to date. I'd like to analyze the result of the survey by use of statistics. We also conducted questionnaire survey in Laos, but some of questionnaires included incorrect outcome. Therefore, I excluded the data of Laos.

First, I'd like to outline the comparison of social trust and social association in eight areas. As for target areas of this survey, there contained Vietnam urban, Vietnam rural, Cambodia urban and Cambodia rural. Afterwards, we added four areas in Thailand; Nonthaburi urban, Nonthaburi rural, Chonburi urban and Cambodia rural.

Concerning about social trust and social association, I adopted Q1：People can be trusted, Q2：Meet relatives, Q3：Meet friends & acquaintances, Q4-A：Depth of social relations with neighborhood and Q4-B：Proportion of neighborhood having relations. Choices of these five questions were made up of the five-point Likert scale. A score of five points to one was assigned in the order of wealth in social capital to the options on the five-point Likert scale in the questions regarding social trust and social association. When all the respondents choose the option to which five points were assigned, the average score would be 5.000. The lower limit might be 1.000.

As for average scores of social trust and social association, average score of Vietnam urban area was 3.990, that of Vietnam rural area was 4.426, that of Cambodia urban area was 3.310, that of Cambodia rural area was 3.639, that of Nonthaburi urban area was 3.777, that of Nonthaburi rural area was 3.905, that of Chonburi urban area was 3.601, that of Chonburi rural area was 3.877. In every area, average scores of rural areas were higher than those of urban areas.

Dose it mean that average scores of rural areas were higher than those of urban areas from stands point of statistics? By use of analysis of variance (ANOVA) and multiple comparison,

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we can say that (1) average score of Vietnam rural area was higher than that of any other areas (significant in 0.1% level). It is significant in 0.1% level means that within 1,000 times it seems to be certain 999 times or more. (2) Average score of Cambodia rural area was higher than that of Cambodia urban area (significant in 0.1% level). (3) Average score of Nonthaburi rural area was not higher than that of Nonthaburi urban area (not statistically significant). (4) Average score of Chonburi rural area was higher than that of Chonburi urban area (significant in 0.1% level).

Second, I explain "Factor Analysis and Path Diagram by SEM." SEM is an abbreviation of Structural Equation Modeling.

This table (see Slide 6) demonstrates the factor analysis results for the Vietnam urban area. This line shows question items. In factor analysis, question items correspond to observed variables, while factor loading will take the value of -1 to +1 in case of orthogonal rotation. In case of oblique rotation, the value may slightly exceed 1. Factor 1 is comprised of (1) not having access to water, (2) threat of natural disasters and (3) threat of food shortage. Factor 2 consists of (1) reliability on military sector in the event of disasters, (2) reliability on the police or firefighting organizations in the event of disasters and (3) reliability on political parties or politicians in the event of disasters. Factor 3 is made up of (1) reliance on military sector in the event of difficulties, (2) reliance on the police or firefighting organizations in the event of difficulties and (3) reliance on political parties or politicians in the event of difficulties.

Factor 1 is dubbed "threats to life," Factor 2 "reliability on social institutions in the event of disasters" and Factor 3 "reliance on social institutions in the event of difficulties." The correlation between Factors 1 and 2 stood at 0.248, and that between Factors 2 and 3 stood at 0.351. Weak correlations are observed in the two relationships. There is little correlation seen between Factors 1 and 3, with a coefficient value of 0.194.

This table (see Slide 7) demonstrates the factor analysis results for Vietnam rural area. Factor 1 is dubbed "reliance on social institutions in the event of difficulties," Factor 2 "reliability on friends, neighbors or relatives in the event of disasters," and Factor 3 "threats to life." Between Factors 1 and 2, a medium-level correlation is confirmed with a value of 0.401, and between 2 and 3, a weak correlation with a value of 0.314. There is little correlation confirmed between Factors 1 and 3, with a value of 0.147.

This diagram (see Slide 8) is a path diagram by SEM drawn on the basis of the factor analysis about Vietnam rural area. All paths are statistically significant. In this model, "threats to life" serve as an exogenous variable. Exogenous variable is determined outside the model in which it is used. With regard to causal relationships, "threats to life" have a minor impact of 0.336 on "reliability on friends, neighbors or relatives in the event of disasters." The reliability on friends, neighbors or relatives in the event of disasters has a medium-level influence of 0.442 on "reliance on social institutions in the event of difficulties."

Lastly, I'd like to designate the area where the path diagram can be drawn as an example. This path diagram (see Slide 10) has been drawn on the basis of the factor analysis about Cambodia urban area. All the paths are statistically significant.

In this model, "reliance or reliability on social institutions in the event of disasters or difficulties" and "reliance or reliability on schools or hospitals in the event of disasters or difficulties" are both exogenous variables. With regard to causal relationships, the exogenous variable of reliance or reliability on social institutions in the event of disasters or difficulties has a medium-level impact of 0.412 on the reliance or reliability on neighbors or friends in the event of disasters or difficulties. The other exogenous variable, namely reliance or reliability on schools or hospitals in the event of disasters or difficulties, has a limited impact of 0.325 on the reliance or reliability on neighbors or friends in the event of disasters or difficulties.

This path diagram (see Slide 13) has been drawn on the basis of the factor analysis about Nonthaburi urban area. Regrettably, one path between latent variables is not statistically significant ($p = 0.194$).

This path diagram (see Slide 15) has been drawn on the basis of the factor analysis about Nonthaburi rural area. All the paths are statistically significant. In this model, "reliability on friends, acquaintances or people in neighborhood in the event of disasters" serves as an exogenous variable. Regarding causal relationships, the exogenous variable of reliability on friends, acquaintances or people in neighborhood in the event of disasters has a medium-level impact of 0.666 on "reliance or reliability on public organizations in the event of disasters or difficulties." The reliance or reliability on public organizations in the event of disasters or difficulties has a strong-level influence of 0.715 on reliance on social organizations in the event of difficulties.

This path diagram (see Slide 17) has been drawn on the basis of the factor analysis about Chonburi urban area. Two paths between latent variables are almost statistically significant ($p = 0.008$, $p = 0.051$). In this model, reliance on "social capital in neighborhood" in the event of difficulties serves as an exogenous variable.

This path diagram (see Slide 19) has been drawn on the basis of the factor analysis about Chonburi rural area. Regrettably, two paths between latent variables are not statistically significant ($p = 0.097$, $p = 0.153$).

A Comparative Analysis of 8 Areas in 3 Southeast Asian Countries

東南アジア3か国8地域の比較分析

Yuichi MARUMO

1

Comparison of social trust and social association
（社会信頼・つきあい交流の比較）

Social trust & social association	Vietnam urban	Vietnam rural	Cambodia urban	Cambodia rural	Nonthaburi urban	Nonthaburi rural	Chonburi urban	Chonburi rural
Q1: People can be trusted	3.680	4.090	2.650	2.915	3.271	3.375	3.160	2.688
Q2: Meet relatives	3.600	4.730	3.665	4.050	3.975	4.185	3.710	4.131
Q3: Meet friends & acquaintances	3.920	4.110	3.810	4.140	3.854	3.955	3.790	4.162
Q4-A: Depth of social relations with neighborhood	4.390	4.430	3.435	3.610	3.714	3.880	3.600	3.889
Q4-B: Proportion of neibourghood having relations	4.360	4.770	2.990	3.480	4.070	4.130	3.745	4.518
total sum	19.950	22.130	16.550	18.195	18.884	19.525	18.005	19.387
average	3.990	4.426	3.310	3.639	3.777	3.905	3.601	3.877

(note) All questions are made up of the five-point Likert scale.

2

Average of social trust and social association

	Average+ SD
—	Average
—	Average- SD

3
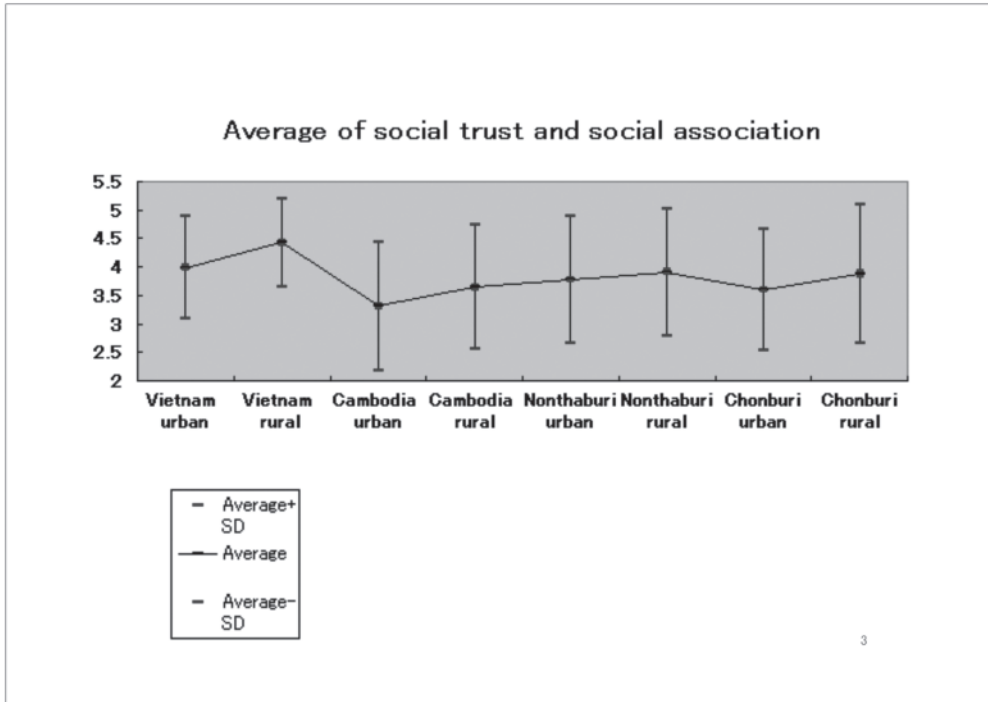
ANOVA→multiple comparison
（分散分析）　　（多重比較）

	Vietnam urban	Vietnam rural	Cambodia urban	Cambodia rural	Nonthaburi urban	Nonthaburi rural	Chonburi urban	Chonburi rural	difference
①	3.990	4.426	3.310	3.639	3.777	3.905	3.601	3.877	***
②	3.990	4.426	3.310	3.639	3.777	3.905	3.601	3.877	***
③	3.990	4.426	3.310	3.639	3.777	3.905	3.601	3.877	***
④	3.990	4.426	3.310	3.639	3.777	3.905	3.601	3.877	***, **
⑤	3.990	4.426	3.310	3.639	3.777	3.905	3.601	3.877	***
⑥	3.990	4.426	3.310	3.639	3.777	3.905	3.601	3.877	***
⑦	3.990	4.426	3.310	3.639	3.777	3.905	3.601	3.877	***

(note) **$p < 0.01$, *** $p < 0.001$

4

**Factor Analysis and
Path Diagram by SEM
因子分析と
共分散構造分析によるパス図**

Factor analysis (Vietnam urban)

Factor Name		Question items (observed variable)	Maximum Likelihood Method, Oblique Promax Rotation		
			Factor 1	Factor 2	Factor 3
Factor 1	Threats to life	Not having access to water	1.003	-0.024	0.015
		Threat, natural disasters	0.848	0.092	-0.122
		Threat, food shortage	0.811	-0.061	0.154
Factor 2	Reliability on social institutions in the event of disasters	Reliability on military sector	0.016	1.006	-0.030
		Reliability on police or firefighting organizations	0.034	0.841	-0.024
		Reliability on political parties or politicians	-0.055	0.519	0.206
Factor 3	Reliance on social institutions in the event of difficulties	Reliance on military sector	-0.077	0.086	0.884
		Reliance on police or firefighting organizations	0.062	0.044	0.802
		Reliance on political parties or politicians	0.053	-0.049	0.663
		Interfactor correlation (see Note)	1.000		
			0.248	1.000	
			0.194	0.351	1.000

n = 100, Cronbach's alpha = 0.811
Note: This merely represents the correlation coefficient between factors.
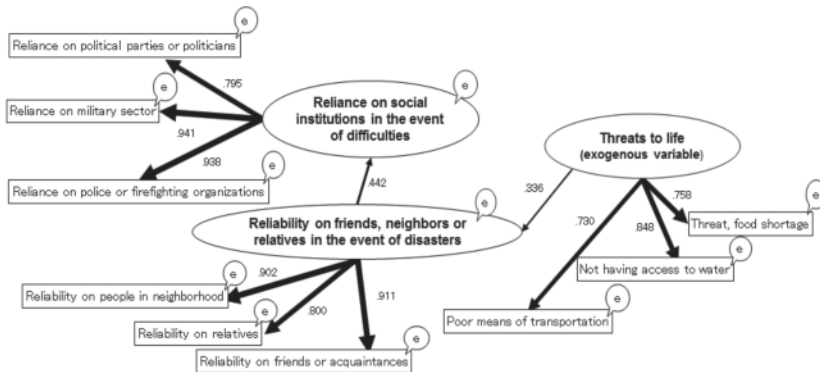No causal relationship is known as no path diagram can be created.

Factor analysis (Vietnam rural)

	Factor Name	Question items (observed variable)	Maximum Likelihood Method, Oblique Promax Rotation		
			Factor 1	Factor 2	Factor 3
Factor 1	Reliance on social institutions in the event of difficulties	Reliance on police or firefighting organizations	0.966	-0.033	0.010
		Reliance on military sector	0.908	0.062	-0.041
		Reliance on political parties or politicians	0.779	0.030	0.034
Factor 2	Reliability on friends, neighbors or relatives in the event of disasters	Reliability on friends or acquaintances	-0.002	0.905	0.050
		Reliability on people in neighborhood	0.086	0.847	0.023
		Reliability on relatives	-0.013	0.833	-0.060
Factor 3	Threats to life	Not having access to water	0.080	-0.050	0.850
		Threat, food shortage	-0.168	0.095	0.761
		Poor means of transportation	0.090	-0.035	0.732
		Interfactor Correlation	1.000		
			0.401	1.000	
			0.147	0.314	1.000

n = 100, Cronbach's alpha = 0.810

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Vietnam rural n = 100
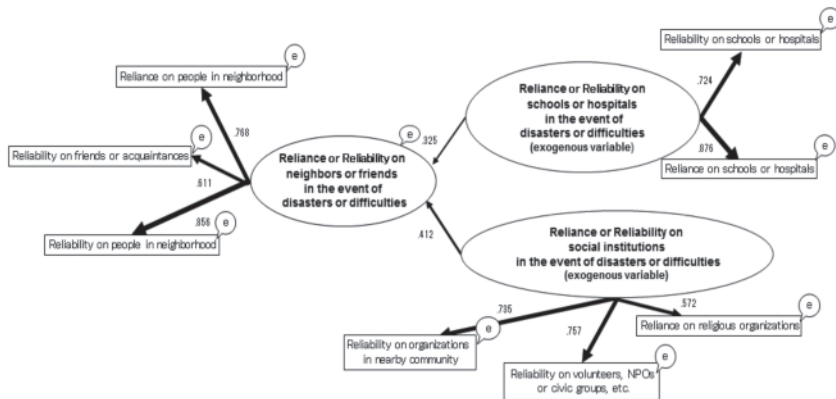
All the paths are statistically significant.

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Factor analysis (Cambodia urban)

	Factor Name	Question items (observed variable)	Maximum Likelihood Method, Oblique Promax Rotation		
			Factor 1	Factor 2	Factor 3
Factor 1	Reliance or Reliability on neighbors or friends in the event of disasters or difficulties	Reliability on people in neighborhood	0.911	0.023	-0.080
		Reliance on people in neighborhood	0.731	-0.029	0.105
		Reliability on friends or acquaintances	0.572	0.045	0.030
Factor 2	Reliance or Reliability on social institutions in the event of disasters or difficulties	Reliability on organizations in nearby community	-0.028	0.792	-0.078
		Reliability on volunteers, NPOs or civic groups, etc.	0.016	0.729	0.009
		Reliance on religious organizations	0.086	0.506	0.158
Factor 3	Reliance or Reliability on schools or hospitals in the event of disasters or difficulties	Reliance on schools or hospitals	-0.013	-0.002	1.005
		Reliability on schools or hospitals	0.046	0.023	0.616
		Interfactor Correlation	1.000		
			0.410	1.000	
			0.335	0.124	1.000

n = 200, Cronbach's alpha = 0.774

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Cambodia urban   n = 200

All the paths are statistically significant.

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Factor analysis (Cambodia rural)

	Factor Name	Question items (observed variable)	Maximum Likelihood Method, Oblique Promax Rotation		
			Factor 1	Factor 2	Factor 3
Factor 1	Reliance or Reliability on neighbors or friends in the event of disasters or difficulties	Reliability on people in neighborhood	0.842	-0.094	0.035
		Reliance on people in neighborhood	0.684	0.001	-0.035
		Reliability on friends or acquaintances	0.569	0.088	0.149
Factor 2	Reliance or Reliability on social institutions in the event of disasters or difficulties	Reliance on volunteers, NPOs or civic groups, etc.	0.029	0.778	-0.039
		Reliability on volunteers, NPOs or civic groups, etc.	0.088	0.768	-0.069
		Reliance on organizations in nearby community	-0.133	0.537	0.125
Factor 3	Reliance or Reliability on schools or hospitals in the event of disasters or difficulties	Reliance on schools or hospitals	-0.027	0.022	1.007
		Reliability on schools or hospitals	0.209	-0.008	0.425
		Interfactor Correlation (see Note)	1.000		
			0.106	1.000	
			0.101	-0.199	1.000

n = 200, Cronbach's alpha = 0.541

Note: This merely represents the correlation coefficient between factors.
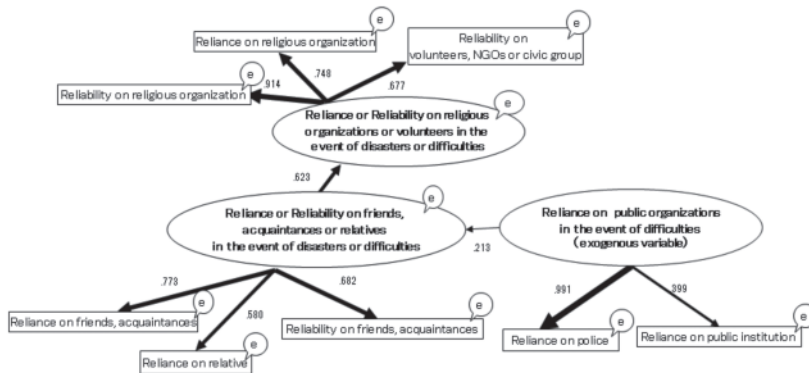No causal relationship is known as no path diagram can be created.

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Factor analysis (Nonthaburi urban)

	Factor Name	Question items (observed variable)	Principal Factor Method, Oblique Promax Rotation		
			Factor 1	Factor 2	Factor 3
Factor 1	Reliance or Reliability on religious organizations or volunteers in the event of disasters or difficulties	Reliability on religious organizations	0.909	0.067	-0.138
		Reliance on religious organizations	0.784	-0.060	0.231
		Reliability on volunteers, NGOs or civic groups	0.590	0.106	0.026
Factor 2	Reliance or Reliability on friends, acquaintances or relatives in the event of disasters or difficulties	Reliability on friends or acquaintances	-0.033	0.721	0.192
		Reliance on friends or acquaintances	0.042	0.718	0.018
		Reliance on relatives	0.154	0.526	-0.210
Factor 3	Reliance on public organizations in the event of difficulties	Reliance on public institution	-0.001	-0.044	0.705
		Reliance on police	0.065	0.065	0.568
		Interfactor Correlation	1.000		
			0.531	1.000	
			0.136	0.143	1.000

n = 122, Cronbach's alpha = 0.745

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Nonthaburi urban n = 122

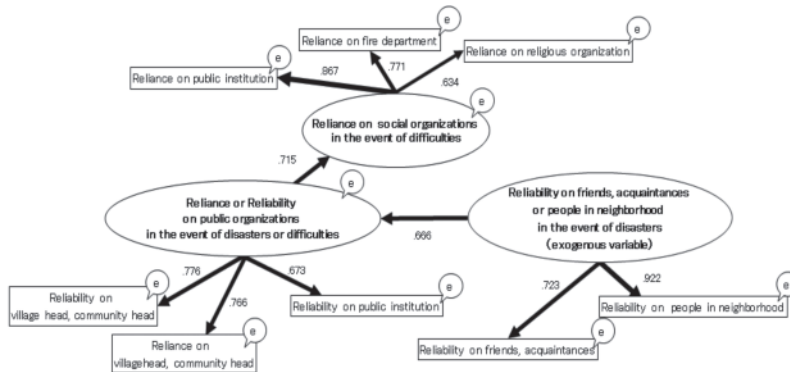One path is not statistically significant (*p* = 0.194).

Factor analysis (Nonthaburi rural)

Factor Name		Question items (observed variable)	Principal Factor Method, Oblique Promax Rotation		
			Factor 1	Factor 2	Factor 3
Factor 1	Reliance on social organizations in the event of difficulties	Reliance on public institution	1.007	-0.087	0.012
		Reliance on fire department	0.605	0.165	0.054
		Reliance on religious organizations	0.513	0.136	0.020
Factor 2	Reliance or Reliability on public organizations in the event of disasters or difficulties	Reliability on village head, community head	-0.061	0.883	0.062
		Reliance on village head, community head	0.301	0.632	-0.086
		Reliability on public institution	0.128	0.390	0.296
Factor 3	Reliability on friends, acquaintances or people in neighborhood in the event of disasters	Reliability on friends, acquaintances	-0.001	-0.081	0.980
		Reliability on people in neighborhood	0.050	0.232	0.597
		Interfactor Correlation	1.000		
			0.508	1.000	
			0.422	0.454	1.000

n = 130, Cronbach's alpha = 0.858

Reliance on fire department

Reliance on religious organization

Reliance on public institution

.967 .771 .634

Reliance on social organizations in the event of difficulties

.715

Reliance or Reliability on public organizations in the event of disasters or difficulties

Reliability on friends, acquaintances or people in neighborhood in the event of disasters (exogenous variable)

.666

.776 .673

.766

Reliability on village head, community head

Reliance on villagehead, community head

Reliability on public institution

.723 .922

Reliability on people in neighborhood

Reliability on friends, acquaintances

Nonthaburi rural   n = 130
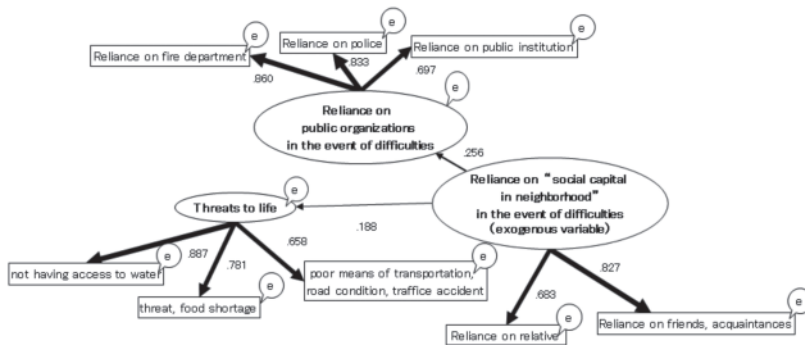
All the paths are statistically significant.

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Factor analysis (Chonburi urban)

	Factor Name	Question items (observed variable)	Maximum Likelihood Method, Oblique Promax Rotation		
			Factor 1	Factor 2	Factor 3
Factor 1	Reliance on public organizations in the event of difficulties	Reliance on fire department	0.858	0.064	-0.007
		Reliance on police	0.841	-0.062	0.004
		Reliance on public institution	0.689	0.010	0.017
Factor 2	Threats to life	not having access to water	-0.028	0.888	0.022
		threat, food shortage	-0.024	0.782	-0.009
		poor means of transportation, road condition, traffice accident	0.064	0.656	-0.013
Factor 3	Reliance on "social capital in neighborhood" in the event of difficulties	Reliance on relatives	-0.031	-0.021	0.836
		Reliance on friends or acquaintances	0.050	0.024	0.672
		Interfactor Correlation	1.000		
			0.099	1.000	
			0.236	0.178	1.000

n = 175, Cronbach's alpha = 0.705

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Chonburi urban   n = 175

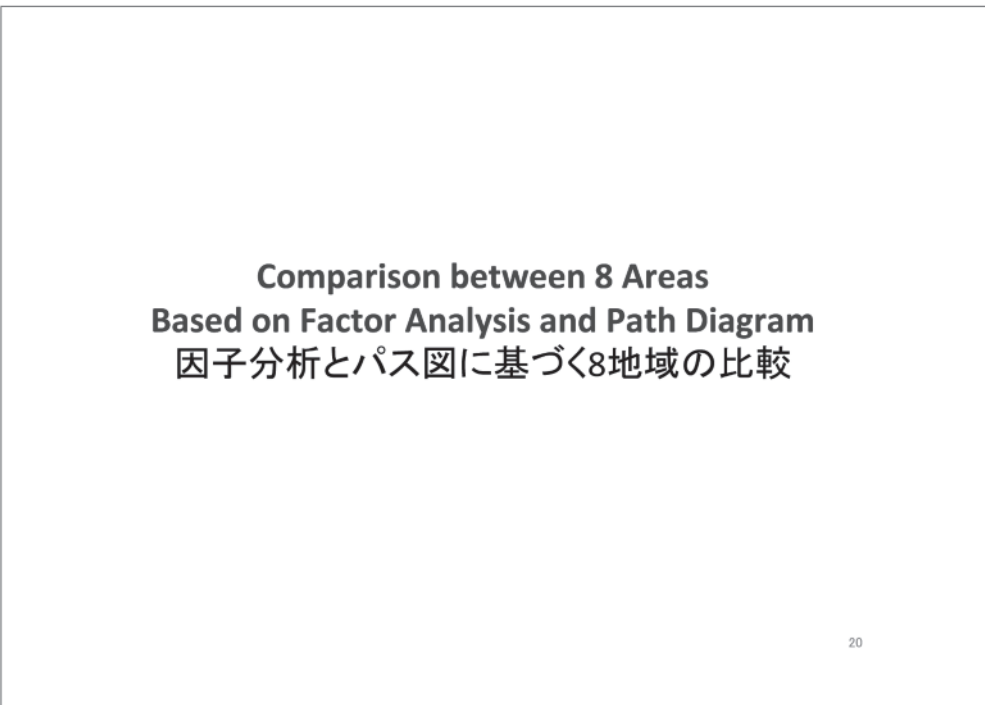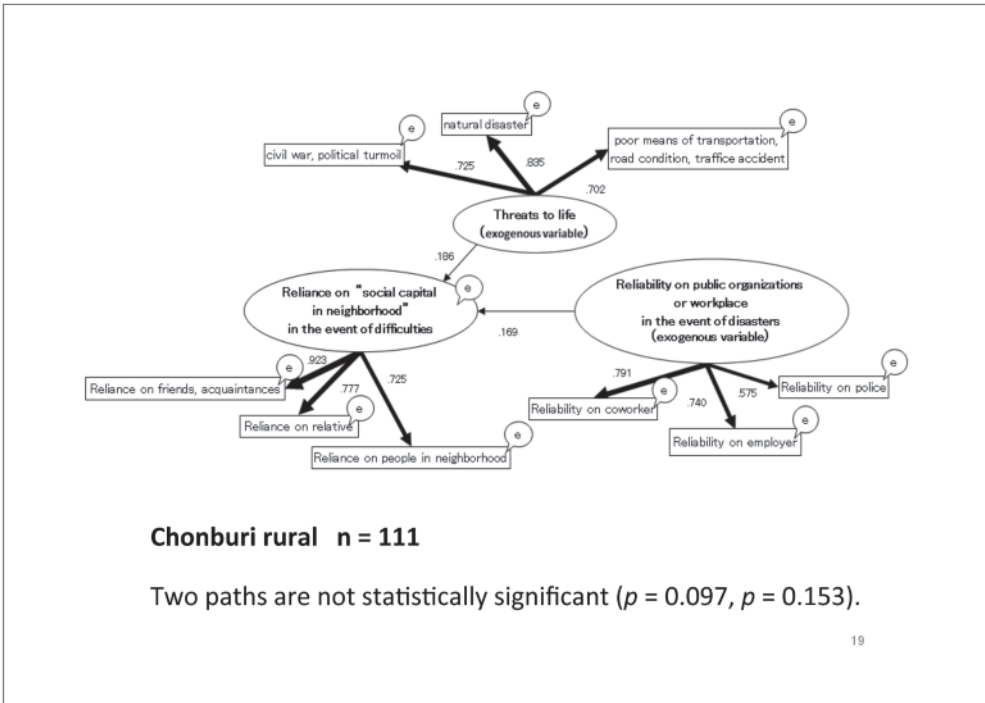All the paths are almost statistically significant（$p= 0.008$, $p = 0.051$）.

Factor analysis (Chonburi rural)

	Factor Name	Question items (observed variable)	Principal Factor Method, Oblique Promax Rotation		
			Factor 1	Factor 2	Factor 3
Factor 1	Reliance on "social capital in neighborhood" in the event of difficulties	Reliance on friends, acquaintances	0.962	-0.018	-0.092
		Reliance on relatives	0.775	-0.060	-0.023
		Reliance on people in neighborhood	0.680	0.105	0.182
Factor 2	Threats to life	civil war, political turmoil	-0.052	0.747	0.095
		natural disaster	-0.005	0.822	0.023
		poor means of transportation, road condition, traffice accident	0.064	0.701	-0.158
Factor 3	Reliability on public organizations or workplace in the event of disasters	Reliability on coworker	0.074	-0.006	0.795
		Reliability on employer	-0.004	-0.038	0.718
		Reliability on police	-0.047	0.019	0.595
	Interfactor Correlation		1.000		
			0.193	1.000	
			0.173	0.003	1.000

n = 111, Cronbach's alpha = 0.670

Chonburi rural   n = 111

Two paths are not statistically significant (p = 0.097, p = 0.153).

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Comparison between 8 Areas
Based on Factor Analysis and Path Diagram
因子分析とパス図に基づく8地域の比較

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	Vietnam urban	Vietnam rural	Cambodia urban	Cambodia rural
Factor 1	Threats to life	Reliance on social institutions in the event of difficulties	Reliance or Reliability on neighbors or friends in the event of disasters or difficulties	Reliance or Reliability on neighbors or friends in the event of disasters or difficulties
Factor 2	Reliability on social institutions in the event of disasters	Reliability on friends, neighbors or relatives in the event of disasters	Reliance or Reliability on social institutions in the event of disasters or difficulties (exogenous variable)	Reliance or Reliability on social institutions in the event of disasters or difficulties
Factor 3	Reliance on social institutions in the event of difficulties	Threats to life (exogenous variable)	Reliance or Reliability on schools or hospitals in the event of disasters or difficulties (exogenous variable)	Reliance or Reliability on schools or hospitals in the event of disasters or difficulties
n	100	100	200	200
Cronbach's alpha (internal consistency)	0.811	0.810	0.774	0.541
SEM (path diagram)	No	Yes	Yes	No
SEM consistency	-	GFI = 0.921 AGFI = 0.858 RMSEA = 0.068	GFI = 0.953 AGFI = 0.906 RMSEA = 0.078	-
Paths in SEM	-	Statistically significant	Statistically significant	-

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	Nonthaburi urban	Nonthaburi rural	Chonburi urban	Chonburi rural
Factor 1	Reliance or Reliability on religious organizations or volunteers in the event of disasters or difficulties	Reliance on social organizations in the event of difficulties	Reliance on public organizations in the event of difficulties	Reliance on "social capital in neighborhood" in the event of difficulties
Factor 2	Reliance or Reliability on friends, acquaintances or relatives in the event of disasters or difficulties	Reliance or Reliability on public organizations in the event of disasters or difficulties	Threats to life	Threats to life (exogenous variable)
Factor 3	Reliance on public organizations in the event of difficulties (exogenous variable)	Reliability on friends, acquaintances or people in neighborhood in the event of disasters (exogenous variable)	Reliance on "social capital in neighborhood" in the event of difficulties (exogenous variable)	Reliability on public organizations or workplace in the event of disasters (exogenous variable)
n	122	130	175	111
Cronbach's alpha (internal consistency)	0.745	0.858	0.705	0.67
SEM (path diagram)	Yes	Yes	Yes	Yes
SEM consistency	GFI = 0.929 AGFI = 0.858 RMSEA = 0.101	GFI = 0.937 AGFI = 0.875 RMSEA = 0.090	GFI = 0.971 AGFI = 0.942 RMSEA = 0.034	GFI = 0.941 AGFI = 0.893 RMSEA = 0.051
Paths in SEM	One path is not statistically significant	Statistically significant	Almost statistically significant	Two paths are not statistically significant

Note: Factors with the same name have different observed variables or question items as constituents.

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	Vietnam urban	Vietnam rural	Cambodia urban	Cambodia rural
Characteristics	1. Reliability in the event of disasters and reliance in the event of difficulties are separate. -> Possibly close to the model of Shinjuku-ku 2. Social institutions include the military sector and political parties (significant reliance on them).	1. Reliability in the event of disasters and reliance in the event of difficulties are separate. 2. Social institutions include the military sector and political parties. 3, Reliability on friends, neighbors or relatives in the event of disasters determines reliance on social institutions in the event of difficulties.	1. Reliability in the event of disasters and reliance in the event of difficulties are not separate. (Neighbors, schools or hospitals are relied on in the event of disasters and difficulties alike.) 2. Threats to life are not extracted as a factor. 3. There are two exogenious factors.	1. Reliability in the event of disasters and reliance in the event of difficulties are not separate. (Neighbors, schools or hospitals are relied on in the event of disasters and difficulties alike.) 2. The factors extracted are identical with those in the urban area. 3. Internal consistency is poor.

	Nonthaburi urban	Nonthaburi rural	Chonburi urban	Chonburi rural
Characteristics	1. Reliability in the event of disasters and reliance in the event of difficulties are not separate. 2. Threats to life are not extracted as a factor.	1. Reliability on public organizations in the event of disasters and reliance on public organizations in the event of difficulties are not separate. 2. Threats to life are not extracted as a factor.	1. SEM consistency is excellent. 2. Reliabilities in the event of disasters are not extracted as a factor.	1. Reliability in the event of disasters and reliance in the event of difficulties are separate. -> Possibly close to the model of Shinjuku-ku 2. There are two exogenious factors. 3. Reliability on workplace or police are extracted as a single factor.

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