

RITSUMEIKAN UNIVERSITY

Understanding the Impact of GIS-based Disaster Information Systems in Indonesia

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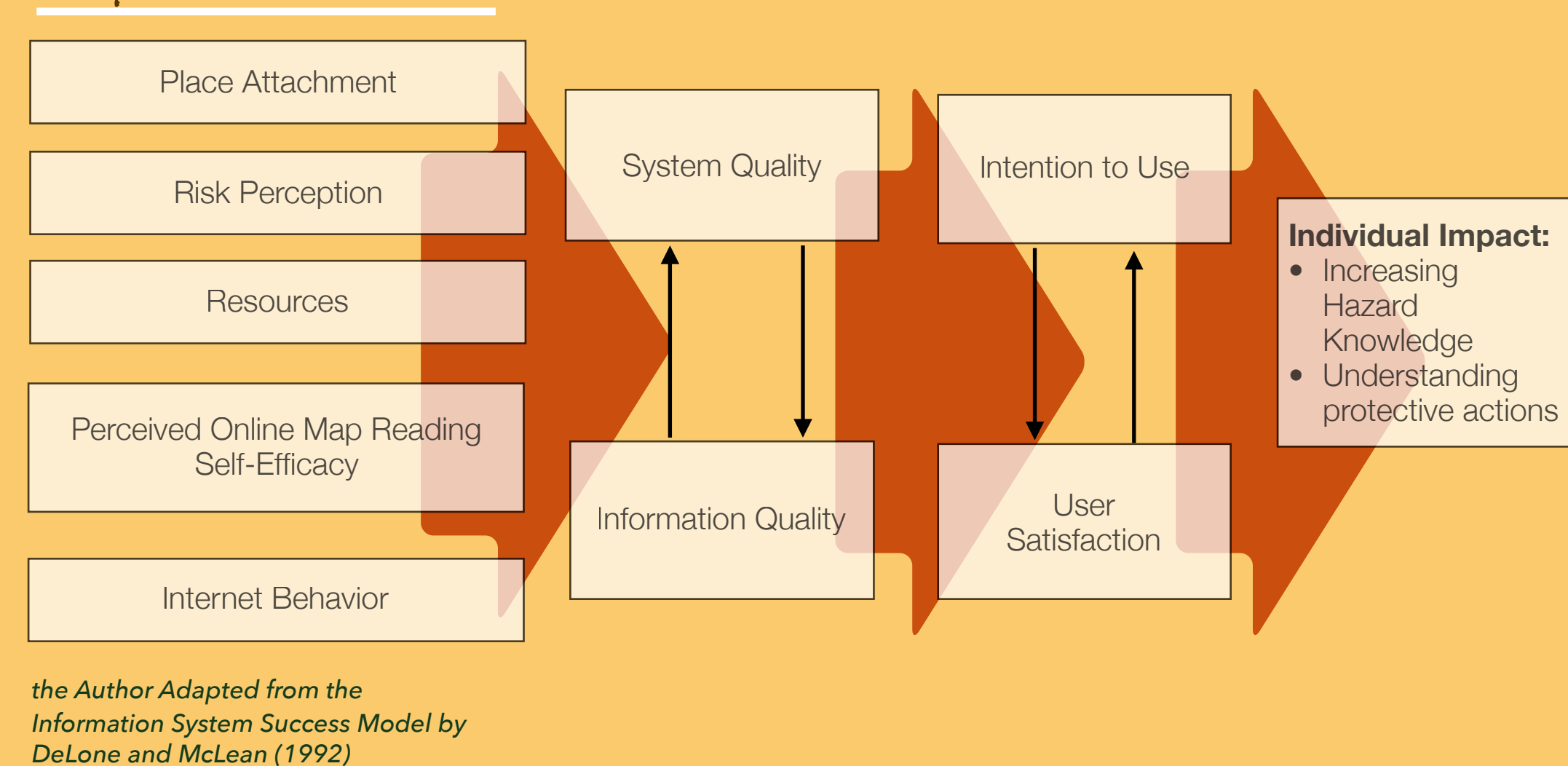
Introduction

- Understanding risk is an essential element of disaster management.
- Public awareness and public education for disaster reduction seek to turn available human knowledge and risk understanding into specific local action to reduce disaster risks. They mobilize people through clear messages, supported with detailed information.
- Providing visualized information such as hazard maps could help to increase one's awareness on the natural hazards.
- Providing information is a fundamental task of government -> part of e-Government -> Public information services (Fu & Su, 2011)
- Thomas (2018) underlines that little is known about the way how maps in disasters, particularly as decision-making tools, are adopted and disseminated.

Research Objectives:

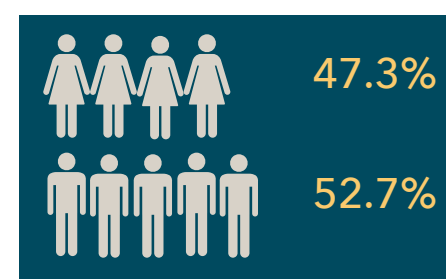
- To understand the impacts of GIS-based Disaster Information Systems in Indonesia provided by government on individuals, particularly on the increasing of natural hazards knowledge and understanding protective actions.
- To build a model that can explain comprehensively the impact of Disaster Information Systems.

Proposed Model

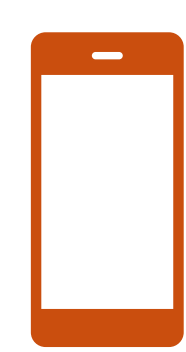


Variables	Indicators
Place Attachment	x1,x2,x3,x4,x5,x6,x7,x8,x9*,x10*
Risk Perception	x11,x12,x13,x14,x15,x16,x17,x18
Resources	x19,x20,x21
Internet Behavior	x22,x23,x24
Perceived Online Map Reading Self-Efficacy	x25,x26,x27
System Quality	x28,x29,x30,x31,x32,x33,x34,x35,x36
Information Quality	x37,x38,x39,x40,x41
User Satisfaction	x42,x43,x44,x45,x46,x47
Intention to Use	x48,x49,x50
Individual Impact	x51,x52,x53,x54,x55,x56,x57

Overview of the Respondents (N=220)



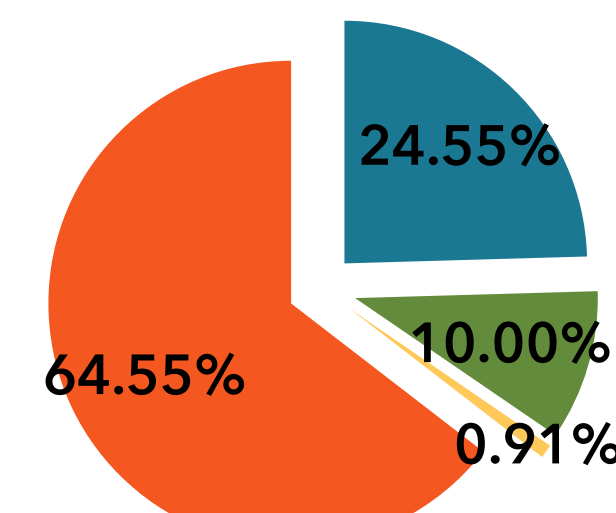
Sex



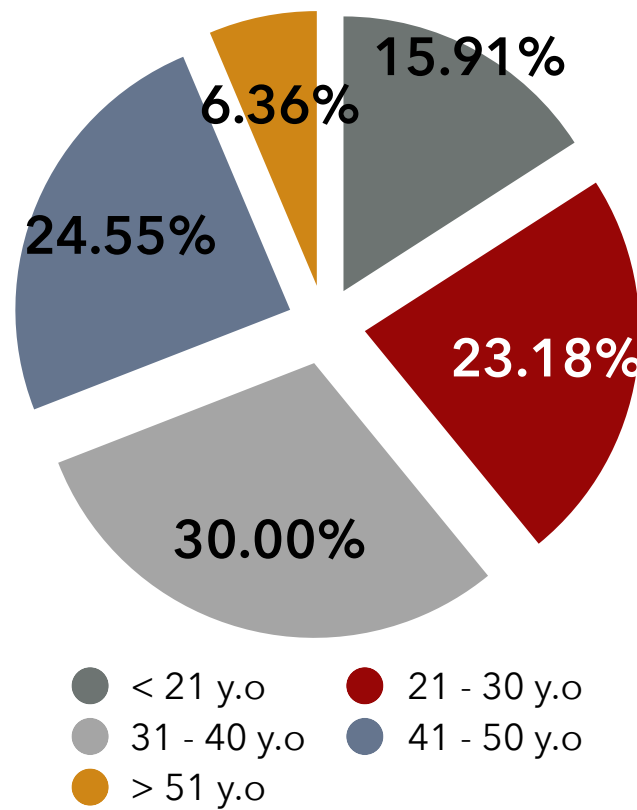
Phone Ownership



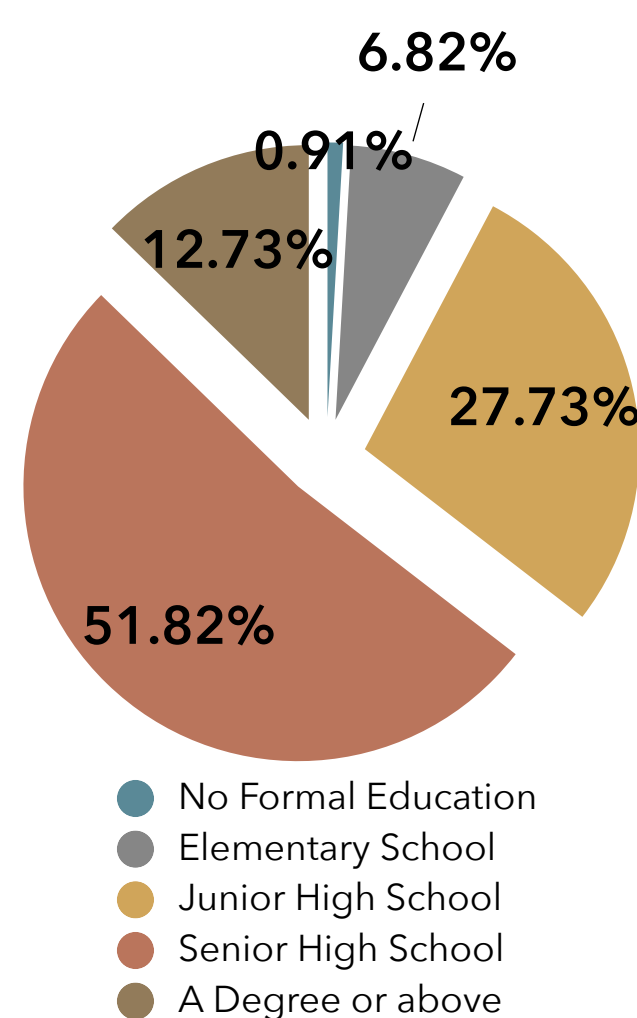
Any Prior Usages of SIKK Magelang?



KRB (Volcanic Eruption Hazard Zones)



Age Group



Education Attainment

Disaster Experience

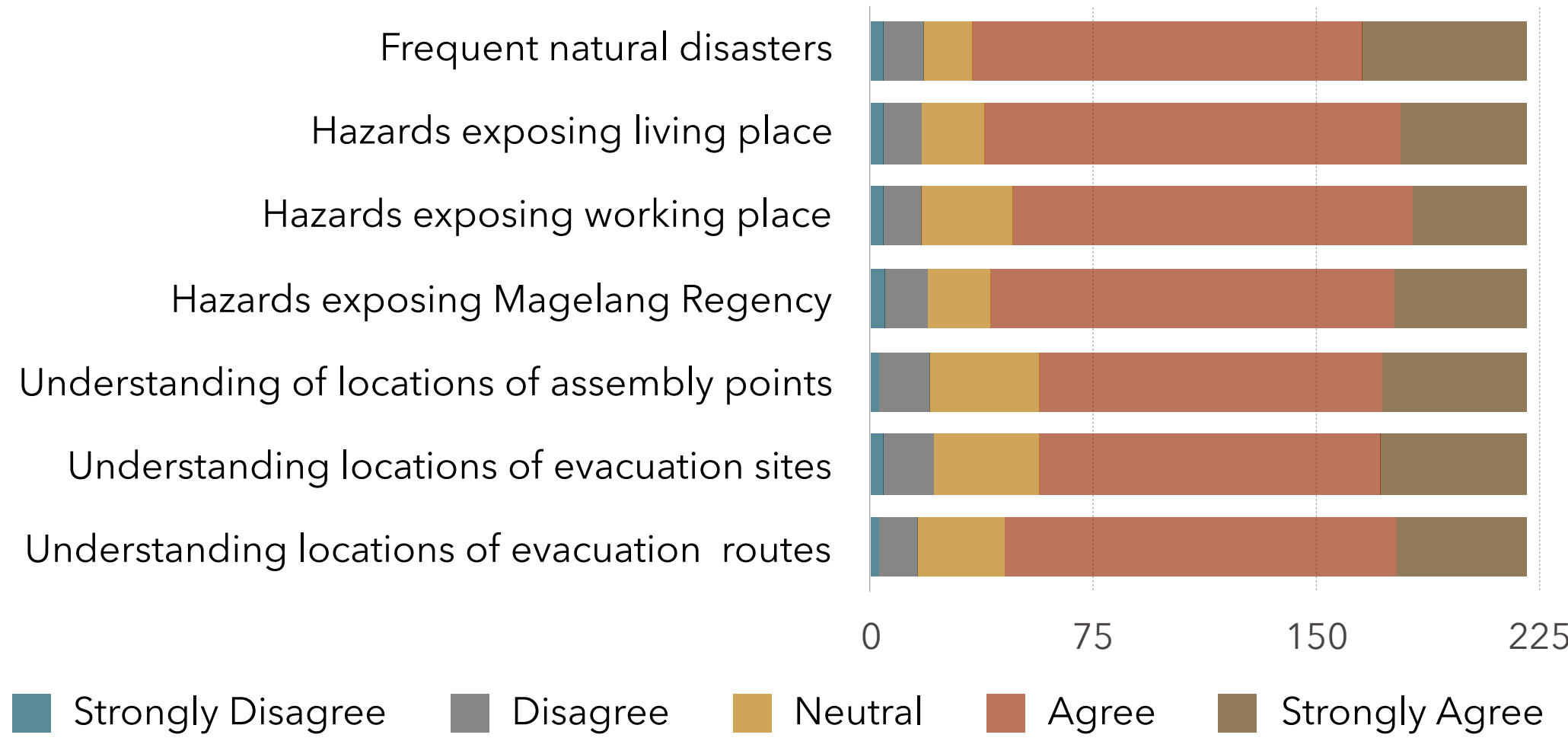
Ever experienced Disasters?

Yes: 100.0%

Been a Disaster Victim?

Yes: 92.3%

No: 7.7%

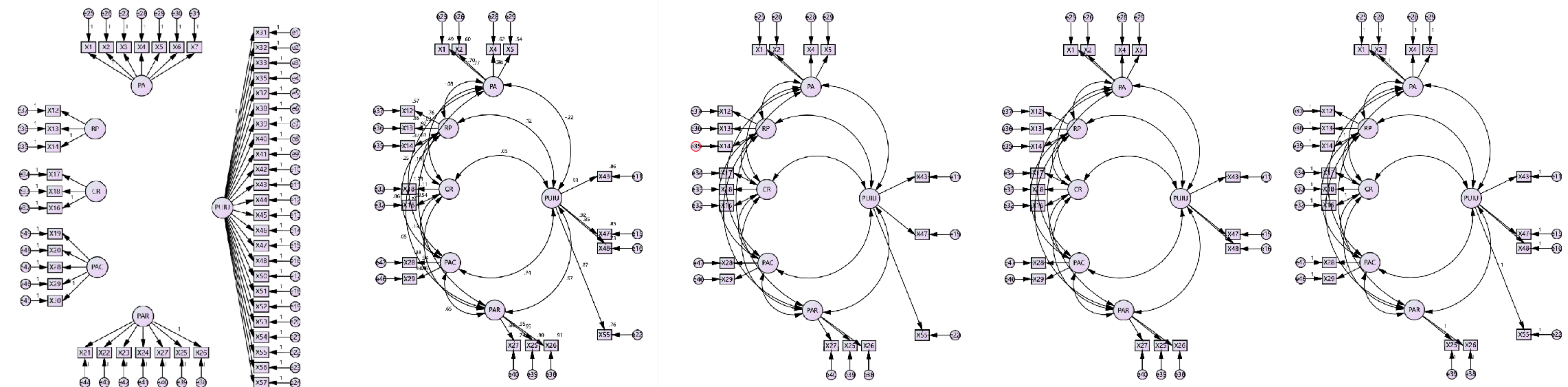


EXPLORATORY FACTOR ANALYSIS

- All Variables' KMO MSA is above 0.50
- All Extractions is above 0.50
- Reliability Analysis: All indicators in all variables is reliable

Variables and Indicators	Mean	SD	Factor Loadings
Perceived Usefulness and Intention to Use (Cronbach's Alpha= 0.967)			
X37 Disaster's information and maps shown on SIKK Magelang are useful	4.05	0.879	0.919
X41 Disaster's information and maps shown on SIKK Magelang are trustworthy/trusted	3.95	0.913	0.916
X56 I became know where the evacuation site for the emergency situation	3.85	0.917	0.910
X52 I became aware of what hazards that may threaten the place where I live	3.92	0.827	0.909
X47 Overall I am satisfied with SIKK Magelang	3.87	0.861	0.907
X55 I became understand where to go to the assembly points nearby during emergency	3.85	0.895	0.904
X43 I am satisfied with maps about disasters in displayed on SIKK Magelang	3.88	0.875	0.904
X42 I am satisfied with the information and records about disaster occurrences shown on SIKK Magelang	3.90	0.881	0.904
X46 I am satisfied with information about evacuation sites displayed on SIKK Magelang	3.79	0.913	0.898
X38 Disaster's information and maps shown on SIKK Magelang are easy to understand	3.88	0.896	0.890
X45 I am satisfied with information about evacuation routes visualized on SIKK Magelang	3.80	0.901	0.882
X48 I am willing to use SIKK Magelang as a source of disaster information	3.95	0.879	0.878
X50 I want to recommend my family members and my friends to use SIKK Magelang as a source of disaster information	3.86	0.916	0.870
X54 I became aware of what hazards that may threaten any places in Magelang Regency	3.91	0.866	0.869
X51 I became understand which areas that natural disasters frequently happened in Magelang Regency	4.00	0.863	0.868
X44 I am satisfied with assembly points visualized on SIKK Magelang	3.77	0.888	0.862
X40 Disaster's information and maps shown on SIKK Magelang are complete/comprehensive	3.81	0.907	0.862
X57 I understand which ways that I should follow during emergency	3.90	0.825	0.858
X39 Disaster's information and maps shown on SIKK Magelang are interesting	3.90	0.899	0.837
X31 SIKK Magelang is easy to operate	3.80	1.024	0.834
X33 SIKK Magelang is reliable as a source for knowing assembly points	3.84	1.038	0.832
X35 SIKK Magelang is reliable as a source for knowing evacuation sites	3.83	1.037	0.829
X53 I became aware of what hazards that may threaten the place where I work	3.86	0.835	0.819
X32 SIKK Magelang is reliable as a source of disaster maps	3.80	0.976	0.780

CONFIRMATORY FACTOR ANALYSIS



CFA - 1st Alternative

P = 0.005;
CMIN/DF = 1.361

CFA - 2nd Alternative

P = 0.007;
CMIN/DF = 1.346

CFA - 3rd Alternative

P = 0.005;
CMIN/DF = 1.366

CFA - 4th Alternative

P = 0.008;
CMIN/DF = 1.338

Summary of the Travel

- Disaster Management Agency of Magelang Regency
- Sumber Village Office
- Dusun Gempol in Jumoyo Village
- Disaster Volunteer Organizations: LPBD Ngrajek, OPRB Kalibening, and Tagana Magelang
- Alun-alun of Magelang Regency
- An Evacuation Site near Tagana

