FLOOD HAZARDOUS ANTICIPATION (CASE STUDY : KAMPUNG MELAYU AND KELAPA GADING RESIDENCES, JAKARTA, INDONESIA)

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Abstract

The objective of this research is to identify flood hazardous anticipation of inhabitants who live in two locations in Jakarta Indonesia, i.e. Kampung Melayu and Kelapa Gading, which are flood stricken most frequently. A self-administered questionnaire was prepared. Questionnaire consist of 15 items excludes respondents profile. Most of items were scored on 3 scales (no, perhaps, certainly), and some were scored on 2 scales (yes and no). In addition to that, questionnaire also assembled with demography questions. However, the participants to the survey were recruited through convenience sampling. That is, questionnaires were distributed to a person who is available at the time data collection. Data collected further was summarized using cross tabulation and analyzed using non parametric test SPSS to test the hypothesis. Flood hazard anticipation was measured using flood mitigation and intention to reduce the impact of flood. Result shows that there's different flood mitigation and intention to reduce the impact of flood between in habitants in Kelapa Gading and Kampung Melayu. Inhabitants in Kampung Melayu seem more prepare for flooding in the future.

Keywords : *flood, hazardous, anticipation, Kampung Melayu, Kelapa Gading*

INTRODUCTION

Flood is an annual feature in the capital of Indonesia, Jakarta. From all parts of Jakarta, society in Kampung Melayu and Kelapa Gading are experienced flooding more worst. They never free from flood every year during January – March. As it is always, flood ruin society and bring miserable to family. Detriment is huge, both as material and life. For instance, material loss which was caused by flooding in 2007, is predicted more than 4 quintillions Indonesian Rupiah (IDR), excludes the destruction of capital and discontinuation of economics activities during flooding, Flood was not only destroy properties but also life. Only during one week, it's reported 88 people were death, either it drowning death or caused by electricity pain. Not to mention properties detriment and life dead loss post flooding. Post flooding, varies illness emerge and attack habitants. Both habitant and government have to expend not in small amount to get cured and prevent the cause off illness.

Kampung Melayu and Kelapa Gading are 2 residences which are different from the point of view of society class. Whilst relocation in order to eluded from flood for Kampung Melayu societies maybe arduous due to relocation costs, but not with Kelapa Gading societies. It seem citizen in these two residences have different reason to endure and remain stay in their home.

Even though they suffer every year, they still remain residing in the same location. However, they have many reasons still remain be resident there. For that, they have to be always prepared

their self in anticipating flood every year. The objective of this research then is to identify flood hazardous anticipation of inhabitants who live in two locations in Jakarta Indonesia, i.e. Kampung Melayu and Kelapa Gading, which are flood stricken most frequently.

RESEARCH METHOD

Research instrument is questionnaire which was developed by adapting flood impact questionnaire. This questionnaire was developed by Bureau of Meteorology of Australian Government in February 2004. Anticipation meaning, as can be read on dictionary, is a prior action that takes into accounts or forstalls a later action. Then flooding anticipation here can be stated as a prior action that inhabitants take into account in reducing loss during next flooding. Since research variable is anticipation, we used 9 items from flood impact questionnaire, and we added 2 items as always perform by common Indonesian inhabitants in anticipating flooding impacts. The two question items are "rise the floor level of house," as a measurement to flood mitigation as well to intention. Questionnaire therefore consist of 11 items excludes respondents profile, as can be seen in Table 1. Most of items were scored on, 3 scales (no, perhaps, certainly), and some were scored on 2 scales (yes and no).

Unit analyses are inhabitant who lives in Kampung Melayu dan Kelapa Gading, Jakarta Indonesia. Respondents profiles collected were arranged in graphics or tabulation, and data flood hazardous anticipation was further analyzed using statistical software. Statistical method which was used is non parametric analysis, in order to test research hypothesis.

Table 1. Research Questions

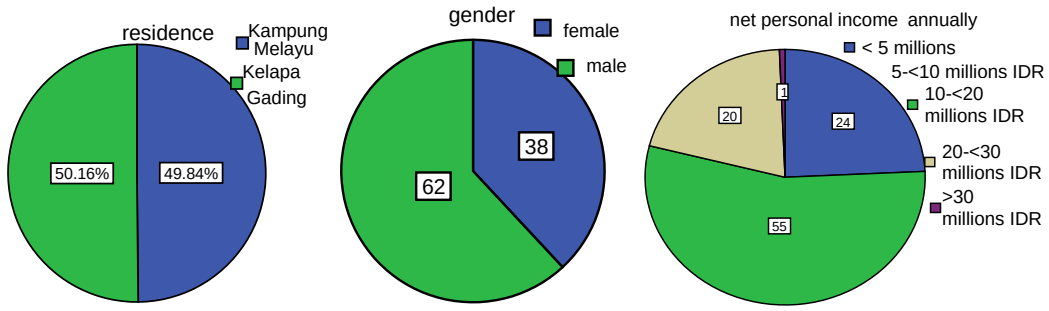
1. *Had you undertaken any of these flood mitigation measures before these floods?*	Yes	No
• Taken out household insurance against flooding		
• Rise the floor level of your house		
• Rise the ground floor of the house		
• Moved property or stock		
• Avoided keeping irreplaceable items or goods of sentimental value on ground floor of your home		
2. As a result of previous flood, do you intend to:	No	Possible definitely
• Seek information on flood risk in your community		
• Seek information on things to do to prepare for a possible flood		
• Become involved with a local group to discuss how to reduce fold risk in your community		
• Increase level of insurance		
• Rise the floor level of our house		
• Relocate		

RESULT AND DISCUSSION

Respondent Profiles

Questionnaire was distributed to 318 respondents in Kampung Melayu and Kelapa Gading residents. All questionnaires were returned, since filling out questionnaire was done by enumerator. But not all items were filled out. There 8 items to explore respondent profile, such as duration of stay, gender, age, earning per month, education level, occupation, living with, and house status owner.

As can be seen on Figure 1, 50.16% of respondents live in Kelapa Gading and the rest live in Kampung Melayu. Based on gender, 38% respondents are female and 62% respondents are male. Based on annual income, 55% of respondent has income between 5 - < 10 millions Indonesian Rupiah (IDR). Only 1% of respondent has income between 20 - < 30 millions IDR. As much as 24% and 20% has annual income ranging between less than 5 millions and 10 until < 20 millions IDR respectively.



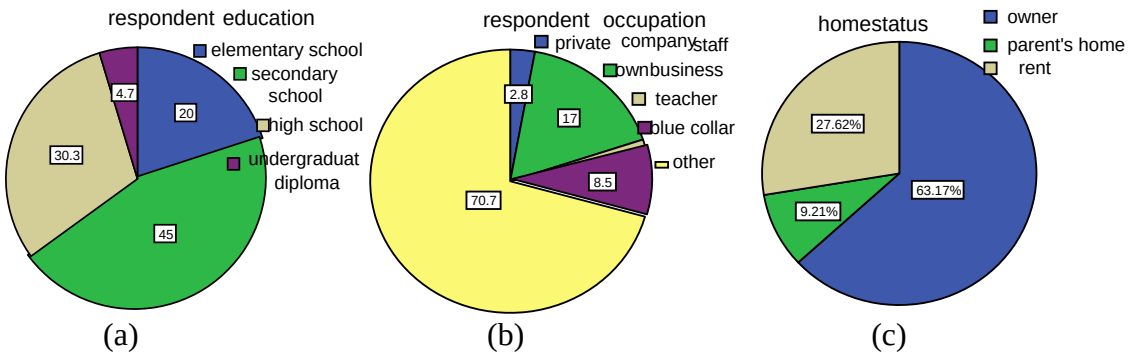
(a) (b) (c)

Figure 1. Repondent (a) Residencies; (b) Gender; (c) Income

From the point of view of occupation, most of our respondents choose others, and they provided as household wife and informal job. As much as 70.7% of our respondents choose other. Second order is own business. As much as 17% or our respondents have their own business. Only 8.5%, 0.9%, and 2.8% respectively work as blue collar, teacher, and private company staff.

As can be seen on Figure 2, based on education level, 45% of our respondents are qualified as secondary school. Second order is high school, with percentage 30.3. Elementary school comes in third order, which is 20%. And the last is undergraduate diploma, with percentage 4.7%. Based on home status, 63.17% or our respondents have their own home. Only 9.21% respondents still live with their parents. As much as 27.62% respondents live in rent house.

Most of our respondent age are liing between 37- 47 years, as can be seen in Table 2. Statistics shows it has 47.3% from total respondents. Second order is 26-36 years old, with statistics 35.3%. The least is respondent age in between 59-69 years old; it's only 0.9% .



(a) (b) (c)

Figure 2. Respondents (a) Education Level; (b) Occupation; (c) Home Status

Table 2. Frequency Table of Respondent Age

		Frequency	Percent	Valid	Cumulative Percent
Valid	15-25	27	8.5	8.5	8.5
	26-36	112	35.2	35.3	43.8
	37-47	150	47.2	47.3	91.2
	48-58	21	6.6	6.6	97.8
	59-69	3	.9	.9	98.7
	70-80	4	1.3	1.3	100.0
	Total	317	99.7	100.0	
Missing System		1	0.3		
Total		**318**	**100**		

From the point of view of living duration in the same location, 41% of respondents have lived in the same location between 11-21 years. This evident shows that no matter they are suffer every year due to flooding, they still remain settle there. As much as 34.1% of our respondents have lived there; third order is living duration in interval between 1-20 years. The least score is living duration liing between 56-66 years. It's only 0.6%. complete statistics of living duration can be seen in Table 3.

Table 3. Frequency Table of Living Duration

		Frequency	Percent	Valid	Cumulative Percent
Valid	1-10	66	20.8	20.8	20.8
	11-21	130	40.9	41.0	61.8
	22-32	108	34.0	34.1	95.9
	33-43	11	3.5	3.5	99.4
	56-66	2	.6	.6	100.0
	Total	317	99.7	100.0	
Missing System		1	.3		
Total		**318**	**100**		

Comparing Flood Hazardous Anticipation in Kampung Melayu and Kelapa Gading

There are 11 items of question which are used to measure anticipation performing of inhabitants in Kampung Melayu and Kelapa Gading. The 11 items of question is classified as "action undertaken for mitigation" and "intention." We used statistic non parametrics to test research hypotheses. Research hypotheses to be tested is "there is no difference of "action undertaken for flood mitigation" between inhabitants in Kampung Melayu and Kelapa Gading." We tested one by one the item using SPSS software, and the result can be seen in Table 4 and 5.

From flood mitigation dimensions, 3 out of 5 questions are showing significance different on 5% between Kelapa Gading and Kampung Melayu inhabitants. Taken out household insurance against flooding and "move property or stock" are not different significantly in the two areas. Therefore, we can say that there is enough evident to show the similarity of inhabitants anticipation toward flooding on Kelapa Gading and Kampung Melayu. Almost all respondents stated that they didn't take out household insurance against flooding neither relocate valuable things to more safety place.

Flooding anticipation by build a home with two floor, rise home ground, and relocate valuable things in second floor are different in the two areas. Based on mean rank and sum of ranks of each residency, inhabitants in Kampung Melayu seem more aware than them in Kelapa Gading for all dimensions. It means, inhabitants in Kampung Melayu prepare their self better than them in Kelapa Gading, to anticipate flooding by perform activities which can reduce their loss or misery even they still remain in their home during flooding. From that result it is obvious to see that inhabitants prefer to stay in the same house during the flood as well as their properties.

Table 4. Statistics test of Flood Mitigation

Test Statistics[a]

	Valueable Material Insurance	Build Home with More than One floor	Rise Home Ground	Relocate Valuable Things to Another Place	Not to Keep Valuable Things on Ground Floor
Mana-Whitney U	12324.000	7615.000	8565.500	12008.000	7104.500
Wilcoxon W	24885.000	20335.000	21285.500	24569.000	19507.500
Z	-1.005	-7.116	-5.735	-1.925	-8.407
Asymp. (Sig. (2-Tailed)	.315	.000	.000	.54	.000

a. Grouping Variable: residance

Table 5. Statistics Test of Intended Action

	Look for Information	Look for Information Next Flood	Involve in Sosial Work	Apply or Increase Insurance	Rise Home Ground	Relocate to Another Place
Chi-Square	129.039	134.260	30.419	0.362	24.883	13.303
df	1	1	1	1	1	1
Asymp. Sig.	.000	.000	.000	.547	.000	.000

a. Kruskal Wallis Test
b. Grouping Variable: residence

On intended action dimension, all items are different significantly between inhabitants in Kelapa Gading and Kampung Melayu. There's enough evident to support the difference of intention to look for information between inhabitants in Kelapa Gading and Kampung Melayu. As well, it is also found the difference of intention toward "look for next flood information, involve in social works, rise home ground, and avoided keeping irreplaceable items or goods of sentimental value on ground floor home." The only item which is not different significantly between Kampung Melayu and Kelapa Gading inhabitants is the intention to increase insurance.

Based on mean rank as can be seen in Table 7, inhabitants in Kampung Melayu still show more intention to anticipate flood impact than them in Kelapa Gading, except intention to relocate. Intention to relocate in order to ducking out flood seems stronger with inhabitants in Kelapa Gading than them in Kampung Melayu.

Providing insurance awareness of Indonesia citizen is very low, it's not surprisingly to find that both inhabitants in Kelapa Gading and Kampung Melayu do not include "rise insurance premium" into intention nor "apply insurance" into flood mitigation. The lowness of this statistics can be seen from comparison of insurance clients with Indonesian population. According to Eddy (2009), out of about 230 millions Indonesia population, only less than 10% applied life insurance in 2008. This statistics excludes "Jamsostek," which is issued by government. More ever, Arizal (2009) stated that life insurance contributes only 5% of total insurance premium.

Property insurance still contribute the highest on insurance premium and gross claim, which is 35% in average in this last 5 years. Second order is assigned to vehicle insurance with percentage is about 32 %.

As one factor which can trigger the need for insurance is income, It's also make sense to find out the lowest interest in apply or rise insurance premium. As can be seen on respondent profile, annual income of respondent is very low. Most of respondent annual income is liing in between 5-less than 10 millions IDR, which is equal to 465-930 USD.

Table 6. Mean Rank and Sum of Ranks of Flood Mitigation

Ranks

	Residence	N	Mean Rank	Sum of Ranks
Valueable material insurance	Kampung Melayu	158	159.50	25201.00
	Kelapa Gading	158	157.50	24885.00
	Total	316		
Build home with more than one floor	Kampung Melayu	158	190.30	30068.00
	Kelapa Gading	159	127.89	20335.00
	Total	317		
Rise home ground	Kampung Melayu	158	184.29	29117.50
	Kelapa Gading	159	133.87	21285.50
	Total	317		
Relocate valuable things to another place	Kampung Melayu	158	161.50	25517.00
	Kelapa Gading	158	155.50	24569.00
	Total	316		
Not to keep valuable things on ground floor	Kampung Melayu	158	191.53	30262.50
	Kelapa Gading	157	124.25	19507.50
	Total	315		

Table 7. Mean Ranks and Sum Rank of Intention

Ranks

	Residence	N	Mean Rank
Look for information	Kampung Melayu	158	211.85
	Kelapa Gading	158	105.15
	Total	316	
Look for information next flood	Kampung Melayu	158	214.55
	Kelapa Gading	158	102.45
	Total	316	
Involve in social work	Kampung Melayu	158	177.90
	Kelapa Gading	155	135.70
	Total	313	
Apply or increase insurance	Kampung Melayu	154	157.03
	Kelapa Gading	158	155.99
	Total	312	
Raise home ground	Kampung Melayu	158	181.09
	Kelapa Gading	157	134.76
	Total	315	
Relocate to another place	Kampung Melayu	158	148.43
	Kelapa Gading	158	168.57
	Total	316	

From the result we can see that inhabitant in Kampung Melayu has performed activities in anticipating flood hazardous. But it haven't reduce society misery and loss during flooding every year. Even with support from government, the report still show bigger loss and misery on every flooding. Government and society need to work seriously and consistently not only anticipate flood hazardous but morever in formulating program to prevent flooding. As a comparison, programs designed by the central and regional (state) government's in India to reduce people's vulnerability to the impacts of tropical cyclones for instance, typically include measures such as the construction of community cyclone shelters, storm warning systems, improved evacuation procedures, hazard mapping and enhanced community preparedness through education programs in cyclone prone areas (Parasuraman and Unnikrishnan, 2000; Reddy et al., 2000). It is pertinent to suggest that individuals and communities that benefit from these initiatives are likely to find their levels of vulnerability reduced.

CONCLUSION AND SUGGESTION

From 5 questions item in flood mitigation, 2 questions are not showing the different between inhabitants in Kelapa Gading and Kampung Melayu inhabitants. All in inhabitants in the two areas are not interested to "taken out household insurance against flooding and "move property or stock." Inhabitants in Kampung Melayu prepared their self to anticipate next flood by build a home with two floor, rise home ground, and relocate valuable things in second floor. In another hand, inhabitants in Kelapa Gading less prepared for that. Inhabitants

in Kampung Melayu seem more prepare for flooding in the future.

Inhabitants in Kampung Melayu show more aware than them in Kelapa Gading based on intention toward "look for information, look for next flood information, involve in social works, rise home ground, and avoided keeping irreplaceable items or goods of sentimental value on ground floor home." In the case with the intention to increase insurance, inhabitants in both areas still show same behavior, i.e. no intention to apply/rise insurance premium.

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