# LAPORAN AKHIR
# PENGABDIAN MASYARAKAT SKEMA PPM INTERNASIONAL



## CAPACITY BUILDING OF DISASTER PREPAREDNESS FOR FLOOD AND LANDSLIDE DISASTER IN SARAWAK, MALAYSIA

Diah Setyawati Dewanti, S.E., M.Sc., Ph.D.      (0526108201)
Susilo Nur Aji Cokro Darsono, S.E., M.R.D.M., Ph.D. (0515049301)
Pazri Nugraha      (20190430059)
Dr. Nur Zaimah Binti Ubaidillah

## UNIVERSITAS MUHAMMADIYAH YOGYAKARTA

UNIVERSITAS MUHAMMADIYAH YOGYAKARTA

Kampus terpadu: Jl. Brawijaya, Geblagan, Tamantirto, Bantul, Daerah Istimewa Yogyakarta 55183

Telp. (0274) 387656 (hunting) Fax. (0274) 387646

**LAPORAN AKHIR PENGABDIAN**

**Informasi Data Usulan Pengabdian**

## 1. IDENTITAS PENGABDIAN

### A. JUDUL PENGABDIAN

| |
|---|
| Capacity building of Disaster preparedness for Flood and Landslide disaster in Sarawak, Malaysia |

### B. SKEMA, BIDANG, TEMA, DAN TOPIK PENGABDIAN

| Skema Pengabdian | Bidang Fokus Pengabdian | Tema Pengabdian | Topik Pengabdian |
|---|---|---|---|
| PPM INTERNASIONAL | Kebencanaan | Teknologi dan manajemen bencana alam: gempa bumi, tsunami, banjir bandang, tanah | Pemberdayaan mitigasi berbasiskan komunitas. |

### C. RUMPUN ILMU PENGABDIAN

| Rumpun Ilmu 1 | Rumpun Ilmu 2 | Rumpun Ilmu 3 |
|---|---|---|
| ILMU SOSIAL HUMANIORA | ILMU SOSIAL | Humaniora |

## 2. IDENTITAS PENGABDIAN

| Nama | Peran | Tugas |
|---|---|---|
| Diah Setyawati Dewanti, S.E., M.Sc., Ph.D. | Ketua Pengusul | |
| Susilo Nur Aji Cokro Darsono, S.E., M.R.D.M., Ph.D. | Anggota Pengabdian | Trainer bagi komunitas untuk community disaster preparedness guideline |
| Pazri Nugraha | Angota Mahasiswa | Membantu pengembangan community disaster preparedness |

## 3. MITRA KERJASAMA PENGABDIAN (JIKA ADA)

Pelaksanaan pengabdian dapat melibatkan mitra kerjasama, yaitu mitra kerjasama dalam melaksanakan pengabdian, mitra sebagai calon pengguna hasil pengabdian, atau mitra investor

| Mitra | Nama Mitra | Kepakaran |
|---|---|---|
| Ketua Kaum Tanjung Bundong | Haji Wan Ahun bin Wan Seman | Kepala Desa |

## 4. KOLABORASI PENGABDIAN (JIKA ADA)

Pelaksanaan pengabdian dapat melibatkan kolaborasi, yaitu kolaborasi kerjasama dalam melaksanakan pengabdian.

| Nama | NIK/NIDN/NIK | Instansi |
|---|---|---|
| Dr. Nur Zaimah Binti Ubaidillah | 0000000000000000 | Universiti Malaysia Sarawak (UNIMAS) |

## 5. LUARAN DAN TARGET CAPAIAN

Luaran Wajib

| Tahun | Jenis Luaran |
|---|---|
| 1 | Publikasi di Jurnal / Publikasi Forum Ilmiah Nasional |
| 1 | Publikasi Media Masa |
| 1 | Video Program Pengabdian |

## Luaran Tambahan

| Tahun | Jenis Luaran |
|---|---|
| 1 | Peserta Di Forum Ilmiah |

**6. ANGGARAN**

Rencana anggaran biaya pengabdian mengacu pada PMK yang berlaku dengan besaran minimum dan maksimum sebagaimana diatur pada buku Panduan Penelitian dan Pengabdian kepada Masyarakat.

## Total Keseluruhan RAB Rp. 19,750,000

## Tahun 1 Total Rp. 19,750,000

| Jenis Pembelanjaan | Komponen | Item | Satuan | Vol. | Harga Satuan | Total |
|---|---|---|---|---|---|---|
| BAHAN | Bahan (Habis Pakai) | Hibah peralatan untuk community disaster preparedness | Unit | 1 | Rp. 6,000,000 | Rp. 6,000,000 |
| PENGUMPULAN DATA | Tiket Transportasi | Transportasi ke Sarawak (PP untuk 2 orang) | OK(Kali) | 4 | Rp. 2,500,000 | Rp. 10,000,000 |
| PENGUMPULAN DATA | Hotel/penginapan | Penginapan selama 5 hari (2 kamar) | OH | 10 | Rp. 375,000 | Rp. 3,750,000 |

**7. LEMBAR PENGESAHAN**

<u>**HALAMAN PENGESAHAN**</u>
<u>**LAPORAN AKHIR PENGABDIAN MASYARAKAT SKEMA:**</u>

Judul : Capacity building of Disaster preparedness for Flood and Landslide disaster in Sarawak, Malaysia

Pengabdi/Pelaksana : Diah Setyawati Dewanti, S.E., M.Sc., Ph.D.
NIDN : 0526108201
Jabatan Fungsional : Lektor
Program Studi/Fakultas : Ekonomi
Nomor HP : 082133691838
Alamat surel (e-mail) : ddewanti@umy.ac.id

Anggota

Nama : Susilo Nur Aji Cokro Darsono, S.E., M.R.D.M., Ph.D.
NIDN : 0515049301

| | |
|---|---|
| Jabatan Fungsional | : Asisten Ahli |
| Program Studi/Fakultas | : Ekonomi |
| | |
| Nama | : Pazri Nugraha |
| NIM | : 20190430059 |
| Prodi | : S1 Ekonomi |
| | |
| Mitra | : Ketua Kaum Tanjung Bundong |
| Nama Mitra | : Haji Wan Ahun bin Wan Seman |
| Kepakaran | : Kepala Desa |
| | |
| Kolaborator | : Dr. Nur Zaimah Binti Ubaidillah |
| NIK | : 0000000000000000 |
| Institusi | : Universiti Malaysia Sarawak (UNIMAS) |
| | |
| Biaya | : Rp. 19,750,000 |
| Biaya Dari Institusi Lain | : Rp. 33,000,000 |

Yogyakarta, 05 Juli 2023
Mengetahui,
Kepala LPM,

Dr. Ir. Gatot Supangkat, M.P.,IPM
NIK: 196210231991031003

## 8. RINGKASAN

Indonesia and Malaysia facing climate change impacts due to raining season. Landslide is one of the natural disasters frequently appear during raining season. The society has confronted this natural disaster and important to decrease the vulnerable impact in the household level. In the context of preparedness, the capacities of households are the important indicator in implementing disaster management. Term of preparedness refers to the effort made to expand the awareness and readiness in handling the dangers and preventative actions related data. The main objective of the paper is to analyse the correlations between livelihoods to preparedness stage in landslide disaster in Kulon Progo, Indonesia. The independent variables define as human-, social-, physical-, natural-, and financial capital and transformation on structure and process. Preparedness is the dependent variable. The Chi square analysis applied to answer the objective. The unit analysis of this study is households and collected 300 households in the research site. Kulon Progo has been chosen since the geographical pattern is hill and uneven land. The medium level on preparedness disaster management is appeared to be owned by the households (37.3%). Based on the strengthen of relation, the belief to keeping away from bad behaviour based on ancestors' advice has the highest CC to preparedness phase (0.396) with Chi square level 55.554**. It found that the belief and religiosity level have strong contingency correlation and chi square test among household capitals.

## 9. KEYWORDS

Disaster preparedness, Landslide, Kulon Progo, Chisquare

**10. HASIL PELAKSANAAN PENGABDIAN**

**1 Introduction**

Rapid growth and urbanization cause the changes of land-use patterns dramatically which could sharply decrease the ecological land, therefore the natural water networks is fragmented and bring the vulnerability on urban ecological systems (Han et al., 2016). Moreover, the global climate brings extreme weather brought increasing tendency which pose serious impact of risks to the fragile ecological system. The rainfall constrained landslide as the most serious disaster type towards geological disasters, including in Indonesia.

There are many lessons can be taken from the implementation of disaster risk reduction policy including the government law, the strength of coordination and networking, community participation, implementation of damage and loss assessment, post disaster recovery process, and more adequately disaster funding management. Nonetheless, all efforts still not significantly hasten the recovery process (Angeningsih, 2015). Catastrophic or cataclysmic events impair a community's capacity to fulfil its functions (Eggerman & Panter-Brick, 2010). Recovery, sustainability, and growth are possible but highly dependent on the resources available to the community and the strengths that are nurtured before a negative event occurs. A review of the research on community resilience suggests that most individuals are only as successful as their communities as a whole and that this success depends on the resources a community has (Ungar, 2011). Among these resources are both an individual's informal social supports and the formal social service systems such as those of child welfare, education, corrections, and health care.

Landslide in Indonesia has one of risk of high rainfall which the tropical climate conditions is worsening the risk. Landslide hazards define the annual probability of occurrence with potential destructive in landslide of a village. (Nadim & Muslim, 2010). Disaster preparedness is applied to reduce the vulnerability risk possibility in an area. Strengthen the capacity of community by appointing full-time disaster managers and integrated the formal and informal education, including training are the sustainability investment in handling the disaster impact (Dariagan et al., 2021). Sustainable Livelihoods Assets (SLA) is an approach to define the priorities for development activities and involving the living of the poor and vulnerable live. SLA consists of the interaction of capital assets and the transformation of structure and process to produce outcome (Dewanti). The purpose of the study are to analyse the preparedness level of vulnerable area in Kulon Progo, Indonesia and to define the correlation between SLA to preparedness phase of landslide disaster management.
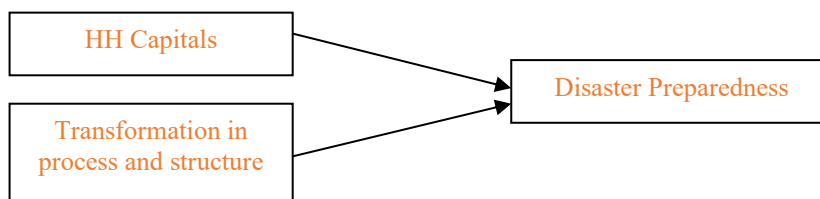


Figure 1. The conceptual framework of this study

**2 Literature Review**

Disaster events are often happening without warning. It is a complex, multi-faceted and global issue. Most disasters lead to consequences such as socio-economic, mental, and physical effects. According to Wisner, Adams, & World Health Organization (2002), there are two types of the disaster which are natural and man-made. Natural disaster includes volcano eruptions, tsunamis, flash floods, and earthquakes. Man-made disaster consists of human accidents, military conflicts, and political unrest. Based on a study by Makwana (2019), developing countries are more susceptible to disaster due to poverty, resource deficiency, limited access to education, inadequate infrastructure and lack of awareness and knowledge.

Malaysia and Indonesia are vulnerable to both natural and man-made disaster, therefore, experience tremendous losses. Hence, government intervention is imperative in the wake of the disaster. Government intervention has evolved in recent years from providing financial assistance to psychosocial interventions. In addition, psychosocial intervention is provided in the aftermath and prior to any disaster events by providing awareness, preparedness and necessary knowledge and skills to the society. Furthermore, the improvement of preparedness in facing adverse events is one of the efforts to reduce disaster risk (UNISDR, 2009). The preparedness to handle oneself

in the event of a disaster is necessary to minimise any disaster difficulties in the absence of immediate health and emergency responders.

Floods and landslides are two of the most frequent natural disasters in Indonesia. In the past few years, these natural disasters have increased tremendously due to human activities. Despite being a natural based disaster, human activities such as uninhibited development and haphazard land clearings boost the severity of floods, particularly at the peak discharge and the time of concentration (Rahman, 2014).

This study seeks to identify the relationship between disaster preparedness intention, which refers to flood risks, and attitude, perceived behavioural control, and social norm. As a result of the high costs of disaster assistance and the resulting damage to social structure and social determinants, disaster behaviour studies have been conducted since 1940. Individual motivation determines intention, according to Ao et al. (2020), and intention in disaster behaviour tendency study is linked between perception and behaviour. According to Najafi et al. (2017), there are three important aspects of motivational factors: attitude toward behaviour or the degree of evaluation of favourable or unfavourable behaviour, social factor (perceived social pressure to implement or not implement the behaviour), and behavioural control (perceived ease or difficulty in showing behaviour). If an individual's attitude and subjective norms favour behaviour, the perceived behavioural control will be higher, and the person's desire to contemplate performing the behaviour will be higher. Vinnel, Milfont, and McClurec (2021) divided attitudes into two types : experiential attitudes based on experience and instrumental attitudes based on consequence. In his research, Motoyoshi (2006) discovered a link between attitude and disaster preparedness objectives. The study found that how people perceive and accept disaster risk has an impact on how prepared they are for disasters. Flood hazards are easily accepted by people who have a great sense of self-responsibility.

In terms of the relationship between social norms and disaster preparedness intentions, social norms are defined as the impacts on an individual's behaviour that are based on what is considered typical by the individual's social group. The social norms have also been divided into injunctive norms, which deal with whether or not a behaviour is acceptable, and descriptive norms, which deal with the prevalence of the behaviour (Vinnel, Milfont, & McClurec, 2021). While self-efficacy, which is defined as confidence in performing a specific behaviour, such as overcoming hurdles to achieve a specific habit, can be used to examine the relationship between perceived behavioural control and disaster preparedness intentions. Individuals' high acceptance of the crisis management scenario was due to their great self-efficacy (Zaman, Zahid, Habibullah & Din, 2021). Few studies were found in the context of developing countries to understand the behavioural factors in disaster preparedness. Mojtahedi & Oo (2012) revealed that a clear understanding of preparedness is important for future enhancement in reducing vulnerability and effective and accurate risk assistance.

## 3 Research Methodology

To answer the objective of this study, has been carried out quantitative research methodology by collecting primary data. The conceptual framework designs to establish the landslide guidelines in adaptive phase based on community-based approaches. The data has been collected in Kulon Progo regency, especially in 6 villages namely Banjarsari, Gerbosari, Kebonhargo, Ngargosari, Purwoharjo and Sinduharjo. The main reason chooses the area is based on the previous research define the rainfall-induced landslide in the area. It is the major the geotechnical hazard during raining season ((Muntohar et al., 2013)). The unit analysis of this research is households. The dependent variable of this study is disaster preparedness, and the independent variables consists of household capitals and transformation in structure and process (TSP). The household capitals define into human capital, social capital, natural capital, physical capital and financial capital. The TSP consists of culture implementation and belief. The total sampling of this study is 300 households spread into 6 villages.

The analysis applied in this study is descriptive analysis and the chi squared test. Chi square test is the distribution of a categorical variable in another sample. This statistical test used to compare the observed result with expected result. The purpose of this test is to determine if a difference between observed data and expected data is due to a relationship between the variables. The variables have been identifying as ordinal variable or recognize in categorical variables. Categorical variables belong to a subset of variables that can be divided into discrete categories, and it known as qualitative variables because they depict the variable's quality or characteristics. The Chi square test has two main types of namely Independence and Goodness-of-Fit. In this study, we are using Independence. The chi square test of independence is derivable or inferential statistical test which examines whether the two sets of variables are likely to be related with each other or not.

## 4 Result and Discussion

Disaster preparedness in this study has been defined into five categories questions namely the awareness of disaster warning alarm; the preparedness during high rainfall season; the knowledge on evacuation training; the communication build with the local government and the awareness of the household on frequently checking the land condition. Based on these criteria, this study defines three levels capability of households as low; medium and high level capability of preparedness disaster management (Table 1). It is found that the preparedness level has been focus on medium level (37.3%), but mostly it is spread wisely in each of phase. In further analysis, the low level (34.3%) of preparedness has been spread in Purwoharjo (50%) and Banjarsari (47.2%).

Table 1. The Preparedness Disaster Management Capability level

| Preparedness Level | N (%) |
|---|---|
| Low Level | 103 (34.3%) |
| Medium level | 112 (37.3%) |
| High level | 85 (28.3%) |
| TOTAL | 300 (100%) |

The descriptive analysis of preparedness disaster management could see in Table 2, whereas the preparedness capability of the households mostly in the medium level (5.76). Based on each question, households mostly checking the land condition occasionally (1.22) as part of their preparedness application. It is strengthening reason when raining-fall season, the household prepared themselves for the worse case of landslide possibility. The less value of standard deviation compared to mean define the data is homogenous. It means the capability of households are in the same level and stage.

Table 2. Descriptive analysis of Preparedness Disaster Management

| Variable | N | Min | Max | Mean | St. Deviation |
|---|---|---|---|---|---|
| Preparedness | 300 | 0.00 | 10.00 | 5.76 | 2.77 |
| P1.1. Warning Alarm | 300 | 0.00 | 2.00 | 1.06 | 0.87 |
| P1.2. When raining, it's prepared | 300 | 0.00 | 2.00 | 1.20 | 0.78 |
| P1.3. Evacuation training | 300 | 0.00 | 2.00 | 1.10 | 0.84 |
| P1.4. Received Information from Govt | 300 | 0.00 | 2.00 | 1.18 | 0.81 |
| P1.5. Checking the land condition | 300 | 0.00 | 2.00 | 1.22 | 0.75 |

The chi square test of independence has been tested in each of the variable of household capacities. The human capital identifies the importance of education in each of the household's perspective. Through eight questions, there is one statement has been significantly related to preparedness capability (Table 3). It is the importance to add capacities of the children to have informal religious education ($\chi^2$ = 10.683*). The Contingency Coefficient (CC) is 0.185 which stated low level in relations among two variables. It is approved by previous study who stated that community-based religious institutions of mosque could support the disaster capabilities of households (Cheema).

Table 3. Chi square test of Independence between Human Capital to Disaster Preparedness Capability

| HC1.3_Send the children to informal Religious Education | Preparedness | | | |
|---|---|---|---|---|
| | Low | Medium | High | Total |
| Not Important | 60.0% | 40.0% | 0.0% | 100% (103) |
| Important | 36.6% | 46.3%% | 17.1% | 100% (112) |
| Very Important | 32.9% | 33.8% | 33.3% | 100% (85) |
| Chi square = 10.683*   CC = 0.185 | | | | |

Social capital in this study consists of relations households to the community, village and other further networking, including government. Through three part of social capital, there are one question who do not significantly related to the preparedness of disaster management, namely financial support of relation when you want to start a business. Support of relation who lived near when you are sick ($\chi^2$ = 6.740*) with low level correlation (CC=0.148). When the households have medium and high level of preparedness capability, they will always give their time to support the relations during they are sick. The strongest relationship to the preparedness phase of disaster management based on CC and significant correlation through Chi square Pearson correlation is the participation on joining the weekly meeting in the village (CC=0.316). This question has also defined with high chi square value in significance less than 1% ($\chi^2$ = 33.336**). The relationship between the participation of weekly meeting in the village mostly a households could describe as the symmetric information given during the weekly meeting. It can be defined that household who have low level of preparedness, they will choose never join the weekly meeting (58.5%), however, as the household who have medium and high levels stated sometime and always joining the weekly meeting in the village. It can be resulted that based on their awareness for receiving information from village is improving their preparedness of disaster management (Danilo V Rogayan). Moreover,

having networking to government and private institutions in the village could strengthen the preparedness capability of the households. This has been identified since in the question of networking, all of the components are significantly have relationship to the preparedness of the disaster management (CC local government= =0.301 and CC private = 0.306).

Table 4. Chi square test of Independence between Social Capital to Disaster Preparedness Capability

| SC_1.1_Your extended family who lived near you will visit when you are sick. | Preparedness | | | |
|---|---|---|---|---|
| | **Low** | **Medium** | **High** | **Total** |
| Never | 0.0% | 0.0% | 0.0% | 100% (103) |
| Sometime | 39.8% | 41.9% | 18.3% | 100% (112) |
| Always | 31.9% | 35.3% | 32.9% | 100% (85) |
| Chi square = 6.740*   CC = 0.148 | | | | |
| SC_1.3_Failured in business or farming, will help lend money | **Low** | **Medium** | **High** | **Total** |
| Never | 19.4% | 41.9% | 8.0% | 100% (103) |
| Sometime | 44.8% | 32.0% | 9.7% | 100% (112) |
| Always | 31.0% | 40.7% | 10.7% | 100% (85) |
| Chi square = 13.579*   CC = 0.208 | | | | |
| SC_2.2_Your family join the weekly meeting in the village | **Low** | **Medium** | **High** | **Total** |
| Never | 58.5% | 28.3% | 13.2% | 100% (103) |
| Sometime | 23.6% | 52.7% | 8.7% | 100% (112) |
| Always | 33.6% | 28.5% | 17.3% | 100% (85) |
| Chi square = 33.336**   CC = 0.316 | | | | |
| SC_2.3_Family active participate in the village | **Low** | **Medium** | **High** | **Total** |
| Never | 44.7% | 44.7% | 10.6% | 100% (103) |
| Sometime | 38.2% | 38.2% | 23.5% | 100% (112) |
| Always | 29.4% | 35.0% | 35.6% | 100% (85) |
| Chi square = 11.695*   CC = 0.194 | | | | |
| SC_2.4_Participated in the culture heritage event | **Low** | **Medium** | **High** | **Total** |
| Never | 56.1% | 29.3% | 14.6% | 100% (103) |
| Sometime | 31.6% | 43.2% | 25.0% | 100% (112) |
| Always | 30.4% | 36.3% | 33.3% | 100% (85) |
| Chi square = 12.729*   CC = 0.202 | | | | |
| SC_3.1_Work collaborates to the government | **Low** | **Medium** | **High** | **Total** |
| Never | 63.5% | 32.7% | 3.8% | 100% (103) |
| Sometime | 31.0% | 38.0% | 31.0% | 100% (112) |
| Always | 26.4% | 38.5% | 35.1% | 100% (85) |
| Chi square = 29.960**   CC = 0.301 | | | | |
| SC_3.2_Work collaborates with private institutions | **Low** | **Medium** | **High** | **Total** |
| Never | 57.3% | 22.5% | 20.2% | 100% (103) |
| Sometime | 27.5% | 42.5% | 30.0% | 100% (112) |
| Always | 20.9% | 45.1% | 34.1% | 100% (85) |
| Chi square = 30,922**   CC = 0.306 | | | | |

The relationship between natural capital and preparedness disaster management defined in Table 5. Natural capital is the resource flows which made up from the natural resource stocks to support the livelihoods, including the land, water and other environmental resources ((Rakodi, 1999). In this study, the variable of natural capital has been defined as the access of water resources and land utilization. The access and quality of water resources in their house has been significant relations to preparedness of disaster management, except the utilization of individual rained bank (*tadah hujan*). The high correlation on water resources access is the highest correlation to preparedness phase of disaster management (CC= 0.239) with Pearson chi square equal to 18.096*. In Kulon Progo found the water resource access as problem to livelihoods, since the water resource access always a problem (54.5%) in low level of preparedness disaster management.

In land utilization, the utilization of renting land without any ownership has been correlated with preparedness of disaster management phase (CC = 0.292). The households with low level of preparedness capability mostly utilize renting land without any ownership status. In tbis area, lots of land forest has been farming by the community without knowing the ownership status. Most of land renting has been used by the household, whether by the government or without any ownership ranting.

Table 5. Chi square test of Independence between Natural Capital to Disaster Preparedness Capability

| NC_1.2   Water resources Access | Low | Medium | High | Total |
|---|---|---|---|---|
| Never | 32.4% | 36.7% | 30.9% | 100% (103) |
| Sometime | 23.2% | 44.2% | 32.6% | 100% (112) |
| Always | 54.5% | 28.8% | 16.7% | 100% (85) |
| Chi square = 18.096*   CC = 0.239 | | | | |
| NC_1.3  The utilization of water resources | Low | Medium | High | Total |
| Never | 33.3% | 41.3% | 25.4% | 100% (103) |
| Sometime | 28.4% | 29.6% | 42.0% | 100% (112) |
| Always | 40.9% | 38.7% | 20.4% | 100% (85) |
| Chi square = 11.634*   CC = 0.193 | | | | |
| NC_1.4  The quality of water resources | Low | Medium | High | Total |
| Never | 34.1% | 37.8% | 28.1% | 100% (103) |
| Sometime | 50.9% | 36.8% | 12.3% | 100% (112) |
| Always | 19.3% | 36.8% | 43.9% | 100% (85) |
| Chi square = 18.408*   CC = 0.241 | | | | |
| NC_2.1   Problem in land utilization | Low | Medium | High | Total |
| Never | 20.4% | 49.5% | 30.1% | 100% (103) |
| Sometime | 39.1% | 29.1% | 31.8% | 100% (112) |
| Always | 45.5% | 40.0% | 14.5% | 100% (85) |
| Chi square = 19.101*   CC = 0.245 | | | | |
| NC_2.2  Land belongs to family | Low | Medium | High | Total |
| Never | 54.8% | 22.6% | 22.6% | 100% (103) |
| Sometime | 35.3% | 45.6% | 19.1% | 100% (112) |
| Always | 26.2% | 39.9% | 33.9% | 100% (85) |
| Chi square = 22.509*   CC = 0.265 | | | | |
| NC_2.3  Land rent to government | Low | Medium | High | Total |
| Never | 37.2% | 31.8% | 30.9% | 100% (103) |
| Sometime | 44.4% | 47.2% | 8.3% | 100% (112) |
| Always | 10.0% | 60.0% | 30.0% | 100% (85) |
| Chi square = 22.404**   CC = 0.264 | | | | |
| NC_2.4_Utilization of renting land without ownership status | Low | Medium | High | Total |
| Never | 26.5% | 39.8% | 33.6% | 100% (103) |
| Sometime | 50.0% | 34.6% | 15.4% | 100% (112) |
| Always | 45.8% | 37.5% | 16.7% | 100% (85) |
| Chi square = 27.942**   CC = 0.292 | | | | |

The physical capital recognized as the physical facilities found to support livelihood activities. Physical capital defines as the quality and access of electricity, telecommunication and road access. However, only quality of telecommunication and asphalt road has been significantly correlated to the preparedness phase of disaster management. The quality signal of telecommunication has medium level correlated to preparedness phase (CC=0.231). It can be explained when the rainfall seasons, the communication become the important part. Household who has medium level capability in preparedness phase stated have good quality of signal for communication ($\chi^2$ = 16.817*). Moreover, the appearance of asphalt road is also correlated with preparedness level capability. Households who always access use asphalt road in medium and high level is more than the household with low level (CC = 0.205 and $\chi^2$ = 13.050*).

Table 6. Chi square test of Independence between Physical Capital to Disaster Preparedness Capability

| PC_2.1_Quality of telecommunication signal | Low | Medium | High | Total |
|---|---|---|---|---|
| Never | 36.8% | 36.8% | 26.3% | 100% (103) |

| Sometime | 32.4% | 28.6% | 39.0% | 100% (112) |
|---|---|---|---|---|
| Always | 31.0% | 49.1% | 19.8% | 100% (85) |
| Chi square = 16.817*   CC = 0.231 | | | | |
| **PC_3.2_Asphalt road** | **Low** | **Medium** | **High** | **Total** |
| Never | 33.3% | 66.7% | 0.0% | 100% (103) |
| Sometime | 40.4% | 32.6% | 27.0% | 100% (112) |
| Always | 33.8% | 35.8% | 30.5% | 100% (85) |
| Chi square = 13.050*   CC = 0.205 | | | | |

In the sustainable livelihoods, there is one of transformation on structure and process who mostly applied as the mediator variable between livelihoods assets and strategies. The transformation on structure and process define as the external strengthen of individual, households, communities or institutions to support the livelihoods outcome, in example policy, belief, norm, local rules, and so on. In this study, belief and culture implementation are defined as the transformation on structure and process (TSP) could be seen in Table 7. Culture and belief implementation are significantly correlated support the preparedness disaster management capability of each household. Each of the household belief has significant in 1% with medium level of correlation (more than 0.250). The culture belief implementation namely celebration events by their own ($\chi^2$ = 27.860**) or held by government ($\chi^2$ = 46.493**). Moreover, avoiding the prohibited act from the ancestor is also significant ($\chi^2$ = 55.554**). This result describes that the culture belief and implementation of households has strong relationship with preparedness phase. However, it seen that the spread of percentage household who have low level of preparedness ability are mostly has sometime implemented the culture event and traditions. The religious or belief implementation consists of the explanation of household implementation on their behaviour namely, start their farming based on the good day belief by each religion; participate in Islamic praying/gathering and held this event invited the neighbours. All of this implementation has been significantly correlated to the disaster preparedness with low level correlation.

Table 7. Chi square test of Independence between Transformation on Structure and Process to Disaster Preparedness Capability

| TSP_1.1_ Culture celebration event as the heritage | **Low** | **Medium** | **High** | **Total** |
|---|---|---|---|---|
| Never | 47.1% | 17.6% | 35.3% | 100% (103) |
| Sometime | 42.0% | 45.5% | 12.5% | 100% (112) |
| Always | 28.9% | 35.8% | 35.3% | 100% (85) |
| Chi square = 27.860**   CC = 0.282 | | | | |
| TSP_1.2_ Help in the culture event held by the government | **Low** | **Medium** | **High** | **Total** |
| Never | 75.0% | 18.2% | 6.8% | 100% (103) |
| Sometime | 34.7% | 43.9% | 21.4% | 100% (112) |
| Always | 22.9% | 38.9% | 38.2% | 100% (85) |
| Chi square = 46.943**   CC = 0.368 | | | | |
| TSP_1.3_ Avoid the forbidden act by the ancestor | **Low** | **Medium** | **High** | **Total** |
| Never | 54.5% | 27.3% | 18.2% | 100% (103) |
| Sometime | 45.3% | 48.0% | 6.7% | 100% (112) |
| Always | 18.4% | 37.4% | 44.2% | 100% (85) |
| Chi square = 55.554 **   CC = 0.396 | | | | |
| TSP_2.1_Start the farming based on good day based on our own religion | **Low** | **Medium** | **High** | **Total** |
| Never | 50.0% | 25.8% | 24.2% | 100% (103) |
| Sometime | 40.6% | 40.6% | 18.8% | 100% (112) |
| Always | 26.6% | 40.5% | 32.9% | 100% (85) |
| Chi square = 14.774*   CC = 0.217 | | | | |
| TSP_2.2_Participate the Islamic praying/gathering | **Low** | **Medium** | **High** | **Total** |
| Never | 46.5% | 41.9% | 11.6% | 100% (103) |
| Sometime | 35.9% | 47.4% | 16.7% | 100% (112) |

| | | | | |
|---|---|---|---|---|
| Always | 30.9% | 32.0% | 37.1% | 100% (85) |
| Chi square = 19.105*   CC = 0.245 | | | | |
| TSP_2.3_Held the Islamic praying/gathering attended by neighbours | **Low** | **Medium** | **High** | **Total** |
| Never | 46.9% | 21.9% | 31.3% | 100% (103) |
| Sometime | 31.2% | 53.2% | 15.6% | 100% (112) |
| Always | 33.7% | 33.7% | 32.6% | 100% (85) |
| Chi square = 15.423*   CC = 0.221 | | | | |

## 11. KESIMPULAN PENGABDIAN

The conclusion of the correlation of disaster preparedness ability of the household capital except financial capital. Transformation on structure and process (TSP) has also correlated to preparedness phase. The social capital and natural capital are the two household capitals who most of the item questions correlated to the preparedness of disaster management. Based on previous research, the preparedness capability level has been identified correlated to many aspect, include the household capitals (social capital, human capital, physical capital and natural capital) and transformation on structure and process ((Dariagan et al., 2021). In the other hand, the socioeconomics are also correlated to the ability of households in preparedness phase of disaster management (Maryani et al., 2022). The socioeconomics has been correlated to the preparedness level, could be spread by the density area of the village. Human capital is correlated to preparedness level capabilities as the same finding with (Prastyo et al., 2021) which define as the access of education formal and informal. Moreover, the social capital took all questions correlated to preparedness phase, due to the strengthen collaboration and networking could updated the information to understand the updated information concerning the status of landslide in prone area (Dewanti et al., 2019; Ruslanjari & Dewi, 2019) (Rogayan & Dollete, 2020). The capacity of community in improving their preparedness skill could be based on the self-efficacy and also the community-based development (Ruslanjari & Dewi, 2019)

## 12. STATUS LUARAN WAJIB

It has been presented in ICCS UMY 2023. The video and mass media have been published yet since the Sarawak team (UNIMAS) has not prepared for community engagement event.

## 13. DOKUMEN LUARAN WAJIB

The document for the academic paper of international conference of ICCS UMY 2023 is attached in Simlitabmas

## 14. LINK LUARAN WAJIB

The video and mass media has not been published

## 18. PERAN MITRA

The partner from UNIMAS is play role in preparing the training. However, the UNIMAS/partner has not been ready for the result or material for training.

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**20. LAMPIRAN-LAMPIRAN**

A. SURAT KESEDIAN MITRA

**SURAT PERNYATAAN**
**KESEDIAAN MENJADI MITRA**
**PELAKSANAAN PROGRAM PENGABDIAN PADA MASYARAKAT**

Yang bertandatangan di bawah ini;

| | |
|---|---|
| Nama | : Dr. Nur Zaimah binti Ubaidillah |
| Pimpinan Mitra | : Faculty of Economics and Business, Universiti Malaysia Sarawak (UNIMAS) |
| Alamat | : 94300 Kota Samarahan, Sarawak, Malaysia |

menyatakan **Bersedia untuk Bekerjasama** dengan Pelaksana Kegiatan **Program Pengabdian Masyarakat**

| | |
|---|---|
| Nama Ketua Tim Pengusul | : Diah Setyawati Dewanti, S.E., M.Sc., Ph.D. |
| Program Studi | : Ekonomi |
| Perguruan Tinggi | : Universitas Muhammadiyah Yogyakarta |
| Judul Pengabdian | : Capacity building of Disaster preparedness for Flood and Landslide disaster in Sarawak, Malaysia |

guna melaksanakan Program Pengabdian Masyarakat serta menerapkan dan/atau mengembangkan IPTEKS pada masyarakat.

Bersama ini kami menyatakan dengan sebenarnya bahwa di antara pihak Mitra dan Pelaksana Kegiatan Program Pengabdian Masyarakat tidak terdapat ikatan kekeluargaan dan ikatan usaha dalam wujud apapun juga.

Demikian Pernyataan ini dibuat dengan penuh kesadaran dan tanggung jawab tanpa ada unsur pemaksaan dari pihak manapun dan dapat digunakan seperlunya.

Yogyakarta, .........
Yang menyatakan,

0A9B6AJX952771926

**(Dr. Nur Zaimah binti Ubaidillah)**