STRENGTHENING DISASTER MANAGEMENT FOR A SUSTAINABLE FUTURE IN MALAYSIA AND INDONESIA

RESEARCH ANCHOR

Head of Research Anchor: Prof. Agus Setyo Nugroho, S.T., M.Eng., Ph.D. (Eng)
Theme of Research Anchor:
Title: "Socio-economic and behavioral determinants of Disaster Preparedness in Malaysia and Indonesia"

PERHITUNGAN TKT

4

RINGKASAN

To increase the disaster resilience, it is important to decrease the vulnerable impact of disaster in the household. In the context of preparedness, the capacities of households is the important indicator in implementing disaster management. Term of disaster preparedness refers to the efforts made to expand awareness and readiness in handling the dangers, relevant agencies, preventative actions and other catastrophe related data. The main objective of this research is to investigate the behavioral determinants of disaster preparedness and assess the role of economic ang policy factors of disaster preparedness. Malaysia and Indonesia are two countries with highly incidents with many types of natural disasters, focusing on flood and landslide. Therefore, involving preparation or plans to save lives or property and aid the operations of response and rescue services. This study explores the factors of disaster preparedness in the context of a developing nation, Malaysia and Indonesia. Measures drawn from the Theory of Planned Behaviour will be analysed between disaster preparedness and its behavioural antecedents. The outcome of the study would assist policymakers in comprehending the significance of integrating behavioural elements into policymaking. In the event of a disaster, the enforcement of regulations governing disaster preparedness should be ingrained in society. This research is carry out for two years, which first year is to measure the model to determine the role of investigation behavioural determinants in disaster preparedness phase. The PLS-SEM is applied to the study's exploratory nature with the non-normality of the data distribution. The respondents will take place in Sarawak, Malaysia and Yogyakarta, Indonesia with aged between

18 to 65 years old. The output of this research is try to targeted the policy brief to the government which will be produced in the second year. The policy brief for the disaster preparedness is the strategic plan to be implemented by the government. In the first year, the output is publication from the findings of PLS-SEM. The "TKT level" could be shown in level 4.

KATA KUNCI

Preparedness, disaster, socio-demography, behavioural

LATAR BELAKANG

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 Malaysia and 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 (Abdul 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. To this end, this study concentrates on investigating the behavioural determinants of disaster preparedness among youth in the case of Sarawak, Malaysia, a state in a developing country..

TINJAUAN PUSTAKA

Seeking or proposing definitions of disaster can be a complex task that brings out the pedantic in scholars and may create considerable frustration. Some of the complexity and frustration can be addressed by specifying the purpose and audience for definitions of disasters. Such definitions must be placed into a meaningful context that clarifies the essential goal of the definition and the uses to which the definition is to be put. At the outset,

it must be acknowledged that the goals in creating definitions vary and that there is no single legitimate purpose or content for definitions. Further, one must clarify whether disaster is being defined as a concept or as an area of study, although there is an inevitable overlap between the two approaches (Karver, 1986). Disaster events are complex, multi-dimensional phenomena, with a wide range of human, socio- economic, cultural, political, and physical impacts. While the disaster event itself presents an immediate shock to impacted populations, the ramifications of disaster events tend to be ongoing:

> *Exposure to disaster impact is only the opening salvo. As the disaster unfolds, and far into the aftermath, the affected populations grapple with loss and change, consequences that persevere long after the risk for physical harm has dissipated. This trilogy of forces - exposure to hazard, massive personal and societal loss, and profound and enduring life change - characterize the nature of disaster (Shultz, Espinel, Galea, & Reissman, 2006, p. 69)*

Although natural hazards have been a risk for human communities for centuries, the number of disaster events and their associated impacts has been increasing, particularly since the 1960s (Joakim, 2013).

The resilience concept is fuzzy and having different on each person. The use of term resilience has beeen conceptualize by the Hyogo Framework for Action which stated this as the guide and define the characteristics of resilient communities. The resilient need to cope disaster with rapid-onset shocks or significant and protracted source of stress. The resilience paradigm shifts disaster causation from environmental determinism to social constructionism which disaster manifest the disequilibrium in the social structure and reduce the communities' capacity to withstand shocks and stresses.   The United Nations International Strategy for Disaster Reduction (UNISDR) notion of resilience tends to be all-encompassing as it views resilience to be the capacity of a system, community or society potentially exposed to hazards to adapt through resistance or change to reach and maintain an acceptable level of functioning and structure. This is determined by the degree to which the social system is capable of organising itself to increase the capacity for learning from past disasters for better future protection and to improve risk reduction measures (UNISDR, 2005). Thus, the UNISDR definition of resilience appears to be underpinned by elements of complex science. Terms such as 'capacity', 'learning', 'orga- nising' and 'adapt', which potentially signal community agency, radicalised approaches to dealing with disaster. In many ways, the UNISDR definition of resilience assumes that resilient communities have

the capacity to 'bounce forward' and move on following a disaster. Capacity is used here to mean a combination of all the strengths and resources available within a community, society or orga- nisation that can reduce the level of risk or the effects of a disaster. This may include physical, institutional, social or economic means as well as skilled personal or collective attributes such as leadership and management (Alagh, 2021).

In political ecology and global environmental change literature, resilience is related to the concept of adaptive capacity, that is the ability of a system to adjust to change, moderate the effects of and cope with a disturbance (Burton, Huq, Lim, Pilifosova, & Schipper, 2002). Adaptive capacity is needed to reduce climate change impacts, particularly in climate-related disasters. This has implications for policy and institutional resilience. In examining resilience implications of policy-informed response to climate change, Adger (Adger et al., 2011) and colleagues argue that adaptive capacity is, in general, influenced by economic development and technology as well as by social factors such as human capital and governance. However, adaptation can be either positive or negative. Positive adaptation depends on the institutional rules, norms and way of doing things and includes skills, abilities and knowledge, as well as the willingness to use these tools to achieve set goals. Negative adaptation tends to suppress the institutional rules, norms and values through, for exam- ple, corruption, oppression and human rights abuses (Carpenter, 2011). Although adaptive capacity has been primarily associated with climate change, it can be used in a number of contexts, whether related to climate, economic, conflict or other stresses and shocks (Jones et al., 2010).

The composite model of community resilince within which pyschological factors as the central role. One approach to manage the community resilience involves the measurement qualities as the components of the model and determine the utility as the predictos of resilience. In this research, the researcher use livelihoods assets or capitals and measurement of personal characteristics to influence the response to adversity. The cognitive component underpins the ability to impose a sense of coherence or meaning on ad- verse and atypical experiences and making decisions regarding whether to confront the problem. The final element, environmental resilience, describes community practices (e.g., sense of community) which mitigate adverse consequences and maximise the potential for recovery. The wealth and diversity of psychological variables that could be implicated in this context necessitates an initial selection of salient variables. The utility of a model is a function of its ability to account for differences in resilience when assessed against a range of hazards. Self-efficacy describes individuals' appraisal of their performance capability and influences their
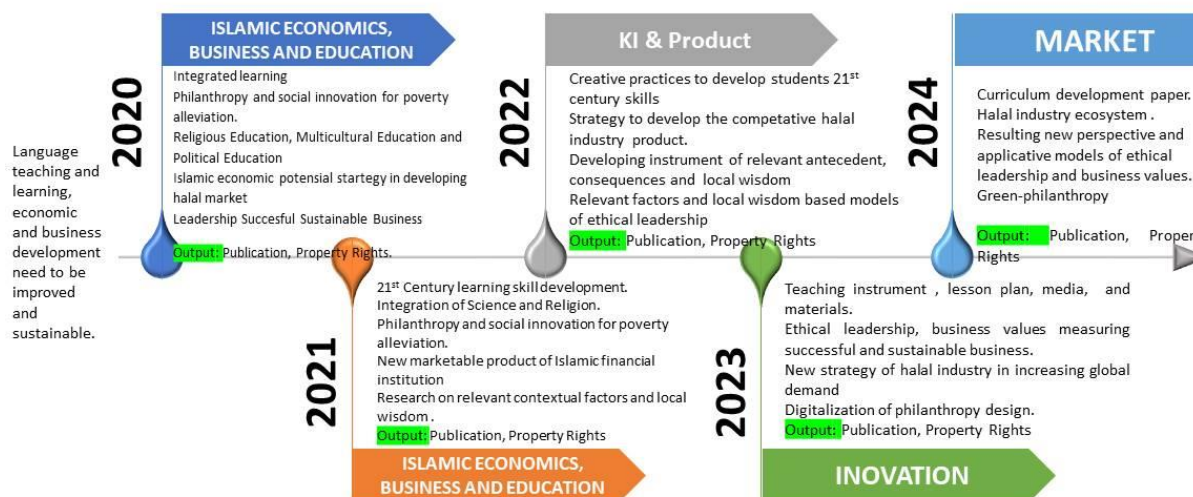
receptivity to information and the likelihood of their adopting risk reduction behaviours. Sense of community (feelings of belonging and attachment for people and places) encourages involvement in community re- sponse following disaster and increases access to, and utilisation of, social support networks. Indi- viduals who perceive themselves as having no investment in their community may develop a level of detachment which, following a disaster, may trigger feelings of isolation and encourage learned helplessness and heighten social vulnerability. Sense of community also provides insights into the prevailing degree of community fragmentation and, consequently, the level of support for mitigation strategies in- volving collective community action. Problem-focused coping (confronting the problem) represents a mechanism for facilitating resilience. Risk perception per se, has proven an inadequate guide to the adoption of risk reduction behaviour. Here risk perception is examined from the perspective of the relationship between hazard effects and community activities (e.g., whether it disrupts employment) and its implications for identifying the relative salience of different potential threats (Paton et al., 2013). The livelihoods assets is defined as human capital, social capital, financial capital, physical capital and natural capital (Dewanti, Ayuwat, & Yongvanit, 2019).

Roadmap Kluster

Peta jalan penelitian: ISLAMIC ECONOMICS, BUSINESS AND EDUCATION

Ketua Kluster : Prof. Hilman Latief, S.Ag., M.A., Ph.D.

ISLAMIC ECONOMICS, BUSINESS AND EDUCATION

Language teaching and learning, economic and business development need to be improved and sustainable.

2020
Integrated learning
Philanthropy and social innovation for poverty alleviation.
Religious Education, Multicultural Education and Political Education
Islamic economic potensial startegy in developing halal market
Leadership Succesful Sustainable Business
Output: Publication, Property Rights.

2021
21st Century learning skill development.
Integration of Science and Religion.
Philanthropy and social innovation for poverty alleviation.
New marketable product of Islamic financial institution
Research on relevant contextual factors and local wisdom .
Output: Publication, Property Rights

ISLAMIC ECONOMICS, BUSINESS AND EDUCATION

KI & Product

2022
Creative practices to develop students 21st century skills
Strategy to develop the competative halal industry product.
Developing instrument of relevant antecedent, consequences and local wisdom
Relevant factors and local wisdom based models of ethical leadership
Output: Publication, Property Rights

2023
Teaching instrument , lesson plan, media, and materials.
Ethical leadership, business values measuring successful and sustainable business.
New strategy of halal industry in increasing global demand
Digitalization of philanthropy design.
Output: Publication, Property Rights

INOVATION

MARKET

2024
Curriculum development paper.
Halal industry ecosystem .
Resulting new perspective and applicative models of ethical leadership and business values.
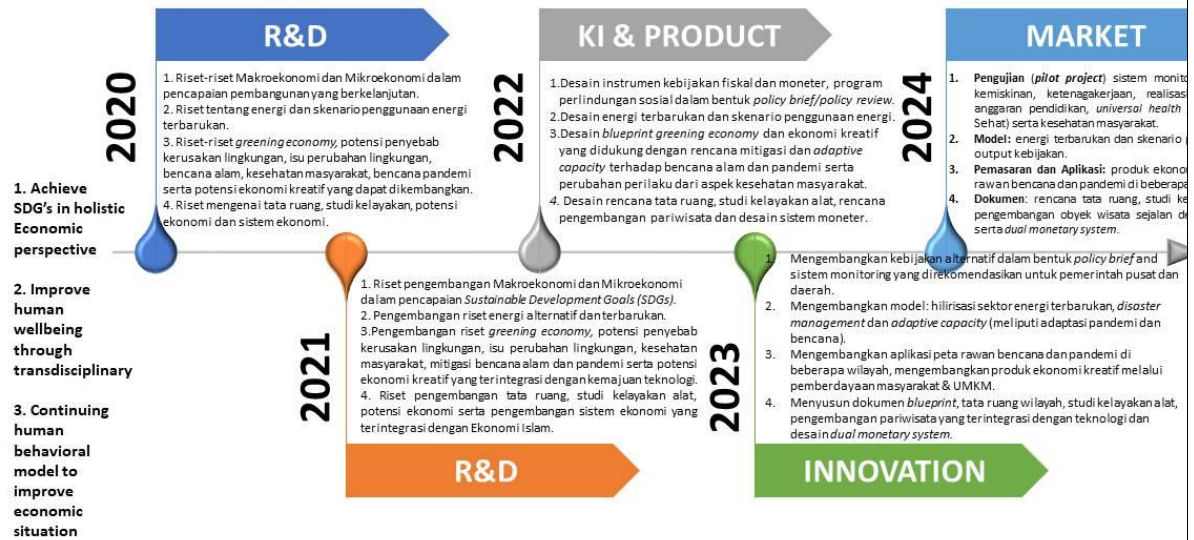Green-philanthropy
Output: Publication, Proper Rights

Roadmap Sub-Kluster

Roadmap Research of Sub-Klaster Economic Development and Monetary Policy 202...

The achievement of SDGs through development of economic and it's transdisciplinary

Roadmap Researcher

Peta jalan penelitian: Greening Economy dan Sustainable Developme...

Dosen: Diah Setyawati Dewanti, M.Sc., PhD

METODE

To determine the role of investigating behavioural determinants of disaster preparedness, the data is analysed using PLS-SEM. PLS-SEM is applied due to the study's exploratory nature, the low sample, and the possible non-normality of the data. PLS-SEM consists of the measurement and structural model. The measurement model assesses the relationship between the factors and the indicators it represented. The tests for measurement model include composite reliability, indicator loadings, discriminant validity and average variance extracted. The structural model assesses the path relationship between the independent and dependent factors/variables used in this study.

The study is conducted in Sarawak, Malaysia. The research respondents consist of those living in the study setting areas aged from 18 to 65 years old. This age range is considered acceptable since anyone under the age of 18 in Malaysia is considered a minor, and participation in the study would require the consent of a parent or guardian. This study employed convenience sampling, a type of nonprobability sampling approach wherein participants of the study are viewed as "convenient" providers of data by the researcher. The minimum sample size for a SEM, is n = 100-150 according to studies by Ding, Velicer, and Harlow (1995) and Tabachnick and Fidell (2001). A G*power analysis will be conducted to determine whether the sample size is adequate.
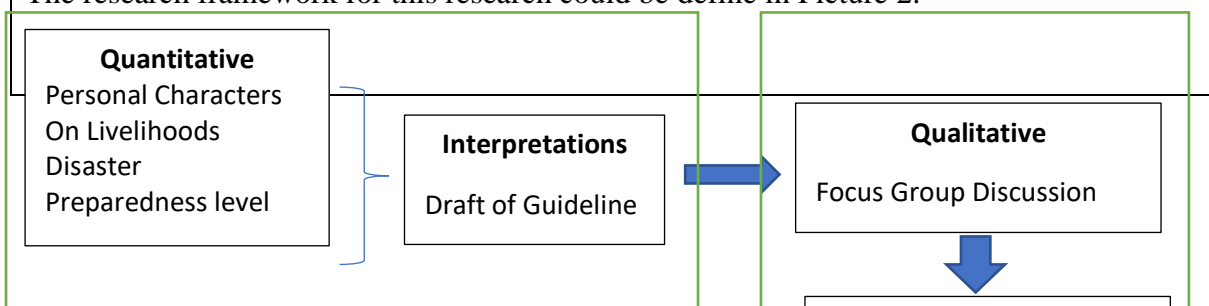
This research is refering the concurrent mixed methods design when quantitative and qualitative are applied to established the disaster preparedness of flood and landslide. The purpose of this mixed methods is to validate the findings generated by each method.

QUAN Data & Results	→	Interpretation	←	QUAL Data & Results
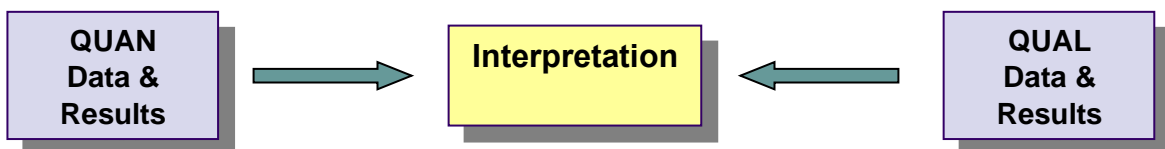
Picture 1. The Concurrent Mixed Methodology

The unit analysis of this research is households/individuals. The variables integrated in this research are personal characteristics and livelihoods assets as the resources for post-landslide disaster. Quantitative phase is collected by structured interview guideline through questionnaire. The household are choosen based on systematic random sampling based on the map of the village. Meanwhile the quantitative is collected, the qualitative will be collected to the head of hamlet. Qualitative phase carry out by focuss group discussion and indepth interview. The indepth interview prepared as the first phase in qualitative to recognize main idea of head of hamlet concerning community resilience post-landslide disaster management. The focuss group discussion conducted after the draft of guideline has been drawn by the researcher

The research framework for this research could be define in Picture 2.

Quantitative Personal Characters On Livelihoods Disaster Preparedness level	**Interpretations** Draft of Guideline	→	**Qualitative** Focus Group Discussion

Year 1   Year 2

This collaboration research is applied to integrated with *Program Pengabdian Kepada Masyarakat* Internal Fund from UMY and UNIMAS. It is also provide Matching Grant Fund from the UNIMAS to support the research and community services program in Sarawak and Yogyakarta province as the implementation of the research findings. Dr. Nur Zai is the expert on the social behavior for the implementation of disaster preparedness.

JADWAL

Jadwal penelitian disusun dengan mengisi langsung tabel berikut dengan memperbolehkan penambahan baris sesuai banyaknya kegiatan.

Tahun ke-1

No	Nama Kegiatan	Bulan											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Prepare the permit and administration of the research	X	X	X									
2	Developing the quanti and quali instruments			X	X	X							
3	Data collection for quantitative (the first phase)					X	X	X					
4	Analysis of quantitative						X	X	X	X			

No	Nama Kegiatan												
5	The first draf of national paper and international paper (Quantitative)							X	X	X			

Tahun ke-2

No	Nama Kegiatan	Bulan											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Re-develop the draft of instruments for data collection in qualitative based on 1st year	X	X	X									
2	Data collection for FGD			X	X	X							
3	Applied the disaster preparedness					X	X	X	X				
4	Drafting the final guideline								X	X	X		
5	Assisting the vulnerability community in disaster preparedness									X	X	X	X

DAFTAR PUSTAKA

Eggerman, M., & Panter-Brick, C. (2010). Suffering, hope, and entrapment: Resilience and cultural values in Afghanistan. Social Science & Medicine, 71,71–83.

Ungar, M. (2011). The social ecology of resilience. Addressing contextual and cultural ambiguity of a nascent construct. The American Journal ofOrthopsychiatry, 81,1–17.

UNISDR. Building the resilience of nations and communities to disasters: hyogo framework for action 2005–2015, World Confer- ence on Disaster Risk Reduction, UNISDRl; 2005.

UNISDR. Terminology: basic terms of disaster risk reduction (2009), ⟨http://www.unisdr.org/eng/library/lib-terminology-eng%20home. htm⟩; 5 April 2013.

Carpenter A. Resilience to violent conflict: adaptive strategies in fragile states. Security Management Initiative; Geneva, 2011. ⟨http://www.securitymanagementinitiative.org/index.php?option= com_docman&task=doc_details&gid=511&lang=en&Itemid=28⟩.

Adger, W. N., Brown, K., Nelson, D. R., Berkes, F., Eakin, H., Folke, C., … Tompkins, E. L. (2011). Resilience implications of policy responses to climate change. *Wiley Interdisciplinary Reviews: Climate Change*, *2*(5), 757–766.

https://doi.org/10.1002/wcc.133

Alagh, Y. K. (2021). Climate change and disaster management. *Economic and Political Weekly*, *56*(4), 58–59. https://doi.org/10.1596/28137

Angeningsih, L. R. (2015). *SISTER VILLAGE MODEL OF ECONOMIC RESILIENCE TO COMMUNITY BASED (A Pilot Project in " Calvari " Group Yogyakarta)*. https://doi.org/10.5176/2251-2403

Burton, I., Huq, S., Lim, B., Pilifosova, O., & Schipper, E. L. (2002). From impacts assessment to adaptation priorities: The shaping of adaptation policy. *Climate Policy*, *2*(2–3), 145–159. https://doi.org/10.3763/cpol.2002.0217

Dewanti, D. S., Ayuwat, D., & Yongvanit, S. (2019). Early warning system through sustainability livelihoods approach for volcanic disaster management. *IOP Conference Series: Earth and Environmental Science*, *398*(1). https://doi.org/10.1088/1755-1315/398/1/012015

Han, L., Xu, Y., Lei, C., Yang, L., Deng, X., Hu, C., & Xu, G. (2016). Degrading river network due to urbanization in Yangtze River Delta. *Journal of Geographical Sciences*, *26*(6), 694–706. https://doi.org/10.1007/s11442-016-1293-0

Joakim, E. P. (2013). *Resilient Disaster Recovery: A Critical Assessment of the 2006 Yogyakarta, Indonesia. Earthquake using a Vulnerability, Resilience and Sustainable Livelihoods Framework*. 1–294.

Jones, L., Jaspers, S., Pavanello, S., Ludi, E., Slater, R., Arnall, A., … Mtisi, S. (2010). *Responding to a changing climate: Exploring how disaster risk reduction, social protection and livelihoods approaches promote features of adaptive capacity*.

Karver, A. J. H. (1986). What is a disaster? *Prehospital and Disaster Medicine*, *2*(1–4), 152–153. https://doi.org/10.1017/S1049023X00030661

Paton, D., Millar, M., Johnston, D., Moser, S., Ph, D., Chang Seng, D. S., … Ã, G. C. G. (2013). Sustainability and community resilience: The holy grail of hazards planning? *International Journal of Disaster Risk Reduction*, *1*(1), 1089–1114. https://doi.org/10.3763/ehaz.1999.0103

Rus, K., Kilar, V., & Koren, D. (2018). Resilience assessment of complex urban systems to natural disasters: A new literature review. *International Journal of Disaster Risk Reduction*, *31*(January), 311–330. https://doi.org/10.1016/j.ijdrr.2018.05.015

Ungar, M. (2011). Community resilience for youth and families: Facilitative physical and social capital in contexts of adversity. *Children and Youth Services Review*, *33*(9),

1742–1748. https://doi.org/10.1016/j.childyouth.2011.04.027

Zhang, X., Song, J., Peng, J., & Wu, J. (2019). Landslides-oriented urban disaster resilience assessment—A case study in ShenZhen, China. *Science of the Total Environment*, *661*, 95–106. https://doi.org/10.1016/j.scitotenv.2018.12.074

LAMPIRAN

a. Ada MoU/MoA/LoA/ToA/Surat Pernyataan Kerjasama dari anggota yang berasal dari luar UMY;

MEMORANDUM OF UNDERSTANDING

BETWEEN

UNIVERSITI MALAYSIA SARAWAK

AND

UNIVERSITAS MUHAMMADIYAH YOGYAKARTA

MEMORANDUM OF UNDERSTANDING
between
UNIVERSITAS MUHAMMADIYAH YOGYAKARTA
Indonesia
And
UNIVERSITI MALAYSIA SARAWAK
Malaysia

This Memorandum of Understanding (hereinafter referred to as **"MoU")** is entered on
_____ 2021;

UNIVERSITAS MUHAMMADIYAH YOGYAKARTA (hereinafter referred to as **"UMY"**) Whose address is at Jl. Brawijaya, Tamantirto, Kasihan, Bantul, Yogyakarta 55183, Indonesia and shall include its lawful representatives and permitted assigns, of the first part;

And

UNIVERSITI MALAYSIA SARAWAK (hereinafter referred to as "**UNIMAS**"), an institution of higher learning established under the Universities and University Colleges Act 1971 whose address is at Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia and shall include its lawful representatives and permitted assigns, of the other part;

(UMY and UNIMAS shall hereinafter be referred to singularly as "Party" or collectively as "Parties" as the case may be)

WHEREAS

A. **UMY** is an established higher learning institution which incorporates modern sciences and knowledge with the Islamic Syariah, committed to enhance its education and research quality by expanding partnership and collaboration with relevant bodies and institutions. UMY represented by its Rector, **Dr. Ir. Gunawan Budiyanto, M.P. IPM** and acting on behalf of the University by virtue of the powers conferred upon him by UMY Statues, and shall include its lawful representatives and permitted assigns, Faculty of Economics and Business.

B. **UNIMAS** is an established University which strives to enhance and strengthen its research capabilities and has taken various initiatives to complement its educational excellence. UNIMAS has entered into various collaborative arrangements with other parties to enhance research, consultancy and academia. UNIMAS represented by its Vice-Chancellor, **Prof. Datuk Dr. Mohamad Kadim Suaidi,** and shall include its lawful representatives and permitted assigns, Faculty of Economics and Business.

C. Financial arrangement and stipulations concerning, including but not limited to, the exchange of students, faculty and staff members are to be specially detailed in separate written Agreement.

D. Each party shall designate an office to as liaison for implementing this MoU. For UMY shall be manage by the International Relations Office (IRO) and Faculty of Economics & Business, meanwhile on UNIMAS part is under UNIMAS Global and Faculty of Economics and Business, UNIMAS.

E. The Parties acknowledge that all visits or exchange of staff, students or administrators will be subject to compliance with the entry and visa regulations of Malaysia and Indonesia and with the respective Party's requirements with respect to staff and students visits.

F. The Parties are desirous of entering into this MoU to declare their respective intentions and to establish a basis of co-operation and collaboration between the Parties upon the terms as contained herein.

ARTICLE I
OBJECTIVE

The Parties, subject to the terms of this MoU and the laws, rules, regulations and national policies from time to time in force in each Party's country, will endeavor to strengthen, promote and develop in academia, research and community co-operation between the Parties on the basis of equality and mutual benefit.

ARTICLE II
AREAS OF CO-OPERATION

Each Party will, subject to the laws, rules, regulations and national policies from time to time in force, governing the subject matter in their respective institution, endeavor to take necessary steps to encourage and promote co-operation in the following areas:

a) Exchange of faculty and staff members;
b) Exchange of students;
c) Exchange of publication and relevant academic and educational information;
d) Joint research, lectures and symposia; and
e) Other activities such as deemed appropriate by mutual consent.

ARTICLE III
FINANCIAL ARRANGEMENTS

3.1   This MoU will not give rise to any financial obligation by one Party to other.

3.2   Each Party will bear its own cost and expenses in relation to this MoU.

3.3   The Parties acknowledge that in the absence or any specific agreement in writing to the contrary. each Party will be responsible for its own costs and expenses in establishing and conducting programmes and activities contemplated under this MoU including without limitation its own costs and expenses in travel and accommodation.

ARTICLE IV
REVISION, VARIATION AND AMENDMENT

4.1   Either Party may request in writing a revision, variation or amendment of this MoU.

4.2   Any such revision, variation or amendment agreed to by the Parties shall be in writing and shall form part of this MoU.

4.3   Such revision, variation or amendment shall come into force on such date as may be determined and agreed to by the Parties.

4.4   Any revision, variation or amendment shall not prejudice the implementation of any project, activity or co-operation arising from or based on this MoU before or up to the date of such revision, variation or amendment.

4.5   The provisions of this MoU or any other written agreement in respect of any on-going exchange programme or any other form of cooperative activity under this MoU shall continue to apply until

their completion unless both Parties mutually agree in writing to the earlier termination of the programme or cooperative activity.

ARTICLE V
ENTRY INTO EFFECT AND DURATION

5.1   This MoU will come into effect on the date of signing and will remain in effect for a period of **five (5)** years or until termination by either party with **six (6)** months written notice, whichever comes earlier.

5.2   This MoU may be extended for a further period as may be agreed in writing by the Parties by issuance to the other Party of a written notice signifying its intention to renew or further the period not less than **three (3)** months prior to the Expiry Date.

ARTICLE VI
NOTICES

Any communication under this MoU will be writing in the English language and delivered by registered mail to the address or sent to the electronic mail address or facsimile number **of UNIMAS** or the **UMY**, as the case may be, shown below or to such other address or electronic mail address or facsimile number as either Party may have notified the sender and shall, unless otherwise provided herein, be deemed to be duly given or made when delivered to the recipient at such address or electronic mail address or facsimile number which is duly acknowledged:

Faculty of Economics and Business, Universiti Malaysia Sarawak, Malaysia

Phone	:	+6082584455
Faximile	:	+6082583999
Website	:	https://www.feb.unimas.my/
Office	:	Faculty of Economics and Business
Email	:	arrossazana@unimas.my

Universitas Muhammadiyah Yogyakarta, Indonesia

Phone   :   +62 274 - 387656, 450212

Faximile   :   +62 274 - 387646

Website   :   https://www.umy.ac.id/

Office   :   International Relations Office

Email   :   yordangunawan@umy.ac.id

ARTICLE VII
SETTLEMENT OF DISPUTES

Any difference or dispute between the Parties concerning the interpretation and/or implementation and/or application of any of the provisions of this MoU shall be settled amicably through mutual consultation and/or negotiations between the Parties, without reference to any third party with the intentions to commence a legal action/ proceeding in a Court of law or law of tribunal.

ARTICLE VIII
CONFIDENTIALITY

8.1   Each Party shall undertake to observe the confidentiality and secrecy of documents, information and other data received from or supplied to, the other Party during the period of the implementation of this MoU or any other agreements made pursuant to this MoU.

8.2   For purposes of paragraph 1 above, such documents, information and data include any document, information and data which is disclosed by a Party (the Disclosing party) to the other Party (the Receiving party) prior to, or after, the execution of this MoU, involving technical, business, marketing, policy, know-how, planning, project management and other documents, information, data and/or solutions in any form, including but not limited to any document, information or data which is designated in writing to be confidential or by its nature intended to be for the knowledge of the Receiving party or if orally given, is given in the circumstances of confidence.

8.3   The obligation of confidentially contained in this MoU shall not apply to any Confidential information which:

    (a) has been made public by the Disclosing Party or by others with the permission of the Disclosing Party;

    (b) is independently received from a third party who is free to disclose it; and

(c) is the public domain or is a compilation of material in the public domain.

8.4 Both Parties agree that the provisions of this Article shall continue to be binding between the Parties notwithstanding termination of this MoU.

ARTICLE IX
NO AGENCY

9.1 Nothing contained herein is to be construed so as to constitute a joint venture partnership or formal business organization of any kind between the Parties or so to constitute either Party as the agent of the other.

9.2 The Parties hereby agree that they are not bound exclusively by this MoU and shall be at liberty to enter into any separate agreements or arrangements with any third party without reference to the other Party.

ARTICLE X
EFFECT OF MOU

10.1 This MoU serves only as a record of the Parties' intentions and does not constitute or create, and is not intended to constitute or create any legal obligations either under domestic or international law and shall not form the basis for any legal process and/ or proceedings in any Court of law or tribunal and/ or actions by any Party herein and shall not be deemed to constitute or create any legally binding or enforceable obligations, express or implied, on any Party herein.

10.2 This MoU is not intended to be legally binding. It merely expresses the intentions and understanding of the Parties which will form the basis of any legally binding agreement to be drafted and executed in the future.

ARTICLE XI
SUSPENSION

Each Party reserves the right for reasons of national security, national interest, public order or public health to suspend temporarily, either in whole or in part, the implementation of this MoU which suspension shall take effect immediately after notification has been given to the other Party through diplomatic and proper channels.

ARTICLE XII
PROTECTION OF INTELLECTUAL PROPERTY RIGHTS

12.1   The protection of intellectual property rights shall be enforced in conformity with the respective national laws, rules and regulations of Parties and with other international agreements signed by both Parties.

12.2   The use of the name, logo and/or official emblem of any of the Parties on any publication, document and/or paper is prohibited without the prior written approval of either Party.

12.3   Notwithstanding anything in paragraph 1 above, the intellectual property rights in respect of any technological development, and any products or services development, carried out-

(i) jointly by the Parties or research results obtained through the joint activity effort of the Parties, shall be jointly owned by the Parties in accordance with the terms to be mutually agreed upon; and

(ii) solely and separately by the Party or the research results obtained through the sole and separate effort of the Party, shall be solely owned by the Party concerned.

The rest of this page is intentionally left blank.

IN WITNESS WHEREOF, signed in duplicate on ____,_____ 2021 in two (2) original texts, both texts being equally authentic.

SIGNED BY
for and on behalf of

UNIVERSITAS MUHAMMADIYAH
YOGYAKARTA, (Indonesia)

....
DR. IR GUNAWAN BUDIYANTO, M.P. IPM

Rector

Date:

Witnessed by:

UNIVERSITAS MUHAMMADIYAH
YOGYAKARTA, (Indonesia)

....
PROF. DR. ACHMAD NURMANDI, M.SC
Vice Rector

SIGNED BY
for and on behalf of

UNIVERSITI MALAYSIA SARAWAK,
(Malaysia)

....
PROF. DATUK DR. MOHAMAD KADIM
SUAIDI
Vice-Chancellor

Date:

Witnessed by:

UNIVERSITI MALAYSIA SARAWAK
(Malaysia)

....
PROF. DR WAN HASHIM WAN IBRAHIM
Deputy Vice-Chancellor (Research & Innovation)

b. Ada Surat Pernyataan *budget sharing* / dana *in-kind* / dana *in-cash* dari anggota yang berasal dari luar UMY;

Letter on Budget Sharing for Research Collaboration

Herewith, I sign as Team Leader of Research Team of Faculty Economics and Business Universiti Malaysia Sarawak, a public institution of higher learning whose principal address is at Jln Datuk Mohammad Musa, 94300 Kota Samarahan, Sarawak, Malaysia

I agree on the budget sharing in order to finance the research collaboration on:
"Socio-economic and behavioral determinants of Disaster Preparedness in Malaysia and Indonesia which is lead by Diah Setyawati Dewanti, M.Sc., PhD, lecturer of Universitas Muhammadiyah Yogyakarta
  1. **Prof. Dr. Endah Saptutyningsih, M.Si**

As stated below:

Proposed budget from Universiti Malaysia Sarawak (**In-kind / ~~cash budget~~**)

No	Expenditures	Provision of Expenditures (……………..(Currencies) Converted in Rupiahs)	
		Year I	Year II
1.	Seminars/	0	0
2.	Meetings	0	0
3.	Survey	RM 3,000 equal to Rp 10.145.500	0
4.	FGD	0	RM 1,000 equal to Rp 3.381.800
5.	Data Analysis	RM 2,000 equal to Rp 6.763.400	RM 2,000 equal to Rp 6.763.400
6.	Reports	0	0
7.	Publication	0	RM 1,000 equal to Rp 3.381.800
8.	Miscellaneous	RM 500 equal to Rp1.690.900	RM 500 equal to Rp1.690.900
Total		RM 5,500 equal to Rp Rp 18,599,800	RM 4,500 equal to Rp 15,217,900
Total Budget for 2 years		RM 10,000 or equal to 33,817,700	

Yogyakarta, 14 November 2022
Signed :

Dr Nur Zaimah Ubaidillah
Senior Lecturer
Faculty of Economics & Business
UNIVERSITI MALAYSIA SARAWAK

Name   : Dr. Nur Zaiman Ubaidillah
Faculty   : Economics and Business
Position   : Senior Lecturer

c. **CV Partner Kolaborator**

CURRICULUM VITAE

Dr Nur Zaimah binti Ubaidillah

Faculty of Economics and Business
Universiti Malaysia Sarawak (UNIMAS)
94300 Kota Samarahan
Sarawak, Malaysia.

082-584491 / 4421   unzaimah@unimas.my

1. PROFESSIONAL PROFILE

Nur Zaimah Ubaidillah is a senior lecturer at Faculty of Economics and Business, Universiti Malaysia Sarawak. She has obtained her undergraduate bachelor's degree in International Economics from Universiti Malaysia Sarawak and Master's degree in Economics from Macquarie University, Australia. She obtained her PhD (Transport Studies) from Institute for Transport Studies in University of Leeds, United Kingdom. Her area of specialization is in Applied Economics which includes transport, environment and tourism economics. She was also involved in several national consultancies and grants including for Malaysian Ministry of Education, Sarawak Land Development Board, Sarawak Islamic Information Centre, and CRAUN Research Centre. She has also published an array of journal articles in indexed publications locally and internationally.

2. ACADEMIC QUALIFICATION
(Qualification), (Discipline), (Institution), (Year)

Doctor of Philosophy, Transport Studies, University of Leeds, UK, 2019

Masters, Economics, Macquarie University, 2011

Bachelors, International Economics, Universiti Malaysia Sarawak, 2008

3. PREVIOUS APPOINTMENT
(Post), (Organisation), (From)-(Until)

Deputy Dean (Industry & Community Engagement) [2022-2024]

Head of Strategy [2020-2022]

Program Coordinator [2012-2013]

4. AREAS OF EXPERTISE
(Main), (Sub/Area)

Economics/Applied Economics, Transport Economics

Economics/Applied Economics, Environmental Economics

Tourism, Tourism

5. RESEARCH
(Project title), (Source), (Role in Project), (From)-(Until)

Sustaining the Environment through Eco-Tourism Initiatives, Co-Researcher, 2014-2018, Niche Research Grant Scheme

Profiling application of Tagang System in Ecotourism framework in Sarawak, Co-Researcher, 2012-2015, Research Acculturation Grant Scheme

Estimating Cost Funtions and efficiency index of Islamic Conventional Banks in Malaysia, Co-Researcher, 2012-2014, Research Acculturation Grant Scheme

Restructuring program-based electives towards future-ready curriculum design., Head / Project Leader, 2019-2020, Scholarship of Teaching and Learning Grants

Constructing a model for the potential strategy in enhancing sustainable rice production in Malaysia, Co-Researcher, 2019-2021, FRGS-RACER

Investigating Factors Affecting the Adoption of Synchronous E-learning Conferencing Application., Co-Researcher, 2020-2022, Scholarship of Teaching and Learning Grants

Students' Perspective on Quality Assurance in Higher Education in the Context of Sustainability: The Case of Faculty of Economics and Business, Universiti Malaysia Sarawak, Co-Researcher, 2020-2022, Scholarship of Teaching and Learning Grants

Impact Assessment of Sago Waste Management in Mukah Division, Sarawak, Co-Researcher, 2020-2021, Luar (Nasional)

Muslim Women in Sarawak, Co-Researcher, 2020-2021, Luar (Nasional)

Developing the demand model for land public transport in Malaysia, Co-Researcher, 2020-2023, Fundamental Research Grant Scheme

Modelling the Agriculture and Food Industry in Malaysia: A Social Accounting Matrix (SAM) Framework, Co-Researcher, 2020-2022, Fundamental Research Grant Scheme

Demand and Supply Analysis of Bushmeat Industry in Malaysia, Co-Researcher, 2021-2024, Postgraduate Student Research

Strategies For Homeownership, Productivity, And Economic Development In Indonesian Rural And Urban Areas, Head / Project Leader, 2021-2024, Postgraduate Student Research

Sago wastewater treatment plant initiative towards sustainable sago production., Co-Researcher, 2021-2024, Postgraduate Student Research

Social and economics determinants of mother(s) and children health in underprivileged households in Sarawak, Co-Researcher, 2021-2023, RISE research grant award

Developing the demand model for Autonomous Rail Transit (ART) in Malaysia, Head / Project Leader, 2021-2023, Impact

Trade Openness and Labor Productivity Growth of ASEAN Contries Amidst Crisis, Co-Researcher, 2022-2025, Postgraduate Student Research

9. POST GRADUATE SUPERVISION
(Student's Name), (Degree), (Thesis Title), (Year Awarded), (Status), (Role)

Mulyadi, PHD, Strategies For Homeownership, Productivity, And Economic Development In Indonesian Rural And Urban Areas, - , In Progress, Main Supervisor

Nur Syiqim Binti Mohd Syafiq Felix, PHD, Demand For Public Transport In Johor Bahru And Klang Valley, - , In Progress, Co Supervisor

Mark Kedit Noel Johntan, PHD, Technological Disruption: Problems Or Opportunities For Sarawak Rural Youths In The Perspective Of Behavioral Economics, - , In Progress, Co Supervisor

Sun Tingting, PHD, Null, - , In Progress, Co Supervisor

Orujekwe Franklin, MBR, An Econometric Analysis On The Impact Of Trade On Economic Growth: Evidence From Nigeria., - , In Progress, Co Supervisor

Adrianne Favianne Alex, MBR, Modelling The Agriculture And Food Industry In Malaysia: a Social Accounting Matrix (sam) Framework, - , In Progress, Co Supervisor

Sharon Hou Wan, MBR, Food Security In Malaysia: a Study Of Sarawak Rice Production And Sustainability, - , In Progress, Co Supervisor

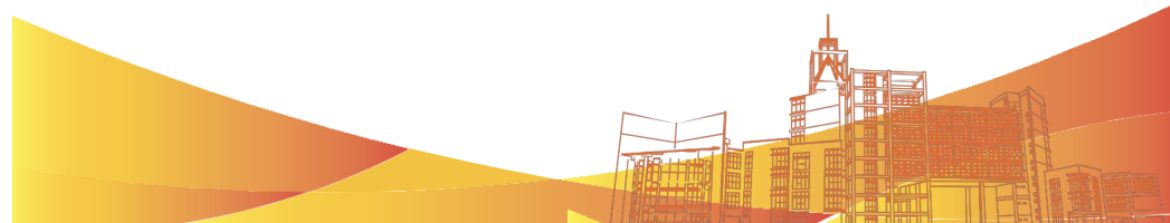Ani Lawrence Ejike, MBR, , - , In Progress, Co Supervisor

Shamsul Bin Arsad, PHD, N/a, - , In Progress, Co Supervisor

Ong Wei Ling, PHD, Bush Meat Trade Market Dynamics In Sarawak, - , In Progress, Co Supervisor

10. TEACHING
(Course name), (Code)

Principles of Economics, Mathematics for Economics, Mathematics for Economics, Transport Economics, Algebra and Calculus, History of Economics Thoughts, Statistics of Economics and Business, Statistics for Economics and Business, Mathematics for Economics, Business Mathematics, Statistics for Economics and Business, Microeconomics, IT Tools for Knowledge Workers, Managerial Economics, Business Mathematics, Statistics for Accounting, Transport Economics, Information Economics

LAPORAN AKHIR

PENELITIAN SKEMA PENELITIAN TERAPAN

STRENGTHENING DISASTER MANAGEMENT FOR A SUSTAINABLE FUTURE IN MALAYSIA AND INDONESIA

Diah Setyawati Dewanti, S.E., M.Sc., Ph.D. (0526108201)

Endah Saptutyningsih, Prof. Dr., S.E., M.Si. (0529117502)

Pazri Nugraha   (20190430059)

Dr. Nur Zaimah Binti Ubaidillah

UNIVERSITAS MUHAMMADIYAH YOGYAKARTA

LAPORAN AKHIR PENELITIAN

Informasi Data Usulan Penelitian

1. IDENTITAS PENELITIAN

A. JUDUL PENELITIAN

STRENGTHENING DISASTER MANAGEMENT FOR A SUSTAINABLE FUTURE IN MALAYSIA AND INDONESIA

B. SKEMA, BIDANG, TEMA, DAN TOPIK PENELITIAN

Skema Penelitian	Bidang Fokus Penelitian	Tema Penelitian	Topik Penelitian
Penelitian Terapan	Kebencanaan	Mitigasi, perubahan iklim dan tata ekosistem	Mitigasi dampak perubahan iklim.

C. KOLABORASI DAN RUMPUN ILMU PENELITIAN

Jenis Kolaborasi Penelitian	Rumpun Ilmu 1	Rumpun Ilmu 2	Rumpun Ilmu 3
Kolaboratif Luar Negri	ILMU EKONOMI	ILMU EKONOMI	Ekonomi Pembangunan

D. WAKTU PELAKSANAAN

Tahun Usulan	Tahun Pelaksanaan	Lama Penelitian
2022	2023	1

E. ANCOR RESEARCH

Anchor Research	Topik Anchor
Agus Setyo Muntohar, Prof., S.T., M.Eng.Sc, Ph.D.(Eng.)	Pengelolaan Kebencanaan

2. IDENTITAS PENELITIAN

Nama	Peran	Tugas
Diah Setyawati Dewanti, S.E., M.Sc., Ph.D.	Ketua Pengusul	
Endah Saptutyningsih, Prof. Dr., S.E., M.Si.	Anggota Pengusul	Analisa data kunatitatif
Pazri Nugraha	Mahasiswa Bimbingan	Mengambil data kuantitatif

3. MITRA KERJASAMA PENELITIAN (JIKA ADA)

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

Mitra	Nama Mitra	Kepakaran
Universiti Malaysia Sarawak	Dr. Nur Zaimah binti Ubaidillah	Kebencanaan

4. KOLABORASI PENELITIAN (JIKA ADA)

Mitra	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 Jurnal Internasional terindeks SCOPUS,
1	Naskah Kebijakan
1	Hak Cipta

Luaran Tambahan

Tahun	Jenis Luaran

6. KLUSTER

Kluster	Sub Kluster	Group Riset	Mata kuliah
			--

7. ANGGARAN

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

Total Keseluruhan RAB Rp. 30,000,000

Tahun 1 Total Rp. 30,000,000

Jenis Pembelanjaan	Komponen	Item	Satuan	Vol.	Harga Satuan	Total
BAHAN	ATK (Kertas/Tinta/Alat Tulis dll)	ATK Kebutuhan data collection	Paket	250	Rp. 3,000	Rp. 750,000
BAHAN	Bahan (Habis Pakai)	Souvenir responden	Unit	250	Rp. 20,000	Rp. 5,000,000
PENGUMPULAN DATA	Transportasi/BBM	Bensin	OK(Kali)	25	Rp. 50,000	Rp. 1,250,000

PENGUMPUL AN DATA	Biaya Telepon	Biaya telpon team	OK(Kal i)	8	Rp. 50,000	Rp. 400,000
PELAPORAN, LUARAN WAJIB, DAN LUARAN TAMBAHAN	Biaya Seminar Internasional	registratio n fee	Paket	1	Rp. 1,500,00 0	Rp. 1,500,00 0
PELAPORAN, LUARAN WAJIB, DAN LUARAN TAMBAHAN	Biaya Luaran KI (Paten, Hak Cipta , dll)	biaya pendaftara n HKI	Paket	1	Rp. 500,000	Rp. 500,000
PELAPORAN, LUARAN WAJIB, DAN LUARAN TAMBAHAN	Article Processing Charge (APC)	Subsidi APC Scopus	Artikel	1	Rp. 1,350,00 0	Rp. 1,350,00 0
PENGUMPUL AN DATA	Uang Harian	uang harian tim pengambil data (internal pimpinan desa)	OH	60	Rp. 100,000	Rp. 6,000,00 0
PENGUMPUL AN DATA	Tunjangan Kehadiran FGD	Honor kehadiran FGD	OK(Kal i)	14	Rp. 250,000	Rp. 3,500,00 0
PENGUMPUL AN DATA	Honorarium Petugas Survey	Petugas survey	OH/OR	3	Rp. 1,000,00 0	Rp. 3,000,00 0
PENGUMPUL AN DATA	Honorarium Sekretariat/Administr asi	Honorariu m asisten lapangan	OB	3	Rp. 1,750,00 0	Rp. 5,250,00 0

8. LEMBAR PENGESAHAN

HALAMAN PENGESAHAN
LAPORAN AKHIR PENELITIAN SKEMA:

Judul : STRENGTHENING DISASTER MANAGEMENT FOR A SUSTAINABLE FUTURE IN MALAYSIA AND INDONESIA

Peneliti/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 : Endah Saptutyningsih, Prof. Dr., S.E., M.Si.

NIDN : 0529117502

Jabatan Fungsional : Guru Besar

Program Studi/Fakultas : Ekonomi

Nama : Pazri Nugraha

NIM : 20190430059

Prodi : S1 Ekonomi

Mitra : Universiti Malaysia Sarawak

Nama Mitra : Dr. Nur Zaimah binti Ubaidillah

Kepakaran : Kebencanaan

Nama : Dr. Nur Zaimah Binti Ubaidillah
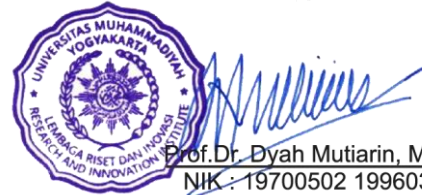
NIK : 0000000000000000

| Institusi | : Universiti Malaysia Sarawak (UNIMAS) |

| Biaya | : Rp. 30,000,000 |

Yogyakarta, 21 Agustus 2023

Mengetahui,

Kepala LRI,

Prof.Dr. Dyah Mutiarin, MS.i.
NIK : 19700502 199603

9. 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.

10. KEYWORDS

Landslide, livelihoods, preparedness, chi square

11. HASIL PELAKSANAAN PENELITIAN

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.
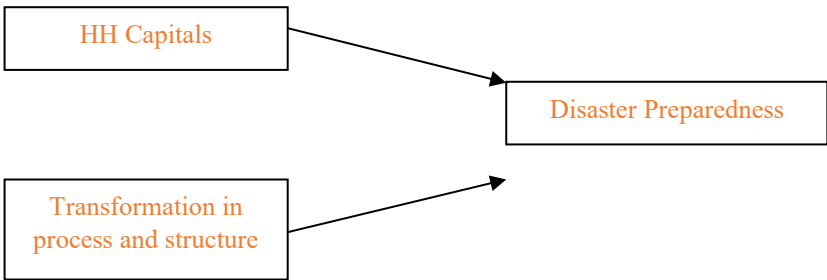

Figure 1. The conceptual framework of this study

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				

12. KESIMPULAN PENELITIAN

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)

13. STATUS LUARAN WAJIB

This program has been integrated with community services program. The paper is presented through ICCS and selected to published in the proceeding E3S, Scopus indexed. However, it's still in the stage of first revision.

14. DOKUMEN LUARAN WAJIB

Preparedness of Disaster Management of Landslide in the livelihoods of Kulon Progo district

Diah Setyawati Dewanti[1,1,] *Endah* Saptutyningsih[1], *Susilo Nur Aji Cokro* Darsono[1] and *Pazri* Nugraha[1]

[1]Department Economics, Faculty Economics and Business, Universitas Muhammadiyah Yogyakarta, Indonesia

Abstract. 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. Preparedness refers to the effort made to expand the awareness and readiness in handling the dangers and preventative actions related data. The aim of the paper is to analyse the correlations between livelihoods to preparedness stage in landslide disaster area in Kulon Progo. The independent variables define as human-, social-, physical-, natural-, and financial capital and transformation

[1] Corresponding author: ddewanti@umy.ac.id

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 based in stratified random sampling in the research site. Kulon Progo has been chosen since the geographical pattern is hill. 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 χ^2 55.554**. It found that the belief and religiosity level have strong contingency correlationamong household capitals.

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., 2 016). 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.

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.

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)(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)(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 objective of the study is 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. Previous studies has been define the relationship between component of livelihoods to disaster management. However, this study is designed to study in the preparedness phase since it play important role to increase the households resilience through livelihoods.
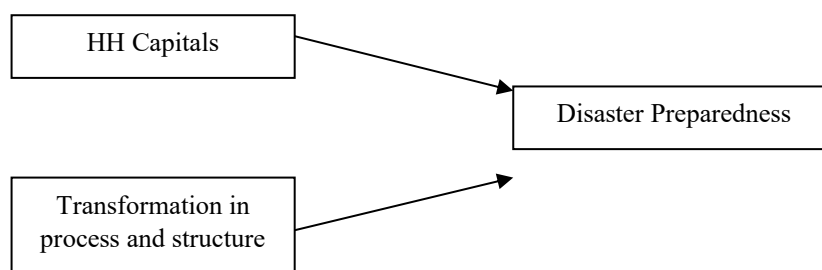

Fig. 1. The conceptual framework of this study

2 Method

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 [16]. 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 total sampling carried out stratified random sampling from 6 villages of Samigaluh district. The six villages are Banjarsari; Gerbosari; Kebonhargo; Ngargosari; Purwoharjo and Sidoharjo village. However, since the last landslide was in Gerbosari, the data collection is focus in Gerbosari village.

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. Previous studies have been applied using chi square to observe the relationship between variables for several natural disasters [17]–[19] 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.

3 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%). The capacity of preparedness level has been distributed almost the same for each level; low, medium and high level.

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 [20]. 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 1. 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. Water management	300	0.00	2.00	1.20	0.78
P1.3. Evacuation training	300	0.00	2.00	1.10	0.84
P1.4. Symmetric 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 [21]. Moreover, the human capacity and preparedness level having strong relationship due to the rescue planning for households [22]. The strong local partnership is improving the risk reduction impact from the landslide occurrence [23]

Table 2. Chi square test of Independence between Human Capital to Disaster Preparedness Capability

Human Capital 3	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 [24]. Communication and training could improve the preparedness capacity in each of individual and households [25]. Moreover, having networking to government and private institutions in the village could strengthen the preparedness capability of the households [26]. This has been identified since in the question of networking, all of the components are significantly having 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

Social Capital 1	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				
Social capital 3	**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				
Social Capital 5	**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				
Social Capital 6	**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				
Social Capital 7	**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				
Social Capital 8	**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				
Social Capital 9	**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 [27]. 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 this 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 3. Chi square test of Independence between Natural Capital to Disaster Preparedness Capability

Natural Capital 1.2	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				
Natural Capital 1.3	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				
Natural Capital 1.4	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				
Natural Capital 2.1	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				
Natural Capital 2.2	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				
Natural Capital 2.3	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				
Natural Capital 2.4	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 (χ^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 χ^2 = 13.050*). Physical capital play important role on building communication facilities between government and community [4]

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

Physical Capital 1	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				
Physical Capital 2	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 defines 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 this implementation has been significantly correlated to the disaster preparedness with low level correlation. Belief and culture strengthen the household capacities in the disaster management, including the preparedness phase [15], [28]

Table 5. Chi square test of Independence between Transformation on Structure and Process to Disaster Preparedness Capability

Culture 1,	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				
Culture 2	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				
Culture 3.	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				
Belief 1	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				
Belief 2.	**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				
Belief 3.	**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				

4 Conclusion

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 aspects, include the household capitals (social capital, human capital, physical capital and natural capital) and transformation on structure and In the other hand, the socioeconomics are also correlated to the ability of households in preparedness phase of disaster management. 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 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 The capacity of community in improving their preparedness skill could be based on the self-efficacy and also the community-based development.

References

L. Han *et al.*, "Degrading river network due to urbanization in Yangtze River Delta," *Journal of Geographical Sciences*, vol. 26, no. 6, pp. 694–706, 2016, doi: 10.1007/s11442-016-1293-0.

L. R. Angeningsih, "SISTER VILLAGE MODEL OF ECONOMIC RESILIENCE TO COMMUNITY BASED (A Pilot Project in " Calvari " Group Yogyakarta)," 2015, doi: 10.5176/2251-2403.

W. Zhang, X. Xu, and X. Chen, "Social vulnerability assessment of earthquake disaster based on the catastrophe progression method: A Sichuan Province case study," *International Journal of Disaster Risk Reduction*, vol. 24, no. June 2016, pp. 361–372, 2017, doi: 10.1016/j.ijdrr.2017.06.022.

M. Ungar, "Community resilience for youth and families: Facilitative physical and social capital in contexts of adversity," *Child Youth Serv Rev*, vol. 33, no. 9, pp. 1742–1748, 2011, doi: 10.1016/j.childyouth.2011.04.027.

Ben. Wisner, J. Adams, and World Health Organization., *Environmental health in emergencies and disasters : a practical guide*. World Health Organization, 2002.

C. Wisner and D. Nivaran, "At Risk: natural hazards, people's vulnerability and disasters Second edition 2003."

N. Makwana, "Disaster and its impact on mental health: A narrative review," *J Family Med Prim Care*, vol. 8, no. 10, p. 3090, 2019, doi: 10.4103/jfmpc.jfmpc_893_19.

Unisdr, "Living with Risk: A global review of dissater reduction initatives," 2004.

N. Z. Ubaidillah, F. Dipah, B. Khalid, R. Hamdan, and A. Liwan, "INVESTIGATING BEHAVIOURAL DETERMINANTS FOR DISASTER PREPAREDNESS AMONG YOUTH IN MALAYSIA."

I. Mariam *et al.*, "Knowledge, Attitudes, Disaster Training and Self Efficacy on Disaster Preparedness," 2021. [Online]. Available: http://journal.publindoakademika.com/index.php/RH

I. Permana, F. M. Said, and N. Syazana Umar, "The Relationship Between Social Capital, Social Support, and Knowledge With Self-efficacy Towards Landslide Preparedness Among the Community in a Rural Area of West Java, Indonesia," 2022.

M. Mojtahedi and B. L. Oo, "The impact of stakeholder attributes on performance of disaster recovery projects: The case of transport infrastructure," *International Journal of Project Management*, vol. 35, no. 5, pp. 841–852, 2017, doi: 10.1016/j.ijproman.2017.02.006.

F. Nadim and D. Muslim, "Landslide risk in Indonesia," 2010.

J. D. Dariagan, R. B. Atando, and J. L. B. Asis, "Disaster preparedness of local governments in Panay Island, Philippines," *Natural Hazards*, vol. 105, no. 2, pp. 1923–1944, Jan. 2021, doi: 10.1007/s11069-020-04383-0.

D. S. Dewanti, D. Ayuwat, and S. Yongvanit, "Early warning system through sustainability livelihoods approach for volcanic disaster management," in *IOP Conference Series: Earth and Environmental Science*, Institute of Physics Publishing, Dec. 2019. doi: 10.1088/1755-1315/398/1/012015.

A. S. Muntohar, J. Ikhsan, and E. Soebowo, "Mechanism of rainfall triggering landslides in Kulonprogo, Indonesia," American Society of Civil Engineers (ASCE), Feb. 2013, pp. 452–461. doi: 10.1061/9780784412787.047.

A. M. AlQahtany and I. R. Abubakar, "Public perception and attitudes to disaster risks in a coastal metropolis of Saudi Arabia," *International Journal of Disaster Risk Reduction*, vol. 44, Apr. 2020, doi: 10.1016/j.ijdrr.2019.101422.

B. Loehn *et al.*, "Factors affecting access to head and neck cancer care after a natural disaster: A post-Hurricane Katrina survey," *Head Neck*, vol. 33, no. 1, pp. 37–44, Jan. 2011, doi: 10.1002/hed.21393.

T. Suryadi, Z. Zulfan, and K. Kulsum, "The Relationship between Knowledge and Attitudes about Community Disaster Preparedness in Lambung Village, Banda Aceh," *International Journal of Disaster Management*, vol. 4, no. 1, pp. 1–10, Apr. 2021, doi: 10.24815/ijdm.v4i1.19993.

D. S. Hadmoko, F. Lavigne, and G. Samodra, "Application of a semiquantitative and GIS-based statistical model to landslide susceptibility zonation in Kayangan Catchment, Java, Indonesia," *Natural Hazards*, vol. 87, no. 1, pp. 437–468, May 2017, doi: 10.1007/s11069-017-2772-z.

A. R. Cheema, R. Scheyvens, B. Glavovic, and M. Imran, "Unnoticed but important: Revealing the hidden contribution of community-based religious institution of the mosque in disasters," *Natural Hazards*, vol. 71, no. 3, pp. 2207–2229, Apr. 2014, doi: 10.1007/s11069-013-1008-0.

E. Prastyo, B. Subali, S. Saptono, and R. Artikel, "PREPAREDNESS LEVEL OF STUDENTS IN PRONE SCHOOLS LANDSLIDE DISASTER INFO ARTIKEL ABSTRAK," vol. 12, no. 1, pp. 33–37, 2021, doi: 10.31764.

K. Sassa, M. Mikoš, S. Sassa, P. T. Bobrowsky, K. Takara, and K. Dang, "Volume 1 Sendai Landslide Partnerships and Kyoto Landslide Commitment ICL Contribution to Landslide Disaster Risk Reduction Understanding and Reducing Landslide Disaster Risk." [Online]. Available: http://www.springer.com/series/16332

D. V. Rogayan and L. F. Dollete, "Disaster awareness and preparedness of barrio community in Zambales, Philippines: Creating a baseline for curricular integration and extension program," *Review of International Geographical Education Online*, vol. 10, no. 2, pp. 92–114, Mar. 2020, doi: 10.33403/rigeo.634564.

F. Mulianingsih, A. Purnomo, S. S. Nur Hidayatulloh, and I. M. Setyarini, "Community social capital in facing landslide hazards in Banjarnegara," in *IOP Conference Series: Earth and Environmental Science*, IOP Publishing Ltd, Feb. 2022. doi: 10.1088/1755-1315/986/1/012042.

A. T. Chatfield, H. J. J. Scholl, and U. Brajawidagda, "Tsunami early warnings via Twitter in government: Net-savvy citizens' co-production of time-critical public information services," *Gov Inf Q*, vol. 30, no. 4, pp. 377–386, 2013, doi: 10.1016/j.giq.2013.05.021.

C. Rakodi, "A capital assets framework for analysing household livelihood strategies: Implications for policy," *Development Policy Review*, vol. 17, no. 3, pp. 315–342, 1999, doi: 10.1111/1467-7679.00090.

D. S. Dewanti, D. Ayuwat, and S. Yongvanit, "Household disaster management capacities in disaster prone II area of Mt. Slamet," *Jamba: Journal of Disaster Risk Studies*, vol. 11, no. 1, 2019, doi: 10.4102/jamba.v11i1.649.

16. STATUS LUARAN TAMBAHAN

It has not been applied yet, it will applied when it is already complete all

17. PERAN MITRA

The partner from UNIMAS has not finished to collect the data, therefore, in this research, we are agree to present the data from Indonesia for the preparedness of landslide.

20. DAFTAR PUSTAKA

Eggerman, M., & Panter-Brick, C. (2010). Suffering, hope, and entrapment: Resilience and cultural values in Afghanistan. Social Science & Medicine, 71,71–83.

Ungar, M. (2011). The social ecology of resilience. Addressing contextual and cultural ambiguity of a nascent construct. The American Journal ofOrthopsychiatry, 81,1–17.

UNISDR. Building the resilience of nations and communities to disasters: hyogo framework for action 2005–2015, World Confer- ence on Disaster Risk Reduction, UNISDRl; 2005.
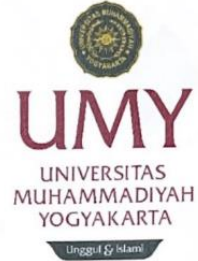
UNISDR. Terminology: basic terms of disaster risk reduction (2009), ⟨http://www.unisdr.org/eng/library/lib-terminology-eng%20home. htm⟩; 5 April 2013.

Carpenter A. Resilience to violent conflict: adaptive strategies in fragile states. Security Management Initiative; Geneva, 2011. ⟨http://www.securitymanagementinitiative.org/index.php?option= com_docman&task=doc_details&gid=511&lang=en&Itemid=28⟩.

Adger, W. N., Brown, K., Nelson, D. R., Berkes, F., Eakin, H., Folke, C., ... Tompkins, E. L. (2011). Resilience implications of policy responses to climate change. *Wiley Interdisciplinary Reviews: Climate Change*, *2*(5), 757–766. https://doi.org/10.1002/wcc.133

Alagh, Y. K. (2021). Climate change and disaster management. *Economic and Political Weekly*, *56*(4), 58–59. https://doi.org/10.1596/28137

Angeningsih, L. R. (2015). *SISTER VILLAGE MODEL OF ECONOMIC RESILIENCE TO COMMUNITY BASED (A Pilot Project in " Calvari " Group Yogyakarta)*. https://doi.org/10.5176/2251-2403

Burton, I., Huq, S., Lim, B., Pilifosova, O., & Schipper, E. L. (2002). From impacts assessment to adaptation priorities: The shaping of adaptation policy. *Climate Policy*, *2*(2–3), 145–159. https://doi.org/10.3763/cpol.2002.0217

Dewanti, D. S., Ayuwat, D., & Yongvanit, S. (2019). Early warning system through sustainability livelihoods approach for volcanic disaster management. *IOP Conference Series: Earth and Environmental Science*, *398*(1). https://doi.org/10.1088/1755-1315/398/1/012015

Han, L., Xu, Y., Lei, C., Yang, L., Deng, X., Hu, C., & Xu, G. (2016). Degrading river network due to urbanization in Yangtze River Delta. *Journal of Geographical Sciences*, *26*(6), 694–706. https://doi.org/10.1007/s11442-016-1293-0

Joakim, E. P. (2013). *Resilient Disaster Recovery: A Critical Assessment of the 2006 Yogyakarta, Indonesia. Earthquake using a Vulnerability, Resilience and Sustainable Livelihoods Framework*. 1–294.

Jones, L., Jaspers, S., Pavanello, S., Ludi, E., Slater, R., Arnall, A., ... Mtisi, S. (2010). *Responding to a changing climate: Exploring how disaster risk reduction, social protection and livelihoods approaches promote features of adaptive capacity*.

Karver, A. J. H. (1986). What is a disaster? *Prehospital and Disaster Medicine*, *2*(1–4), 152–153. https://doi.org/10.1017/S1049023X00030661

Paton, D., Millar, M., Johnston, D., Moser, S., Ph, D., Chang Seng, D. S., … Ã, G. C. G. (2013). Sustainability and community resilience: The holy grail of hazards planning? *International Journal of Disaster Risk Reduction*, *1*(1), 1089–1114. https://doi.org/10.3763/ehaz.1999.0103

Rus, K., Kilar, V., & Koren, D. (2018). Resilience assessment of complex urban systems to natural disasters: A new literature review. *International Journal of Disaster Risk Reduction*, *31*(January), 311–330. https://doi.org/10.1016/j.ijdrr.2018.05.015

Ungar, M. (2011). Community resilience for youth and families: Facilitative physical and social capital in contexts of adversity. *Children and Youth Services Review*, *33*(9), 1742–1748. https://doi.org/10.1016/j.childyouth.2011.04.027

Zhang, X., Song, J., Peng, J., & Wu, J. (2019). Landslides-oriented urban disaster resilience assessment—A case study in ShenZhen, China. *Science of the Total Environment*, *661*, 95–106. https://doi.org/10.1016/j.scitotenv.2018.12.074

21. LAMPIRAN-LAMPIRAN

LAMPIRAN

   a. Ada MoU/MoA/LoA/ToA/Surat Pernyataan Kerjasama dari anggota yang berasal dari luar UMY;

MEMORANDUM OF UNDERSTANDING

BETWEEN

UNIVERSITI MALAYSIA SARAWAK

AND

UNIVERSITAS MUHAMMADIYAH YOGYAKARTA

MEMORANDUM OF UNDERSTANDING
between
UNIVERSITAS MUHAMMADIYAH YOGYAKARTA
Indonesia
And
UNIVERSITI MALAYSIA SARAWAK
Malaysia

This Memorandum of Understanding (hereinafter referred to as **"MoU"**) is entered on
_____ 2021;

UNIVERSITAS MUHAMMADIYAH YOGYAKARTA (hereinafter referred to as "**UMY**") Whose address is at Jl. Brawijaya, Tamantirto, Kasihan, Bantul, Yogyakarta 55183, Indonesia and shall include its lawful representatives and permitted assigns, of the first part;

And

UNIVERSITI MALAYSIA SARAWAK (hereinafter referred to as "**UNIMAS**"), an institution of higher learning established under the Universities and University Colleges Act 1971 whose address is at Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia and shall include its lawful representatives and permitted assigns, of the other part;

(UMY and UNIMAS shall hereinafter be referred to singularly as "Party" or collectively as "Parties" as the case may be)

WHEREAS

A. **UMY** is an established higher learning institution which incorporates modern sciences and knowledge with the Islamic Syariah, committed to enhance its education and research quality by expanding partnership and collaboration with relevant bodies and institutions. UMY represented by its Rector, **Dr. Ir. Gunawan Budiyanto, M.P. IPM** and acting on behalf of the University by virtue of the powers conferred upon him by UMY Statues, and shall include its lawful representatives and permitted assigns, Faculty of Economics and Business.

B. **UNIMAS** is an established University which strives to enhance and strengthen its research capabilities and has taken various initiatives to complement its educational excellence. UNIMAS has entered into various collaborative arrangements with other parties to enhance research, consultancy and academia. UNIMAS represented by its Vice-Chancellor, **Prof. Datuk Dr. Mohamad Kadim Suaidi,** and shall include its lawful representatives and permitted assigns, Faculty of Economics and Business.

C. Financial arrangement and stipulations concerning, including but not limited to, the exchange of students, faculty and staff members are to be specially detailed in separate written Agreement.

D. Each party shall designate an office to as liaison for implementing this MoU. For UMY shall be manage by the International Relations Office (IRO) and Faculty of Economics & Business, meanwhile on UNIMAS part is under UNIMAS Global and Faculty of Economics and Business, UNIMAS.

E. The Parties acknowledge that all visits or exchange of staff, students or administrators will be subject to compliance with the entry and visa regulations of Malaysia and Indonesia and with the respective Party's requirements with respect to staff and students visits.

F. The Parties are desirous of entering into this MoU to declare their respective intentions and to establish a basis of co-operation and collaboration between the Parties upon the terms as contained herein.

ARTICLE I
OBJECTIVE

The Parties, subject to the terms of this MoU and the laws, rules, regulations and national policies from time to time in force in each Party's country, will endeavor to strengthen, promote and develop in academia, research and community co-operation between the Parties on the basis of equality and mutual benefit.

ARTICLE II
AREAS OF CO-OPERATION

Each Party will, subject to the laws, rules, regulations and national policies from time to time in force, governing the subject matter in their respective institution, endeavor to take necessary steps to encourage and promote co-operation in the following areas:

a) Exchange of faculty and staff members;
b) Exchange of students;
c) Exchange of publication and relevant academic and educational information;
d) Joint research, lectures and symposia; and
e) Other activities such as deemed appropriate by mutual consent.

ARTICLE III
FINANCIAL ARRANGEMENTS

3.1 This MoU will not give rise to any financial obligation by one Party to other.

3.2 Each Party will bear its own cost and expenses in relation to this MoU.

3.3 The Parties acknowledge that in the absence or any specific agreement in writing to the contrary. each Party will be responsible for its own costs and expenses in establishing and conducting programmes and activities contemplated under this MoU including without limitation its own costs and expenses in travel and accommodation.

ARTICLE IV
REVISION, VARIATION AND AMENDMENT

4.1 Either Party may request in writing a revision, variation or amendment of this MoU.

4.2 Any such revision, variation or amendment agreed to by the Parties shall be in writing and shall form part of this MoU.

4.3 Such revision, variation or amendment shall come into force on such date as may be determined and agreed to by the Parties.

4.4 Any revision, variation or amendment shall not prejudice the implementation of any project, activity or co-operation arising from or based on this MoU before or up to the date of such revision, variation or amendment.

4.5 The provisions of this MoU or any other written agreement in respect of any on-going exchange programme or any other form of cooperative activity under this MoU shall continue to apply until

their completion unless both Parties mutually agree in writing to the earlier termination of the programme or cooperative activity.

ARTICLE V
ENTRY INTO EFFECT AND DURATION

5.1 This MoU will come into effect on the date of signing and will remain in effect for a period of **five (5)** years or until termination by either party with **six (6)** months written notice, whichever comes earlier.

5.2 This MoU may be extended for a further period as may be agreed in writing by the Parties by issuance to the other Party of a written notice signifying its intention to renew or further the period not less than **three (3)** months prior to the Expiry Date.

ARTICLE VI
NOTICES

Any communication under this MoU will be writing in the English language and delivered by registered mail to the address or sent to the electronic mail address or facsimile number **of UNIMAS** or the **UMY**, as the case may be, shown below or to such other address or electronic mail address or facsimile number as either Party may have notified the sender and shall, unless otherwise provided herein, be deemed to be duly given or made when delivered to the recipient at such address or electronic mail address or facsimile number which is duly acknowledged:

Faculty of Economics and Business, Universiti Malaysia Sarawak, Malaysia

Phone	:	+6082584455
Faximile	:	+6082583999
Website	:	https://www.feb.unimas.my/
Office	:	Faculty of Economics and Business
Email	:	arrossazana@unimas.my

Universitas Muhammadiyah Yogyakarta, Indonesia

Phone	:	+62 274 - 387656, 450212
Faximile	:	+62 274 - 387646
Website	:	https://www.umy.ac.id/
Office	:	International Relations Office
Email	:	yordangunawan@umy.ac.id

ARTICLE VII
SETTLEMENT OF DISPUTES

Any difference or dispute between the Parties concerning the interpretation and/or implementation and/or application of any of the provisions of this MoU shall be settled amicably through mutual consultation and/or negotiations between the Parties, without reference to any third party with the intentions to commence a legal action/ proceeding in a Court of law or law of tribunal.

ARTICLE VIII
CONFIDENTIALITY

8.1 Each Party shall undertake to observe the confidentiality and secrecy of documents, information and other data received from or supplied to, the other Party during the period of the implementation of this MoU or any other agreements made pursuant to this MoU.

8.2 For purposes of paragraph 1 above, such documents, information and data include any document, information and data which is disclosed by a Party (the Disclosing party) to the other Party (the Receiving party) prior to, or after, the execution of this MoU, involving technical, business, marketing, policy, know-how, planning, project management and other documents, information, data and/or solutions in any form, including but not limited to any document, information or data which is designated in writing to be confidential or by its nature intended to be for the knowledge of the Receiving party or if orally given, is given in the circumstances of confidence.

8.3 The obligation of confidentially contained in this MoU shall not apply to any Confidential information which:

   (a) has been made public by the Disclosing Party or by others with the permission of the Disclosing Party;
   (b) is independently received from a third party who is free to disclose it; and

(c) is the public domain or is a compilation of material in the public domain.

8.4 Both Parties agree that the provisions of this Article shall continue to be binding between the Parties notwithstanding termination of this MoU.

ARTICLE IX
NO AGENCY

9.1 Nothing contained herein is to be construed so as to constitute a joint venture partnership or formal business organization of any kind between the Parties or so to constitute either Party as the agent of the other.

9.2 The Parties hereby agree that they are not bound exclusively by this MoU and shall be at liberty to enter into any separate agreements or arrangements with any third party without reference to the other Party.

ARTICLE X
EFFECT OF MOU

10.1 This MoU serves only as a record of the Parties' intentions and does not constitute or create, and is not intended to constitute or create any legal obligations either under domestic or international law and shall not form the basis for any legal process and/ or proceedings in any Court of law or tribunal and/ or actions by any Party herein and shall not be deemed to constitute or create any legally binding or enforceable obligations, express or implied, on any Party herein.

10.2 This MoU is not intended to be legally binding. It merely expresses the intentions and understanding of the Parties which will form the basis of any legally binding agreement to be drafted and executed in the future.

ARTICLE XI
SUSPENSION

Each Party reserves the right for reasons of national security, national interest, public order or public health to suspend temporarily, either in whole or in part, the implementation of this MoU which suspension shall take effect immediately after notification has been given to the other Party through diplomatic and proper channels.

ARTICLE XII
PROTECTION OF INTELLECTUAL PROPERTY RIGHTS

12.1   The protection of intellectual property rights shall be enforced in conformity with the respective national laws, rules and regulations of Parties and with other international agreements signed by both Parties.

12.2   The use of the name, logo and/or official emblem of any of the Parties on any publication, document and/or paper is prohibited without the prior written approval of either Party.

12.3   Notwithstanding anything in paragraph 1 above, the intellectual property rights in respect of any technological development, and any products or services development, carried out-

   (i)   jointly by the Parties or research results obtained through the joint activity effort of the Parties, shall be jointly owned by the Parties in accordance with the terms to be mutually agreed upon; and

   (ii)   solely and separately by the Party or the research results obtained through the sole and separate effort of the Party, shall be solely owned by the Party concerned.

The rest of this page is intentionally left blank.

IN WITNESS WHEREOF, signed in duplicate on _____, _____ 2021 in two (2) original texts, both texts being equally authentic.

SIGNED BY
for and on behalf of

UNIVERSITAS MUHAMMADIYAH YOGYAKARTA, (Indonesia)

....
DR. IR GUNAWAN BUDIYANTO, M.P. IPM
Rector

Date:

Witnessed by:

UNIVERSITAS MUHAMMADIYAH YOGYAKARTA, (Indonesia)

....
PROF. DR. ACHMAD NURMANDI, M.SC
Vice Rector

SIGNED BY
for and on behalf of

UNIVERSITI MALAYSIA SARAWAK, (Malaysia)

....
PROF. DATUK DR. MOHAMAD KADIM SUAIDI
Vice-Chancellor

Date:

Witnessed by:

UNIVERSITI MALAYSIA SARAWAK (Malaysia)

....
PROF. DR WAN HASHIM WAN IBRAHIM
Deputy Vice-Chancellor (Research & Innovation)

b. Ada Surat Pernyataan *budget sharing* / dana *in-kind* / dana *in-cash* dari anggota yang berasal dari luar UMY;

Letter on Budget Sharing for Research Collaboration

Herewith, I sign as Team Leader of Research Team of Faculty Economics and Business Universiti Malaysia Sarawak, a public institution of higher learning whose principal address is at Jln Datuk Mohammad Musa, 94300 Kota Samarahan, Sarawak, Malaysia

I agree on the budget sharing in order to finance the research collaboration on:
"Socio-economic and behavioral determinants of Disaster Preparedness in Malaysia and Indonesia which is lead by Diah Setyawati Dewanti, M.Sc., PhD, lecturer of Universitas Muhammadiyah Yogyakarta
  1. **Prof. Dr. Endah Saptutyningsih, M.Si**

As stated below:

Proposed budget from Universiti Malaysia Sarawak (**In-kind / ~~cash budget~~**)

No	Expenditures	Provision of Expenditures (……………..(Currencies) Converted in Rupiahs)	
		Year I	**Year II**
1.	Seminars/	0	0
2.	Meetings	0	0
3.	Survey	RM 3,000 equal to Rp 10.145.500	0
4.	FGD	0	RM 1,000 equal to Rp 3.381.800
5.	Data Analysis	RM 2,000 equal to Rp 6.763.400	RM 2,000 equal to Rp 6.763.400
6.	Reports	0	0
7.	Publication	0	RM 1,000 equal to Rp 3.381.800
8.	Miscellaneous	RM 500 equal to Rp1.690.900	RM 500 equal to Rp1.690.900
Total		RM 5,500 equal to Rp Rp 18,599,800	RM 4,500 equal to Rp 15,217,900
Total Budget for 2 years		RM 10,000 or equal to 33,817,700	

Yogyakarta, 14 November 2022
Signed :

Dr Nur Zaimah Ubaidillah
Senior Lecturer
Faculty of Economics & Business
UNIVERSITI MALAYSIA SARAWAK

Name   : Dr. Nur Zaiman Ubaidillah
Faculty   : Economics and Business
Position   : Senior Lecturer

c.   CV Partner Kolaborator

CURRICULUM VITAE

Dr Nur Zaimah binti Ubaidillah

Faculty of Economics and Business
Universiti Malaysia Sarawak (UNIMAS)
94300 Kota Samarahan
Sarawak, Malaysia.

082-584491 / 4421   unzaimah@unimas.my

1. PROFESSIONAL PROFILE

Nur Zaimah Ubaidillah is a senior lecturer at Faculty of Economics and Business, Universiti Malaysia Sarawak. She has obtained her undergraduate bachelor's degree in International Economics from Universiti Malaysia Sarawak and Master's degree in Economics from Macquarie University, Australia. She obtained her PhD (Transport Studies) from Institute for Transport Studies in University of Leeds, United Kingdom. Her area of specialization is in Applied Economics which includes transport, environment and tourism economics. She was also involved in several national consultancies and grants including for Malaysian Ministry of Education, Sarawak Land Development Board, Sarawak Islamic Information Centre, and CRAUN Research Centre. She has also published an array of journal articles in indexed publications locally and internationally.

2. ACADEMIC QUALIFICATION
(Qualification), (Discipline), (Institution), (Year)

Doctor of Philosophy, Transport Studies, University of Leeds, UK, 2019

Masters, Economics, Macquarie University, 2011

Bachelors, International Economics, Universiti Malaysia Sarawak, 2008

3. PREVIOUS APPOINTMENT
(Post), (Organisation), (From)-(Until)

Deputy Dean (Industry & Community Engagement) [2022-2024]

Head of Strategy [2020-2022]

Program Coordinator [2012-2013]

4. AREAS OF EXPERTISE
(Main), (Sub/Area)

Economics/Applied Economics, Transport Economics

Economics/Applied Economics, Environmental Economics

Tourism, Tourism

5. RESEARCH
(Project title), (Source), (Role in Project), (From)-(Until)

Sustaining the Environment through Eco-Tourism Initiatives, Co-Researcher, 2014-2018, Niche Research Grant Scheme

Profilling application of Tagang System in Ecotourism framework in Sarawak, Co-Researcher, 2012-2015, Research Acculturation Grant Scheme

Estimating Cost Funtions and efficiency index of Islamic Conventional Banks in Malaysia, Co-Researcher, 2012-2014, Research Acculturation Grant Scheme

Restructuring program-based electives towards future-ready curriculum design., Head / Project Leader, 2019-2020, Scholarship of Teaching and Learning Grants

Constructing a model for the potential strategy in enhancing sustainable rice production in Malaysia, Co-Researcher, 2019-2021, FRGS-RACER

Investigating Factors Affecting the Adoption of Synchronous E-learning Conferencing Application., Co-Researcher, 2020-2022, Scholarship of Teaching and Learning Grants

Students' Perspective on Quality Assurance in Higher Education in the Context of Sustainability: The Case of Faculty of Economics and Business, Universiti Malaysia Sarawak, Co-Researcher, 2020-2022, Scholarship of Teaching and Learning Grants

Impact Assessment of Sago Waste Management in Mukah Division, Sarawak, Co-Researcher, 2020-2021, Luar (Nasional)

Muslim Women in Sarawak, Co-Researcher, 2020-2021, Luar (Nasional)

Developing the demand model for land public transport in Malaysia, Co-Researcher, 2020-2023, Fundamental Research Grant Scheme

Modelling the Agriculture and Food Industry in Malaysia: A Social Accounting Matrix (SAM) Framework, Co-Researcher, 2020-2022, Fundamental Research Grant Scheme

Demand and Supply Analysis of Bushmeat Industry in Malaysia, Co-Researcher, 2021-2024, Postgraduate Student Research

Strategies For Homeownership, Productivity, And Economic Development In Indonesian Rural And Urban Areas, Head / Project Leader, 2021-2024, Postgraduate Student Research

Sago wastewater treatment plant initiative towards sustainable sago production., Co-Researcher, 2021-2024, Postgraduate Student Research

Social and economics determinants of mother(s) and children health in underprivileged households in Sarawak, Co-Researcher, 2021-2023, RISE research grant award

Developing the demand model for Autonomous Rail Transit (ART) in Malaysia, Head / Project Leader, 2021-2023, Impact

Trade Openness and Labor Productivity Growth of ASEAN Contries Amidst Crisis, Co-Researcher, 2022-2025, Postgraduate Student Research

9. POST GRADUATE SUPERVISION
(Student's Name), (Degree), (Thesis Title), (Year Awarded), (Status),　(Role)

Mulyadi, PHD, Strategies For Homeownership, Productivity, And Economic Development In Indonesian Rural And Urban Areas,　-　, In Progress, Main Supervisor

Nur Syiqim Binti Mohd Syafiq Felix, PHD, Demand For Public Transport In Johor Bahru And Klang Valley,　-　, In Progress, Co Supervisor

Mark Kedit Noel Johntan, PHD, Technological Disruption: Problems Or Opportunities For Sarawak Rural Youths In The Perspective Of Behavioral Economics,　-　, In Progress, Co Supervisor

Sun Tingting, PHD, Null,　-　, In Progress, Co Supervisor

Orujekwe Franklin, MBR, An Econometric Analysis On The Impact Of Trade On Economic Growth: Evidence From Nigeria.,　-　, In Progress, Co Supervisor

Adrianne Favianne Alex, MBR, Modelling The Agriculture And Food Industry In Malaysia: a Social Accounting Matrix (sam) Framework,　-　, In Progress, Co Supervisor

Sharon Hou Wan, MBR, Food Security In Malaysia: a Study Of Sarawak Rice Production And Sustainability,　-　, In Progress, Co Supervisor

Ani Lawrence Ejike, MBR, ,　-　, In Progress, Co Supervisor

Shamsul Bin Arsad, PHD, N/a,　-　, In Progress, Co Supervisor

Ong Wei Ling, PHD, Bush Meat Trade Market Dynamics In Sarawak,　-　, In Progress, Co Supervisor

10. TEACHING
(Course name), (Code)

Principles of Economics, Mathematics for Economics, Mathematics for Economics, Transport Economics, Algebra and Calculus, History of Economics Thoughts, Statistics of Economics and Business, Statistics for Economics and Business, Mathematics for Economics, Business Mathematics, Statistics for Economics and Business, Microeconomics, IT Tools for Knowledge Workers, Managerial Economics, Business Mathematics, Statistics for Accounting, Transport Economics, Information Economics