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Article

Risk Management, Disaster Mitigation in the University Environment

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Abstract

Natural disasters present conditions that can lead to significant damage and pose a threat to the survival of society. Addressing and mitigating the risks associated with these disasters is imperative. One approach involves the implementation of risk management and disaster mitigation strategies. Despite the widespread acknowledgment of these measures, their application in the tertiary sector remains limited. This study focuses on Nadhlatul Ulama University in Yogyakarta, aligning with the emphasis on disaster mitigation at the university level as outlined in Minister of Education and Culture Regulation Number 33 of 2019, which pertains to the Implementation of Disaster-Safe Education Units. Utilizing a qualitative research design with descriptive methods, data collection involves structured interviews. Purposive sampling is employed to select informants capable of providing insights relevant to the study's focus. The research yields an initial model for a disaster-safe university, aiming to enhance understanding of school-based disaster risk reduction models and programs within communities vulnerable to potential disasters. The disaster risk reduction program is encapsulated in an initiative named "Disaster Class," which incorporates elements of Pentahelix disaster management.

Keywords: Risk Management; Disaster Mitigation; Mitigation Model in Collage.

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1. Introduction

University of Nahdlatul Ulama Yogyakarta, established on March 10, 2017, in the Special Region of Yogyakarta, operates under the auspices of PBNU. Currently, the university lacks a dedicated component focused on risk management and disaster mitigation within the campus environment and its vicinity. Therefore, the establishment of a risk management and disaster mitigation team at Nahdlatul Ulama University of Yogyakarta is a strategic initiative to fulfill the university's vision of becoming a "Leading Professional Hub University."

It is noteworthy that the University of Nahdlatul Ulama Yogyakarta Campus, situated in Gamping, Sleman Regency, was constructed using the State Budget (APBN) funds allocated by the President of the Republic of Indonesia, Mr. Joko Widodo. According to Pambudi et al. (2019), Buchari (2020), Wisner (2015), Sapir (2016), and Rahma (2018), disaster management is an essential activity that centers on analyzing the comprehension of disaster mitigation, particularly non-structural aspects, among the human resources of an institution.

This analysis serves as the foundation for developing an effective disaster mitigation model tailored to local conditions, fostering capabilities in development planning that encompass prevention, preparedness, disaster risk reduction, and post-disaster recovery capacity building in both learning and administrative processes within the campus environment.

In the Special Region of Yogyakarta, not all universities incorporate risk management and disaster mitigation in their tertiary environments. Interviews with employees from a disaster management institution in DIY revealed that, in this region, both public and private universities lack adequate risk management and disaster mitigation teams. This team typically comprises students, alumni, and the academic community, individuals cognizant of the importance of risk management and disaster mitigation within the university setting.

Per Minister of Education and Culture Regulation Number 33 of 2019, risk management in higher education involves identifying risks in educational units located in disaster-prone areas, organizing uncertainties into manageable risks, and integrating risk management into the continuing education curriculum. This integration aims to establish connections between risk management and disaster control management to effectively reduce disaster risk (Kasman, 2019; Power, 2007; Soin et al., 2014; Syreyshchikovaa et al., 2020).

The Special Region of Yogyakarta is inherently prone to disasters, evident in the four districts and one city within the area. The presence of an active volcano in Sleman district, coupled with the proximity to the sea in the southern region of Bantul District, reinforces the susceptibility to natural disasters. Additionally, Kulon Progo and Gunungkidul districts face potential disasters in the form of landslides and drought during the summer. Meanwhile, in the city of Yogyakarta, natural disasters such as fallen trees and flooding due to water discharge are prevalent. Heavy rainfall not only triggers natural disasters but also increases the risk of non-natural disasters, particularly fires, occurring in the four districts and one city. Incident report data from the Yogyakarta Special Region Regional Disaster Management Agency substantiates the frequency of reported disasters almost every month.

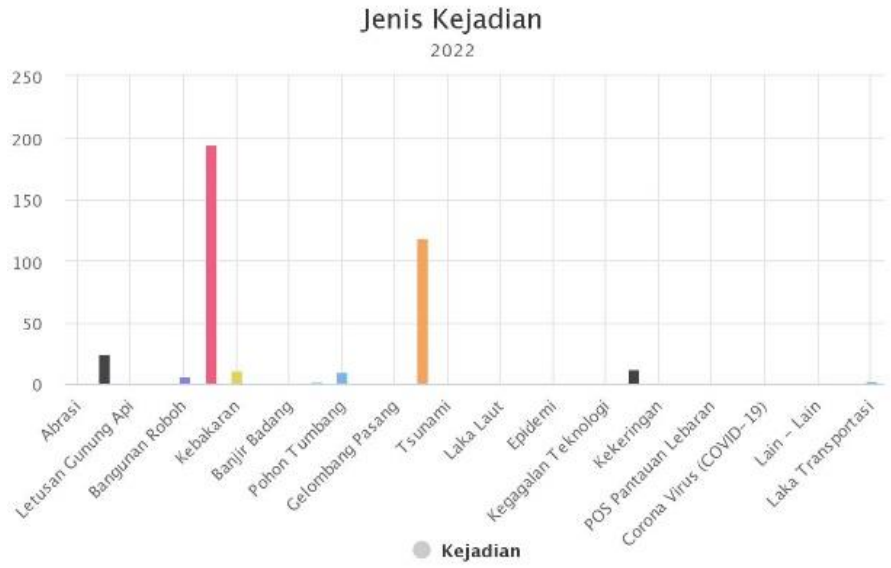

Figure 1. Incident Report Type of Event
Source: https://pamor.jogjaprov.go.id/statistik_kejadian

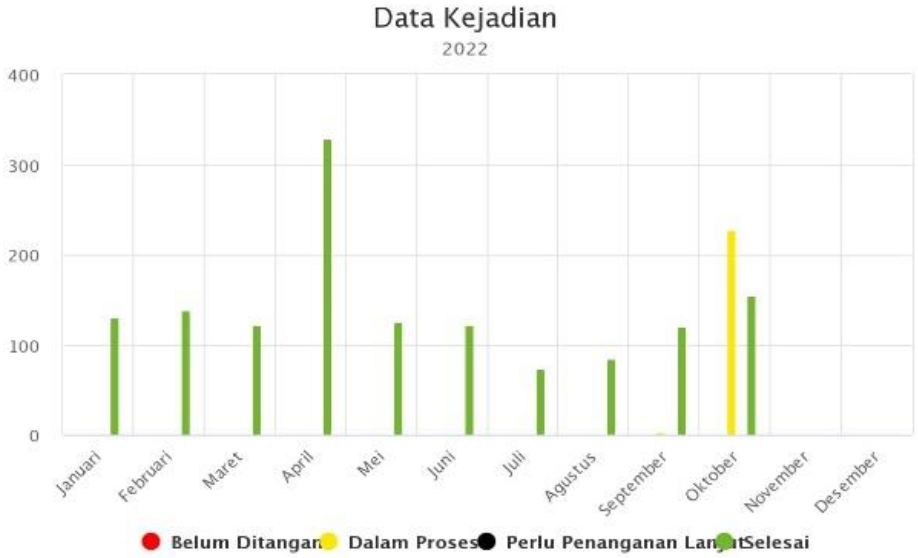

Figure 2. Incident Report Type of Event Data
Source: https://pamor.jogjaprov.go.id/statistik_kejadian

Based on Law No. 24 of 2007, article (1) explains that disaster mitigation is an effort aimed at reducing disaster risk, either through physical development or increasing human resources' ability to face disasters. Meanwhile, based on the regulation of the head of the National Disaster Management Agency (BNPB) no. 4 of 2008, it is explained that mitigation is an activity that is classified into structural and non-structural in the form of regulations, education, and counseling.

Disaster mitigation is important in universities. This is shown in Permendikbud number 33 of 2019. The document focuses on implementing disaster-safe Education Units. In paragraph 3 of the article, there is a program called SPAB. The Disaster Safe Education Unit Program helps schools prevent and handle disasters. The goal is to ensure that teaching and learning activities can continue safely. This research analyzes risk management and disaster mitigation in a university environment. The research question is how to apply Risk Management, Disaster Mitigation in a University Environment. So, the objective of this research is to create a model for the University of Nahdlatul Ulama Yogyakarta.

2. Theoretical Framework & Grand Theory

2.1. Risk

Risk, as per the definition in Law No. 24 of 2007, Article (1), is an inherent aspect of activities conducted by organizations or companies. It emerges from the uncertainty associated with an event and its potential material impact on organizational objectives. Various factors, including environmental elements, contribute to the uncertainty faced by organizations, leading to potential losses. Thus, risk is characterized as a combination of the probability of an adverse event occurring due to uncertain and undesirable future events (Selim and McNamee, 1999; Ponda and Fatma, 2019).

2.2. Mitigation

Disaster mitigation, the term used to describe actions aimed at reducing the impact of disasters, is crucial in areas with varying levels of vulnerability. Despite not being prioritized in development, mitigation plays a significant role in the reformulation of policies, necessitating proactive planning and implementation to reduce risks associated with natural and human-made hazards. This comprehensive approach involves spatial management, training to enhance community capacity, knowledge, and attitude development, emergency planning, and resource mobilization (Faturahman, 2018; Faturahman, 2017; Noor, 2014; Humaedi, 2016; Hermon, 2015). Law No. 24 of 2007 categorizes mitigation into two forms:

a. Structural Mitigation: Involves infrastructure development to minimize impacts and employs technological approaches. This includes activities such as compiling a database on potential landslide hazard areas and establishing an early warning system.

b. Non-Structural Mitigation: Encompasses spatial management and training to enhance community capacity. Key components include increasing community capacity through knowledge and attitude development, emergency planning, and resource mobilization.

2.3. Disaster Countermeasures Management

According to Law Number 24 of 2007 on Disaster Countermeasures Management, a disaster is an event or series of events that threaten and disrupt people's lives and livelihoods. These events can be caused by natural, non-natural, or human factors, resulting in human casualties, environmental damage, property loss, and psychological impacts.

2.4. Disaster Countermeasures Management

Disaster management, as defined by Nurjanah (2012; Oktari et al., 2020; Achmad, 2023) is a comprehensive science of management knowledge practice that studies disasters and related aspects, particularly disaster risks and strategies for risk avoidance. This dynamic process involves traditional management functions such as planning, organizing, actuating, and controlling (Oktari et al., 2020). The implementation of disaster management encompasses a series of efforts, including the establishment of development policies for areas at risk of disasters, disaster prevention activities, emergency response, rehabilitation, and reconstruction (PP 21/2008).

2.5. Collage

According to Law No. 20 of 2003 on the National Education System, higher education is defined as the educational level following secondary education, encompassing diploma, bachelor, master, specialist, and doctoral programs organized by universities. Government Regulation No. 60 of 1999 on Higher Education, in Chapter 1, General Provisions, Article (1) paragraph 2, clarifies that a university is an educational unit that offers higher education. Moreover, in Chapter III regarding the Implementation of Higher Education, Article (3) paragraph 1 outlines the responsibility of higher education institutions, which includes providing higher education, conducting research, and offering community service.

3. Literature Review

The research conducted by the author is titled "Risk Management and Disaster Mitigation in the Higher Education Environment." Similar themes found in prior studies are highlighted below:

In a research article by Pambudi et al. (2019) titled "Analysis of Understanding of UAD Human Resources in Non-Structural Disaster Mitigation Efforts," the authors delve into the management phenomenon of the disaster mitigation system within Ahmad Dahlan University (UAD) campus. The study reveals activities aimed at preparing human resources for both students and the academic community. However, these efforts have not been seamlessly integrated into the agreed-upon disaster management reference framework. The research underscores the need for UAD to develop an effective disaster mitigation model to create a resilient and well-prepared campus. Unlike the aforementioned study, the author's research focuses on assessing the influence of UAD's entire community and students on disaster risk reduction efforts within the campus environment. The study explores the level of understanding among UAD's human resources regarding potential disaster threats, evacuation route signs, participation in disaster training and socialization, disaster simulations, understanding safety briefings, and the integration of disaster curriculum in lectures.

In a separate study by Buchari (2020) titled "Disaster Mitigation Management with Community Institutions in Disaster-Prone Areas, Garut Regency, Indonesia," it is explained that the National Disaster Management Agency (BNPB) has developed a strategy for establishing resilient villages (Destana) through community-based disaster risk reduction (PRBBK). The selected villages/subdistricts aim to enhance adaptive capacity and readiness to overcome and recover from disaster threats. To achieve this, active participation from all stakeholders, including Village/Subdistrict Officials and the Community, is essential. Furthermore, communities are equipped with a Community-Based Early Warning System,

Contingency Plans, and evacuation routes based on their knowledge of the local environment.

This research aligns with disaster management theory, defined as a planned process executed through three stages (Soehatman, 2010): pre-disaster (preparedness, mitigation, and early warning), during a disaster/emergency response, and post-disaster (rehabilitation and reconstruction).

4. Research Method

This study employs qualitative research methods, aiming to comprehend social phenomena from the participant's viewpoint to understand and explore their views and experiences to obtain information or data. required, as articulated by Sukmadinata (2005; Amelia et al.,2023). Qualitative research investigates participant perspectives using diverse strategies, including direct observation, participant observation, in-depth interviews, and document analysis, complemented by techniques such as photography and recordings.

Additionally, descriptive research methods are utilized with to illustrate existing phenomena, both natural and human-engineered to issue solving. This involves examining activity forms, characteristics, changes, relationships, similarities, and differences with other phenomena (Sukmadinata, 2005; Achmad, 2023). The research focuses on two objects: the University of Nahdlatul Ulama Lowanu campus (UNUYO Lowanu) and the Gamping campus (UNUYO Gamping).

Data collection techniques are crucial in research, and in this study, structured interview techniques based on interview guidelines that have been prepared beforehand to get the information needed, as outlined by Sugiyono (2012; Jaya, 2020), are employed. Structured interviews are chosen when the researcher possesses clear expectations about the information to be obtained. This method involves direct questioning and responses with the sources, contrasting with the questionnaire strategy where respondents react to a set of written statements.

The sampling technique employed is purposive sampling, defined by Lenaini (2021) as a non-random technique where the researcher selects sample citations based on unique identifiers relevant to the research objectives. The criteria for selection in this research are 1) knowledge about risk management and disaster mitigation methods, 2) familiarity with the history of the founding of Yogyakarta Nahdlatul Ulama University, and 3) possession of information essential for data collection regarding building size, facilities, and equipment.

Following these criteria, two sources are identified for this study: a representative from the leadership of Nahdlatul Ulama University Yogyakarta and an employee of Nahdlatul Ulama University Yogyakarta. Primary data sources include information gathered through documentation, observation, interviews, and questionnaires from organizations or institutions deemed relevant to the research objectives (Sinaga et al., 2020).

This research draws indicators from the flood disaster management training disaster management module (PUPR, 2017) based on the following indicators: (list the indicators).

Table 1. Descriptive Statistic

No.	Research Indicators	Questions List
1	Risk Identification	Regarding activities that have been carried out by the university regarding risk identification and assessing the vulnerability of human resources at the university to analyze risks
2	Risk Assessment	Discusses the scope of risk assessment at universities
3	Risk Evaluation	Ask about checking the availability of tools and equipment at the university
4	Prevention	What are the university's efforts to prevent the risks from becoming worse
5	Mitigation	Questioning the university's method of identifying the situation and the availability of an "Emergency Response Team" that is ready when a disaster occurs
6	Risk Redirection	How does the University transfer risk to the 3rd part
7	Acceptance Risk	How the University decides to accept the consequences and possible risks that occur

5. Result

According to Resource Person 1, disaster risk management involves the interconnected aspects of risk assessment and management. Risk assessment encompasses the identification, assessment, and evaluation of risks, followed by risk management, which includes prevention, mitigation, transfer, and acceptance of risks.

Risk identification entails determining the priority scale for risk prevention efforts, such as initially enhancing human resource (HR) governance and establishing a list of service operation standards (SOP) that need development. However, at present, UNU Yogyakarta has not conducted a risk assessment in the campus environment.

Risk evaluation is subsequently linked to risk management. Based on the obtained data, the overall risk evaluation at UNU Yogyakarta is unfavorable. Critical observations reveal deficiencies in physical infrastructure strategy, absence of evacuation route instructions or protection mechanisms for campus residents during disasters, and suboptimal human resources to handle risks. Despite limited human resources and competing priorities, disaster mitigation is not overlooked. In terms of disaster prevention, the university has allocated a budget and comprehensively interpreted risks, involving the entire academic community. The establishment of a consultation clinic covering psychological health and daily problems is also intended for the broader community.

Mitigation efforts by the university include the formulation of disaster mitigation strategies to be implemented in new buildings. However, there is no designated location point or dedicated personnel in charge of disaster risk mapping, and a specific disaster risk anticipation program is lacking.

Based on the presented data, the need for routine and periodic training in disaster mitigation becomes apparent. In terms of risk transfer, UNU Yogyakarta aims to establish connections with the police, NU-affiliated Banser, health workers, and fatayat, to achieve comprehensive risk mitigation. Disaster risk acceptance is characterized by a conscious and broad interpretation of risk assessment. Efforts to address this involve forming a team dedicated to the entire process, from preparation to implementation, especially in the forthcoming new building, with the implementation of the most effective and efficient strategy.

Resource Person 2 highlights two approaches to risk identification. Firstly, by reviewing documents related to potential disasters in the relevant environment over the last two decades, covering threats leading to material loss, damage, or casualties. Secondly, utilizing the "INA-Risk" application accessible via mobile phones, which, with user permission, provides information on potential disasters and threat levels in the vicinity. The application also offers recommendations for treatment or preventive measures.

Drawing upon the available data, the assessment of risks in the environment unfolds over some time. This involves considering frequently occurring threats, the probability of risk incidents, and the frequency or duration of these occurrences. Through this comprehensive approach, the evaluation of risk levels becomes feasible.

Risk evaluation, viewed through the lens of four crucial elements—namely vulnerability, capacity, risk, and impact—employs the Pentagon assets as its foundation. This review encompasses human, socio-cultural, economic, infrastructure, and environmental dimensions, elucidating the readiness of individuals in the environment. This readiness spans an understanding of disasters based on socio-cultural conditions, economic preparedness to finance needs related to disaster risk reduction, the suitability of infrastructure in line with risk assessment, and the environmental conditions incorporating available public facilities.

Risk prevention, an essential step, involves enhancing existing capacity to reduce vulnerability. This preventative measure requires proactive consideration of emerging vulnerabilities, facilitating sustained socialization and simulations. The guiding principle is the simultaneous reduction of vulnerabilities and increases in capacity. For instance, universities can enhance human resource capacity, leveraging the campus community's clear understanding and paradigm regarding disaster risk prevention. This involves recognizing and analyzing existing threats to formulate action plans based on identified needs.

Examining each of the three identified risks in the area is imperative to avoid conflicts in risk reduction efforts. Building capacity, a recommended approach, enables the prediction of potential threats by fulfilling specific requirements through the formation of a disaster-ready team comprising employees, students, and lecturers. Even campus residents not directly involved in document creation must participate in subsequent actions, such as socialization or simulations, to anticipate threats and minimize material and casualty losses.

Risk transfer necessitates forging relationships with disaster stakeholders, including governmental bodies, universities, the community, and the media, fostering collaborations with relevant entities such as BPBD and health services. This approach rejects the notion of acceptable risk in Risk Management, acknowledging that risks entail both material and life losses.

In summary, disaster risk management in higher education involves the identification, evaluation, and reduction of potential risks within the campus environment. Risk identification incorporates reviewing potential past disasters and utilizing the INA-Risk application for preventive recommendations. Risk assessment determines the frequency and magnitude of identified risks. Risk evaluation considers elements like vulnerability, capacity, risk, and impact. Risk prevention involves enhancing HR governance, creating SOPs, and engaging the academic community in decision-making. Mitigation efforts include developing disaster strategies and establishing consultation clinics for psychological and daily health issues. Regular training is essential to bolster preparedness for facing disaster risks. Lastly, Pentagon assets underpin risk evaluation by assessing human, economic, infrastructure, socio-cultural, and environmental readiness. Risk transfer seeks collaboration with relevant stakeholders, while risk acceptance acknowledges unacceptable risks resulting in losses.

6. Discussion

According to Indonesia (2011), schools hold a pivotal role in enhancing community resilience within the context of disaster management efforts in the country. Schools, as educational institutions, bear the responsibility of providing conscious and planned education to cultivate a learning environment where students actively develop their potential in religious spirituality, self-control, personality, intelligence, noble morals, and necessary skills for the benefit of society, the nation, and the state, including in times of disasters.

According to PUPR (2017), disaster risk management encompasses seven essential components: risk identification, risk assessment, risk evaluation, risk prevention, risk mitigation, risk transfer, and risk acceptance. The initial stage, Disaster Risk Identification, involves determining the factors influencing existing risks. This can be achieved by examining pertinent documents or utilizing the INA-Risk application. Subsequently, Risk Assessment endeavors to quantify the magnitude of potential risks, describing the expected risk levels. Concurrently, Risk Evaluation aims to establish the priority scale of risks, facilitating the formulation of follow-up plans.

Risk prevention is defined as a sequence of actions taken as a preemptive effort to reduce or eliminate the risk of disasters. Risk Mitigation comprises actions to decrease existing risks, encompassing physical improvements, facility enhancements, heightened human resource awareness, and the establishment of preparedness measures for risks. Collaborating with specific stakeholders represents a pertinent strategy for educational institutions engaging in risk transfer activities, aimed at minimizing both material and human casualties. Conversely, risk acceptance involves acknowledging risks that are deemed unacceptable due to resulting losses; fundamentally, institutions aim to avoid experiences that lead to losses.

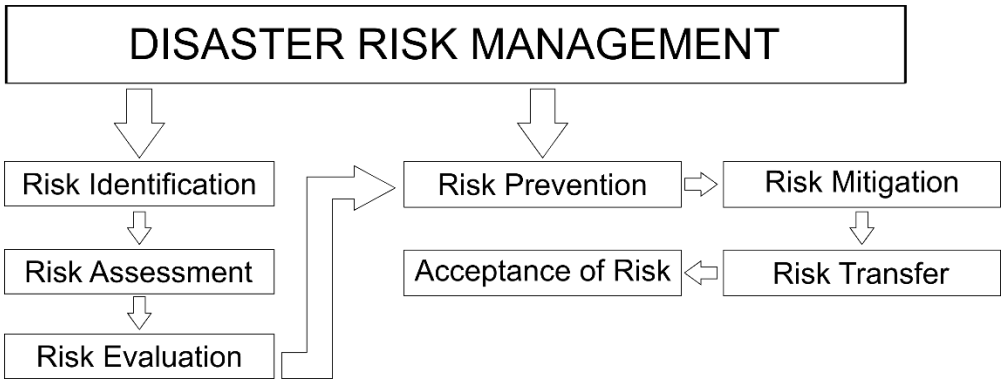

Figure 3. Disaster Risk Management Model

The visual depiction above illustrates the Disaster Risk Management Model, defined as follows: Risk identification marks the inaugural stage in analyzing potential risks within one's living environment. Subsequently, a comprehensive risk assessment is conducted, producing evaluated results that inform the formulation of contingency plans. These plans are instrumental in preparing for various risk management strategies, including risk prevention, risk mitigation, risk transfer, and risk acceptance. The model thus provides a systematic framework for addressing and navigating the complexities associated with potential risks.

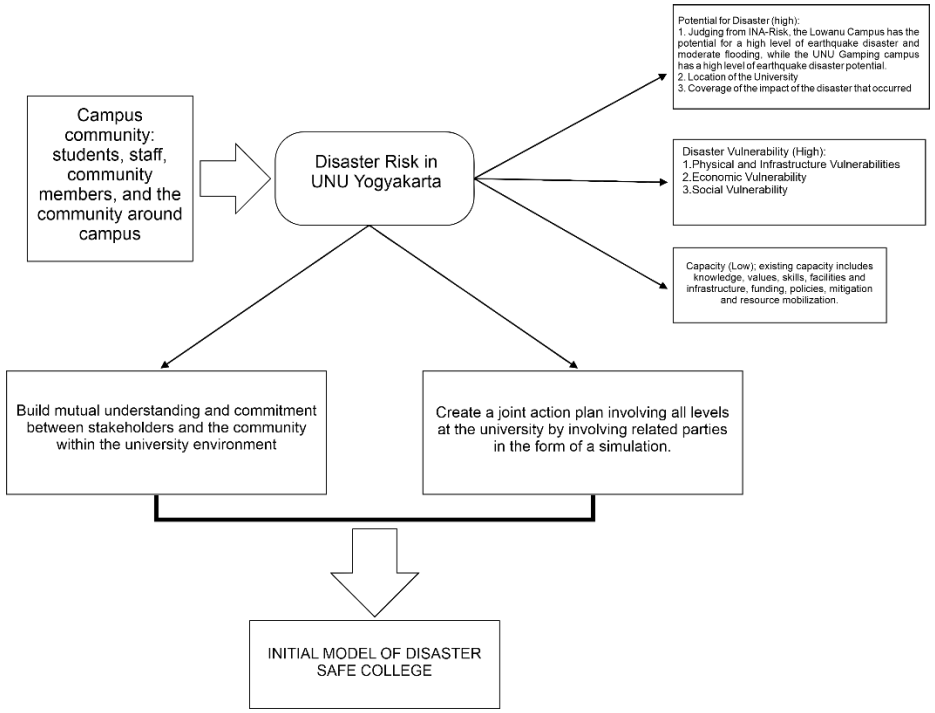

Figure 4. The initial model of a disaster-safe college

The depicted scenario portrays individuals within the UNU Yogyakarta campus environment who possess awareness and knowledge regarding potential disaster risks in that particular setting. The INA-Risk application, facilitated by BNPB, serves as one avenue for discerning these potential risks. For instance, the UNU Nahdlatul Ulama Yogyakarta (UNUYO) campus in Lownau faces a high potential for earthquake disasters and moderate flooding, while the UNUYO in Gamping encounters a high earthquake disaster risk potential. The assessment extends further to scrutinize the coverage and potential impacts of these identified risks, compelling the university to undertake measures to prevent significant losses.

Analyzing vulnerability reveals a high susceptibility, particularly for the Iowa campus, where infrastructure remains incomplete compared to the UNUYO Gamping, equipped with information signs for disaster events. Meanwhile, the overall capacity of UNU Yogyakarta is categorized as low, given insufficient knowledge, values, skills, facilities, infrastructure, funding, policies, mitigation strategies, and resource mobilization within the environment.

To address these challenges, the University of Nahdlatul Ulama Yogyakarta must foster mutual understanding and commitment among stakeholders and the university community. This strategic approach aims to augment existing capacities because, in principle, complete threat elimination may be impractical, but optimizing existing capacities can effectively minimize the impact of identified risks. Moreover, UNU Yogyakarta can develop a Joint Action Plan involving all university levels and engage relevant stakeholders through simulations. This proactive step ensures that in the event of a risk occurrence, the university community is well-versed in the assigned responsibilities. Subsequently, this concerted effort contributes to the establishment of an initial model for a disaster-safe higher education institution.

7. Conclusion

The initial assessment of the research location reveals that the disaster risk reduction model supporting the creation of a Disaster Safe Education Unit at UNU Yogyakarta is not yet optimal due to insufficient human resources, compounded by the university's recent establishment in 2017. The Disaster Risk Reduction Model, specifically implemented through the Student Activity Unit-Based Preparedness program, undergoes consultation and evaluation by experts. The researchers will incorporate expert input to refine the model, aiming to achieve the final model for Risk Reduction through University-Based Preparedness. Efforts to mitigate disaster risks involve enhancing university-based preparedness, engaging all segments of the university community, and collaborating with various institutions focused on disaster risk reduction. A specific initiative in this regard is the "Disaster Class" program, incorporating elements of PENTAHELIX disaster management. The "Disaster Class" program concentrates on augmenting community capacity in disaster response, aligning with the preparedness aspect in the disaster risk reduction stage. Its application can feasibly integrate local cultural elements, contemporary technology, and active involvement from the Nahdliyyin community. The difference in this study with previous researchers lies in the pentahelix stakeholder in disaster that involves the Government, Universities, Companies, Communities, and the Media (GUCCM). in

previous researchers, there is still no research that mentions the pentahelix stakeholder disaster.

8. Recommendation

Based on the findings of this study, it is recommended that policies consider implementing a Disaster Mitigation Risk Management policy in the Higher Education Environment in order to improve Security, Comfort, and Safety in teaching and learning activities in the university environment, involved by the pentahelix of disaster stakeholders namely Government, Universities, Companies, Communities, and Media (GUCCM).

9. Acknowledge

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References

Achmad, W. (2023). The Effectiveness of Earthquake Disaster Management Policy in Indonesia. *Ganaya: Jurnal Ilmu Sosial dan Humaniora*, 6(2), 367-377.

Alfansyur, A., & Mariyani. (2020). Seni Mengelola Data: Penerapan Triangulasi Teknik, Sumber Dan Waktu Pada Penelitian Pendidikan Sosial. . *Historis: Jurnal Kajian, Penelitian dan Pengembangan Pendidikan Sejarah, 5(2)*, 146-150.

Amelia, A., Fadhillah, I., Pangestika, R., Charunnisa, Z., & Nur Ilham, R. (2023). Analysis of Service Quality in an Effort to Improve Member Satisfaction (Case Study on PT. PIM Sharia Employee Cooperatives). *International Journal of Social Science, Educational, Economics, Agriculture Research and Technology*, 2(2), 1191-1197.

Buchari, R. A. (2020). Manajemen Mitigasi Bencana dengan Kelembagaan Masyarakat di Daerah Rawan Bencana Kabupaten Garut Indonesia. *Jurnal pengabdian Masyarakat Pembangunan Sosial, Desa dan Masyarakat*, 1-10.

Faturahman, B. M. (2017). Reformasi Administrasi Dalam Manajemen Bencana. *Mimbar Yustitia*, 185-201.

Faturahman, B. M. (2018). Konseptualisasi Mitigasi Bencana Melalui Perspektif Kebijakan Publik. *Jurnal Ilmu Administrasi Publik*, 121-134.

Guha-Sapir, D., Hoyois, P., Wallemacq, P., & Below, R. (2016). *Annual Disaster Statistical Review 2016: The Numbers and Trends, Center For Research on The Epidemiology.*

Hermon, D. (2015). Estimate of Changes in Carbon Stocks Based on Land Cover. *Forum Geografi: Indonesian Journal of Spatial and Regional Analysis*, 187-196.

Humaedi, M. A. (2016). *Etnografi Bencana; Menakar Peran Para Pemimpin Lokal dalam Pengurangan Resiko Bencana.* Yogyakarta: LKis.

Indonesia, R. (2007). Penanggulangan Bencana. *Undang Undang Republik Indonesia*, No 24 Pasal 1 ayat 9.

Indonesia, K. P. B. (2011). Laporan Hasil Kerja Gugus Tugas Konsorsium Pendidikan Bencana Dalam Proses Review Strategi Nasional Pengarustamaan Pengurangan Risiko Bencana Dalam Sistem Pendidikan Nasional. *Jakarta: JTIC*.

Indonesia, R. (2019). Penyelenggaran Program Satuan Pendidikan Aman Bencana. *Peraturan Menteri Pendidikan dan Kebudayaan RI*, pasal 1 ayat 3.

Jaya, I.M Laut Mertha.2020. *Metode Penelitian Kuantitatif dan Kualitatif: Teori, Penerapan, Riset Nyata*. Yogyakarta: QUADRANT

Kasman, R. (2019). Bimbingan Satuan Pendidikan Aman Bencana Bagi Guru Dan Tenaga Kependidikan Pasca Bencana Di Kota Palu, Sigi Dan Donggala. *Jurnal Obor Penmas: Pendidikan Luar Sekolah*, 67-77.

Lenaini, I. (2021). Teknik pengambilan sampel prposive dan snowball sampling. *Historis : Jurnal Kajian, Penelitian & Pengembangan Pendidikan Sejara*, 33-39.

Noor, D. (2014). *Pengantar Mitigasi Bencana Geologi*. Deepublish.

Nurbaiti, Y., & Napitupulu, R. H. (2020). Pengadministrasian Job Description Karyawan Menggunakan Aplikasi HCIS (Human Capital nformation System) Di Perum Perumnas. *Jurnal Mahasiswa Bina Insani*, 73-85.

Nurjanah, R. Sugiharto, Dede Kuswanda, Siswanto BP dan Adikoesoemo. 2012. *Manajemen Bencana*. Bandung: Alfabeta.

Oktari, R. S., Munadi, K., Idroes, R., & Sofyan, H. (2020). Knowledge management practices in disaster management: Systematic review. International *Journal of Disaster Risk Reduction*, 51, 101881.

Pambudi, D. I., Fatmawati, L., & Purwadi. (2019). Analisis Pemahaman Sdm Uad Dalam Upaya Mitigasi Bencana . *Applicable Innovation of Engineering and Science Research (AVoER)*, 848-851.

Penanggulangan Benca, B. N. (2008). Pedoman Penyusunan Rencana Penanggulangan Bencana. *Peraturan Kepala BNPB*, No 4 Bab 1 Poin D ayat 6.

Ponda, H., & Fatma, N. F. (2019). Identifikasi Bahaya, Penilaian Dan Pengendalian Risiko Keselamatan Dan Kesehatan Kerja (K3) Pada Departemen Foundry PT. Sicamindo. *Jurnal Teknik Industri Heuristic*, 62-74.

Power, M. (2007). *Organized Uncertainty: Designing a World of Risk Management.* USA: Oxford University Press.

PUPR, K. (2017). Modul Manajemen Penanggulangan Bencana. Dalam P. P. Konstruksi, *Modul Manajemen Penanggulangan Bencana* (hal. 10). Jakarta: Kemenentrian PUPR.

Rahma, A. (2018). Implementasi Program Pengurangan Risiko Bencana. *Jurnal Varidika*, 1-11.

Selim, G., & McNamee, D. (1999). Risk Management and Internal Auditing: What are the Essential Building Blocks for a Successful Paradigm Change? *International Journal of Auditing*, 147-155.

Sinaga, A., Alam, A. P., Daud, A., Br.Barus, R. A., & Amri, S. (2021). Analisis Peningkatan Kinerja Karyawan Melalui Pelatihan dan Pengembangan pada Bank Muamalat Cabang Medan Balai Kota. *El-Mal: Jurnal Kajian Ekonomi & Bisnis Islam*, 233-251.

Soehatman, R. (2010). Manajemen Bencana. *Jakarta: Dian Rakyat*.

Soin, K., Huber, C., & Wheatley, S. (2014). Management Control and Uncertainty: Risk Management in Universities. *Management control and uncertainty*, 178-192.

Sugiyono. (2012). *Metode Penelitian Pendidikan: Pendekatan kuantitatif, kualitatif.* Bandung: Alfabeta.

Sukmadinata. (2005). *Metode Penelitian.* Bandung: PT remaja rosdakarya.

Syreyshchikova, N. V., Pimenov, D. Y., Mikolajczyk, T., & Moldovan, L. (2020). Development of a risk management technique in strategic planning of universities. Case study of a Polytechnical Institute. *Procedia Manufacturing*, 256-262.

Syreyshchikovaa, N. V., Pimenov, D. Y., Mikolajczykb, T., & Moldovanc, L. (2020). Development of a Risk Management Technique in Strategic Planning of Universities. Case study of a Polytechnical Institute. *Procedia Manufacturing Vol 46*, 256–262.

Wijaya, H. (2019). *Analisis Data Kualitatif: Sebuah Tinjauan Teori & Praktik.* Sekolah Tinggi Theologia Jaffray.

Wisner, B. (2015). Natural Hazards, People's Vulnerability and Disasters. Journal of Homeland Security and Emergency.