Journal of Contemporary Issues in Business and Government Vol. 27, No. 1, 2021
P-ISSN: 2204-1990; E-ISSN: 1323-6903
https://cibg.org.au/

The effective use of technology and digitalization in Disaster Management in Malaysia.

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Abstract: The study will review the literature about disaster management in the Scopus database in 10 years from 2009 to 2018. A review will be done systematically to find out the direction of published and highly cited literature in the policymaking and problem solving after and post-natural disaster in Malaysia. After the complete assessment and filtration of the sheet, only 52 studies are left for the further process. irrelevant literature is screen out and relevant research is analyzed for further process. flood management and landslides are widely discussed challenges and problems in Malaysia. But the flood hazard management in Malaysia is developing rapidly, although the country is a new industrial developed country. The growth and development of social pace, fast-growth political and economic changes and that also charging up the pace of physical and environmental changes. Landslides are also growing with the period in Malaysia and some parts of the country are victims near the residential areas during the monsoon period. It's alarming that the residential areas are in the potential risk of landslides and the highways in some parts of the mountain area of the country.

Keywords: Disaster management, flood management, Hazards, the global positioning system

1. INTRODUCTION

Natural disasters are not avoidable and difficult to control the damages completely, but the only possibility is minimizing the risk. Early warning strategies prepare and implement development plans to resist and cope with the disasters post and after disaster reduction to the rehabilitation process (Billa, Shattri, Mahmud, & Ghazali, 2006). Disaster management is a big challenge for less developed and high populated countries. Malaysian government focuses the disaster management after the building collapsed in 1997, the government planned the disaster management structure after developing the Mechanism on National Disaster relief and Management (Radziwill, 2017). The main agenda was to play vital roles in saving lives in emergency situations (Aini & Fakhru'l-Razi, 2009). Malaysia provides a study of disaster management in health care, those who work in the emergency and trauma department, even the number of growing disaster events over the years (Ahayalimudin & Osman, 2016). The United Nations International Strategy for Disaster Reduction (UNISDR

stress on hospitals and other healthcare centers to improve the disaster management training and staff for the occurrence of any emergency situation (Ahayalimudin & Osman, 2016). But Malaysia has serious problems with the flood in some parts of countries after the heavy rain over the years. Many damages are done due to floods and landslides for many years and the government contributed a huge level of resources to cope with the disaster. The geographical positioning of Malaysia lies in comparatively stable regions of natural disasters but is affected by floods, landslides, haze and some human-developed disasters (Chan, 2015). In last many years Malaysia faces many flood troubles due to heavy rains and climatic events, including EI Nino in 1997, La Nina in 2011 and 212 (floods) and thunderstorms every calendar year which causes wind damage, flash floods and landslides, monsoon rains also brings floods in Malaysia and haze that is causing the polluted air quality, heat and drought (Hisada, Belyaev, & Kunii, 2002; Qureshi et al., 2019).

Disaster in Malaysia floods is annually bringing disasters and frequently happens in the country. Highest damages have done during the year of 1996 floods brought by a tropical storm and causes 241 precious lives and claimed losses of USD 97.8 million infrastructure damages and also escalated the thousands of properties and houses (Birnboim & Dekel, 2003). Losses are not limited to some years and on continuous basis floods and flash floods are occurs in Malaysia and damages the lives and financial losses in the infrastructure of the country (Chan, 2015). Tsunami floods are very much damaging in Malaysia and 54 deaths are claimed until now due to large scale tsunamis (Billa, Shattri, Rodzi Mahmud, & Halim Ghazali, 20017). For the development of a sustainable disaster management program, a complete and comprehensive strategy required for effective reduces the impact of natural disasters. In Malaysia, the disaster management program is in control of government level and policies and procedures are centered in the government departments (Khalid, Social, & 2015; Khan et al., 2020). a batter risk management system needs more technological and developed mechanisms to handle the emergency hours during natural disasters. Software applications are needed to apply for warning before the natural disasters and shifting of residents near about the emergency area is more vital at the policy level. Wireless sensors, drones, Internet communication devices, GPS & GIS technologies are adopted in the modern and developed parts of the world (Erdelj, Król, Networks, 2017). This study will review the literature over the years published in Malaysia on disaster management topics. How researchers contributed body of knowledge in disaster management.

The digital development of technology creates more safety precautions for indications of natural disasters. For measuring the disaster management indicators, it's very challenging of conceptual, technical and numerical perspectives for using the indicators. The measurement of indicators must be easily understandable, robust and transparent at the policy level, national and urban level (Carreño et al., 2007). Large scale natural disasters check the basic human efforts of survival through inflicting massive and unpredictable loss to human civilization and assets developed by humans. Different kind of natural disasters are defined by the literature geophysical (earthquake, tsunami, volcano, landslide, avalanche), hydrological (floods, debris flows, and flash-floods), meteorological (hurricane, sandstorm, heavy rainfall, and tropical storm) and climatological (extreme temperature, drought, wildfire) are reason to causes many lives with the material losses (Haworth & Bruce, 2015). Natural disasters are critical issues in every part of the world in both developing and developed parts. Human is battling against the natural disaster's wright after the creation of the universe, every era has new and dangerous consequences of natural disasters (Lee, Har,

Congress, & 2016; N Khan & Qureshi, 2020). The modern world is focusing more batter way to control the emergency situations and minimize the losses of natural disaster by various tools and technologies of information communication technologies of geographic information system (GIS) and global positioning system (GPS) are usually used for information sharing during the natural disaster situations and enhance the quality of communication (Hu & Kapucu, 2016). New developments like e-team, WebEOC and Share point are much easier applications and tools for the collection of circulating information in the quick time frame that is helpful for the emergency department to respond quickly to disaster control (Hu & Kapucu, 2016). Developed technologies are more helpful to assess the losses of the disaster and point out the more detailed and accurate information about the managing situation after disasters like floods, landslide, tsunami, and heavy rainfalls in some parts of the world. For successful emergency operations need all actors most know about the happening in the situation and what is happening next (Radziwill, 2017). Many technologies like drone applications, early warning systems, wireless sensor systems, and digital mediums are very much helpful during disaster and emergency situations (Nohman Khan & Qureshi, 2020).

In this study, we will review the literature about disaster management in the Scopus database in the last 10 years from 2009 to 2018. A review will be done systematically to find out the direction of published and highly cited literature in the policymaking and problem solving after and post-natural disaster in Malaysia. Researchers have mostly pointed out the disaster base activities which are able to geophysical disaster and climatically originated disasters to cop up with them. The past results and reports of Malaysia show the floods and thunderstorms are more dangerous natural disasters in the country and cause many human life losses and infrastructural damages over the years. The is also focusing to find the solutions and safety measures recommended for the policymakers and government disaster management department in Malaysia. The classification of the research will figure out the high number of areas, the past published studies were focused, and the study will give the direction for future researchers to explore the research in which corners needed. The focus of the study measures out the importance of published research contributions during the years 2019 to 2018.

2. LITERATURE REVIEW

Malaysia is a tropical rain forest country and heavy rains are continued throughout the year and floods are very common in some parts of the country. For the study, we analyze the web of science database literature to critically look upon the published literature in the last 10 years from 2009 to 2018. The main idea was to find the direction and central points of research during the years. Web of Science database is used to search with the keyword “Disaster management” and initially 43684 results were found.

For the more batter and accurate results, some filters are used and selected the country Malaysia in the database. The language option is also selected, and only the English language published paper was selected.

After the filter only 450 papers were shown by the web of science and process is further elaborated by limited the time period from 2009 to 2018, the results are 254 studies. The selection process also had the option of more filtrations like subject base studies but for comprehensive analysis, the study is not limited to some subjects. When 250 were selected from the database, the citation criteria are applied in the excel sheet and a minimum 10 times cited paper is selected for the study. although the most cited process is limited only on the 85

papers. So, the 85 studies are cited by the different other researchers for manuscripts. For further assessment and quality development of the study, the quality assessment process is adopted. Only articles are chosen for the study and review papers and conference papers are not selected. All papers are published and in-review and under publication studies are not elected for detail and quality maintain the process.

Quality Assessment

The last 85 studies with more than 10 times cited are closely observed in the excel sheets for analyzing the quality of the research. In the excel sheet further on check for the duplication and irrelevancy of the selected papers. The process is deeply observed and categorically checking the papers for quality measurement. After the complete checking of the sheet, only 52 studies are left for the further process. mostly studies are not relevant to the current study and some literature was published in the other country's perspective, so the irrelevant literature is screen out and relevant research is analyzed for further process. For the screening process, the abstract and findings of the research papers are read carefully to avoid duplication irrelevancy.

Eligibility and Inclusion Criteria

To make the process more relevant and optimum with the subject, irrelevant studies were removed from the excel sheet to ensure the process more detailed**.** Eligibility criteria were set for the study to cited by the 10 times and variables of the research most relevant to the Malaysian perspective. Every kind of duplication is cleared very carefully, and the screening process analyzes very consciously on the excel sheet. From the database, all the subjects are selected for the process and journals are also not limited to the inclusion criteria. The only published articles are included in the study and review papers and conference papers are excluded from the study.

Studies Included in Qualitative Synthesis

Final 52 studies from the year 209 to 2018 were screened on the excel sheets very deeply to maintain the quality criteria for the review. All the procedures are systematically done on the excel sheet to find out the most cited research papers and journal base list are also calculated.

For a batter review of the literature graphs of publications and journal is also shown. Analysis and quality process of systematic literature review (SLR) shown through the PRISMA statement templet, that is used to explain the overall process of selected and rejected articles for the study. PRISMA statement helps the researcher to analyze and improve the results of review papers.

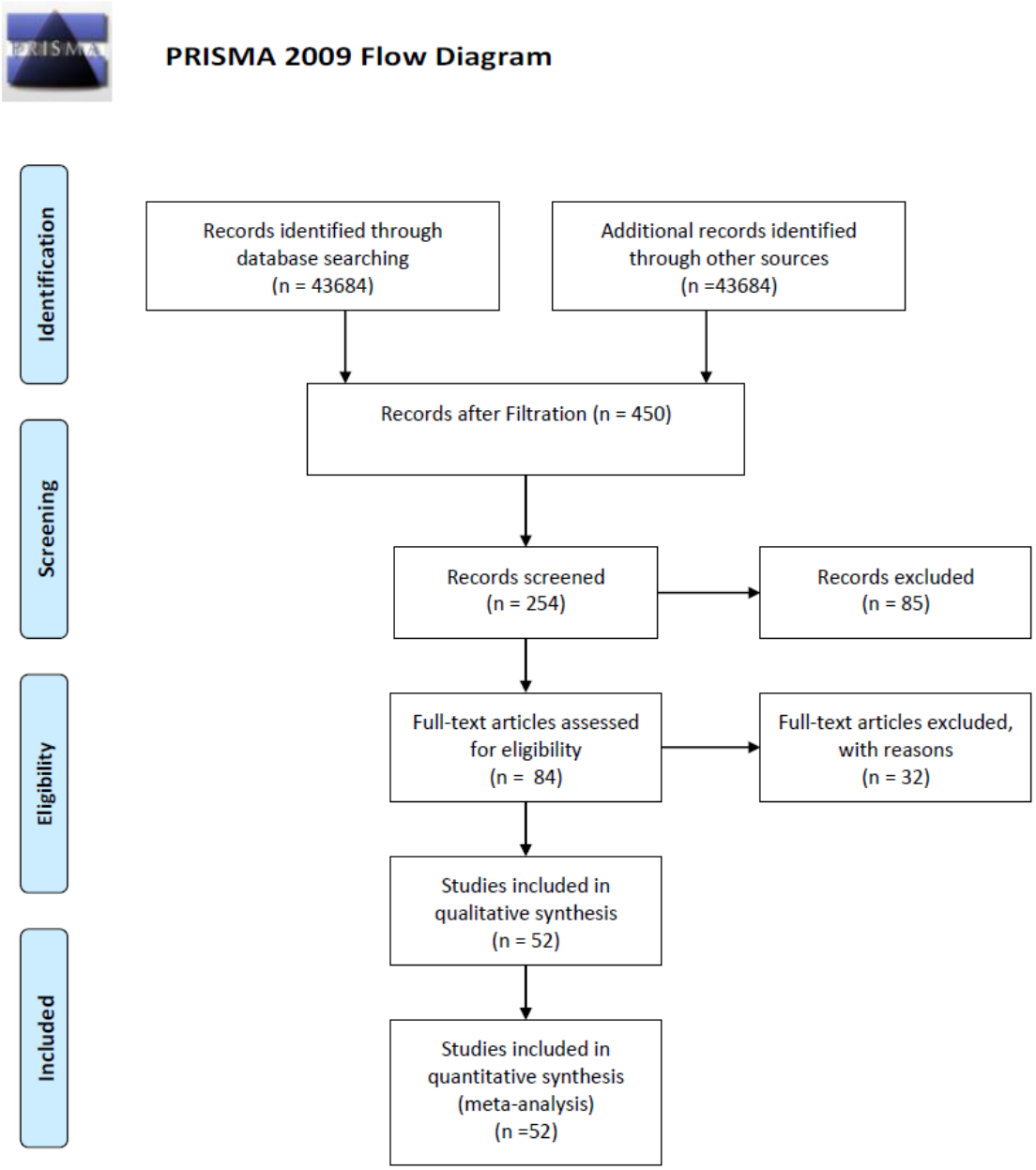
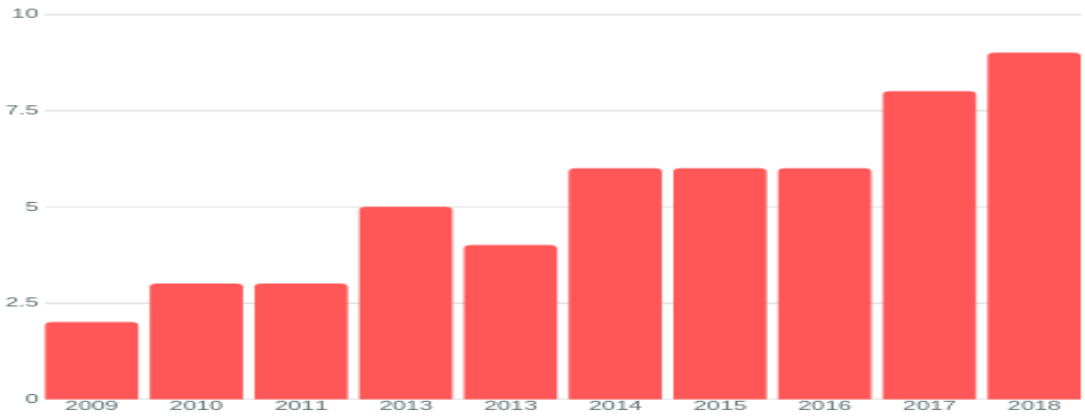


Figure 1.1 PRISMA statement 2009

Year Base Publications

The year-wise publications according to the most cited papers are shown in the diagram. The year 2009 is the beginning year selected for the review and 1 is on the eligibility criteria with more than 10 citations. The year 2013 is contributing 5 studies are have risen citations and the year 2014, 2015 and 2016 is are almost having the same 6 studies each year and selected for the screening process. Year base selection has shown us the actual numbers of papers selected from which year. From the year 2017 study selected 7 papers for the review and the year 2018 is the highest number with 9 studies for the assessment. The highest number of articles are selected from the year 2018 and 2017 with 19 articles each but the lowest number is 1 from the year 2009.



1.2

Publications year-wise Graph

Most Cited Publications

The most cited paper in the study is Ecological mitigation of hillslope instability: ten key issues facing researchers and practitioners that are cited by 86 times. Minimum citation criteria for the study is selected 5 times and the maximum is cited by 86 time. Soil erosion assessment and its correlation with landslide events using remote sensing data and GIS: a case study at Penang Island, Malaysia is the second highest cited study with 81 times. That is talks about the soil erosion problem in Malaysia. Figure 1.3 is showing the details of the highest time cited papers for the study.

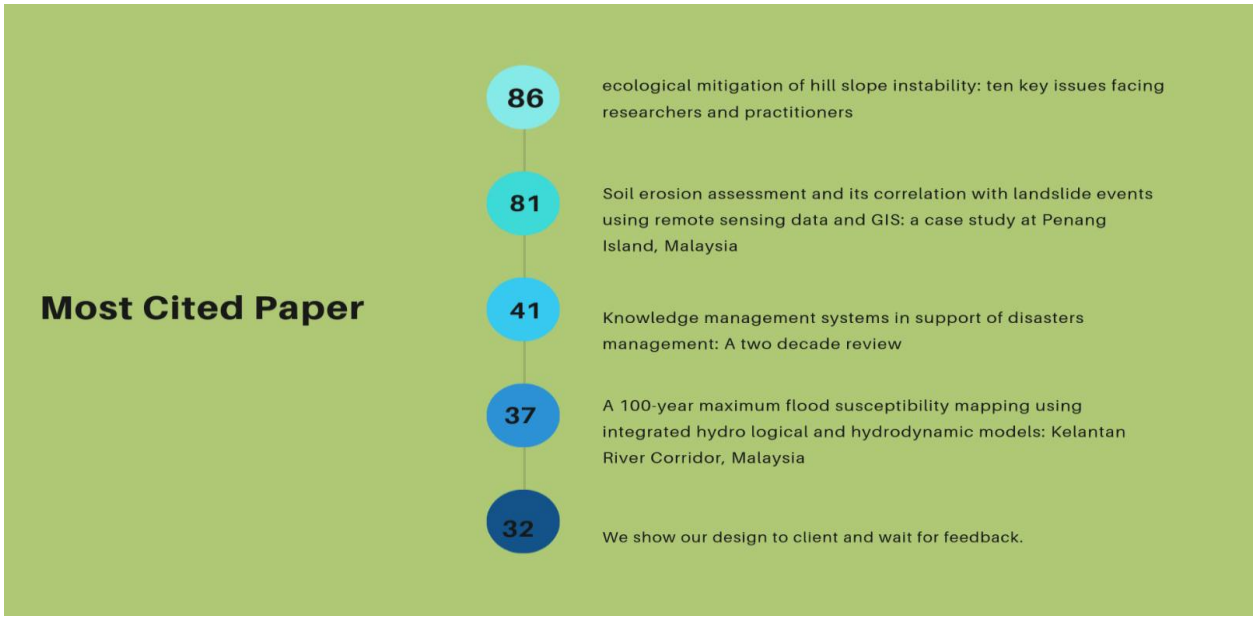


Figure 1.3 most cited papers

Journal Base Publications

The journal of hydrology has 3 articles for the study with a minimum 5-time citation report. The background of the studies is discussing disaster management issues and challenges in Malaysia. Another journal with 3 articles for the literature is selected for the study is the Landslides journal with three research papers. Figure 1.4 is showing the details of the journal with a maximum number of publications. water science and technology journal have 3 publications and ecological engineering contributed 2 studies for the review.

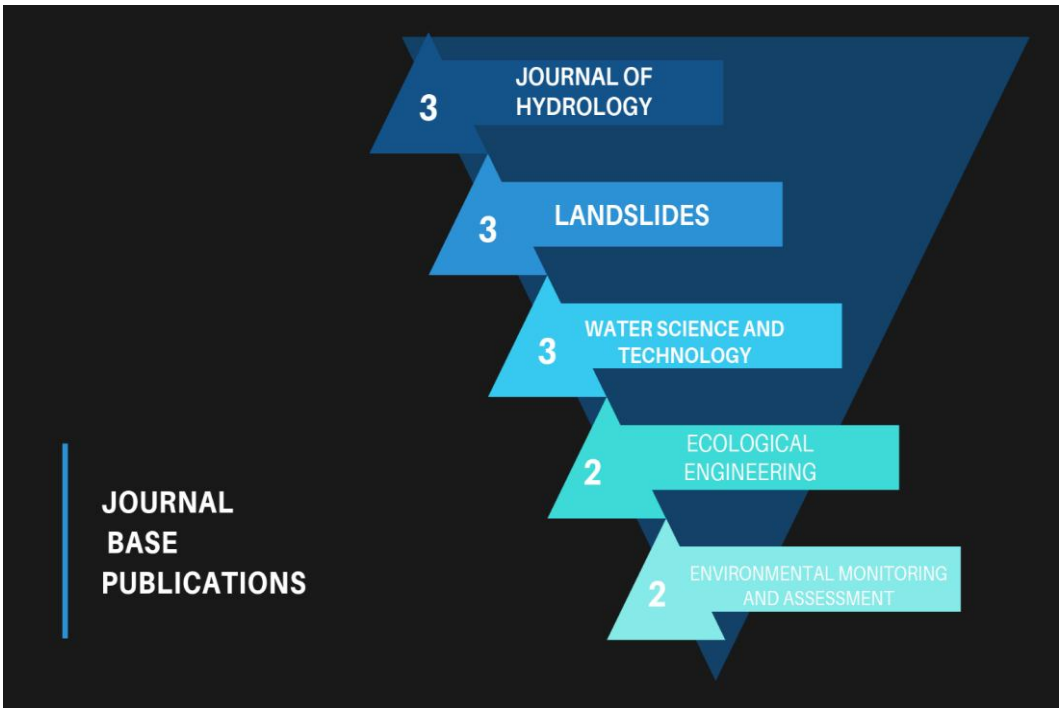


Figure 1.4 Journal base publications

Classification

The classification of literature is done according to excel sheets result, most cited papers from the last 10 years from 2009 to 2018 are transferred on the excel sheet from the Scopus database. The work is done, and variables are read accordingly and select the variables of studies. After that, all the variables are classified according to nature and similarity of literature worked done.

Floods

One of the very common problems of natural disasters in Malaysia is floods and losses and rescue activities cost MYR 1 billion every year. The affected area of floods is almost 328938 sq. km that is about 9% of Malaysia and 21% population residing 21% in these areas (Pradhan & Youssef, 2011). Malaysia's government is viewing the flood matter as high importance at the policy level (M. Othman et al., 2014a). In the Scopus derived studies discuss the matter more than 8 times with high cited paper. Our results about the flood management in Malaysia is discussed by the past researchers in detail. Othman, Ahmad, Suliman, Arshad, & Maidin, (2014) study COBIT principles to govern flood management explains flood management is a complex and disorder in nature. For managing a flood, very discipline coordination needs to be managing the losses and handling emergency situations.

the author in the study provides detail situations of floods and challenges to governance to covering the complex situations of the flood. He also suggested the information process for flood management and information related technology for flood management technology (Othman et al., 2014; M I Qureshi et al., 2017). The current flood management in Malaysia lacks a multi-disciplinary approach includes a well-balanced mixture of structural and no-structural measures. Malaysia after managing the 50 years of flood management, Malaysia is still subject to serve floods, Indeed Malaysia is never to be flood-free. Malaysia has a rich past of floods and learns many experiences from past management (Chan, 2015). Econometric Evidence on Forest Ecosystem Services: Deforestation and Flooding in Malaysia is a study and the author believes that floods are a very common problem in tropical areas around the globe, the ability of the tropical forest to mitigate floods debated from a long period of time (Jonkman, 2005). For the pre-disaster flood management, the development of forecasting the flood forecasting system is working in Malaysia that is in control of the irrigation department. The information model is known as liner transfer functional model and tank model to forecast the flood in flood-prone areas in the future (Tahir et al., 2016; Muhammad Imran Qureshi et al., 2016). Information from the model is used for the preparations of the future flood and convey massages o all near about areas to the rivers (Romali et al., 2015).

Table 1.1 classification of publications

Authors	**Variables**	**Findings**
(B Pradhan, 2017**,** M Othman, Ahmad, Suliman, 2013)	Floods	The successful production of a reliable and accurate flood inventory map confirmed the efficiency of the methodology
(Inan, Beydoun, & Pradhan, 2018, Nikku, 2013)	Disaster Management	presents compelling evidence of the soundness and the effectiveness of the overall approach to DM knowledge sharing.
(Chow, Yusop, & Toriman, 2013, Dominic, Aris, Sulaiman, & Tahir, 2016a)	Stormwater	For the residential catchment, the highest bacterial concentrations occurred during the early part of stormwater runoff with peak concentrations usually preceding the peak flow.
(Zareei, Taghizadeh, Budiarto, & Wan, 2011, Ahmed, Bakar, Channa, Khan, & Haseeb, 2017a)	Wireless Sensor Network	enhancement can significantly improve energy efficiency when there is a reasonable packet delivery rate.
(Pradhan et al., 2012)	soil erosion	soil erosion in these dynamic and rapid developments in Penang Island indicate the co-existence and balance of the ecosystem

Disaster Management

Literature from the last ten years from 2009 to 2018 second most classification discussed the Disaster management. Most of the researchers talk about disaster management techniques and strategies of coping with the flood base disasters. A study Development and validation of a Disaster Management Metamodel (DMM) is discussed about disaster management involves in decision making is very much complexity and involves in different sources of knowledge at different time, space and people (S. H. Othman et al., 2014). But S. H. Othman & Beydoun, (2013) explains disaster management as the claim that disaster management is involved with planning, response, the different phases of natural or manmade disaster, like mitigation, preparedness, and recovery. Disaster Management can also be defined as an effective organization, utilization, and direction in the presence of available resources in a given time period. Managers in the domain goal to minimize the potential loss and avoid hazards and assure prompt assistance to victims and achieve a sustainable recovery(Seneviratne et al., 2010).In Malaysia, Flood Disaster management is one of a very challenging job due to large scale floods over the years. Generally, Malaysia flood disaster management planning is based on four initial steps to rescue the risk. First is before the flood preparations include flood forecasting, after the potential forecasting of a flood than warnings are issued, and experts are preventing further problems. The third is responding to the emergency disaster and the last one is recovery response after the disaster stable (Tahir et al., 2016). Literature mainly focuses on flood disaster management in years 2009 to 2018, due to heavy scale floods are coping by the Malaysian government. Some studies brief that the flood disaster management in Malaysia is not sustainable, polices and mechanisms are needed to integrate for the floods management in Malaysia (Zawawi et al., 2018). For sustainable disaster management, it's very important the involvement of the private sector, NGOs and the public. All agencies' cooperation to perform the duties and responsibilities is important to determine the success and effectiveness of disaster management(Zawawi et al., 2015).

Stormwater

Stormwater is the third most variable in the literature discussed in the published studies from 2009 to 2018. Some regions of Malaysia facing the water shortage although having huge water resources in some parts. Water demand is increasing rapidly and trigger the options for an alternative resource for water supply. Rainwater harvesting and storage policy developed by the Malaysian government to fulfill the scarcity problem(K. E. Lee et al., 2016). Urban stormwater management in Malaysia was started in 2001 as a guideline to adapt and design to control stormwater in terms of quality and quantity for development (Mentens, Raes, & Hermy, 2016). Later on, the management of urban stormwater is done through the green roof system for more improved quality and quantity of harvesting the stormwater in-country (Ismail, 2011; M I Qureshi et al., 2016). Green roofs are constructed through quality layers manufactured in design and placed on the roofs for growing medium and vegetation. Normally green roof system is divided into two systems extensive and intensive (Kok et al., 2016). According to Dominic, Aris, Sulaiman, & Tahir, (2016) urban stormwater is sometimes very much polluted and contains hazardous metals and polycyclic aromatic hydrocarbons. For the protection of human health it's important to runoff the stormwater and for environmental quality and in many circumstances to strengthen to empower for the legal requirements (Berland et al., 2017). Qiao, Kristoffersson, & Randrup, (2018) world is facing flooding due to increased urbanization and climate change. The problem of wastewater and stormwater mix up is very dangerous in some areas. That is affecting the quality and pollution in the water.

Landslides

Some studies also mentioning the land sliding issues in different areas of Malaysia. A general term of land sliding with a slide motion for all varieties of mass-transport deposits, that is consists of slides, slumps, debrides, topples, creeps, etc. in environments has produced conceptual and nonconceptual problems(Fell, Corominas, Bonnard, 2008). Malaysia landslides are is a very common disaster due to heavy rains, special climate, mountainous terrain and socioeconomic circumstance (Pradhan et al., 2010; (M I Qureshi et al., 2015). Rainfalls, which makes more landslides and mudslides, are the main reason in Malaysia. Landslides have caused serious losses to livestock, highways, waterways, and properties in the country. Mostly slides are coming in cut slopes near the roads side and highways in the mountain areas. Some of the landslides are also reported near the residential areas and apartments cause loss of life (Pradhan & Lee, 2010). Literature concluded the discussion that in Malaysia, landslides are regularly damaging, and losses are incurred, the history of the record shows there are very small efforts are used for planning and slope management. In the last few years, awareness of landslides problem has led to significant changes in the development of unstable slope areas. According to literature, in recent years the Malaysian government and Highways authorities are focusing and stressing landslides hazard mapping process very seriously to avoid the damages (Pradhan & Lee, 2010).

Emergency events Management

Emergency management explained as a function of the safety and fire department, which supports in an event to protect public health and considered as the civil defense department in any country (Choi, 2008). The literature discusses the emergency management in detail about flood management in Malaysia, but some other aspects are needed to cover up with emergency management. Some of the studies raise the point about crowd management, during the natural disaster events. Crowd management is involved with accessing and interpreting very open-source information to handles the behaviors of the crowd during the circumstances of high stress and damages. The panic situations are more dangerous and challenging for the management to deal with that(Wijermans et al., 2016). one study talks about the evacuation of the immediate situation very openly and the prevailing evacuation management system is mainly depending on the human and development of the system is also the reason of the human mind. For any assistance during the circumstances of emergency to evacuate the place is a difficult job but for that Malaysia has an Intelligent Evacuation Management System (IEMS) that helps for safe evacuation and crowd management(Ibrahim et al., 2016). For the crowd management another study Anjum, Noor, & Anisi, (2017) talks about the mobile ad hoc technology that is new technology to crowd management. This system (MANET) number of similar mobile nodes, the capacity of different and arbitrary movement. Mobile doesn't have specific limitations, centralized management, and located stations they are just working with rapid changes where every single node communicates over packet radios to other hosts which is available within the transmission range. In a simple way, the MANET is self-motivated, self-adaptive and unpredictable wireless networks.

Soil Erosion

Soil erosion is one of the serious and unpredictable hazards throughout the world and Malaysia is also one of them. From the last few years, soil erosion is suddenly increased, soil erosion is a natural process that continues without any warning and symptoms, has been considering a serious issue for many years (Julien et al., 2009). The soil erosion is discussed in many studies and explains river soil erosion is more in Malaysia. There is two main process of erosion: 1) is channel flow imposed hydraulic erosion and 2) subaerial erosion due

to weathering and weakening of bank river bank material (Abidin et al., 2017). Malaysia due to tropical and rainforest climate has hot and humid weather throughout the year and reason to be prone to soil erosion. Literature shows that the high rainfall adverse on soil particles because it grows the ability of drops in the rain to detach the particles. This process is to be call rainfall erosivity, usually depends on rainfall intensity, energy and seasonal distribution of rain as an impetus (Caracciolo et al., 2012). In simple words, soil erosion depends upon a combination of the strength of the rain cause erosion and withstand ability of soil with rain. Another study about soil erosion is damaging the growth of the plants, agricultural fields, quality of water and recreation. It is the master process of degradation of soils as it occurs naturally on all lands (Issaka & Ashraf, 2017). Water nearby pollution, wetlands and reduction in agricultural land reduction is also associated with soil erosion (Issaka & Ashraf, 2017).

Slope Failure Threats

Urbanization intensive, high land transformation activities, and development of physical infrastructures applies intensive changes in the highlands natural system. studies explain excessive land utilization disrupts organized hydrological balance and downstream natural changes and affecting water quantity, quality, and sustainability (Yusof et al., 2015). An author talks about the Hulu Kelang region that is near Kuala Lumpur, slope failures due to the weather and climatic changes in the year due to high temperature and rainfall (Saadatkhah et al., 2015). Slope failure season is usually in monsoon and construction procedures must be done properly are the proper safety measure to address the issue. Mostly literature is discussing the problem in the same manner with the land sliding and, but some are managing it separately in published work.

Wireless Sensor Network

Whenever the metrological natural hazards occur like floods and high fires, the infrastructural communication networks are may not available, in that case, alternative communication systems are needed for the importance of delivering the disaster information to concern departments to find accurate information. Recently, WSNs have continuous monitoring platforms and become one of the premier technology for natural disasters (Ahmed et al., 2017b). Another study is also talking about the WSNs are traditionally about the static networks, in which the nodes are fixed during the deployment. But in the last few years, mobility is emerged and involved with the basic characteristic of the WSNs. Mobility in WSNs application refers to the fact that used some important elements, like nodes, skin, monitor targets and mobiles for such as reasons for wind are water or because the sensors are attached with the mobile entities (Peng & Cui, 2015). literature is keenly communicating the impotence of WSNs about disaster management, especially in case of floods mitigation and natural disaster to find accurate information. WSN is determined the positioning and accurate information in far away and distance areas.

Disaster Action Plan

Peng & Cui,(2015) talks about the disaster action plan for any natural disaster in Malaysia. In the last decade, global climate change eventually reduced the rainfall in many water catchment areas around the world and limited the utilization of water in many cities of the world. In Malaysia, several instances of pollution discharge into rivers that interrupted the water supply. Usually, the natural disaster management operations responsibility of the government and developing sustainable strategies for coping emergency situations. Floods are the most frequent disaster in Malaysia, and the government is making strategies and

planning about the development of reliable flood mitigation. But the geographical location of Malaysia is very different for making the complete plan to escalate the flood problem (Boughton, 2015).

3. CONCLUSION & DISCUSSION

Disaster management is a very challenging job for every country and specifically in developing and under-developing countries. Natural hazards are not only financially damaging for nations but also claimed thousands of casualties. In this study, literature has found that researchers are focuses to find out flood management and landslides. But the flood hazard management in Malaysia is developing rapidly, although the country is a new industrial developed country. The growth and development of social pace, fast-growth political and economic changes and that also charging up the pace of physical and environmental changes (Muhammad Imran Qureshi et al., 2016). These are the directions and ultimate reasons that are causing the poor and mismanagement of the floods in Malaysia. That also raises the context of the risk, exposure, and vulnerability to flooding hazards. The other issues like poverty, low residential and mobility, landlessness and ethnic culture have increased vulnerability of floods hazards among communities (Nohman Khan et al., 2020b). Flood management is more challenging with the time due to large scale floods in the last few years and literature resulting that it is very risky for the infrastructure of the country. Floods are also causing the intention of growth towards the risk and lifestyle of people who are in danger due to hazards (Muhammad Imran Qureshi, Khan, Qayyum, et al., 2020). To monitor and control the disaster the utilization of technology is very important. Sometimes communication networks are not available during the emergency time and Wireless sensors networks are playing a role to gather information on actual situations and losses. Results show that Malaysia's alarming system for disaster is also needed to develop more efficient and accurate. Some studies also discuss the after-disaster activities are not implemented properly and victims are not satisfied with the disaster management activities for relief and rehabilitation. To enhance the ability of disaster management government, seek to plan and implement a policy that minimizes the risk of lives and financial losses in Malaysia (Muhammad Imran Qureshi, Khan, Ahmad Hassan Gillani, et al., 2020). The common understanding between the literature is about the rehabilitation process is missing in the research and to improve the process, researchers must highlight the area for the development of literature.

Landslides are also growing with the period in Malaysia and some parts of the country are victims near the residential areas during the monsoon period. It's alarming that the residential areas are in the potential risk of landslides and the highways in some parts of the mountain area of the country. To control the landslides government needs to develop an effective strategy in emergency situations. some literature suggests that the landslides in Malaysia's reasons are humans' error during the construction and improper maintenance of slope mainly causes the landslides. Some researcher's suggesting that the construction process must implement the reliability assessment technique as a part of a working strategy to control the slopes and human error. It also needs to compliance the design and guidelines protocols order to eliminate the landslides. There is important to conduct seminars and workshops about the awareness of deadly events like landslides. People must know about the event and how to react whenever a natural disaster happens.

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