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Enhancing Disaster Preparedness: Evaluating Factors Influencing the Use of Proposed Mobile Disaster Management Application for Risk Reduction

Ahmed Nur Dirie¹, Siti Rahyla Rahmat^{2*}, Nurul Ashikin Ahmed Tarmizi³

^{1,2,3} School of Social Sciences, University Sains Malaysia, Penang, Malaysia

*Corresponding email: rahyla@usm.my

Abstract

Disaster is a significant disruption causing significant losses and damages to a community or society, often beyond the capacity of those affected. Factors such as climate change, diseases, urbanization, and global movement are contributing to the worsening impacts of these disasters. The objectives of this study are 1) To assess the influence of mobile application use on the acceptance of community towards mobile disaster management applications. 2) To identify Factors Impacting Preparedness through Disaster Mobile Applications. 400 surveys were collected physically in disaster-prone areas conducted in the districts of Paya Terubong and Georgetown Penang, Malaysia. This study utilized a Logistic Regression Model to identify factors influencing the community's acceptance of mobile disaster apps. The logit analysis results show that age group, race, level of education, current app usage, and daily use ease positively influence the acceptance of mobile disaster management applications. However, education level has a negative influence. Factors affecting preparedness through disaster mobile applications include race, level of education, disaster experience, and network interruptions during hazards. Furthermore, the study suggests that to enhance disaster preparedness, local governments and app developers should address technical obstacles, enhance user interfaces, and implement proactive promotion strategies.

Keywords

Disaster Risk Reduction, community awareness, technology innovations, mobile application, readiness

1.0 Introduction

According to Tarlochan et al., (2023), disasters are unplanned incidents that result in deaths, property destruction, environmental damage, and disruption of normal daily activities. Nowadays, it has become more frequent and severe on a global scale. For the last decades, multi-hazard disasters have impacted 88 million people worldwide, with an average of 24 million displaced annually over the previous decade (United Nations International Strategy for Disaster Reduction, 2019). Moreover, seismic events and other ecological hazards remain the main roots of many tragic occurrences (Brar et al., 2022). Despite landslides, avalanches, snowstorms, and fires damaging fewer people, natural catastrophes such as floods, earthquakes, cyclones, and droughts are more frequent and have greater effects (Guha and Lechat 1988; Tomasini and Van Wassenhove 2009).

Earthquakes caused the most deaths, resulting in 760,000 fatalities, which made up 49% of the total fatalities due to disaster. Storms, including cyclones, caused 250,000 deaths, representing 16% of the total fatalities. Cyclones alone contributed to 15% of these deaths. Floods affected a staggering 2.5 billion people and resulted in more than 170, 000 deaths, making up 11% of the total fatalities from 1995 to 2020 (Navarro de Corcuera et al. 2022). Subsequently, Stakeholder (non-governmental organizations (NGOs) and government organizations) strategies for natural disasters include mitigation, preparedness, response, and recovery efforts taken, before, after, and during a catastrophe. To properly handle the consequences of disasters, such approaches incorporate the organizational

qualities of stakeholders, socio-economic considerations, and dangers associated with the structure of the environment (Mojtahedi and Oo, 2014).

During the crisis, management authorities have developed and endorsed public disaster applications through focused efforts. For example, in several nations, the Red Cross and Red Crescent Societies have already produced or are currently in the stages of establishing disaster mobile applications (Tan et al. 2020a). Being prepared for a crisis means taking proactive steps ahead of time, and being ready is associated with gathering urgent supplies and setting up family plans (Nguyễn et al. 2023). Instead of waiting for the outcomes of risk assessments and risk control plans from trained professionals, community members must implement proactive measures to address hazards (Kinanthi et al. 2023). The objectives of this study are 1) To assess the influence of overall mobile application use on the acceptance of community towards adoption of mobile disaster management applications and 2) To identify factors impacting preparedness through disaster mobile applications. Several studies have tried to measure the awareness of the community in natural disasters and the perception of using technology products to reduce disaster risks. However, more research is still needed to determine whether society accepts technology in general, and mobile applications in particular, and whether it is necessary for effective disaster management. The results of past studies by (Appleby-Arnold et al. 2019; Hashim et al. 2021; Oktari et al. 2020; Paul, Bee, and Budimir 2021) have been inconsistent, suggesting that community preparedness for disasters is a complex issue that needs more investigation using different methods. Moreover, the study expands the existing body of knowledge by assessing the community's degree of readiness for disasters along with the way they interact with technology. Additionally, it considers technical proficiency, experience, knowledge, and social impact as well as other elements determining the process by which the community accepts technological advances for the sake of disaster risk reduction.

The remainder of the present study is organized as follows: A description of the relevant academic literature is offered in Section 2, the methodology is outlined in Section 3, results and discussion are presented in Section 4, and finally, conclusions are illustrated in Section 5.

2.0 Literature Review

Disaster management involves strategic planning and standardized procedures to preserve lives and minimize the devastating effects of disasters on property (Rina Suryani Oktari et al.,2020). Attitude, subjective norms, community participation, and political power trustworthiness are factoring that impact households' willingness to influence earthquake preparation (Zaremohzzabieh et al. 2021). In contrast, strategies for flood disaster preparedness are shaped by risk assessment, prior flood experiences, and retail business experiences (Hashim et al., 2021). Acknowledging the restrictions for traditional disaster management models in handling the distinct impacts of different disasters, there is a huge demand for a more integrated strategy that adjusts vulnerability measures in forecasting, managing, and strengthening community resilience via strategic planning (Cho and Choi 2024; Sawalha 2020; Shmueli, Ozawa, and Kaufman 2021).

Lalith Prakash et al (2024) stressed the importance of conducting focused assessments to gauge the community's disaster preparedness. According to Lin and Lee (2023), community members prefer regular disaster prevention events, seminars on disaster mitigation, and cooperation between government and non-governmental organizations' resources in the event of a natural disaster. Bogdan et al. (2021) revealed that combining social capital with educative training enhanced participants' perceptions of the workshops' efficacy and inspired communities to keep improving their respective households' and neighbours' disaster readiness.

Current disaster-related mobile applications are often restricted in educational scope and can handle a single sort of hazard and one stage of Disaster Risk Management (DRM), which limits the capacity to manage systemic risk and intensify the response to humanitarian emergencies (Navarro de Corcuera et al. 2022; Sukhwani and Shaw 2020). However, mobile applications incorporating artificial intelligence (AI) foster knowledge and mitigate natural hazards, by contributing to better catastrophe preparedness and response, as well as higher rates of human survival (Berawi et al. 2021; Sun, Bocchini, and Davison 2020; Winarni and Purwandari 2018). Furthermore, feedback from consumers improves the effectiveness of disaster apps, demands collaboration from local stakeholders, and builds trust via shared accountability, while social media promotes shared narratives and cooperative understanding (Paul et al. 2021; Tan et al. 2020b). Wahyudi (2023) proposes that to enhance the adoption rate of mobile applications for disaster management, it is essential for local governmental bodies and application developers to effectively tackle technical obstacles, improve user interface experience, and engage in proactive promotion strategies.

Education and knowledge sharing have a substantial impact on social preparedness for risks and disasters, advocated including certain subjects in school curricula and regularly performing disaster mitigation training through organizations that are involved (Sayuti et al., 2021; Yüksel & Akbel, 2023). Indrayani and Wasistiono (2021) suggested enhancing the education and training provided to community protection organizations through provincial working groups or other parties involved. For example, Children's preparations for crises were improved through disaster education and it positively impacted children's perceptions of risk and the significance of preparedness (Shah et al. 2020; Yildiz et al. 2024). Similarly, Kinanthi et al. (2023) discovered that students' perspectives are significantly influenced by their motivation and perception of earthquake hazards, with each factor having a partial influence. Likewise, experience with disaster risk reduction is given priority in some academic fields, while other important areas like values, attitudes, and skills are frequently disregarded (Mutseekwa and Razuwika, 2023). Additionally, secondary school students' perceptions of economic, personal, and environmental hazards are positively affected by their degree of trust in authoritative organizations, expert institutions, and meteorological departments (Huang et al. 2022). Sakurai, Sato, and Murayama (2020) revealed that encouraging children to participate in community-rebuilding projects actively can help them maintain their sense of belonging to the community and increase their desire to contribute positively. Conversely, Wiwik Astuti, Werdhiana, and Wahyono, (2021) proposed teachers' comprehension of disaster risk reduction (DRR) was improved by their experience with catastrophes, and they then used this additional knowledge in a variety of teaching activities.

3.0 Methodology

This study employs cross-sectional survey data to assess community readiness and awareness of natural disasters through the use of technological innovations. The technological innovations considered in this is the mobile disaster management apps which might minimize the risk and easily update and provide information about the upcoming disaster to the communities of prone disaster areas. The survey is structured in distinct sections, each focusing on specific topics: sociodemographic characteristics; the usage of mobile applications by participants; the level of readiness for risks in the community; and participants' prior experiences with natural disasters. Different items have been used to measure household preparedness for disasters, as adopted in past studies by (Cisternas et al., 2024). Respondents answered dichotomous scale questions (yes or no) related to household preparedness for disasters (see Table 2 for details). Moreover, the community's perception of mobile disaster management apps and their technical readiness, such as internet access and smartphone viability, are depicted in Table 3.

Disparities were assessed concerning the following sociodemographic factors: gender (woman, man), age group (18-20 years, 21-34 years, 35-49 years, 50-64 years, and 65 years and above), nationality (citizen or non-citizen), race (Malay, Chinese, Indian, or others), an education level (tertiary, post-secondary, secondary, primary, none), income group (RM 5,000 and above, RM 3,000 – RM 4,999, RM 1,000 – RM 2,999, RM 999 and below), employment category (employed, student, self-employed, unemployed, or pensioner), state of residence, and duration of residence.

This research critically assessed the social acceptability of a mobile application for disaster risk reduction and mitigation. Survey data were collected using household surveys. Hard-copy methods were adopted to facilitate data collection. Based on suggestions from Penang's disaster management unit, the survey was conducted in the districts of Paya Terubong and Georgetown. In each district, a group of eight skilled field surveyors, under the direction of a head enumerator, delivered the questionnaires face-to-face. Before distributing the questionnaires, the survey respondents were informed about the study's goals and provided their consent. It took 1 hour for participants to carefully review and answer the questions.

3.1 Model specification

The logistic regression model is a commonly used statistical method for assessing the probability of an event happening, considering the values of independent variables, which may be either categorical or numerical (Neupane et al., 2002). Various studies have investigated the acceptability of mobile disaster management apps and their influence on preparation. This study uses the binary logit regression model to examine two distinct situations. Firstly, it is used to assess the community's inclination and receptiveness towards mobile disaster management solutions. Furthermore, the research used the binary logit regression model to examine the specific attributes that impact preparedness using a mobile disaster management application.

The study used a Logistic Regression Model to ascertain the parameters that impact the community's adoption of mobile disaster apps. The dependent variable was binary, with values recorded as either 0 or 1. A Logit Regression Model was used to evaluate the probability of adoption, using maximum-likelihood techniques. The model is defined in the following manner:

$$P(\text{Prob} : Y = 1) = \frac{e^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n}}{1 + e^{(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n)}} \quad (1)$$

$$P(\text{Prob} : Y = 0) = 1 - P(\text{Prob} Y = 1) = e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n)} / (1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n)}) \quad (2)$$

where P is the probability that an individual decides to accept to use of disaster mobile applications under the given Xi (Xi is the set of explanatory variables influencing the acceptance decision). Y=1 if the choice is yes. Y=0 if the choice is no. $\beta_0, \beta_1, \dots, \beta_i$ are regression beta coefficients of explanatory variables to be estimated, and e is the base of natural logarithms. The model predicts the response variable from the independent variables.

Model 1:

$$\text{Logit}(Y) = \beta_0 + \beta_1 PU + \beta_2 PEU + \beta_3 \text{Socio} - \text{demographic Characteristics} + \varepsilon \quad (3)$$

Y_i is the dependent variable, which represents the society acceptance of mobile disaster applications; PU is the Perceived usefulness, which indicates measured (Apps Fulfilling Needs, Ease Daily Routine, current app usage). PEU represents the variables (e.g., Autonomous App Install and Regular App Use); β_0 represents a constant term; β_1 represents the estimated coefficient of Perceived usefulness; β_{2i} indicates the estimated coefficient of the PEU; and ϵ_i is the random disturbance term.

Model 2:

$$\text{Logit}(Y) = \beta_0 + \beta_1 TR + \beta_2 FDR + \beta_3 DEX + \beta_4 \text{Socio} \\ - \text{demographic Characteristics} + \epsilon \quad (4)$$

Y_i is the dependent variable, which represents the Preparedness through mobile disaster applications; TR is the Technical Readiness, which Measured variables (Smartphone viability Internet Access, network). FDR represents the variables (Future Disaster Readiness). DEX is the disaster experience; β_0 represents a constant term; β_{1i} represents the estimated coefficient of technical readiness; β_{2i} indicates the estimated coefficient of Future disaster readiness; and ϵ_i is the random disturbance term.

4.0 Results and Discussion

4.1 Descriptive analysis of the socio-demographic background of the respondents

A total of 400 respondents participated in the survey, as outlined in Table 1. The ages of the respondents ranged from 18 to over 65 years old. Of these, 219 (54.8%) were male, and 181 (45.2%) were female. The ethnic breakdown was 227 Malay respondents (56.8%), 130 Chinese respondents (32.5%), 38 Indian respondents (9.5%), and 5 respondents (1.3%) from other races. The age distribution was as follows: 8 respondents (2%) were between 18 and 20 years old, 73 respondents (18.3%) were between 21 and 34 years old, 122 respondents (30.5%) were between 35 and 49 years old, 102 respondents (25.5%) were between 50 and 64 years old, and 95 respondents (23.8%) were 65 years and older. Additionally, 274 respondents (68.5%) were married, 81 (20.3%) were single, 31 (7.8%) were single parents, and 14 (3.5%) were widowed.

Table 1: Descriptive statistics of the respondent's characteristics

Variable		Frequency	(%)
Gender	Male	219	54.8
	Female	181	45.2
Age	18 - 20 years	8	2
	21 - 34 years	73	18.3
	35 - 49 years	122	30.5
	50 - 64 years	102	25.5
	65 years/ and above	95	23.8
Race	Malay	227	56.8
	Chinese	130	32.5
	Indian	38	9.5
	Other	5	1.3
Marital Status	Single	81	20.3
	Married	274	68.5
	Single parents	31	7.8
	Widow/widower	14	3.5

Additionally, we provided an overview of the participant's employment status after the sociodemographic background analysis (Figure 1). The provided bar chart illustrates the distribution of respondents among various employment categories. First, we should mention that more than 20%

of the respondents are independent contractors. Personnel in sales and service belong to the next group, with slightly less than 15% of the total. Housewives and unemployed people together account for 15% of the entire population. About 10% of the respondents are professionals, and 7–8% are technicians or retirees. The proportion of clerical support workers is 5%, whereas the number of contract workers somewhat surpasses this figure. It is found that that self-employment was the most common occupational status among the participants.

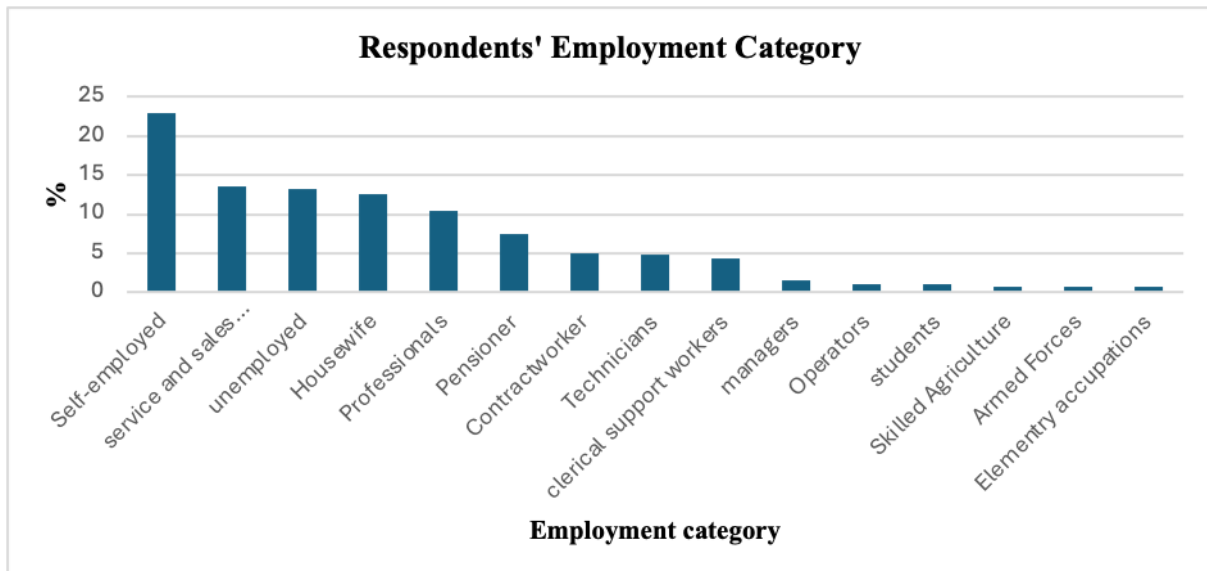


Figure 1: Respondents' Employment Category

4.2 Technical readiness and usage of mobile applications

Based on the mean and standard deviation statistics provided in Table 2, the assessment of the community's readiness for technical issues, such as smartphone viability, internet access, reliability of internet connectivity, and network disruptions during natural disasters, shows that a significant number of survey participants own smartphones and have internet access. This signifies a favourable degree of technical preparedness. While most respondents have an internet connection, periodic instability raises questions about the internet's reliability. Moreover, there are significant concerns over the reliability of internet access during emergencies, since several users have seen intermittent disruptions. This implies that although there has been an essential level of technological preparedness, there are still significant worries over the stability and reliability of connectivity to the internet, especially under dangerous circumstances. This highlights the need to improve readiness and tactics for responding in this region.

In addition, we examine community members' perspectives on the use of general mobile apps. Based on the data shown in Table 3, the mean score for the first question is 1.06, indicating a strong similarity to the binary response of 1 (yes). This suggests that a substantial number of respondents use many programs on their cell phones. Likewise, the median average for continuous mobile application usage indicates that the participants are using and are likely to continue using mobile applications extensively. On the other hand, the mean value of 1.51, together with a standard deviation of 0.74 for the fulfilment of social needs by mobile applications, suggests that while many individuals install these apps, they often do not prioritize achieving certain requirements. Furthermore, the findings suggest that a growing proportion of individuals are incorporating mobile applications into their

everyday schedules, seeing them as instruments that improve productivity and streamline various tasks in their daily existence.

The results demonstrates that the participants exhibit a significant degree of involvement with mobile applications overall. Most participants now use mobile applications and indicate a strong inclination to persist in doing so, as they believe that adopting these technological improvements will augment their capacity to carry out daily activities. In general, this suggests that people have a favourable perspective on mobile apps as advantageous for their everyday tasks.

Table 2: Questions for technical readiness of the community

	Mean	SD
Do you have a smartphone?	1.08	0.268
Do you have access to the internet?	1.05	0.210
Is your internet access stable when in use now?	1.44	0.791
Your internet network is interrupted in case of a hazard/disaster?	1.82	0.818

SD = standard deviation

Table 3: Questions for communities' intention for general mobile app use

	Mean	SD
Have you ever used any type of mobile application?	1.06	0.256
Are you still using the mobile application?	1.10	0.407
Do you install more mobile applications that fulfil your needs?	1.51	0.741
Do you install the mobile application based on your willingness?	1.35	0.662
Do you feel that the mobile application eases your daily routine?	1.17	0.491
Do you use mobile applications regularly?	1.24	0.631

According to Figure 2, 220 (or 55%) of the respondents said they kept an emergency supply pack at home, compared to about 180 (or 45%) who did not. Given the greater number of individuals who have an emergency backup at home compared to those who lack backup supplies, this clearly shows a high level of preparedness among households. On the other hand, there is a significant difference in household car readiness (refer to storing emergency supplies in private vehicle). In case there is hazard while community in their vehicle; or community need to move to other place, the community should be ready with emergency kit/bag in everywhere and anywhere).

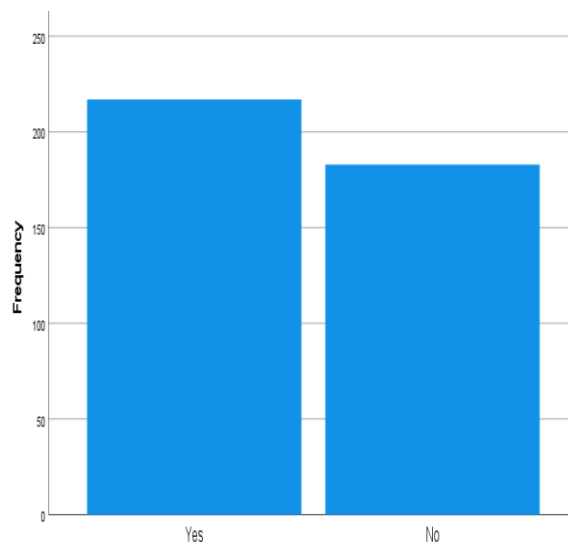


Figure 2: Respondents' emergency supply kit at home

As noted in Figure 3, only roughly 100 individuals have emergency equipment and kits for every household vehicle, whereas approximately three hundred (75%) of the respondents do not. This significant disparity suggests that while many households have emergency supplies at home, there is a notable lack of emergency supplies in family cars, indicating a general need for increased readiness.

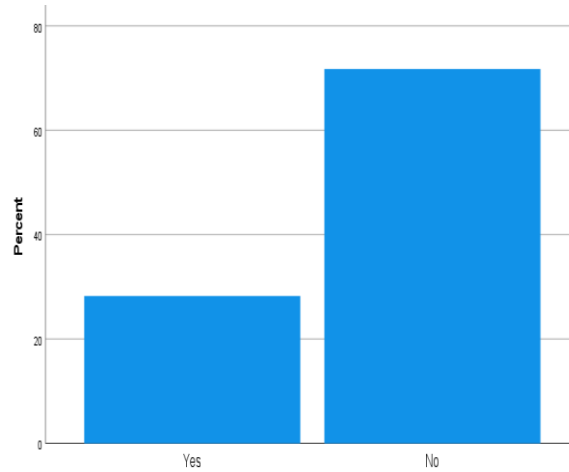


Figure 3: Respondents' emergency supplies kit for each family vehicle

4.3 Logistic regression result analysis

Logit analysis was used to estimate the extent to which regular mobile app usage influences the community's acceptance of mobile disaster management apps and the factors affecting preparedness through these apps. The dependent variable is dichotomous, indicating whether the respondent/community is willing to accept and use mobile apps or not. The calculated factor scores were used in a binary logit analysis alongside selected demographic characteristics, perceived usefulness, ease of use, technical readiness, and disaster experience (see Tables 4 and 5 for details).

From the logit analysis results in Table 4, the factor scores concerning the adoption of the mobile disaster management application were calculated. A positive coefficient indicates that the probability of respondents' acceptance of mobile disaster management apps was positively influenced by the independent variables. Conversely, a negative coefficient suggests that a higher value of the variables tends to decrease the probability of adopting and accepting mobile disaster management apps.

The following variables were statistically significant at the 5% level: age group, race, level of education, current app usage, and daily use ease, while the employment category or job status variable was statistically significant at the 10% level. On the other hand, several variables were not statistically significant, including gender, residence area, income group, fulfilling user needs, autonomous application installation, and regular app usage.

Moreover, the age group, race, level of education, current app usage, and daily use ease exhibited positive coefficients, indicating that these variables positively increase the probability of accepting mobile disaster management applications. For instance, the coefficients for age group and level of education were 0.793 and 0.463, respectively, revealing that a 1-unit increase in the age group and education level leads to a 0.793 and 0.463 increase in the probability of community acceptance of mobile disaster management applications, with a 5% significance level. Similarly, the current app usage and daily use ease variables led to a 0.807 and 1.136 increase in the likelihood of accepting mobile disaster management applications in the community, with a significance level of 5%. On the

other hand, the job status or employment category also affects the acceptance of mobile disaster management applications. The coefficient for the employment category shows that a 1-unit increase leads to a 0.105 increase in the probability of accepting disaster management apps but with a significance level of 10%. Furthermore, factors like gender, income, and regular app usage show a negative relationship but are statistically insignificant.

The results from the logit analysis, as presented in Table 5, show the calculated factor scores regarding the factors that affect preparedness through disaster mobile applications. Significant at 5% ($P < 0.05$) were the following variables: race, level of education, and disaster experience, and at 1% ($P < 0.01$) for the factors of network interruptions during hazards and readiness for future disasters. All these significant variables positively influence the likelihood of being prepared for disasters through mobile disaster management applications, except for the education level, which shows a negative influence on preparedness through mobile disaster management applications. However, the technical readiness results show that having smartphones and internet access had a positive impact on disaster preparedness through mobile management apps, but it is insignificant because merely having these resources is not enough; sustaining a network without interruption during a catastrophe is vital. According to Wahyudi (2023), who proposes the importance of enhancing the adoption rate of mobile applications for disaster management, it is essential for local governmental bodies and application developers to effectively tackle technical obstacles, improve the user interface experience, and engage in proactive promotion strategies. This may improve the survival rate of victims and facilitate emergency responses.

Table 4: Model 1: Impact of general/regular mobile app usage on the acceptance of mobile disaster management apps.

	B-coefficient	Exp(B)	P-value
Gender	-0.056	0.945	0.893
Age Group	0.793	2.211	0.003
Race	0.751	2.119	0.011
Residence Area	0.073	1.076	0.832
Types of House	0.192	1.211	0.223
Level of education	0.463	1.589	0.008
Income Group	-0.288	0.75	0.248
Employment Category	0.105	1.11	0.086
Current App Use	0.807	2.24	0.042
Apps Fulfilling Needs	-0.478	0.62	0.219
Installing mobile applications based on your willingness	-0.1	0.905	0.764
Applications eases daily routine	1.136	3.114	0.004
Regularly mobile application usage	-0.025	0.976	0.939

Table 5: Model 2: Factors Effect Preparedness Through Disaster Mobile Applications

	B-coefficient	Exp(B)	P-value
Gender	-0.31	0.734	0.258
Age Group	-0.044	0.956	0.753
Race	0.57	1.767	0.002
Residence area	0.145	1.156	0.551
Types of houses	-0.092	0.912	0.347
Level of education	-0.216	0.806	0.028

Income group	-0.092	0.913	0.325
Employment category	-0.022	0.978	0.534
Smartphone viability	-1.102	0.332	0.116
Internet access	0.083	1.086	0.89
Internet network interrupted	0.581	1.788	<.001
Future disasters readiness	2.356	10.552	<.001
Disaster experience	0.677	1.969	0.012

5.0 Conclusion

Natural disasters have historically caused enormous losses in human lives and financial resources. It has affected 88 million people globally in the decade preceding, including an average of approximately 24 million individuals experiencing displacement each year. Thus, the study adopted a descriptive analysis and logistic regression method to evaluate the community's preparedness and knowledge for disasters from various perspectives, including technological preparedness and behavioural intention in using new technologies, such as mobile applications for hazard preparedness, across various societal demographics. The descriptive analysis of the socio-demographic characteristics demonstrates that 400 respondents participated in the survey, as outlined in Table 1. The ages of the respondents ranged from 18 to over 65 years old. Among these, 219 (54.8%) were male and 181 (45.2%) were female. Furthermore, a background review of the individuals' sociodemographic work status indicated that over 20% are independent contractors, with 15% being sales and service employees. 15% of the population are housewives and unemployed. In contrast, 7–8% are technicians or retirees, and 10% are professionals. Graph 1 shows the remaining sectors, with clerical support workers expected to make up 5% of the workforce.

Findings reveal that participants had a high level of engagement with mobile applications. Most participants currently use mobile applications, and they are keen to continue using them because they believe that embracing such technological improvements would increase the probability that they will complete their daily chores. This indicates that consumers see mobile apps positively and find them useful for daily tasks. On the other hand, as seen in Figure 3, only around 100 people have emergency supplies and kits in their home car, compared to about 300 (or 75%) of those who responded. The fact that there is a noticeable shortage of emergency supplies in family automobiles, even though many households are adequately prepared for emergencies at home, suggests that overall preparedness should be improved.

This study presents certain recommendations for disaster management strategy. firstly, it is proposed to Heighten Community Awareness; policymakers ought to give precedence to enhancing communities' awareness regarding natural calamities by elevating their level of preparedness, encompassing technical and intellectual resources. More specifically, households should elevate their preparedness by stocking adequate emergency provisions in their vehicles, which are currently scarce. Subsequently, Lower Internet Expenses and Enhance Connectivity: Given society's inclination towards utilizing technological tools, notably mobile applications, is considerable and acceptable, stakeholders should enact measures to decrease internet expenses and enhance internet connectivity before and during calamitous events to effectively manage disastrous occurrences. Lastly, advanced mobile disaster applications with enhanced attributes need to be introduced to society. These attributes could involve language translation, safe route during disaster, expected time arrival of rescues and emergency alert functions to boost overall readiness and response to disasters.

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Tarikh : 20 Januari 2023



Prof. Madya Dr. Nur Hisham Ibrahim
Rektor
Universiti Teknologi MARA
Cawangan Perak

Tuan,

**PERMOHONAN KELULUSAN MEMUAT NAIK PENERBITAN UiTM CAWANGAN PERAK
MELALUI REPOSITORI INSTITUSI UiTM (IR)**

Perkara di atas adalah dirujuk.

2. Adalah dimaklumkan bahawa pihak kami ingin memohon kelulusan tuan untuk mengimbas (*digitize*) dan memuat naik semua jenis penerbitan di bawah UiTM Cawangan Perak melalui Repositori Institusi UiTM, PTAR.

3. Tujuan permohonan ini adalah bagi membolehkan akses yang lebih meluas oleh pengguna perpustakaan terhadap semua maklumat yang terkandung di dalam penerbitan melalui laman Web PTAR UiTM Cawangan Perak.

Kelulusan daripada pihak tuan dalam perkara ini amat dihargai.

Sekian, terima kasih.

“BERKHIDMAT UNTUK NEGARA”

Saya yang menjalankan amanah,

SITI BASRIYAH SHAIK BAHARUDIN
Timbalan Ketua Pustakawan

nar

Setuju.

27.1.2023

PROF. MADYA DR. NUR HISHAM IBRAHIM
REKTOR
UNIVERSITI TEKNOLOGI MARA
CAWANGAN PERAK
KAMPUS SERI ISKANDAR