



My Relief: A Socio-Technical Mobile Flood Support System in Malaysia

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ABSTRACT

Recurring monsoon floods in Malaysia disrupt communication, shelter access, resource coordination, and recovery of belongings. This study designs and evaluates My Relief, an Android flood-support application integrating group chat, global positioning system-assisted relief-centre navigation, donation search and acceptance, and a lost-and-found registry within a socio-technical design. Development followed an Agile lifecycle covering planning, design, development, testing, and deployment. An online questionnaire was completed by 30 respondents from flood-prone Malaysian communities, including participants with and without direct flood experience. Descriptive statistics and thematic grouping of open-ended feedback were used. Overall, 76.7% considered a dedicated flood-relief application helpful, 20.0% were unsure, and 3.3% were doubtful. All respondents rated group chat extremely helpful; global positioning system directions were rated extremely helpful by the majority, while donation and lost-and-found functions were generally rated very or extremely helpful. The findings provide exploratory evidence for an integrated mobile support design. Larger usability, security, and field-resilience evaluations are required because the sample was small and purposive and no inferential validation was performed.

1. Introduction

1.1 Background

Flood disasters disrupt mobility, communications, access to emergency services, and the distribution of essential resources. In monsoon-prone settings such as Malaysia, these disruptions can create cascading operational pressures across communities and response agencies. Existing disaster-risk and emergency-response research therefore emphasises the need to connect monitoring, communication, risk mapping, and relief logistics rather than treating them as isolated functions [4,5,8,9,11,13].

Digital technologies have expanded the range of tools available for disaster response. Flood-warning sensor networks support monitoring and operational awareness [1], while social-media analytics can help extract community reports, sentiment, and situational information during floods

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[2,3,14,17]. Mobile positioning and geolocation methods can strengthen population awareness and location-based response [10,12]. Other strands of research examine artificial intelligence for disaster decision support and humanitarian logistics [15] and unmanned aerial vehicles for restoring communication or supporting post-disaster operations [16]. Together, these developments demonstrate the value of rapid, digitally mediated information flows, but they do not by themselves guarantee that affected users can coordinate peer assistance through a single, usable interface.

The human dimension is equally important. Disaster environments involve stress, volunteer burden, uncertainty, and the need for trusted social interaction [6,7]. Humanitarian logistics studies also show that relief distribution is vulnerable to coordination barriers that can delay last-mile assistance [9]. From a socio-technical perspective, an effective flood-support application should therefore align technical functions with the social practices through which survivors share information, locate help, request resources, and recover from disruption.

Against this background, the gap addressed in this study is the limited integration, within the manuscript's reviewed design space, of peer-to-peer communication, location-based shelter navigation, structured donation matching, and lost-and-found support in one mobile environment. This gap is significant because users may otherwise need to move between fragmented channels at a time when connectivity, attention, and mobility are constrained. The objective of the study is to design, develop, and conduct an exploratory user-perception evaluation of My Relief, an Android-based flood-support application that brings these four functions together within a socio-technical framework. The study contributes a user-centred system design and descriptive evidence on which functions respondents perceive as most helpful, while deliberately avoiding causal or inferential claims beyond the reported sample.

2. Methodology

2.1 Research Design and Socio-Technical Framework

The study used an exploratory, user-centred system-development design followed by a descriptive perception-based evaluation. Socio-technical systems thinking was used as the organising framework because the proposed application combines social interaction among survivors and donors with technical functions for messaging, navigation, resource coordination, and information retrieval. The framework was used as a design lens rather than as a latent-variable or causal model. This distinction is consistent with the practical need to consider both social coordination and technical reliability in disaster environments [7,9].

2.2 Agile Development Life Cycle and System Scope

My Relief was developed through an iterative Agile life cycle consisting of planning, design, development, testing, and deployment. The approach was intended to support rapid refinement of requirements and interfaces as the system progressed from problem definition to end-user evaluation. The principal activity in each phase is summarised in Table 1.

Table 1

Agile development phases applied in the my relief project

Phase	Main activity
Planning	Problem definition, requirements elicitation, and benchmarking of existing humanitarian assistance portals
Design	Preparation of wireframes, user-interface mock-ups, use cases, and system architecture
Development	Android implementation of group chat, shelter navigation, donation support, and lost-and-found functions
Testing	Multi-device functional and usability checks across different screen and Android configurations, including consideration of degraded connectivity
Deployment	Distribution of the stabilised application for perception-based end-user evaluation and workflow refinement

The implemented functional scope comprised four service modules. Group chat was designed to support local peer communication and community updates. Global positioning system directions were included to guide users towards relief centres and related aid locations. The donation module was intended to structure requests and donor matching, while the lost-and-found registry provided a central place to report displaced personal belongings. These functions were selected because the source study identified communication, access to operational information, shelter location, material support, and recovery of personal items as practical post-flood needs.

2.3 Data Collection and Instrument Design

An online questionnaire was administered through Google Forms to 30 respondents from flood-prone communities in Malaysia using purposive recruitment. The final sample included both respondents with first-hand flood experience and respondents without direct victim experience, as reported in the source dataset. The questionnaire contained three sections: demographic and flood-exposure information; awareness and perceived limitations of existing disaster-related applications; and perceived helpfulness of the four My Relief functions using a five-point helpfulness scale. Open-ended responses were also used to capture concerns and suggestions related to usability, security, and connectivity.

2.4 Data Analysis

The evaluation was descriptive and exploratory. Questionnaire responses were cleaned and summarised using frequencies, percentages, and qualitative pattern identification, with Microsoft Excel and IBM SPSS Statistics reported as processing tools in the source manuscript. Open-ended comments were grouped thematically around usability, fraudulent-donation concerns, and connectivity limitations. No structural equation modelling, path analysis, mediation, moderation, or latent-construct validation was performed because the study did not specify a structural model or hypothesis-testing design.

3. Results

3.1 Analytical Sample

All 30 completed questionnaire responses were retained for the descriptive analysis. The manuscript reports no excluded cases. Because the study used a small purposive sample, the results are presented as exploratory evidence of user perceptions rather than as population estimates.

3.2 Demographic and Flood-Experience Profile

The respondents were described across gender, age, education, and direct flood experience. Exact frequencies were not reported for most demographic categories in the source manuscript; therefore, Table 2 preserves the reported qualitative distribution rather than reconstructing unreported counts.

Table 2

Reported demographic profile of the respondents (N = 30)

Characteristic	Reported pattern
Gender	Female respondents formed the majority; male respondents formed the minority
Age	Most respondents were 20-23 years old; smaller groups were 24-26 years old and 27 years or older
Education	Degree or diploma holders formed the majority; SPM-level respondents formed a smaller group
Direct flood experience	Mixed sample comprising respondents with and without first-hand victim experience

Flood exposure also varied by area of residence, from rare or occasional events to very frequent seasonal flooding. Among respondents who had previously been affected, the reported consequences included property loss, structural damage, temporary displacement, and financial hardship. These patterns reinforce the need for a support system that addresses both immediate coordination and recovery-oriented information needs.

3.3 Awareness of Existing Relief Applications and Perceived Need

Most respondents reported that they had not encountered, or were unsure whether they had encountered, a dedicated mobile or web application specifically designed for flood victims in Malaysia. The practical difficulties identified in the questionnaire included communication barriers, limited access to real-time operational information, loss of personal identification documents, and difficulty locating temporary shelters. Respondents were then asked whether a dedicated flood-relief application would be helpful. The reported percentages are shown in Table 3.

Table 3

Perceived helpfulness of a dedicated flood-relief application

User perception	Percentage (%)
Helpful	76.7
Unsure / mixed opinion	20.0
Doubtful	3.3

The results show a clear positive orientation towards a dedicated application: 76.7% considered such an application helpful, compared with 20.0% who were unsure and 3.3% who were doubtful. The source manuscript states that the doubtful category represented a single respondent. Frequency counts for the other response categories were not explicitly reported and are therefore not reconstructed in this manuscript.

3.4 Perceived Helpfulness of Core My Relief Features

The final questionnaire section evaluated the four core system functions. Group chat received the strongest reported response, with all respondents rating it in the highest helpfulness category described in the source results as "extremely helpful". Global positioning system directions were also rated extremely helpful by the majority. Donation search and acceptance and the lost-and-found registry were generally rated very or extremely helpful. Table 4 summarises these reported patterns and the intended operational role of each function.

Table 4

Perceived helpfulness and intended role of the core my relief features

Feature	Reported helpfulness	Intended operational role
Group chat messaging	Unanimously extremely helpful	Peer-to-peer communication, safety updates, and community coordination
Global positioning system directions	Majority extremely helpful	Navigation towards relief centres, medical support, and aid locations
Donation search and acceptance	Mostly extremely or very helpful	Structured resource requests and donor matching
Lost-and-found registry	Mostly very or extremely helpful	Centralised reporting and recovery of displaced belongings

The strong response to group chat suggests that respondents prioritised direct, local information exchange during emergencies. The positive response to navigation indicates that location-based guidance is also perceived as central to evacuation and access to assistance. Donation and lost-and-found functions extend the platform beyond immediate communication by supporting resource coordination and recovery needs. However, the survey assessed perceived helpfulness rather than observed task completion, delivery accuracy, security performance, or real-world disaster outcomes.

3.5 Interpretation and Study Limitations

Taken together, the results support the design premise that flood-affected communities may value an integrated mobile environment that combines communication, navigation, resource requests, and recovery support. The findings also illustrate the socio-technical character of the application: the technical modules are meaningful only when they support social practices such as sharing local information, locating assistance, coordinating material needs, and reconnecting people with lost belongings.

The evidence remains preliminary. The sample was limited to 30 purposively recruited respondents, demographic frequencies were not fully reported, and direct flood experience was mixed. The source manuscript also does not report inferential statistics, validated multi-item constructs, controlled usability tasks, field deployment metrics, or a technical security evaluation of the donation workflow. Claims of scam resistance or operational resilience should therefore be treated as design intentions rather than empirically validated outcomes. Larger and more diverse samples, scenario-based usability testing, and field exercises are required before broader generalisation.

4. Conclusions

This study designed and conducted an exploratory evaluation of My Relief, an Android-based flood-support application intended to integrate peer communication with practical resource-coordination functions. The system brings together group chat, global positioning system-assisted relief-centre navigation, donation support, and a lost-and-found registry within a socio-technical design. Among 30 respondents, 76.7% considered a dedicated flood-relief application helpful, 20.0% were unsure, and 3.3% were doubtful. Group chat received the strongest reported feature evaluation, while navigation, donation support, and lost-and-found functions were also viewed positively.

The main contribution is not a claim of proven disaster-response effectiveness, but a consolidated design and early user-perception evidence indicating which functions respondents value in a mobile flood-support environment. The study is limited by its small purposive sample, incomplete demographic frequencies, mixed direct flood experience, and the absence of inferential, field-performance, and technical security validation. Future research should evaluate My Relief with larger representative samples, controlled usability tasks, disaster-drill or field scenarios, low-connectivity and offline conditions, bandwidth and battery constraints, and explicit verification mechanisms for donation transactions. These steps are necessary to determine whether the perceived value identified here translates into dependable operational performance during actual flood emergencies.

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