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Research Design

Method

The research method for the project "Development of a Mobile Application for Streamlined Emergency Calls in Specific Crisis Situations," a mixed-methods approach will be used to capture a well-rounded understanding of both the technical and human elements involved in emergency response systems. Qualitatively, insights will be gathered from stakeholders, including emergency responders, city officials, and residents, to explore the specific needs and obstacles faced in emergency call handling. Quantitative data will supplement these insights, focusing on metrics such as current response times, the effectiveness of existing call systems, and accessibility of emergency services.

The study will focus on urban and suburban areas with diverse populations and varying levels of access to emergency resources. This diversity will allow for a more comprehensive exploration of how location-specific challenges impact emergency response, ensuring that the mobile app can be designed to meet the needs of a broad user base. Data collection will be conducted through multiple methods. Surveys, distributed both online and in paper format, will capture residents' experiences and satisfaction levels with current emergency services. Semi-structured interviews with emergency responders, healthcare professionals, and local government officials will provide in-depth information on the operational challenges of emergency response. Additionally, focus groups with residents and stakeholders will offer a collaborative setting to discuss difficulties encountered in crisis situations and brainstorm features for the proposed app. Observational studies in emergency call centers will further clarify existing processes and highlight potential areas for improvement.

The collected data will be analysed through both qualitative and quantitative methods. A thematic analysis will identify recurring themes from interviews and focus groups, especially concerning communication challenges and service accessibility. Coding will be applied to categorize these insights, and statistical methods will be used to analyse survey data, examining factors like demographics and emergency service access. Additionally, Geographic Information Systems (GIS)

will be utilized to visualize high-traffic emergency areas, highlighting potential app deployment hotspots.

Based on these findings, the initial prototype of the mobile app will be developed, including features like geolocation tracking, emergency call buttons, and options for different crisis types. A pilot test of the app will then be conducted with selected users, including residents from specific locations and emergency service professionals, to gather feedback on usability and efficiency. Following the pilot, additional surveys and interviews will collect user feedback for further refinement.

To evaluate the app's success, key performance indicators (KPIs) will be set, such as reduced response times, usability, and the accuracy of geolocation tracking. Follow-up surveys and interviews with users and stakeholders will measure satisfaction and identify areas for future improvement. Ethical considerations, such as informed consent, data confidentiality, and bias mitigation, will be strictly observed throughout the research.

The research will be structured according to a detailed timeline. The planning phase will cover the initial four weeks, followed by data collection from weeks 5 to 12, data analysis from weeks 13 to 18, and prototype development from weeks 19 to 24. Pilot testing will be carried out from weeks 25 to 30, with final evaluation and feedback collection occurring from weeks 31 to 36. This approach will ensure a thorough examination of current emergency response needs and facilitate the development of a practical, user-centered solution.

IT CAPSTONE Software Development Project FRAMEWORK MODEL