Chapter V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

SUMMARY

"E-Path: QR Code-based Security Monitoring System with SMS notification for Students in Mindanao State University" outlines the development of a security monitoring system for students using public transit. The system includes a web-based and mobile-based application, SMS notifications, and QR code generation for public utility vehicles (PUVs). It aims to enhance the security of commuters, particularly students, while traveling on public transit. The document also provides a review of related systems, a summary matrix comparing different contact tracing applications, and a technical background on the Mindanao State University and the Peace Keeping Force. Additionally, it presents the project concept, system analysis design, and use case diagram for the administrator.

The study discusses various aspects of the security monitoring system, including its technical background, project concept, and system analysis design. It also provides a review of related systems, such as contact tracing applications, and a summary matrix comparing different systems. The system is designed to enhance the security of commuters, particularly students, while traveling on public transit. It includes features such as a web-based application, mobile-based application, SMS notification to parents of commuters, generate QR code for PUV, travel history, emergency alerts, data visualization, and user authentication. The study also presents the system architecture, use case diagram for the administrator, and other modeling tools that define the system and its procedures.

The study covers technical details related to the development of the security monitoring system. It provides a comprehensive overview of the system's features, its target users, and the technical aspects of its design and implementation.

Specifically, the researchers aim the following objectives:

- To conduct interviews with stakeholders to understand their needs and expectations for the monitoring system.
- To conduct a comprehensive requirements analysis, involving client interviews and surveys.
- To identify and document the detailed specifications for the Web based and mobile-based monitoring system, integrating QR Code scan, SMS notifications, and user interface preferences.
- To design and develop a QR code mobile-based monitoring system for student commuters with SMS notifications to allow parents/guardians to monitor their children.
- To design and develop a web-based monitoring system for the employees to monitor and access all student commuters' record which include PUV Driver's detail, travel history from starting point to destination point.
- To test the developed security monitoring system based on the client's requirements.

CONCLUSION

The "E-Path: QR Code-based Commuter Security Monitoring System with SMS Notification for Students in Mindanao State University" is a comprehensive and innovative system designed to enhance the security and safety of student commuters using public transportation. The system's development was guided by the need to address the vulnerability of public transit users, particularly students, to various safety and security concerns, such as violent crime and sexual harassment. By leveraging QR code technology and SMS notifications, the system aims to provide a more secure and transparent commuting experience for students and their parents or guardians. The document outlines the system's objectives, context, purpose, and the positive perception of its ease of learning and user satisfaction. It also discusses the challenges faced by the Peace Keeping Force in managing student commuter safety and the potential of the E-Path system to address these challenges. The system's development was based on a modified Waterfall Model, and it underwent alpha and beta testing to ensure its effectiveness and usability. The results of the testing phase, as indicated by the USE (Usefulness, Satisfaction, and Ease of use) test questionnaire, reflect a positive reception of the system's usefulness, satisfaction, and ease of use. Overall, the E-Path system represents a significant step towards improving the safety and security of student commuters at Mindanao State University, and its positive reception underscores its potential to address the safety concerns of public transit users.

RECOMMENDATION

The "E-Path" system presents a comprehensive solution for enhancing the security and safety of student commuters using public transportation. To further improve the system, it is recommended to consider the following:

- **Enhanced Hardware Requirements:** The system's hardware requirements, particularly the recommended RAM and processor specifications, should be carefully evaluated to ensure optimal performance and scalability. Consideration should be given to increasing the recommended RAM and processor specifications to accommodate potential future system enhancements and increased user load.
- **Continuous User Feedback:** Implement a mechanism for continuous user feedback to gather insights on the system's usability, satisfaction, and effectiveness. This feedback can be valuable for identifying areas of improvement and ensuring that the system continues to meet the evolving needs of its users.
- **Integration of Real-time Tracking:** Explore the integration of real-time tracking capabilities to provide immediate visibility into student commuters' locations and travel status. This can further enhance the system's ability to ensure commuter safety and provide timely assistance in case of emergencies.
- **Adapting Freemium Model:** To address situations where internet connectivity may be limited, a freemium model can be considered. This model would allow student commuters to use the system for essential functions, such as QR code scanning and emergency alerts, even with minimal or no load, as long as there is at least a minimal internet connection. By providing basic functionality under these conditions, the system can continue to support the safety and security of

student commuters, ensuring that key features remain accessible during periods of limited connectivity. This approach aligns with the system's goal of enhancing commuter safety and security, even in challenging or resource-constrained environments.

By considering these recommendations, the "E-Path" system can be further strengthened to provide an even more robust and user-centric solution for enhancing commuter security and safety within Mindanao State University.