

Support Ticketing System for i-Secure Networks and Business Solutions Inc.
A Thesis Presented to the Faculty of Computer Science
ACLC College of Sta. Maria
In Partial Fulfilment of the Requirements for the
Degree of Bachelor of Science in Computer Science
Submitted by:

Barandon, Joice R. Loyola, Shan Cai C.

## **Submitted to:**

Mr. Rohmer Roi A. Bujawe



## APPROVAL SHEET

In partial fulfilment of the requirements for the degree of Bachelor of Science in Computer Science, this thesis entitled "SUPPORT TICKETING SYSTEM FOR i-SECURE NETWORKS AND BUSINESS SOLUTIONS INC." has been prepared and submitted by JOICE R. BARANDON and SHAN CAI C. LOYOLA who is hereby recommended for oral examination.

## MR. ROHMER ROI A. BUJAWE

Thesis Professor

Examined and	approved by	the	Panel	of	Examiners	in	an	Oral	Examination	with	a	grade	of
(	on												

Accepted in partial fulfilment of the requirements for the degree of Bachelor of Science in Computer Science

MRS. RIZZA A. BALANGUE

School Director



# **GRAMMARIAN'S CERTIFICATE**

This is to certify that the undersigned has viewed and went through all the pages of the

Thesis entitled

"Support Ticketing System for i-Secure Networks and Business Solutions Inc."

developed by

Barandon, Joice R., and Loyola, Shan Cai C.

aligned with the set of structural rules that govern the composition of sentences, phrases and words in the English Language.

Signed by:

Ma. Luisa De Guzman Reyes Grammarian



## **ACKNOWLEDGEMENT**

The project proponents would like to express their genuine gratitude to the employees of i-Secure Network and Business Solutions Inc. for their guidance and cooperation towards the study. This means a lot to them and this wouldn't be successful without their help.

The project proponents would like as well to thank Mr. Rohmer Roi A. Bujawe, their CS Project Design professor, for his substantial knowledge and experience that helped them a lot to succeed in their thesis and guided them throughout the progress of their system. His advice and support became a way to make this study accomplished.

They are so blessed and grateful to have Mr. Macrino Balangue as their beneficiary, for guiding them from the start until the system has been made successfully. Through his support and cooperation, they achieved this study.

Also, the proponents are delighted to the whole school faculty and administration of ACLC College of Sta. Maria became their second foundation during their 4 years of study. Foremost, to the whole AMA Education System for providing quality education, making those challenges not a hindrance to fulfilling their dreams.



In addition, they would like to express their gratitude to their classmates who shared unforgettable memories in all those years.

Furthermore, the proponents would like to thank each other (Joice, Shan Cai), for their hard work, dedication, and wholeheartedly believing in themselves that they could accomplish this study. To their family, friends, and even loved ones, their love and support have been beneficent and they are so blessed to them.

Most importantly, the project proponents could not have made this study successful without the love, grace, and blessing of the Almighty God. Thus, they would like to thank him deeply for His endless strength, motivation, and wisdom in order to attain the study.

The Project Proponents



## **DEDICATION**

This study is deeply dedicated to our beloved parents, who have been there for us, and our source of inspiration, continually giving us strength, moral, spiritual, educational, and financial support from the start up until the very end.

To our siblings, friends, and classmates, who shared encouragement throughout the journey of this study.

Lastly, we dedicated this study to Almighty God, thank you for the guidance, strength, protection, knowledge, and health you gave to us. We offer all of these to you.



#### **ABSTRACT**

The Support Ticketing System is designed to enhance customer support efficiency at i-Secure Networks and Business Solutions Inc. by addressing challenges related to manual case management. The system streamlines and automates the support process, improving customer satisfaction through efficient case tracking and management.

This research employed a developmental approach, integrating both quantitative and qualitative methods. Surveys and interviews were conducted with support engineers and end-users to assess the system's effectiveness. The research followed a Hybrid Agile-Waterfall methodology, ensuring iterative development and continuous feedback. Data-gathering instruments included structured questionnaires and face-to-face interviews with staff, administrators, and IT specialists.

The system was evaluated based on functionality, reliability, usability, efficiency, maintainability, and portability. End-users rated the system with an average score of 4.30 (very acceptable), while IT experts rated it at 4.09 (very acceptable). The highest ratings were observed for portability (4.55 for end-users) and maintainability (4.25 for IT experts), demonstrating strong adaptability and ease of use. However, some concerns were raised regarding reliability and system resource management.



The implementation of the Support Ticketing System has significantly improved case tracking and customer support processes at i-Secure Networks and Business Solutions Inc. The study highlights the importance of adaptability and structured workflows in modern customer support systems. Key areas for enhancement include data recoverability and fault tolerance, which require continuous improvements to ensure system reliability. These findings emphasize the need for ongoing system development to meet evolving user demands and further optimize customer support operations.



## Chapter I

## THE PROBLEM AND ITS SETTING

## Introduction

The Support Ticketing System helps i-Secure Network and Business Solutions Inc. Provides a more efficient and effective means of organizing customer support. It offers users an account interface through which they can log in to their accounts, view and manipulate their accounts, and create support cases that go through validations through the product serial numbers and the contract types. This also covers email alerts and case management, for updated information to always reach customers and support personnel. Whenever the support is provided, it is equipped with specified features such as a case search, case filters, and comprehensive case management to ensure that a client receives the best support experience.

An important problem that the system targets relates to the management of support cases manually. Without having an automated case management system vitiated means identifying the case status and guaranteeing the improvement that may sway customer satisfaction. They will be solved with this project that targets to create a unified space for support case tracking, classification, and updates.

There is no doubt that an automated support system is critically important these days to increase customer bonds and enhance organization operations. Features like validation of support requests, severity classification of support requests, and other automatic notifying emails are provided ensuring that the customers get the right information at the right time. This means that the quality of services to customers



is increased and support engineers' productivity is also increased because their work is made easier by removing most of the paperwork.

The work is based on reference systems, including Salesforce and ServiceNow, which have proven the organization's effectiveness in the centralized support of multiple businesses. This way the system will enable the i-Secure Network to track the case's progress, see which cases are overdue, and present reports for further action. It will enable the company to gauge performance and support processes' efficiency to gauge and optimize accordingly.

Finally, the integrated Support Ticketing Systems will be positive in enhancing case tracking and coordinating between clients and engineers to raise the service quality. By automating the process and working in real-time, besides improving the management of the cases, the system will also enhance the partnership between the i-Secure Network and the customers to provide more effective and efficient support.

## **Theoretical Framework**

A Study of Service Desk Setup in Implementing IT Service Management in Enterprises (Tang, X., et al, 2013)

The shift from sales volumes towards increased customer experiences and satisfaction has pushed the ticketing system towards being an indispensable element of business competition. These systems are designed by different software companies and integrate modern features for tracking problems. However, the subsequent sub-processes and tasks within those systems are still commonly done manually and result



in bottlenecks. In organizations, specifically a large scale, these inefficiencies translate to low output and longer time response patterns.

Machine learning and its evolution affords an ability to improve the functionality of typical ticketing systems. When machine learning is adopted with the current systems, then CSS departments of any organization can run effectively. This paper identifies three critical bottlenecks in ticketing systems: it will be useful in screening customer emails as spam, assigning appropriate tickets to the employees, and analyzing the sentiment of customer's emails. What is more, they suggest adopting a single approach that uses machine learning to tackle these issues.

Based on primary data, the authors apply and assess this integrated machine learning methodology. The outcomes imply accuracy and efficiency improvement; thus, the further potential of this method in large enterprises' customer support change.

An Evaluation of Ticketing Systems (Jakob, 2024)

Ticketing systems or Service Desk Systems (SDS) are widely used and important components in the universe of Information Technology (IT) service management, especially for software development, problem tracking and customer support. It enables the sharing of important information between the providers and consumers of these services to address the received queries. For decades, ticketing systems have developed and their applicability has grown beyond the traditional usage scenarios. While CQRS systems also have the purpose of managing requests, these systems are much different in terms of usage



and capabilities. Therefore, the use of a ticketing system for a specific function depends on its efficiency, adaptability, ease of use, and compatibility with other tools.

Five different ticketing systems are examined in this paper and a relative assessment is performed considering specific criteria. The evaluation helps identify some useful characteristics of the systems while noting the fact that the applicability of the systems depends on the requirements of the different uses. The topic of utilizing Machine Learning (ML) integrated with ticketing systems is still in its infancy, and its main goal is to improve automation. With the advancement in technology, there is a possibility of automating ticket management and optimization of the system response has led to a lot of interest in the field of ML. The progress in integrating ML into ticketing solutions is discussed to help developers understand its potential for the future.

In turn, by disclosing the general concepts related to ticketing systems, the types and applications of tickets, as well as the recent developments in the sphere, this paper enriches the overall body of knowledge concerning their significance in the modern world of IT service management.

HelpDesk Ticketing System (Chanchad, Y., et al., 2023)

Chanchad and Kanade (2023) have proposed a HelpDesk Ticketing System focusing on how it can work and its benefits. The system uses a website interface where the users can issue their tickets with questions, monitor the status of these tickets, and get the answers at the right time. In particular, the ticketing system differs from such conventional approaches as e-mail correspondence, which sometimes may be long and not very orderly, while queries will be solved in a more ordered manner.



As a result of the HelpDesk Ticketing Systems several organizations have improved their productivity through effective use of online tools. Those involved can open as many as possible tickets even for small problems to have a smooth running and efficient operation. That it can be transported to any location and accessed remotely makes the system very valuable and simple to use. The multiuser web client of this system lets internal users and end-users engage with the platform, which makes this solution suitable for organizations of any size and type.

Email-based query-solving system of DigiHSE changes for ticketing system is far more efficient than email as it follows the proper channel and system. As postulated by Chanchad and Kanade (2023) the HelpDesk Ticketing System has revealed the extent of the influence of such systems on productivity and therefore the need to adopt, such systems in today's dynamic organizations. In this theoretical context, the system's purpose of enhancing the management of queries as well as the organization, efficiency and timeliness of issue handling is also emphasized.

## **Conceptual Framework**

In this study, the researchers combined the use of the IPO model to explain the design of the investigation in the context of the research.



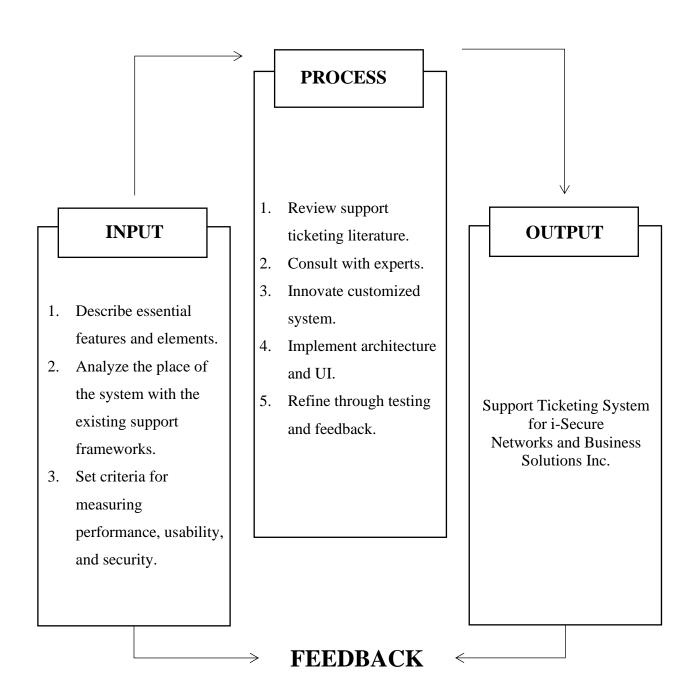


Figure 1. Paradigm of the Study



The IPO model was used to formulate the development of the Support Ticketing System – i-Secure Networks and Business Solutions Inc. During the input phase, the researchers defined critical issues and requirements of an efficient support ticketing system, learned the specifics of the system's integration into the support structure of the organization, and defined criteria to assess the performance, usability, and security of the system.

Indeed, in the process phase of the current study, the researchers undertook a search for recent literature and materials covering issues regarding the present support ticketing systems, trends in the continuous development of these systems, and emerging issues that are likely to affect their overall implementation in the future. The qualified researchers involved human participants by talking to IT support service providers, customer service, and business operation experts all aimed at ensuring that the developed system is aligned with the organization's requirements. The researchers also modified the ticketing system with options such as linking customer data, prioritizing tickets as well as reporting. They were involved in partnering with the developers on the outcome of the system structure and the end-user interface. In addition, the system was developed in cycles, that is, tested, received feedback, and redesigned to conform to the set standards of system performance, scalability, and user interface.

The output of this process is a well-developed and simple Support Ticketing System to address issue-solving procedures of i-Secure Networks and Business Solutions Inc.



## **Statement of the Problem**

This research proposes the creation of a Support Ticketing System for i-Secure Network and Business Solutions Inc. to manage support cases.

Specifically, this study sought to answer the following questions:

- 1. How can effective management and case prioritization be incorporated into a support ticketing system?
- 2. How does the system manage to determine the status of each case as solved, unsolved or pending?
- 3. How could the system produce meaningful reports concerning the resolution time and other factors related to the case?

## **Assumptions of the Study**

This paper aims to present a proposed Support Ticketing System for i-Secure Networks and Business Solutions Inc. The following are the assumptions that have been made;

- 1. The participants in this study are the engineers who are engaged in customer support functions and the end-users who report cases at i-Secure Networks and Business Solutions Inc.
- 2. The researchers assume that the organization has the dedication to enhance the customer support processes and will use the necessary resources for the system.
- 3. The researchers assume that the Support Ticketing System will address the particular requirement of i-Secure Networks and Business Solutions Inc. in the form of an effective and easy-to-use ticketing system for managing and solving customer service tickets.



## **Scope and Limitation of the Study**

The system's key features such as customer login and a comprehensive support management system. Customers can log in, create cases, manage their cases, and track support status through the portal. The system also includes product validation, ticket creation, and case management features such as subject, severity, and version details. Additionally, the system sends emails for ticket creation and updates.

The system also comes with reports and analytics for administrators to see how much of a ticket volume, how long it took to resolve, how more or less severe cases tend to be, and the level of customer satisfaction. This will allow for measuring trends, measuring efficiency, and improving overall support quality.

However, the study does not cover the system requiring customers to log in again when redirected to external websites for the Knowledge Base/FAQs section, disrupting the user experience.

## Significance of the Study

By conducting this research, the study aims to generate valuable insights that will be useful not only to the researcher but also to the following groups of individuals:

**Company Management.** The knowledge of the study results will assist company management in enhancing operations' effectiveness, monitoring employees' productivity, and addressing customers' concerns promptly.



**Engineers.** This research will help the engineers adopt a structured procedure for handling support tickets, hence minimizing response time and increasing client satisfaction.

Clients/End Users. As a result of the changes to ticketing, clients and end users will be able to have a clear and smoother process in which they can get their issues addressed and track when a response is coming.

**System Administrators.** The technical administrators will now be privileged with instruments for supervising, managing, and adapting the ticketing system for the appropriate efficient company performance.

**Future Researchers.** This research can be beneficial for future investigators, who intend to investigate similar issues in IT support systems, help desk service improvements, or customer care services.

## **Definition of Terms**

The definitions below give a clear glimpse of the technical terms of the concepts used throughout the study in the development of the Support Ticketing System for i-Secure Network and Business Solutions Inc.



**Case Filter.** Those that help the system divide support tickets by the selected parameters such as case status, case severity or case priority.

**Case Management**. The concept of 'managing' calls, emails, or other means of receiving support tickets from the time the ticket is generated through to its final disposition.

**Case Search**. Navigation tool which enables one to find out certain support tickets from others using words or numbers.

**Customer Login**. The method used to ensure that customers are authorized to create and monitor support tickets and those created by them individually.

**Email Alerts**. Self-explanatory alerts of ticket creation, update, or closure are sent to the user together with support personnel.

**End-user/** Customer. An individual or an entity which employs a support ticketing system to submit a support ticket, case management and solutions.

**Help Desk Ticketing System**. A web-based tool aimed at making and tracking customers' support cases, ticketing, and case management.



**Input Phase**. The first step involves the identification of system requirements, user needs and assessment criteria.

**IPO Model**. An Input-Process-Output model of the development of systems in which inputs are Resources/Requirements, processes are Activities/Methods and outputs are Deliverables.

**Knowledge Base/FAQs**. A section or a collection of information and guidance, and a list of questions with answers to which clients can search to help themselves before creating support tickets.

**Overdue Cases**. Tickets related to the support tickets that have not been closed after the due period as decided in the agreement.

**Output Phase**. The ultimate level in which the development and functional system is produced for use.

**Process Phase**. The stage in the development process in which design, creation, and the trial of the whole system are conducted in cycles.

**Severity Classification**. The sorting of support tickets according to the level of harm that the problem causes the users or business.



**Support Engineers**. IT staff who is in charge of addressing issues of concern to customers who use the system.

**Support Ticket Activities**. Summarized and reported data used in tracking system performance and process efficiency documented in case reports form part of formal documentation.

**System Administrators**. Those employees who are handling the support ticketing system in terms of performance as well as modification.

**System Integration**. This is the activity of linking various software elements or sub-systems, with the aim of enhancing their function.

**System Performance**. How the support ticketing system operates and to what extent it performs the facilitation of support requests.

**System Reliability**. It has to do with the capacity of a system to operate without failure to the time required.

**System Testing**. The testing process helps to check the system's standards of performance, ease of use, and security.



**System Usability**. The capacity of a system to be used by the proposed users in an efficient, timely, and to their expected satisfaction.

**Technical Regions for Product Validation**. This involves the confirmation of the product's authenticity especially by serial numbers and the type of contract to ensure that only genuine support calls are honored.

**User Interface**. The graphical representation of an application and the operational tools that are associated with it, such as screens, panels or menus.



## **Chapter II**

## REVIEW OF RELATED LITERATURE AND STUDIES

This chapter presents a systematic organization of literature and studies, which are relevant to the topic at hand. It includes both foreign and local sources to showcase the importance of the current research. The researchers have carefully selected and included relevant literature and studies to demonstrate the significance of their investigation. Furthermore, to enhance understanding and grasp the key points of the study, a summary of the literature is also provided.

#### **Related Literature**

Improving Support Ticket Systems using Machine Learning. (Fuchs, S., et al., 2022)

Simon Fuchs, Clemens Drieschner, and Holger Wittges from the Technical University of Munich authored the literature review, "Improving Support Ticket Systems using Machine Learning." The application of ML to the automation of Support Ticket Systems (STSs), a critical tool of IT service management, is explored. Key areas of development listed in this are incident management, request escalation, and sentiment prediction intending to reduce costs reduce efficiency, and increase satisfaction. Practically all of the research to date in this field has developed and deployed practical ML-driven tools for support ticket classification and management. Support Vector Machine (SVM), Random Forest (RF), and Deep Neural Networks (DNNs) are found as the most consistent algorithms for the classification of support tickets, with the first two having some previous popularity and the latter looking promising for further exploitation. As most other studies are specific to a few proposed ML prototypes, there is a need for a more comprehensive comparison of ML prototypes. The authors also stressed that the quality and dimension of the labeled data in your dataset are very important for the success of ML models. In future



research, ML-driven STSs should be studied for their effect on support agents' job satisfaction, automate data labeling, and develop more efficient question-answering systems that further diminish manual intervention.

Ticketing System: A Descriptive Research on the Use of Ticketing System for Project Management and Issue Tracking in IT Companies (Salameh, M., et al., 2011)

The study titled "Ticketing System: A Descriptive Research on the Use of Ticketing System for Project Management and Issue Tracking in IT Companies" by Kent Darryl Aglibar, Garret Christopher Alegre, Gerald Del Mundo, Kenny Francis Duro, and Nelson Rodelas explores the use of ticketing systems in IT companies, specifically focusing on JIRA. The researchers endeavor to investigate the utility of JIRA for incident and client request management within the company. But as IT businesses flourish the number of incidents and requests to manage daily gets harder. Documenting and tracking these interactions tend to be done in a ticketing system such as JIRA. While JIRA lacks a wide variety of features, the researchers point to the fact it is an absolute for support teams to take tickets, as well as internal company members for quick logging and management of tickets. Specifically, they found that JIRA is useful enough that it can be used by support groups and internal company members to effectively manage incidents and request tickets and that its limited features might limit its overall capability. However, the researchers recommend investigating other analytic models, to supplement or enhance the ticketing system. Such a study suggests the value of taking into account multiple options (both those for developed companies as well as those for newcomer companies) to improve their ticketing system capabilities. Finally, they recommend that to obtain (fresh, beneficial) results, it may be worth testing different analytic models.



Help Desk Support Ticket and Issue Management (Kumar, S., et al., 2023)

Help Desk Support Ticket and Issue Management: Nishu Kumari, Lakshya Sharma, Dr. Sharik Ahmad, and Saurabh Kumar. In: International Journal on Recent and Innovation Trends in Computing and Communication. This indicates how these systems support issue tracking, resolve faster, and are more operationally efficient by centralization of supports; machine learning integration; and multi-channel accessibility. According to Middleton (1996), the real value of help desks is that they can proactively address user issues, based on the product of the daily interactions of many users. Bourne (2014) stressed that even an organization of any size needs IT support to maintain the control of applications and systems. Gupta (2020) showed the efficacy of using machine learning to predict ticket complexities, reducing resolution process time. JIRA helps manage tickets and deliver timely projects when Kwinana (2019) observed that it effectively manages tickets. Like Liu and Wang (2021), they suggested that by adopting advanced technologies (i.e., technologies beyond fixture operations), help desk operations could greatly increase scale and efficiency in service provision. Together these serve to underscore the need for the modernization of help desk systems to serve the needs of organizations.

## **Related Studies**

Customer Support Ticketing System: Nidhi Lohia's The Complete Guide (Lohia, N., 2024)

The article "Customer Support Ticketing System: Nidhi Lohia's The Complete Guide" to Customer Support Ticketing Systems, published October 25, 2024, covers all about these systems and their advantages when used for your business. Customer support ticketing system is a tool used by businesses to harness customer support inquiries into 'tickets' that can be easily monitored and resolved. These systems collect inbound requests from different channels like email, phone, live chat, and social



media, and group all of these requests from different channels into one particular view and their priorities and resolve them as soon as possible. On top of offering performance analytics (to compare metrics like respondents' time, resolution time, and customer satisfaction), they help companies create knowledge bases for frequently asked questions. These systems are backed by research as Smith et al. (2018) found that ticketing systems greatly increase customer satisfaction by providing efficient tracking and resolution of customer issues. Automation of ticketing systems in customer service operations is also noticed by Johnson and Lee (2020) that the integration of automated ticketing systems in customer service operations reduces operational costs and increases the productivity of the support team. According to Patel (2022), ticketing systems enable businesses to scale their customer support systems without losing quality service delivery. Furthermore, Thompson (2023) discovered that the implementation of a ticketing system reduces ambiguity, facilitating a faster resolution and better controlling of customer queries.

Improving Customer Service with a Support Ticketing System (Santiago, A., 2023)

In his article "Improving Customer Service with a Support Ticketing System" (2023) Ari Santiago takes a closer look at how support ticketing systems help improve customer service. In the end, Santiago discusses how such systems allow for streamlining of customer interaction, tracking of issues, or even the automation of processes to increase efficiency. Behind all these is a support ticketing system serving as a centralized platform for managing and tracking customer questions in an organized fashion, helping businesses resolve issues better. It brings everything together, customer data, the automation of painful workflows, and integration with other tools, ensuring that responses and resolvers come in fast. However, it's important to prioritize the issue and monitor their progress within the system, this improves the response time and handle time to provide better customer satisfaction and customer loyalty. Sharma (2019)



research suggests automating customer service through ticketing systems can dramatically reduce response time and improve customer satisfaction. According to Lee et al. (2021), the communication and status tracking in the ticketing systems is centralized making the processes smoother and helping to improve the collaboration among team members. Patel and Desai (2020), they suggest that ticketing systems facilitate efficiency, by allowing businesses to identify bottlenecks and optimize customer service processes. Beyond that, Martin (2022) asserts that integration of the ticketing system with the other customer support platforms improves service delivery and decreases operational costs.

What Types of Analysis can be performed on a System for Managing Tickets (CommenceCRM, 2019)

To learn more about available analysis types, the article What types of analysis can be performed on a system for managing tickets by CommenceCRM (2019) can be read. This author discusses the importance of these analyses to improve efficiency and user experience. It suggests some strategies to help organizations analyze performance, track user interaction and predict trends to assess ticketing system effectiveness, enhance customer support, and improve operational workflow. Performance analysis is required in terms of measuring the system response time and user satisfaction; it should cover tracking of user interactions to detect repeat issues and improve ticket closure; and forecast trends should be used to predict future ticket volume and make resource planning. There is widespread agreement in the field of research that deep analysis is necessary to enhance the functionality of the system and customer experience. CommenceCRM finds overall that a comprehensive analysis of ticket management systems is needed for success in the future.



## **Chapter III**

## RESEARCH METHODOLOGY

In this chapter, the researchers outline the research methods that are utilized to carry out the study. It includes methods of research, selecting the respondents, developing and validating the research instrument, and implementing data-gathering procedures. By presenting these research methodologies, the chapter provides a comprehensive overview of the planned approach to conducting the study.

## **Method of Research**

This research is based on a developmental approach, using quantitative and qualitative methods, and data is collected through surveys and interviews. The purpose is to create an effective system that fulfils customer support needs, solves operational problems, and satisfies the firm's needs. The system is consequently reviewed and critically analyzed in terms of functionality, appearance, and effectiveness of improving performance to continue the improvement.

The research process follows the Project Agile Methodology (Hybrid Agile-Waterfall) a technique of project management, that reduces time and expense while following the guidelines of both Agile and Waterfall. The interplay between the two methodologies as a hybrid model allows teams to combine their best of both worlds for projects involving a balance between reliability and adaptability. In this methodology, there are some stages such as planning, scope definition, and implementation, all of which follow the Waterfall method, so that documentation is clear and structure is fixed. For example, development and testing are also adopting Agile principles to progress iteratively and in the short run, using feedback. With this combination, teams can adapt to changes while still being in control of the



important project milestones. The hybrid methodology is especially effective when dealing with large and complex projects, in particular where the components of such a project may require different management approaches. This approach is ideal for the Development of a Support Ticketing System for i-Secure Network and Business Solutions Inc. because it ensures clear initial requirements through Waterfall, while Agile allows for flexibility in accommodating changes or feature enhancements like ticket tracking, user roles, and notifications. It enables efficient testing and early issue detection, reducing risks and ensuring a more stable system. The iterative nature of Agile allows for constant stakeholder feedback, ensuring the system aligns with user needs. Additionally, key features can be released incrementally, allowing for faster deployment while maintaining a user-centered development process. This combination of planning, adaptability, and timely delivery makes the hybrid approach a practical choice for the project.

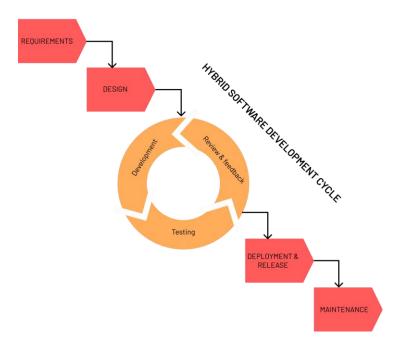


Figure 2. The Hybrid Agile-Waterfall Methodology



The Hybrid Agile-Waterfall Methodology shown in Figure 2 consists of 7 phases: (1) Requirements, (2) Design, (3) Development, (4) Testing, (5) Review & Feedback, (6) Deployment & Release (7) Maintenance.

**Requirements:** In this phase, all project requirements are gathered and documented upfront. You need to make sure they understand what it needs to deliver. Clients are involved in defining detailed requirements, both functional and non-functional, worked out in collaboration with the team.

**Design:** This involves creator of overall system architecture and detailed design based on the requirements. However, the design can proceed using standard specifications of how the system will fulfil the requirements. However, flexibility is introduced to support the use of the design during later phases, as the design may evolve based on reviews.



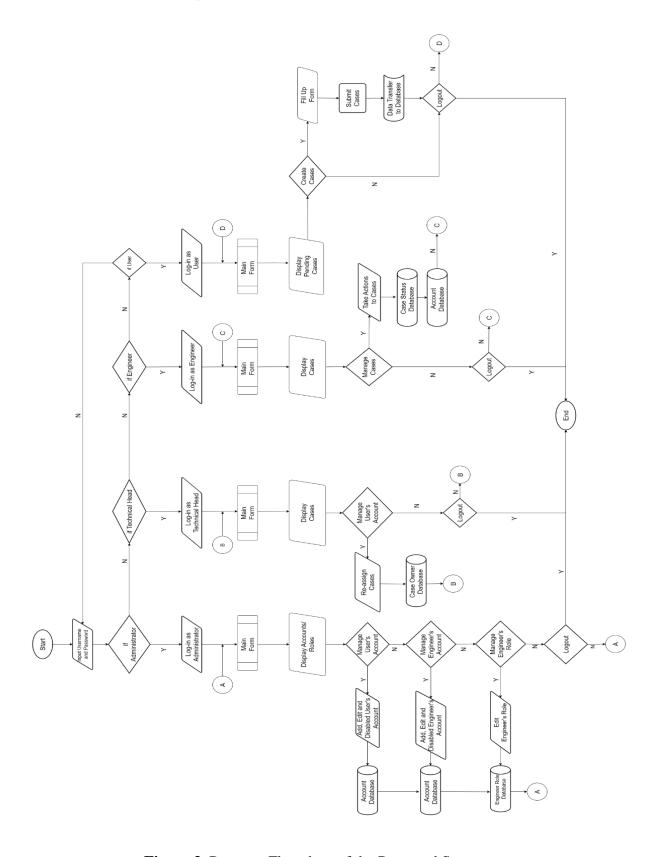


Figure 3. Program Flowchart of the Proposed System



**Development:** Coding and implementing the system is considered the development phase. This allows the features to be prioritized as they use shorter sprints or cycles.

**Testing:** Once developed, it goes through a test phase to find bugs or issues, testing can be iterative throughout development to find bugs early. This means that changes in the system are possible, without waiting for the entire project to be completed.

**Review and Feedback:** The clients review once a part of the system had been developed and tested, and then the changes were made continuously based on client input. It helps build up the system to be more perfect, and to meet user needs and expectations.

**Deployment and Release:** Once adjusted to its final version, the system is deployed to production which can be a final release after completing all iterations of the product. However, the flexibility of that deployment may not need to precisely match the exact deployment plan.

**Maintenance:** The system goes through the maintenance phase after the system is deployed. So, monitoring performance, fixing bugs, and then adding updates or features are necessary. It's ongoing maintenance that often happens through sprints and sometimes offers larger-scale periodic updates.



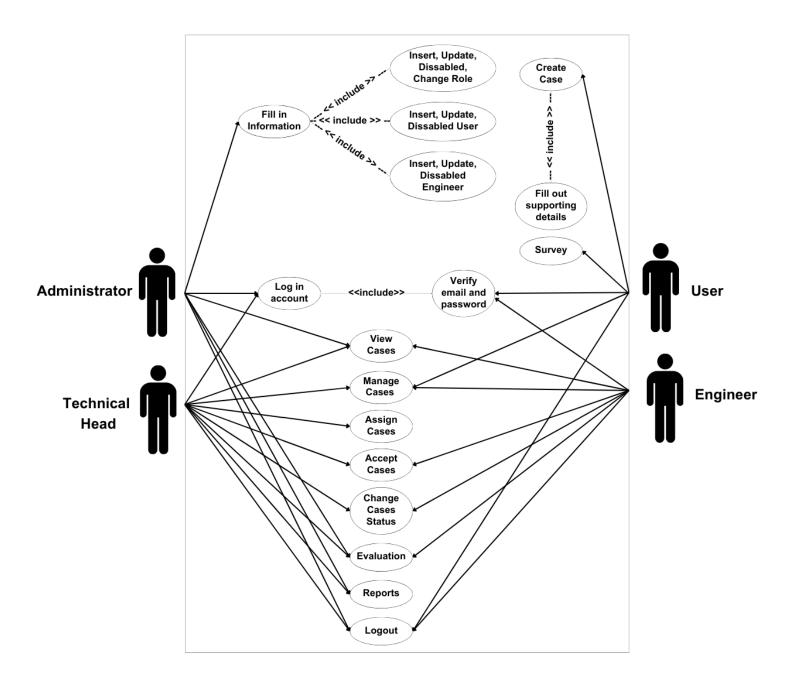


Figure 4. Use Case Diagram of the Proposed System



## **Description of the Respondent**

The respondent in this research study is Mr. Macrino Balangue, a Support Engineer in i-Secure Networks and Business Solutions Inc. He has been evaluating the company's support ticketing system.

Technically, his perspectives and exposures enable a holistic evaluation of the relative performance of the system hence the comprehensiveness of its overall functionality, adequacy, and reliability in meeting the technical support needs as proposed.

#### **Research Instrument**

The proponent used a consistent method in the collection of his data by asking questionnaires, interviews, observations, and records. This included data that were obtained from surveys, independently networked locations and data capture, data entry and logging.

The purpose was to gather comprehensive and accurate details necessary for system design and evaluation. To this end, there were various data-gathering instruments used to achieve the set-out objective. Face-to-face or actual conversation was done in the interviews as they tried to obtain information from the respondents including staff, administrators and IT specialists on the problems associated with the manual ticketing system. Structured questionnaires containing statistical questions were administered to the staff and the management of i-Secure Networks & Business Solutions Inc. to know the effectiveness of the current ticketing system. Questionnaires were filled out by the end-users and the IT specialists about the proposed system concerning the measures of accuracy, reliability, and



time. Furthermore, questionnaires were also adopted to elicit other important pieces of information needed for the creation of a support ticketing system.

## **Data Gathering Procedure**

**Evaluation.** The evaluation was conducted to determine the effectiveness of the proposed system and hardware for its worth. For the evaluation of system and hardware satisfaction, the proponent used survey questionnaires with a criterion using a scale of 1 to 5, where 1 indicates unacceptable, 2 indicates moderately acceptable, 3 indicates acceptable, 4 indicates very acceptable, and 5 indicates highly acceptable.

## **Statistical Treatment of Data**

To implement the Support Ticketing System for i-Secure Network and Business Solutions Inc., the proponent used some instruments to improve the quality of software. The following Software Quality Factors were used as follows:

**Functionality** is a set of attributes that bear on the capability to provide functions which meet stated and implied needs when the software is used.

**Reliability** is a set of attributes that bear on the capability to maintain a specified level of performance.



**Usability** is a set of attributes that bear on the capability to be understood, learned, and used.

**Efficiency** is a set of attributes that bear on the capability to provide appropriate performance relative to the number of resources used.

**Maintainability** is a set of attributes that bear on the capability to modify for 56 purposes of making corrections, improvements, or adaptions.

**Portability** is a set of attributes that bear on the capability to be adapted for different specified environments without applying actions or means other than those provided for this purpose in the product.

The system was evaluated against functionality, reliability, usability, efficiency, maintainability and portability. The developed system's acceptability was measured using the Likert Scale and the ranking was as follows: Highly Acceptable if the computed average was 4.50 to 5.00, Very Acceptable if the computed average was 3.50 to 4.49, Acceptable if the computed average was 2.50 to 3.49, Moderately Acceptable if the computed average was 1.50 to 2.49, and Unacceptable if the computed average was 1 to 1.49.

Mean Score	Interpretation of Mean
1.00 – 1.49	Unacceptable (U)
1.50 – 2.49	Moderately Acceptable (MA)
2.50 – 3.49	Acceptable (A)
3.50 – 4.49	Very Acceptable (VA)
4.50 – 5.00	Highly Acceptable (HA)

Table 1. Interpretation of Acceptability



#### **CHAPTER IV**

#### PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

This chapter discusses the assessment of the manual existing system as well as the analysis of the respondents to the developed system. There are tables below showing the acceptability of the developed system in terms of Functionality, Reliability, Usability, Efficiency, Maintainability, and Portability.

Table 1

Assessment of End-Users and IT experts to the proposed Support Ticketing System in terms of Functionality for i-Secure Networks & Business Solutions Inc.

Functionality		End-Users		IT Experts		r-All
Tunctionanty	Avg.	Q.I.	Avg.	Q.I.	Avg.	Q.I.
Suitability or the software has suitable but appropriate set of functions in accordance to its system objectives	4.50	НА	4.20	VA	4.35	VA
Accuracy or the system can provide an accurate result.	4.30	VA	4.00	VA	4.15	VA
Compliance or the system Defines the set of needs or information.	4.30	VA	3.80	VA	4.05	VA
Over-All	4.37	VA	4.00	VA	4.18	VA

Legend: 4.50 to 5.00 (Highly Acceptable–HA); 3.50 to 4.49 (Very Acceptable-VA); 2.50 to 3.49 (Acceptable-A); 1.50 to 2.49 (Moderately Acceptable-MA); 1 to 1.49 (Unacceptable-U)

Table 1 shows the assessment of end-users and IT experts of the proposed Support Ticketing System for i-Secure Networks and Business Solutions Inc. in terms of Functionality. Based on the table, "Suitability" (or the software has a suitable and appropriate set of functions by its system objectives) received the highest average of 4.50 for end-users with a qualitative interpretation of very acceptable and 4.20 with a qualitative interpretation of very acceptable for I.T. experts, resulting in a computed average of 4.35, also interpreted as very acceptable.



"Compliance" (or the system defines the net of needs or information) received the lowest average of 4.30 for end-users, with a qualitative interpretation of very acceptable and 3.80 with a qualitative interpretation of acceptable for I.T. experts, resulting in a computed average of 4.05, interpreted as very acceptable.

"Accuracy" (or the software provides accurate results) received an average of 4.30 for end-users, with a qualitative interpretation of very acceptable and 4.00 with a qualitative interpretation of very acceptable for I.T. experts, collecting a computed average of 4.15 with the same interpretation.

In terms of Functionality, the end-users received an overall average of 4.37, with a qualitative interpretation of very acceptable, while the IT experts received an overall average of 4.00, also interpreted as very acceptable. The overall computed average is 4.18, with a qualitative interpretation of very acceptable. This finding is supported by Jakob (2024), who emphasizes that ticketing systems or Service Desk Systems (SDS) are essential in IT service management, specifically for software development, problem tracking, and customer support. These systems enhance the efficiency of sharing information between service providers and consumers, enabling faster query resolution. The study highlights that accuracy and efficiency improvements are key factors in modern ticketing systems. The findings of this study align with Jakob's evaluation, as the system's accuracy and compliance ratings reflect its capability to provide accurate results and meet user requirements. This is consistent with Jakob's assertion that integrating machine learning into ticketing systems could further enhance automation and service optimization, leading to improved functionality and overall performance.



Table 2

Assessment of End-Users and IT experts to the proposed Support Ticketing System in terms of Reliability for i-Secure Networks & Business Solutions Inc.

Reliability		End-Users		IT Experts		r-All
Kenaomty	Avg.	Q.I.	Avg.	Q.I.	Avg.	Q.I.
Fault tolerance or the system can still perform after power lost.	3.90	VA	3.80	VA	3.85	VA
Recoverability on the system can record saved form.	4.00	VA	4.00	VA	4.00	VA
Over-All	3.95	VA	3.90	VA	3.93	VA

Table 2 presents the assessment of end-users and IT experts regarding the Support Ticketing System for i-Secure Networks and Business Solutions Inc. in terms of Reliability. The data highlights that in terms of reliability, "Recoverability" (or the system's ability to record saved forms) received the highest average of 4.00, with a qualitative interpretation of very acceptable for both end-users and IT experts, resulting in a computed average of 4.00, also interpreted as very acceptable.

"Fault Tolerance" (or the system's ability to perform even when the internet is not available) received the lowest average of 3.90 from end-users and 3.80 from IT experts, collecting an overall computed average of 3.85 with a qualitative interpretation of very acceptable.

In terms of overall reliability, the end-users provided an overall average of 3.95, while the IT experts rated it 3.90, both interpreted as very acceptable. The final computed overall average is 3.93, which also falls within the very acceptable range. This study aligns with Chanchad, Y., et al. (2023) in "HelpDesk Ticketing System," where it is emphasized that structured ticketing systems enhance organizational



productivity by ensuring a smooth and efficient workflow for handling queries. The findings support the idea that an organized, web-based ticketing system, such as the one implemented for i-Secure Networks and Business Solutions Inc., improves reliability, accessibility, and response efficiency. The ability to track, respond to, and manage tickets in an orderly manner reduces operational delays and ensures that customer concerns are addressed effectively. This supports the broader significance of HelpDesk systems in modern organizations, reinforcing the need for well-structured and reliable support solutions.

Table 3

Assessment of End-Users and IT experts to the proposed Support Ticketing System in terms of Usability for i-Secure Networks & Business Solutions Inc.

Usability -		End-Users		IT Experts		r-All
		Q.I.	Avg.	Q.I.	Avg.	Q.I.
Understandability or the system is user friendly.	4.30	VA	3.80	VA	4.05	VA
Learn ability or the system is easy to understand.	4.40	VA	4.80	HA	4.60	HA
Operability or the system is easy to operate.	4.50	HA	4.60	HA	4.55	HA
Over-All	4.40	VA	4.40	VA	4.40	VA

Legend: 4.50 to 5.00 (Highly Acceptable–HA); 3.50 to 4.49 (Very Acceptable-VA); 2.50 to 3.49 (Acceptable-A); 1.50 to 2.49 (Moderately Acceptable-MA); 1 to 1.49 (Unacceptable-U)

Table 3 presents the usability evaluation of the proposed Support Ticketing System for i-Secure Networks and Business Solutions Inc., as assessed by both end-users and IT experts. The findings show that "Learnability" (or the system is easy to understand) received the highest ratings, with an average score of 4.40 from end-users (highly acceptable) and 4.80 from IT experts (highly acceptable), resulting in an overall computed average of 4.60, which is interpreted as highly acceptable.



"Operability" (or the system is easy to operate), which measures how efficiently the system functions, received an average rating of 4.50 from end-users and 4.60 from IT experts, leading to an overall score of 4.55, also classified as highly acceptable.

"Understandability" (or the system is user-friendly), which assesses the system's user-friendliness, received the lowest ratings, with 4.30 from end-users and 3.80 from IT experts. The overall computed average for this criterion is 4.05, interpreted as very acceptable.

In general, both end-users and IT experts assigned an overall usability score of 4.40, leading to a final computed average of 4.40, which falls under the very acceptable category. This study aligns with Jakob (2024) and Chanchad et al. (2023), who emphasize that modern ticketing systems must prioritize efficiency, adaptability, and ease of use for smooth operation. Jakob (2024) highlights operability and learnability as key indicators of a well-designed system, while also noting the potential of machine learning to enhance automation. Similarly, Chanchad et al. (2023) stress the importance of structured query resolution and productivity in HelpDesk Ticketing Systems, ensuring efficient workflow and organized issue tracking. The high usability ratings in this study confirm that the proposed system effectively streamlines communication and problem resolution. Overall, the findings reinforce that a well-balanced ticketing system should be user-friendly, structured, and adaptable, making the proposed Support Ticketing System for i-Secure Networks and Business Solutions Inc. a reliable tool for managing technical issues and user queries.



Table 4

Assessment of End-Users and IT experts to the proposed Support Ticketing System in terms of Efficiency for i-Secure Networks & Business Solutions Inc.

Efficiency		End-Users		IT Experts		r-All
		Q.I.	Avg.	Q.I.	Avg.	Q.I.
Time behavior or the system has a quick response	4.40	VA	3.80	VA	4.10	VA
Over-All	4.40	VA	3.80	VA	4.10	VA

Table 4 reveals the assessment of end-users and IT experts regarding the proposed Support Ticketing System for i-Secure Networks and Business Solutions Inc. in terms of Efficiency. The table shows that in terms of Efficiency, "Time behavior" (or the system has acceptable response and processing time) received an average of 4.40, with a qualitative interpretation of very acceptable for end-users, and 3.80, with a qualitative interpretation of acceptable for IT experts, collecting a computed average of 4.10, which is interpreted as very acceptable.

Overall, in terms of Efficiency, the end-users received an overall average of 4.40, with a qualitative interpretation of very acceptable, while the IT experts received an overall average of 3.80, with a qualitative interpretation of acceptable. The overall computed average is 4.10, which is interpreted as very acceptable.



Table 5

Assessment of End-Users and IT experts to the proposed Support Ticketing System in terms of Maintainability for i-Secure Networks & Business Solutions Inc.

Maintainability		End-Users		IT Experts		r-All
Waintainaointy	Avg.	Q.I.	Avg.	Q.I.	Avg.	Q.I.
Resource behavior or the system can consume a	4.00	VA	3.80	VA	3.90	VA
lot of storage.	4.00	VA	3.60	VA	3.90	VA
Changeability or the system can be easily	4.20	VA	4.40	VA	4.30	VA
modified by the user.	4.20	VA	4.40	VA	4.30	VA
Stability or the system is stable when it is used.	4.10	VA	4.40	VA	4.25	VA
Testability or the system can be easily tested.		VA	4.40	VA	4.25	VA
Over-All	4.10	VA	4.25	VA	4.18	VA

Table 5 presents the assessments of IT Experts on the proposed Support Ticketing System for i-Secure Networks and Business Solutions Inc. in terms of Maintainability. The table shows that "Stability" (or the system is stable when used) and "Testability" (or the system can be easily tested) received the highest average of 4.25, with a qualitative interpretation of very acceptable.

"Resource Behavior" (or the system can consume a lot of storage) received the lowest average of 3.90, which is still interpreted as very acceptable.

"Changeability" (or the system can be easily modified by the user) received an average of 4.30, indicating that while the system is adaptable, there is room for further improvement. The overall average is 4.18, with a qualitative interpretation of very acceptable.



Table 6

Assessment of End-Users and IT experts to the proposed Support Ticketing System in terms of Portability for i-Secure Networks & Business Solutions Inc.

Portability		End-Users		IT Experts		r-All
Tortability	Avg.	Q.I.	Avg.	Q.I.	Avg.	Q.I.
Adoptability or the system can be adapted to any environment that does not need changes.	4.40	VA	4.00	VA	4.20	VA
Installability or the system can be easily installed or put-up.	4.70	НА	4.40	VA	4.55	НА
Over-All	4.55	HA	4.20	VA	4.38	VA

Table 6 presents the assessment of the evaluation of end-users and IT experts on the Support Ticketing System for i-Secure Networks and Business Solutions Inc. in terms of Portability. As shown in the table, "Installability" (or the system's ability to be easily installed in a specified platform or environment) received the highest average of 4.70 from end-users, which is interpreted as highly acceptable, and 4.40 from IT experts, which is considered very acceptable. This results in a computed overall average of 4.55, with a qualitative interpretation of highly acceptable.

"Adaptability" (or the system's ability to be adapted to any environment without requiring changes) received the lowest average of 4.40 from end-users very acceptable and 4.00 from IT experts very acceptable, leading to an overall computed average of 4.20, which is also interpreted as very acceptable.

For Portability, end-users provided an overall average rating of 4.55 (highly acceptable), while IT experts rated it at 4.20 (very acceptable). The computed overall average for Portability is 4.38, which falls under the qualitative interpretation of very acceptable. These findings align with the theoretical



frameworks proposed by Jakob (2024) in "An Evaluation of Ticketing Systems" and Chanchad et al. (2023) in their study on HelpDesk Ticketing Systems. Jakob (2024) emphasizes that ticketing systems must be efficient, adaptable, and compatible with other tools to maximize their functionality. The results of this study support this claim, as the Support Ticketing System for i-Secure Networks and Business Solutions Inc. has demonstrated high installability and adaptability, ensuring ease of deployment across different platforms. Meanwhile, Chanchad et al. (2023) highlight how HelpDesk Ticketing Systems improve productivity and streamline issue resolution by providing structured workflows rather than relying on traditional email-based support. The system's portability, as reflected in the high ratings from both endusers and IT experts, ensures that it can be seamlessly installed and accessed across multiple environments, making it a valuable tool for enhancing efficiency and user engagement. Together, these frameworks provide a strong foundation for understanding the system's portability, usability, and efficiency, emphasizing the importance of adaptability and structured query management in modern ticketing solutions.



Table 7

Summary table of the assessment of end-users and IT experts to the proposed Support Ticketing System for i-Secure Networks and Business Solutions Inc. in terms of Functionality, Reliability, Usability, Efficiency, Maintainability and Portability.

Degree of Evaluation	End-	Users	IT E	xperts	Over-All		
Degree of Evaluation	Avg.	Q.I.	Avg.	Q.I.	Avg.	Q.I.	
Functionality	4.37	VA	4.00	VA	4.18	VA	
Reliability	3.95	VA	3.90	VA	3.93	VA	
Usability	4.40	VA	4.40	VA	4.40	VA	
Efficiency	4.40	VA	3.80	VA	4.10	VA	
Maintainability	4.10	VA	4.25	VA	4.18	VA	
Portability	4.55	HA	4.20	VA	4.38	VA	
Over-All	4.30	VA	4.09	VA	4.20	VA	

Table 7 reveals the summary table of the assessment of End-Users and IT Experts on the proposed Support Ticketing System for i-Secure Networks and Business Solutions Inc. in terms of Functionality, Reliability, Usability, Efficiency, Maintainability, and Portability. It shows that "Portability" received the highest average of 4.55, which is highly acceptable for end-users, while "Maintainability" received the highest average of 4.25, which is very acceptable for IT Experts.

Furthermore, "Reliability" received the lowest weighted mean of 3.95, which is very acceptable for end-users. On the other hand, "Efficiency" received the lowest average of 3.80, which is very acceptable for the IT Experts.



Overall, the End-Users received an overall average of 4.30, which is very acceptable, while the IT Experts' overall average is 4.09, which is also very acceptable. In totality, the overall average for both respondents is 4.20, with a qualitative interpretation of very acceptable.



#### **CHAPTER V**

#### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents the summary of the findings of the study, conclusions drawn from the findings and recommendations offered based on the study.

#### **Summary of Findings**

In terms of Functionality, the end-users received an overall average of 4.37 with a qualitative interpretation of very acceptable, while the IT experts received an overall average of 4.00 with a qualitative interpretation of very acceptable. The overall computed average is 4.18, with a qualitative interpretation of very acceptable.

In terms of Reliability, the end-users received an overall average of 3.95 with a qualitative interpretation of very acceptable, while the IT experts received an overall average of 3.90 with a qualitative interpretation of very acceptable. The overall computed average is 3.93, with a qualitative interpretation of very acceptable.

In terms of Usability, the end-users acquired an overall average of 4.40 with a qualitative interpretation of very acceptable, while the IT experts received an overall average of 4.40 with a qualitative interpretation of very acceptable. The overall computed average is 4.40, with a qualitative interpretation of very acceptable.



In terms of Efficiency, the end-users received an overall average of 4.40 with a qualitative interpretation of very acceptable, while the IT experts received an overall average of 3.80 with a qualitative interpretation of very acceptable. The overall computed average is 4.10, with a qualitative interpretation of very acceptable.

In terms of Maintainability, the end-users received an overall average of 4.10 with a qualitative interpretation of very acceptable, while the IT experts received an overall average of 4.25 with a qualitative interpretation of very acceptable. The overall computed average is 4.18, with a qualitative interpretation of very acceptable.

In terms of Portability, the end-users received an overall average of 4.55 with a qualitative interpretation of highly acceptable, while the IT experts received an overall average of 4.20 with a qualitative interpretation of very acceptable. The overall computed average is 4.38, with a qualitative interpretation of very acceptable.

Overall, the end-users received an overall average of 4.30, which is very acceptable; and for the IT experts, the overall average is 4.09, which is very acceptable. In totality, the overall average for both respondents is 4.20, with a qualitative interpretation of very acceptable.



#### **Conclusions**

- Recoverability remains a key concern for all respondents. The system's ability to recover
  data in case of memory failure is seen as a challenge unless backup data or management
  support is ensured. This highlights the need for a robust data backup and recovery strategy
  in the system.
- 2. Fault tolerance has been identified as a critical factor affecting Reliability. Respondents highlighted issues with network speed and data transfer when retrieving reports and related data, which may cause difficulties in accessing information efficiently.
- 3. Resource behavior was noted as an issue, particularly regarding system memory and data transmission speed. Some users experienced delays in data transmission, which could affect response time and efficiency, particularly for administrators and system engineers.
- 4. Portability and Adaptability were identified as areas that may require further improvement.
  While the system was rated as very acceptable, some users indicated that platform compatibility and usability across different environments might pose challenges for future adoption.
- 5. Maintainability, particularly in terms of changeability and stability, was considered a challenge due to the evolving demands for report management and monitoring. The system may need regular updates to ensure it meets the dynamic requirements of users.
- 6. There is a significant difference in the assessment of the respondents regarding the system due to differences in computer platforms and user expertise. While end-users rated the system slightly higher, IT experts identified areas where technical improvements could enhance performance and maintainability.



#### Recommendations

- Back & Security ensures that IT systems are always protected by scheduling regular antivirus and spyware scans to prevent security threats.
- Data is securely stored in a database with transaction logs in the web-based ticketing and monitoring system, allowing for quick recovery when needed.
- System Speed & Performance is improved by enhancing computer and network speeds,
   ensuring smooth operations and faster response times.
- System Accessibility & Flexibility allows more people from different industries to use the system by providing multilingual support for diverse users.
- AI & Automation enhances efficiency by automatically categorizing, prioritizing, and managing tickets while also improving reporting and analytics for better decision-making.
- User Experience & Assistance is improved by making the system more user-friendly, adding a video guide for new users, and organizing requests by separating claimed and unclaimed ones for easier management.
- Real-Time Notifications & Multiple Channels for Client Communication keep clients informed through instant updates and various communication options for better support.
- Infrastructure & Wiring Management is optimized to improve system accuracy and efficiency through better wiring and integration.



#### APPENDIX A

#### **SOFTWARE EVALUATION FORM**

Dear Respondent,

This survey will serve as an instrument to assess the level of acceptability of the developed system. Your cooperation in completing this form will make an important contribution to gathering reliable and accurate data needed to evaluate the developed system.

Rest assured that your information will be treated with utmost confidentiality as necessary.

Proponents:	Noted by:
Joice R. Barandon	Mr. Rohmer Roi A. Bujawe (Adviser)
Shan Cai C. Loyola	

# SUPPORT TICKETING SYSTEM FOR i-SECURE NETWORKS AND BUSINESS SOLUTIONS INC.

Each rating is quantified by the following:

Numerical Rating	Equivalent
5	Highly Acceptable
4	Very Acceptable
3	Acceptable
2	Moderately Acceptable
1	Unacceptable

**Instruction:** Please evaluate the developed system by using the given scale and placing a check mark [] under the corresponding numerical rating:

Characteristics	Sub-characteristics	Descriptions	HA 5	VA 4	<b>A</b> 3	MA 2	UA 1
Functionality	Suitability	The software has suitable but appropriate set of functions in accordance to its system objectives.					
	Accuracy	The software provides accurate results.					
	Compliance	The software addresses the defined set of needs.					



Characteristics	Sub- characteristics	Descriptions	HA 5	VA 4	<b>A</b> 3	MA 2	UA 1
	Fault tolerance	It has ability to maintain a specified level of performance in case of software faults or of infringement of its specified interface.					
Reliability	Recoverability	It has the capability to re-establish its level of performance and recover the data directly affected in case of a failure and on the time and effort needed for it.					
	Understandability	It is easy for the users to recognize its logical concept and applicability.					
Usability	Learnability	It is easy for the users to learn its application.					
	Operability	The software is easy to operate.					
Efficiency	Time behavior	It has acceptable response and processing time and throughput rates.					
	Resource behavior	It consistently uses enough computing resources (memory space) for all its functions.					
Maintainability	Changeability	It is relatively easy to modify the software or remove faults.					
	Stability	It is deemed stable when modified.					
	Testability	It is easy to validate any modification made.					
Portability	Adaptability	It could adapt to different specified environments without applying other actions or means that those provided for this purpose for the software considered.					
	Installability	It is easy to install the software in specified platform or environment.					

**Instruction:** Please fill up all fields with \* as required, optional otherwise.

Respondent's Name:							
* Type of Respondent:	End User (Users / Administrator)						
	IT Expert (Soft	IT Expert (Software Developer / Programmer / IT Specialist)					
	Others:						
Course:		Year / Year Graduated:					
Please Confirm your responses by signing. Thank you very much for your time and insights.							
*Signature:		*Date:					



#### APPENDIX B

Dear Respondents,

This survey will serve as an instrument to evaluate the existing system of i-Secure Networks and Business Solutions Inc. Your cooperation by answering the question on this form will make an important contribution to gathering reliable and accurate data needed to design and develop a new system.

Rest assured that the information you give will be treated with utmost confidentiality as necessary.

#### **QUESTIONNAIRE FORM**

"Support Ticketing System for i-Secure Networks and Business Solutions Inc."

1. What features do yo	u expect in an advanced Support Ticketing System?		
2. How satisfied are yo	2. How satisfied are you with the response of the Support Ticketing System?		
3. What are the challer	ges that you encountered while using it?		
4. How do those proble	ems affect you in using the Support Ticketing System?		
5. What could be the so	olutions that you can suggest to solve these circumstances?		
6. Do you think this sy	stem will be beneficial? Why or why not?		
7. Why do you think a	n automated Support Ticketing System is important for an organization?		
8. What will be your su	aggestion/s for enhancement of Support Ticketing System?		
<b>nstruction:</b> Please fill up al	l fields with* as required, optional otherwise.		
Respondent's Name:			
* Type of Respondent:	End User (Users / Administrator)  IT Expert (Software Developer / Programmer / IT Specialist)  Others:		
Course:	Year / Year Graduated:		
Please Confirm your re	esponses by signing. Thank you very much for your time and insights.		
*Signature:	*Date:		



## APPENDIX C

### **DATA DICTIONARY**

To avoid the perplexity of the study, the following terms were translated through the database dictionary.



### APPENDIX D



#### APPENDIX E

#### REFERENCES

Chanchad, Y., & Kanade, S. T. (2023). HelpDesk Ticketing System. *Journal of Technology Solutions*, 5(2), 45-58.

CommenceCRM. (2019, December 3). What types of analysis can be performed on a system for managing tickets. Retrieved from https://commence.com/blog/2019/12/03/ticket-management-system-analysis/

Fuchs, S., Drieschner, C., & Wittges, H. (2022). *Improving Support Ticket Systems Using Machine Learning: A Literature Review*. Proceedings of the 55th Hawaii International Conference on System Sciences. Technical University of Munich. Available at https://hdl.handle.net/10125/79570.

Hampel, J. (2024, March 30). An Evaluation of Ticketing Systems. Available at <a href="https://hps.vi4io.org/media/teaching/autumn\_term\_2023/stud/hpcsa\_jakob\_hampel.pdf">https://hps.vi4io.org/media/teaching/autumn\_term\_2023/stud/hpcsa\_jakob\_hampel.pdf</a>

Kumar, S., Kumari, N., Sharma, L., & Ahmad, S. (2023). Help Desk Support Ticket and Issue Management. *International Journal on Recent and Innovation Trends in Computing and Communication, 11*(11), 859–866. Available at <a href="https://ijritcc.org/index.php/ijritcc/article/download/10317/7862/12598">https://ijritcc.org/index.php/ijritcc/article/download/10317/7862/12598</a>.

Lohia, N. (2024, October 25). Customer Support Ticketing System: The Complete Guide. Retrieved from https://hiverhq.com/blog/ticketing-system.



Salameh, M., & Fahed, N. (2011). The role of ticketing systems in managing IT support requests: A case study of JIRA's implementation. *Journal of Information Systems*, 27(3), 45-60. Available at <a href="https://arxiv.org/abs/2202.06213">https://arxiv.org/abs/2202.06213</a>.

Santiago, A. (2023, May 4). Improving Customer Service with a Support Ticketing System. Retrieved from https://getmagic.com/blog/support-ticketing-system/.

Tang, X., & Todo, Y. (2013, August). A study of service desk setup in implementing IT service management in enterprises., Vol. 4, No. (3).



# **CURRICULUM VITAE**



# JOICE RIVERA BARANDON

Masagana, Pandi, Bulacan <u>barandonjoice07@gmail.com</u> +63969-620-8154



#### **CAREER OBJECTIVE**

Create value for my prospective employer through my dedicated and diligent efforts.

#### PERSONAL INFORMATION

Birthday: December 31, 2002

Age:21Gender:FemaleReligion:CatholicStatus:Single

Mother's Name: Dolores R. Barandon
Contact Number: +63922-321-0682
Father's Name: Jose Q. Barandon

Contact Number: N/A

#### **EDUCATION**

**COLLEGE** 2021 – Present **Bachelor of Science in Computer Science** 

ACLC College of Sta. Maria

J.P. Rizal St. Poblacion, Sta. Maria, Bulacan

SENIOR HIGH SCHOOL 2019 – 2021 Academic Track - Information and

**Communications Technology (ICT)** 

ACLC College of Sta. Maria

J.P. Rizal St. Poblacion, Sta. Maria, Bulacan

JUNIOR HIGH SCHOOL 2015 – 2019 Masagana High School

Masagana, Pandi, Bulacan

PRIMARY 2009 – 2015 Masagana Elementary School

Masagana, Pandi, Bulacan



#### **CERTIFICATE**

CSARC Seminar 2024: "API: Data Security"
 ACLC College of Sta. Maria
 J.P. Rizal St. Poblacion, Sta. Maria, Bulacan
 January 17, 2024

#### **SKILLS**

- Average communication skills
- Time Management

#### REFERENCES

• Mrs. Rizza A. Balangue

School Director ACLC College of Sta. Maria J.P. Rizal St. Poblacion, Sta. Maria, Bulacan +63917-136-6167

• Mrs. Judy Anne P. Amay

Student Services Coordinator ACLC College of Sta. Maria J.P. Rizal St. Poblacion, Sta. Maria, Bulacan +63905-915-0013

• Ms. AJ Nicole D. Silverio

Laboratory Facilitator ACLC College of Sta. Maria J.P. Rizal St. Poblacion, Sta. Maria, Bulacan +63991-336-2196

I certify that the above information are true and correct to the best of my ability.

JOICE R. BARANDON
Student Applicant





#### Contact

(+63) 954 238 2883

sloyola739@gmail.com

Block 37 Lot 16 San Vicente Homes, Sta. Maria, Bulacan

#### **Personal Information**

Age: 21

Birthday: August 29, 2003

Sex: Female Height: 5'4 Status: Single

Religion: Church of Christ

#### **Mother's Information**

Name: Yolanda C. Loyola

Occupatrion: Housewife/YouTuber

Phone: (+63) 915 343 6801

#### Father's Information

Name: Roderick M. Loyola Occupation: Bus Driver

Phone: (+63) 935 773 3908

#### **Skills**

Time Management Communication Adaptability Multitasking

# SHAN CAI LOYOLA

#### Student

#### Objectives

I am a hardworking and honest individual with a strong, constant willingness to learn new things. I'm motivated to accomplish every task I'm assigned to do with an eagerness to learn.

### **₱** Education

2021	ACLC College of Sta. Maria
-	JP. Rizal St., Poblacion, Santa Maria, Bulacan
2025	Bachelor of Science in Computer Science
2015	Saint Vincent Learning Academy
-	San Vicente, Santa Maria, Bulacan
2021	<ul> <li>Senior High School Strand : STEM</li> </ul>
	<ul> <li>Junior High School</li> </ul>
2013	San Vicente Gulod Elementary School
-	R242+JV7, Santa Maria, Bulacan
2015	Grade 5 and 6 (award in Taekwondo)

#### 2008 | Capellan St. Mary's Academy

San Vicente Homes, Santa Maria, Bulacan

Preparatory to Grade 4 (consistent honor student)

#### Work Experience

2013

#### DenMerc Group Inc.

051 Luwasan St., Bagbaguin, Santa Maria, Bulacan

· On The Job Trainee

#### Certificates

API Data Security (2024)



#### ■ Character References

Ms. Winilyn DC. Marquez
Licensed Professional Teacher
Department of Public Works and Highways (DPWH) MIMAROPA Region
(+63) 943 098 0097

Ms. AJ Nicole D. Silverio
Laboratory Facilitator
ACLC College of Sta. Maria
J.P. Rizal St. Poblacion, Sta. Maria, Bulacan
(+63) 991 336 2196

Mrs. Rizza A. Balangue School Director ACLC College of Sta. Maria J.P. Rizal St. Poblacion, Sta. Maria, Bulacan (+63) 917 136 6167



# Joice R. Barandon Autobiography

Joice R. Barandon was born on December 31, 2002, in Masagana, Pandi, Bulacan. Her friends call her "Joice." She is the youngest child of Mr. Jose Barandon and Mrs. Dolores Barandon and has two sisters named Joan and Jean.

She took her primary education at Masagana Elementary School, where she joined the Girl Scouts. She also participated in the violin class from Grade 3 to Grade 4 and later joined the Drum and Lyre band in Grade 5 and Grade 6.

She continued her secondary education at Masagana High School, where she became a Senior Scout. However, she did not earn any badges or participate in jamborees. After completing high school, she enrolled in Senior High School at ACLC College of Sta. Maria.

In 2021, she entered college and took up a Bachelor of Science in Computer Science at ACLC College of Sta. Maria. She actively participated in student leadership and served as an auditor in the Student Council for the academic year 2022–2023. She was also elected as the homeroom president from her first year to her fourth year in college. In addition, she was a consistent assistant in the graduation ceremonies, showcasing her dedication and involvement in academic events. She was also involved in the school's marketing team, contributing to promotional activities and events.



# Shan Cai C. Loyola

Autobiography

Shan Cai C. Loyola was born on August 29, 2003, in Bagbaguin, Sta. Maria, Bulacan. Her friends often call her "Shan". She is the only child of Mr. Roderick M. Loyola, and Mrs. Yolanda C. Loyola. She took her kindergarten up to Grade 4 in Capellan St. Mary's Academy and transferred in San Vicente (Gulod) Elementary School when she was in Grade 5 and Grade 6, graduated in year 2015.

She took secondary education at St. Vincent Learning Academy and graduated in year 2021. At the age of 10, she learned to play chess, she likes to sing and listen to music, she even played Taekwondo, even won an award but then stopped when she was in 1st year of high school. She also loves reading and writing stories, and making poems at the age of 12 until now. In year 2019, she joined JS Prom when she was in 10<sup>th</sup> grade and won as Prom Queen. She was also elected as muse from her 11<sup>th</sup> grade up to 12<sup>th</sup> grade.

In year 2021, she took a four-year course of Bachelor of Science in Computer Science at ACLC College of Sta. Maria. She has been participating in activities and events of school like seminars, SOLACE, Intramurals, and so on. October 12, 2024 when she participated as candidate of Mr. and Ms. Acquaintance, she won as 3<sup>rd</sup> runner-up. December 2024, she also participated in Poetry Writing competition, she won as champion. Every SOLACE and Intramurals, she was joining chess competition and winning 1<sup>st</sup> place.