



Republic of the Philippines

University of Cabuyao
(Pamantasan ng Cabuyao)
College of Computing Studies

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PNC:AA-LE-343

April 23, 2024

Dr. Zandra N. Maningas
DR. ZANDRA N. MANINGAS

Vice President for Planning, Research, and Extension

Dr. Joanna Marie A. De Borja
THRU: DR. JOANNA MARIE A. DE BORJA

Director, Research and Development Department

Dear Dr. Maningas:

Dangal Greetings!

I am writing to request an addendum about some changes that should be made to the BSIT and BSCS student research.

After thorough consideration and consultation with Dr. Alice Lacorte, the dean of the College of Computing Studies, it has been determined that certain adjustments are necessary to enhance the coherence of the outline of the research manuscript. Specifically, the following revisions are proposed:

1. Omit the **conceptual framework** discussion in Chapter 1 of the BSIT Capstone Project. Since the conceptual framework is already in Chapter 2. Therefore, it is recommended to omit the redundant discussion for better readability and focus.
2. Inclusion of **population and sampling** in the discussion of respondents to the study in Chapter 3 both in the BSIT Capstone Project and the BSCS Thesis. To provide a comprehensive understanding of the respondents to the study, it is proposed to include detailed information regarding the population and sampling techniques within the discussion of respondents in Chapter 3.
3. Place the **evaluation and scoring** after the data gathering tools section in Chapter 3 both in BSIT - Capstone Project and BSCS Thesis. It is suggested to include a section on evaluation and scoring immediately following the discussion of data gathering tools in the data analysis plan. This addition will provide clarity on the process of analyzing the collected data and enhance the transparency of the research methodology.

I kindly request your approval to proceed with these revisions. Your guidance and support throughout this process are greatly appreciated. Thank you for your attention to this matter. I look forward to your favorable response.

Note: Attached in this letter the proposed research outline with description for BSIT Capstone Project and BSCS Thesis.

Respectfully

Prof. Fel Rablanida
PROF. FEL RABLANIDA
Research Teacher

Dr. Gima B. Montecillo
DR. GIMA B. MONTECILLO
Research Teacher / CCS Research Coordinator

Dr. Luvim M. Eusebio
DR. LUVIM M. EUSEBIO
Research Teacher / BSIT Department Chair

Dr. Alice M. Lacorte
DR. ALICE M. LACORTE
Dean, College of Computing Studies

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BSIT CAPSTONE PROJECT 1 – RESEARCH OUTLINE AND DESCRIPTION

CHAPTER I - THE PROBLEM AND IT'S SETTING

Introduction

This section discusses the rationale of the study. The researcher should address the following points: current technology trends related to the study, research gaps, brief overview of the company being studied, its processes, problems faced by the company within the discussed process, the intention to solve those problems, and how the research will address the existing gaps. Maximum 2 pages of discussion.

Objectives of the Study

This section should provide both general and specific objectives that are anchored to the research problems stated in the introduction. The objectives should be presented in declarative form using numbered bullets. Focus on the design, development, and testing in constructing the specific objectives.

Example:

Research Title: A LAN-Based Electronic Hospital Management System for WahKoKer Hospital

General Objective:

To design, develop and implement a hospital management system that will improve the services provided by WahKoKer Hospital on the following context: patient records, billing statements and operating costs.

Specific Objectives:

- 1. Design a user-friendly interface for the following tasks:*
 - 1.1. managing patient records;*
 - 1.2. calculating billing statements; and*
 - 1.3. generating operating costs.*
- 2. Develop a LAN-based system that can:*
 - 2.1. maintain and organize the medical record of patients;*
 - 2.2. automatically calculate the patient's bill based on the patient's stay, cost per day, and doctor's fee;*
 - 2.3. provide a running balance for the patient upon request;*
 - 2.4. determine the business overhead costs incurred by the hospital; and*
 - 2.5. provide a dashboard for the equipment operating costs based on the budget allotted.*
- 3. Evaluate the performance of the proposed system based on the following criteria of ISO 25010:*
 - 3.1. Effectiveness;*
 - 3.2. Reliability;*
 - 3.3. Efficiency; and*
 - 3.4. Usability.*

Scope and Limitation

The study's scope should cover the target users/beneficiaries, geographic area, timeframe, general purpose, and specific features of the proposed system. On the other hand, the study's limitations should discuss its weaknesses that are beyond the researcher's control and must be supported with valid reasons.

Significance of the Study

Explain the academic and practical significance of the study, focusing on the knowledge, innovation, and technological value it adds to the field of information technology. Present the explanation in a Macro to Micro perspective.



Definition of Terms

Define all **conceptual** and **technical** terms in the study, provide citations for each term, and spell out all acronyms. Technical terms should be taken from reliable dictionaries or encyclopedias, while conceptual terms should be defined based on their observed characteristics and usage.

Note: Use proper citation for the technical terms

CHAPTER II - REVIEW OF RELATED LITERATURE AND STUDIES

Note: This chapter presents a comprehensive review of existing literature and studies relevant to the research topic. It aims to identify gaps from the existing research, establish the significance of the current study in the context of previous work, and provide a conceptual paradigm and guidelines for developing the proposed IT solution.

(Chapter Introduction)

This section is meant to provide overview of the chapter's content.

Conceptual Literature

In this section, the researcher should discuss the fundamental functionalities and guidelines for developing the proposed IT solution based on the literature. It should first outline the standard features expected in such a system. It should then provide guidelines on programming or creating that system. Additionally, the literature should stress the significance of user-centric design and testing to ensure the system meets the needs of its intended users effectively.

Research Literature

This section has two parts: Review of Related Literature and Review of Related Studies

Review of Related Literature discusses the previous research literature that are directly related to the current research topic. It is a systematic examination of the scholarly literatures. It critically analyzes, evaluates, and synthesizes research concepts, theories, practices, and constraints by scholars and researchers that are related to an area of focus.

Review of Related Studies discusses studies that are related to the current research topic. It discusses the results of studies closely related problems that have been investigated, the research design used in the study including procedures used and data gathering instruments employed, population, sampling methods utilized, variables that were operationally defined, extraneous variables that may affect the findings, and recommendations for the further research.

Note: The topics mentioned in this section for discussing the RRL and RRS are just minimum requirements. You are allowed to add additional topics in RRL and RRS.

Theoretical / Conceptual Framework

This section presents the **theoretical framework or conceptual framework of an existing study** that will guide the current study. It should clearly explain the theoretical perspective or conceptual model that will be used to interpret the results of the study.



Note: Start writing this section by explaining how a particular framework aligns with the research objectives and contributes to addressing the research problem.

Conceptual Paradigm

Researchers should **illustrate and explain their own conceptual framework/model/paradigm** that shows the key concepts, variables, and relationships that will be investigated in the study. This should be based on the theoretical or conceptual framework presented in the previous sections.

Synthesis

This section synthesizes the findings of the literature and studies review, highlighting key themes, trends, and gaps. It should also justify the need for the current study based on the gaps identified.

CHAPTER III - METHODS AND PROCEDURES

Note: This chapter outlines the research design, methods, and procedures that will be used to conduct the study. It provides a detailed overview of how the research will be carried out and why specific methods were chosen.

(Chapter Introduction)

This section is meant to provide overview of the chapter's content.

Research Design

This section describes the overall research design, indicating whether it is qualitative, quantitative, mixed methods, or another method. It should also provide an explanation for the rationale behind selecting the specific research design.

Respondents of the Study

Start the discussion by briefly describing the geographical area or specific setting where the research will take place. Include relevant details such as the name of the institution or organization, its location, and any unique characteristics that make it suitable for the study. Remember, the choice of locale can significantly impact the research outcomes, as it influences factors such as access to resources, the population under study, environmental conditions, and cultural context.

In the next paragraph, describe the population's profile, from which the sample will be drawn, and the total population of the study based on the statistics.

Lastly, discuss the process of determining the sample size and the method of sampling (probability or non-probability). A table should also be used to display the total number of participants as well as the number of participants per classification.

Note:

- When the population size is relatively small and well-defined, use total enumeration. If that's the case, the entire population is included in the data collection (Source: <https://dissertation.laerd.com/total-population-sampling.php>)
- Otherwise, use Slovin's formula to determine the minimum sample size (Source: <https://www.statology.org/slovins-formula/>)



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Data Gathering Procedure

This section has three parts: Data Gathering Tools, Evaluation and Scoring, Data Analysis Plan, and System Development

Data Gathering Tools

In this section, the researcher should provide an overview of the data collection tools and procedures that will be employed to gather information for the study. This tool includes, but is not limited to, surveys, interviews, focus group discussions, and observations.

Evaluation and Scoring

Explain the criteria and methodology that will be used to evaluate the performance of the proposed solution. It should also outline how the system's performance will be scored.

Data Analysis Plan

This section outlines the procedures for analyzing the collected data, including the preparation and presentation of the data, how a statistical method will be used, and how to interpret the data to determine the findings. It explains the tasks researchers must perform for data analysis.

System Development

This section should discuss the methodology for developing the proposed system, the tasks to be done, tools required, and the results of each task. Present the results from phase 1 up to the design phase for Capstone Project 1. Use UML for system design. Also, discuss the results from Step 1 up to system testing in Capstone Project 2.

Ethical Considerations

This section addresses any ethical issues that should be taken into account during the study, such as protecting participant confidentiality and anonymity.

Literature Cited

List of References

Appendices

- A.** Copy of Confidentiality and Non-Disclosure Agreement if PnC is a research site
- B.** Validated Research Instrument/s
- C.** Informed Consent Form
- D.** Research Ethics Review Committee Evaluation
- E.** Short report of Plagiarism Software
- F.** Report of Language Software
- G.** Curriculum Vitae of Student Researchers



BSCS THESIS 1 – RESEARCH OUTLINE AND DESCRIPTION CHAPTER I

CHAPTER I – THE PROBLEM AND IT'S SETTING

Introduction

This section discusses the rationale of the study. The researcher should address the following points: current technology trends related to the study, algorithm used in the existing related study, research gaps, problems that the research would like to solve, the intention to solve those problems. Maximum 2 pages of discussion.

Statement of the Problem

This section should provide both general and specific statement of the problem that are anchored to the research problems stated in the introduction.

*The **general statement of the problem** is the first statement of this section, beginning with a clear declarative statement, and summarizing the problem to be investigated.*

*A **specific statement of the problem** adds more detail, facts, and clarifying information to the general statements. They provide supporting arguments and evidence for the general statements and are found after the general statements. The specific statement should be presented in interrogative form using numbered bullets. Focus on the application of algorithm, development, and testing.*

Example:

Research Title: Criminal Identification with Reporting System for Identifying and Locating Wanted Persons

General Statement of the Problem:

The related literature and studies on criminal identification and reporting systems lack comprehensive understanding and solutions regarding the development of effective face recognition systems and reporting features for accurately identifying and locating wanted persons in the Philippines.

Specific Statement of the Problems:

In view of the foregoing study, the researcher aims to address the following questions:

1. *How can data mining's pre-processing techniques be effectively implemented during the machine learning phase using historical data from Wakhocare agencies?*
2. *How accurately can the descriptive features and the target features in the dataset be captured using*
 - 2.1 *random forest; and*
 - 2.2 *decision tree algorithms?*
3. *What are the absolute error and root mean square error metrics indicating about the performance of the machine learning algorithms in identifying wanted person?*
4. *How can a face recognition system be developed for effective criminal identification?*
5. *How can a reporting system be developed to efficiently locate wanted persons?*
6. *What is the acceptance rate of the proposed system according to the Biometric Acceptance Model?*



Scope and Limitation

The study's scope should cover the target users/beneficiaries, geographic area, timeframe, general purpose, and specific features of the proposed system. On the other hand, the study's limitations should discuss its weaknesses that are beyond the researcher's control and must be supported with valid reasons.

Significance of the Study

Explain the academic and practical significance of the study, focusing on the knowledge, innovation, and technological value it adds to the field of computer science. Present the explanation in a Macro to Micro perspective.

CHAPTER II - REVIEW OF LITERATURE AND STUDIES

Note: This chapter presents a comprehensive review of existing literature and studies relevant to the research topic. Its aims to identify gaps in the existing research, establish the significance of the current study within the context of previous work, and provide a conceptual framework. Additionally, it offers guidelines for using the algorithm and for developing the proposed application.

(Chapter Introduction)

This section is meant to provide an overview of the chapter's content.

Conceptual Literature

In this section, the researcher should discuss the fundamental functionalities and guidelines for developing the proposed application based on the literature. It should first outline the guidelines for using the algorithm. Then, it should provide the standard features expected in such an application and things to consider when developing the application. Additionally, the literature should stress the significance of user-centric design and testing to ensure the system meets the needs of its intended users effectively.

Research Literature

This section has two parts: Review of Related Literature and Review of Related Studies

Review of Related Literature discusses the previous research literature that are directly related to the current research topic. It is a systematic examination of the scholarly literatures. It critically analyzes, evaluates, and synthesizes research concepts, theories, practices, and constraints by scholars and researchers that are related to an area of focus.

Review of Related Studies discusses studies that are related to the current research topic. It discusses the results of studies closely related problems that have been investigated, the research design used in the study including



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procedures used and data gathering instruments employed, population, sampling methods utilized, variables that were operationally defined, extraneous variables that may affect the findings, and recommendations for the further research.

Note: The topics mentioned in this section for discussing the RRL and RRS are just minimum requirements. You are allowed to add additional topics in RRL and RRS.

Theoretical Background

This section presents the theoretical background that will guide the current study. It should clearly explain the theoretical perspective that will be used to interpret the results of the study.

Note: Start writing this section by explaining how a theory aligns with the research objectives and contributes to addressing the research problem.

Conceptual Framework

Researchers should illustrate and explain their own conceptual framework/model/paradigm that shows the key concepts, variables, and relationships that will be investigated in the study. This should be based on the theoretical or conceptual framework presented in the previous sections.

Synthesis

This section synthesizes the findings of the literature and studies review, highlighting key themes, trends, and gaps. It should also justify the need for the current study based on the gaps identified.

Definition of Terms

Define all conceptual and technical terms in the study, provide citations for each term, and spell out all acronyms. Technical terms should be taken from reliable dictionaries or encyclopedias, while operational terms should be defined based on their observed characteristics and usage.

Note: Use proper citation for the technical terms

CHAPTER III – RESEARCH METHODOLOGY

Note: This chapter outlines the research design, methods, and procedures that will be used to conduct the study. It provides a detailed overview of how the research will be carried out and why specific methods were chosen.

(Chapter Introduction)

This section is meant to provide an overview of the chapter's content.



Research Design

This section describes the overall research design, indicating whether it is qualitative, quantitative, mixed methods, or another method. It should also provide an explanation for the rationale behind selecting the specific research design.

Research Locale

This section refers to the specific geographic location or physical setting where the research is conducted. Remember, the choice of locale can significantly impact the research outcomes, as it influences factors such as access to resources, the population under study, environmental conditions, and cultural context.

Respondents of the Study

Describe the respondent's profile, from which the sample will be drawn, and the total population of the study based on the statistics.

In the next paragraph, discuss the process of determining the sample size and the method of sampling (probability or non-probability). A table should also be used to display the total number of participants as well as the number of participants per classification.

Data Gathering Procedure

This section has two parts: Discussion on Algorithms/Mathematical Model/Formula, and Instrumentation and Validation

Discussion on Algorithms/Mathematical Model/Formula

Briefly discuss the foundational concepts and techniques used in the design, analysis, and implementation of algorithms.

Instrumentation and Validation

Instrumentation

This section provides an overview of the data collection tools and procedures that will be employed to gather information for the study. This tool includes, but is not limited to, surveys, interviews, focus group discussions, and observations.

Validation

Validation procedures vary depending on the nature of the research and the specific research questions being addressed. They may include internal validation (e.g., control experiments, replication studies) and external validation (e.g., comparison with existing literature, peer review) to ensure the credibility and robustness of research findings.



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Evaluation and Scoring

Explain the criteria and methodology that will be used to evaluate the performance of the proposed solution. It should also outline how the system's performance will be scored.

Ethical Considerations

This section addresses any ethical issues that should be taken into account during the study, such as protecting participant confidentiality and anonymity.

Literature Cited

List of References

Appendices

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- B. Validated Research Instrument/s
- C. Informed Consent Form (PNC PRE-FO-50 Informed Consent Form)
- D. Research Ethics Review Committee Evaluation (PNC PRE-FO-49 Research Ethics Application Form)
- E. Short report of Plagiarism Software
- F. Report of Language Software
- G. Curriculum Vitae of Student Researchers