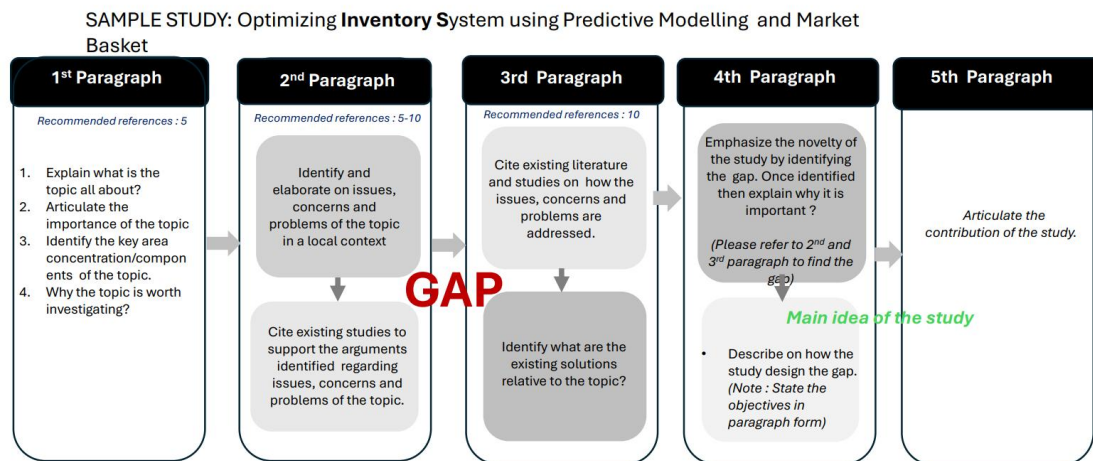


REVISIONS OF CAPSTONE PROJECT MANUSCRIPT

1. After project description, add **PROJECT CONTRIBUTION** - this answers the questions: Who can benefit from the implementation of the project? How does the project make an impact in the current situation or process of a certain business or operations? What is/are the expected outcomes of the implementation of the project?
2. Be reminded to change the titles of your capstone projects. See examples below:
 - a) Road Safety Enhancement: An Advanced RNN Model for Real-time Drowsiness Detection Via Posture Landmarks Integration
 - b) A Multimodal Approach to Drowsiness Detection : A Fusion of Eye Facial Cues and Body Posture for Enhanced Driver Safety

3. Tips in Writing the INTRODUCTION

Guide in Writing an Introduction (CS & IT)



4. Example of a Good Introduction

ROAD SAFETY ENHANCEMENT: AN ADVANCED RNN MODEL FOR REAL-TIME DROWSINESS DETECTION VIA POSTURE LANDMARKS INTEGRATION

1st paragraph : Introduce what is drowsiness, what are factors of drowsiness, what are the common signs drowsiness.

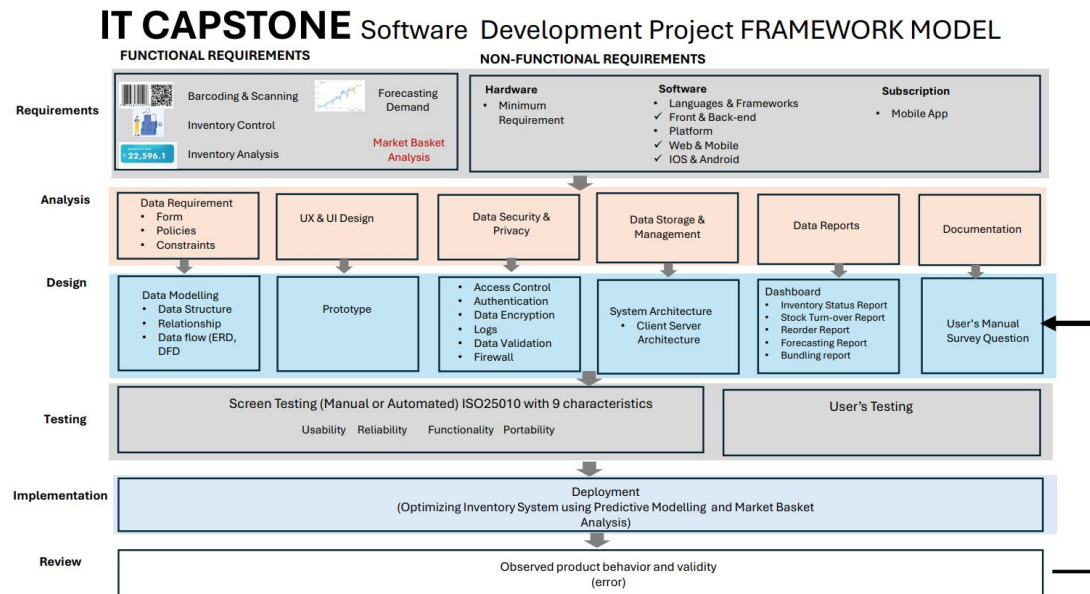
2nd paragraph : Drowsiness significantly contributes to road accidents, resulting in loss of life and jeopardizing road traffic safety (Pushkar et al., 2023).

3rd paragraph Various drowsiness detection systems have been developed, primarily analyzing eye and lip patterns as indicators of driver fatigue. However, existing solutions often need to pay more attention to posture recognition, a critical aspect. As noted by Muehlhan et al. (2014), poor posture can lead to cognitive impacts and feelings of fatigue, contributing to drowsiness. Conversely, maintaining good posture, as highlighted by a recent study from Lin and Broadbent (2023), positively influences alertness.

4th paragraph : This study proposes the integration of integrating real-time drowsiness detection with posture recognition to address this gap. By incorporating facial cues and body postures in analyzing the drowsiness a hybrid CNN model offers a more comprehensive and accurate assessment of the driver's drowsiness level. Using Mediapipe Holistic landmarker in conjunction with RNN model to process these sequences to learn the temporal patterns by analyzing the movement of the body and facial cues eye landmark . This approach enhances detection accuracy by considering body posture as a primary indicator of drowsiness, which often corresponds with facial reactions, particularly around the eyes—a key marker of drowsiness. These two components are crucial to monitor in order to prevent accidents. The novelty of this paper lies in its real-time alert system, which is activated when both body posture and eye landmarks indicate drowsiness. for preprocessing unstructured data and extracting key landmarks from the driver's body postures, this study introduces a pioneering method.

5. THE NEW CONCEPTUAL FRAMEWORK

Be sure to design you own.



6. FOR CHAPTER 3 - METHODOLOGY

A. RESEARCH DESIGN

IT Capstone

Action research is particularly useful when you aim to both improve a process and study it.

Example : Improving the existing system by incorporating the relevant/unique features of the system based on business requirements

Descriptive research is state the practice method used in software development

Example : Designing the survey to assess the system.

Sample :

This research employed a descriptive and action research design, utilizing an iterative model approach. The study focused on analyzing and resolving process inefficiencies within the inventory system. Key features and solutions were introduced to optimize these processes. Additionally, the proposed solution was evaluated to ensure that all concerns and issues were addressed in accordance with the agreement between both parties, allowing for modifications until all requirements were satisfactorily met.

7. REQUIREMENT PHASE

B. Requirement Phase

IT Capstone

- Explain the modality used in gathering the requirements and its purpose (e.g., one-on-one interviews, focus group discussions, surveys, observation, etc.).
- Describe how the project team identified the functional and non-functional requirements.
- Highlight the uniqueness or novelty of the solution by benchmarking it against existing studies with similar concepts.

Mastering the Art of Technical Writing: A Workshop on Strategic Approaches and Techniques by

Sample :The project team, in collaboration with the beneficiary (X Company), convened for a **focus group discussion** to identify issues and concerns with the existing process and to agree on the requirements for the proposed solution. As a result, both functional and non-functional requirements were identified to ensure the developed solution would meet the project's objectives.

The beneficiary emphasized the importance of incorporating the following features based on the agreed requirements: **a) A barcode scanning tool to expedite the recording of product details, b) Inventory control to monitor inventory levels, c) Inventory analysis to present sales trends, d) A forecasting model to predict inventory status over months and years, and e) Market basket analysis to support decision-making in product bundling.**

Regarding non-functional requirements, the solution was designed to be accessible across various platforms. Additionally, given the project timeline, the team employed various programming languages software and frameworks to enhance the user experience.

Furthermore, compared to existing solutions, this proposed solution introduces a unique feature by incorporating a data mining technique **through market basket analysis to examine the co-occurrence of items in transaction data, thereby identifying associations and patterns. This feature is a strategic approach for the beneficiary, aiming to maximize the solution's benefits and improve their decision-making processes.**

8. ANALYSIS PHASE

C. Analysis Phase

IT Capstone

- Identify how each components of the analysis phase software development should be performed.
- Explain why choosing the tools, methods and techniques used for analysis .
- Articulate the outcomes of the chosen tools, methods and techniques used thus provide valuable insights that form the basis in ensuring that the software development process is guided by well-defined requirements and objectives.

Sample : In this phase, the project team conducted an extensive analysis of several critical components, including data requirements, UI/UX design, data security, data storage and management, forms, data reports, and documentation.

- 1.Data Requirements: The project team thoroughly examined the forms, policies, and constraints implemented by the beneficiary to ensure data accuracy and compliance with existing standards.
- 2.UI/UX Design: The team customized the color scheme to align with the company's branding and preferences. Ensuring responsiveness was also a priority, with a focus on optimizing the solution for various screen sizes and enhancing user navigation by adhering to Web Content Accessibility Guidelines (WCAG).
- 3.Data Security: The team evaluated different security algorithms to determine the most effective methods for safeguarding data and ensuring robust protection.
- 4.Data Management: The team analyzed the existing network architecture to ensure that the solution would be accessible and scalable within the current infrastructure.
- 5.Data Reports: The project team in collaboration with the beneficiary determined the most relevant reports to feature on the main dashboard.
- 6.Documentation: The team reviewed and analyzed documentation format of the system to ensure clarity and comprehensiveness.

9. DESIGN PHASE

D. Design Phase

IT Capstone

- Identify the key factors that must be considered when designing the software for instance system requirements, scalability, performance, user experience, and security.
- Explain the rationale behind selecting specific tools, methods and techniques used in the designing of the solution (for example programming languages, frameworks, platforms, algorithms, and data mining techniques).
- Highlight how these choices align with the project's goals and contribute to the software's overall success.

Sample :During the design phase, the project team utilized a **Data Flow Diagram (DFD)** to map out the transitions and relationships between various data elements, ensuring accuracy and alignment with all specified requirements. This diagram became a key reference throughout the coding phase, where programming languages such as **PHP and JavaScript** were employed for implementation.

Additionally, a wireframe or prototype was developed to gain approval from stakeholders on the proposed user interface design. This wireframe served as a foundation for selecting the appropriate programming languages and frameworks for both front-end and back-end development.

The solution was architected to support both web and mobile platforms, ensuring portability and accessibility. High-performance frameworks and tools, such as (), were identified and utilized for key data security tasks, including authentication, encryption, and logging.

The team opted for a client-server architecture, with approximately two workstations designed for simultaneous transactions. (Note: Insert the architectural diagram here.)

To ensure the system's ability to meet the requirements, data mining techniques such as(**k-means clustering and decision tree algorithms**) were employed and thoroughly evaluated. Various charts and visualizations were incorporated into the dashboard to provide real-time, relevant information. Furthermore, a user manual was crafted to guide users during training and serve as a reference for future use.

10. TESTING PHASE

E. Testing Phase

IT Capstone

- Explain the formulation and design of the Survey Questionnaire by identifying the components and then explain why choosing the components.
- Identify who are the evaluators of the questionnaire and what statistical method was used to validate the reliability of the questionnaire.
- State what are preparation in conducting the testing phase.

Sample : The team/proponents designed a survey questionnaire validated by experts to ensure that all items within each component—functionality, usability, reliability, portability, and maintainability—are accurate and complete based on the requirements.

Additionally, the questionnaire's reliability was tested using Cronbach's alpha before administration.

Regarding the evaluation process, the team identified and invited technical experts responsible for assessing all components, as well as process owners and the management team, to evaluate the usability, reliability, and functionality of the solution. This ensured that all requirements were properly addressed.

The evaluation took place in a laboratory, where the solution was deployed on a workstation. Evaluators then reviewed all items reflected in the survey.

11. IMPLEMENTATION PHASE

D. Implementation

IT Capstone

- Identify all the needed tools and preparation for the implementation of the solution .
- Explain the system architecture on how the components interact and functions together.
- State the process on how to conduct the user's and its purpose.

Sample : The team, in coordination with the IT department of the beneficiary, identified and prepared all hardware and software components required for the deployment of the application or solution on a server located in the IT room.



Figure 1. System Architecture

Note : Explain here

Then once setup is completed, all identified users were given access to the application. The teams conducted a users training to familiarize them with its functionality before its full implementation.

12. REVIEW PHASE

D. Review

IT Capstone

- Identify all the needed tools and preparation for the implementation of the solution .
- Explain the process on how to implement the solution.

Sample : The team monitored the application's performance for one month, as agreed, to address any errors or issues encountered promptly. In case of changes or the addition of new features, the team and the beneficiary will agree on additional requirements or extend the project timeline as necessary.

13. CHAPTER IV

Interpretation Table

II Caps

Scale	Range	Verbal Interpretation
5	4.21-5.0	Strongly functional
4	3.41-4.20	Functional
3	2.61-3.40	Moderately functional
2	1.81-2.60	Slightly functional
1	1.0-1.80	Not functional

Guide in Writing the RESULTS SECTION



Interpret the over-all result based on the statistical result.



Highlight which specific components had the most significant impact to the over –all result whether it is positive or negative. Support your findings by reviewing the items that contributed to these results.



Compare or support the findings with existing studies or related work.



State a final statement to support the issues.

Results

IT Capstone

Table 5. Inventory System Functionality

Functionality	WM	STD	VI
Log-in – All users			
1. The application is accessible in web and mobile platform.	3.75	0.25	F
2. The user access is working based on the specified requirement	3.40	0.51	F
3. The user can be notified for incorrect username or password.	2.80	0.20	MF
4. The new user can change their password before continuing to access the application.	3.0	0.31	MF
5. The user can request a new password if in case he forgotten his or her access control.	3.0	0.44	MF
TOTAL MEAN	3.19	0.17	MF

Sample :Interpretation of Results

1. Interpret the over-all result based on the statistical result.

Table 5 presents the overall results of the application evaluation, which received a score of 3.18, classified as "moderately functional," with a standard deviation of 0.17. This suggests that the evaluators' responses were relatively consistent in their assessment of the application's functionality, particularly in terms of accessibility, notifications, and requests.

2. Highlight which specific components had the most significant impact to the over –all result whether it is positive or negative. Support your findings by reviewing the items that contributed to these results.

Among these features, accessibility across both web and mobile platforms received the highest score, indicating that it meets the agreed-upon requirements. However, certain functional aspects significantly impacted the overall performance of the application and require improvement, particularly the notification system for incorrect username and password inputs. This feature scored the lowest at 2.80, with a standard deviation of 0.20, reflecting a high level of agreement among evaluators. The low score highlights a vulnerability, as users were notified about the specific error—either username or password—that occurred during login attempts. Similarly, the password request and change features scored 3.0, "moderately functional," due to the lack of a control mechanism that notifies users about the strength or security level of the password they entered.

3. Compare or support the findings with existing studies or related work.

The observed results indicate that numerous applications neglected critical security aspects during their development. Several studies have demonstrated that security design was often overlooked in favor of emphasizing transaction functionality components [3, 8]. This deficiency was notably highlighted in the evaluations of these projects [10].

4. Make a final statement on the implication in addressing the issues and concern.

In this context, integrating comprehensive security measures is paramount for system protection. Expert analyses and research findings underscore that incorporating robust security protocols significantly enhances application security, thereby improving both user experience and system integrity.

Guide in Writing the CONCLUSION SECTION (CS & IT)



Summarize the key findings.



Address the result



Articulate the importance or implication



State your conclusion and recommendation.

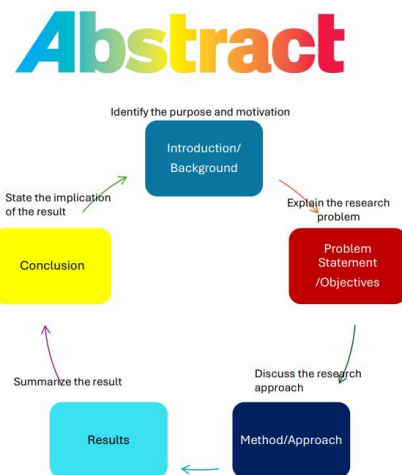
Guide in Writing the Conclusion & Recommendation

Based on the results of the application's functionality components, it demonstrates a “moderate functionality” performance in the notification system and security mechanisms. While the application meets its functional requirements in terms of accessibility, it requires significant improvements in security and error handling. The vulnerabilities present in the application pose serious concerns regarding data privacy, data breaches, and security trust, which could greatly affect not only the integrity of the data but also the overall operation of the system. To further improve this project the following actions were recommended to strengthen the security measures:

- Implementing delays before displaying error messages.
- Incorporating account lockout mechanisms.
- Apply CAPTCHA after multiple failed login attempts.
- Design a notification bar regarding the strength of the password entered, enhancing both usability and security.

Guide in Writing the Abstract

Oryza sativa, or rice, is the staple food for a large portion of the world's population, with demand rising annually. However, rice yields have been significantly affected by various diseases. This paper investigates crop monitoring for the early diagnosis of diseases or deficiency disorders and proposes a Modified-Embedded Waterfall Model for developing a software application. VGG embeddings were utilized for feature extraction from 5,932 images of four rice diseases, followed by factor analysis for dataset reduction. The Kaiser-Meyer-Olkin (KMO) statistic was used to assess the adequacy of the data for factor analysis. Results revealed that the features could be effectively reduced to 103, with a KMO measure of 98%, indicating excellent suitability. Furthermore, the Convolutional Neural Network (CNN) with reduced features outperformed the CNN prior feature reduction, achieving AUC, class accuracy, precision, recall, and MCC values ranging from 96% to 99.2%. These results strongly support the development of a mobile-based application for the accurate, fast, and easy identification and classification of rice leaf diseases. By Johansen Caluza



Modeling the Use of Technical Writing: A Model for the Process of Writing and Revision

The Agile Methodology has six (6) processes which are the following:

Requirements. To gather detailed information on the tobacco diseases present in the area, processes and functions that the proposed system should perform, the researchers conducted unstructured interview with NTA – Candon City's head as well as tobacco technicians. Furthermore, the researchers worked together as a team during the planning stage to organize the software development. The software's sitemap and wireframe were created to guide what content must be present in the system based on the gathered requirements.

Design. The system's blueprint or prototype was developed in this stage. During this phase, graphics, typography, colours, and other elements were decided.

Development. The actual development of the software took place in this stage. All requirements, graphic elements, and back-end requirements such as HTML, JavaScript, CSS and front-end requirements such as machine learning, tensor flow, etc. were considered.

Testing. Testing and corrections were performed to allow for continuous improvement until the final software was developed and released to the end user.

Deployment. After ensuring that all user requirements were met and that the software is functional, an actual demonstration of the developed system was conducted in the chosen area of study. The demonstration took place to ensure that the developed software will be of great assistance to the tobacco farmers in the municipality.

Review. To get their feedback about the software, the respondents evaluated the software using the Usefulness, Satisfaction, and Ease of use (USE) questionnaire.