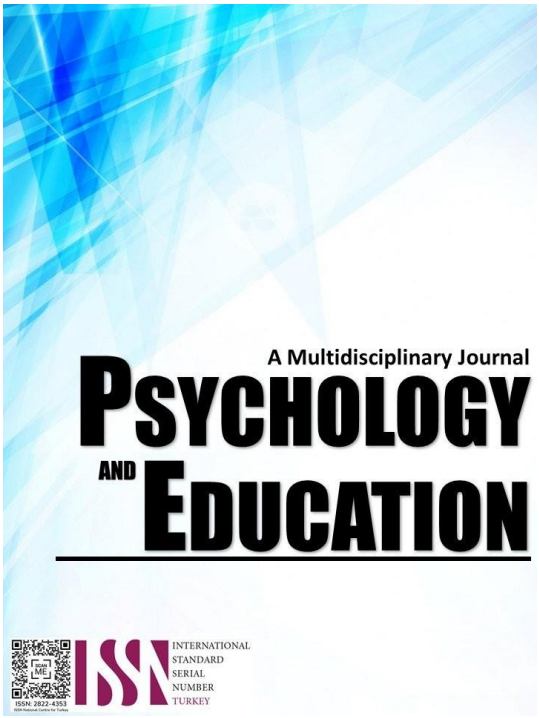
# TRACKERB: HOLY NAME UNIVERSITY ETHICAL REVIEW BOARD DOCUMENT TRACKING SYSTEM

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Research Article

# TrackERB: Holy Name University Ethical Review Board Document Tracking System

Lord Francis B. Navarro,* Leah V. Barbaso, Chris Jordan G. Aliac
For affiliations and correspondence, see the last page.

## Abstract

Managing research submissions is crucial for the Ethical Review Board (ERB) at Holy Name University. The existing process involves manually submitting documents and sending a soft copy through email. These processes result in difficulty monitoring submissions, uncertainty about submission statuses, lack of notifications for relevant individuals, and communication problems with reviewers. To tackle these issues, the researchers developed a web-based document-tracking system called TrackERB, simplifying submission management and improving tracking efficiency.The system was developed using Laravel. Charts.js was used for graphical data visualization. DOMPdf was used to generate PDF reports, and the Vonage Communications API was used to send SMS-based notifications. The development environment was set up using Laragon. TrackERB serves as a centralized system for submission tracking, empowering users—including the ERB Head, ERB staff, Reviewers, and Research Advisers—to track submission progress, receive instant status updates, and ensure reviews are completed in a timely manner. A usability test was conducted with the system's intended users to assess its effectiveness, efficiency, and user satisfaction. The evaluation, based on the System Usability Scale (SUS), resulted in a score of 91.19, indicating an above-average usability rating. The results demonstrate that TrackERB significantly improves submission tracking by enhancing accessibility, automating notifications, and providing clear status updates. In conclusion, TrackERB offers a reliable and efficient solution for managing ERB submissions, addressing the limitations of traditional email-based tracking. The system streamlined the review process by improving workflow efficiency and transparency, benefiting all stakeholders involved in research submission and evaluation.

**Keywords:** *document management, document tracking, web application, laravel, TailwindCSS*

## Introduction

Document Management refers to managing paper and electronic documents through their lifecycle, from creation to review, storage, and deletion (Sewdass, 2005). Its roots date back to the 1970s when computers were used to store records for paper-based documents (Morley, 2016). Document management is a continuous process in any organization.

Electronic Document Management System (EDMS) refers to using computer systems to store, manage, and track electronic documents and images (Abbasova, 2020). Various companies and sectors have used these systems to improve efficiency and productivity in their daily tasks.

TrackERB is an Electronic Document Management system specifically designed to track the status of the document submissions for the Ethical Review Board office of Holy Name University. It provides a platform for centralized document tracking instead of using Gmail to track submissions. This platform also monitors issues, allowing users to manage issues on a submission.

TrackERB tracks documents using tags. These tags allow users to know the status of the document. The system allows research advisers to submit a document. The documents are then assigned to a set of reviewers, who can add issues. Suppose the reviewers are done checking the document. In that case, the ERB head can decide whether to provide the advisers with a clearance or return the submission to the advisers to resolve the issues first. This system also allows the advisers to check the status of their documents without having to go physically to the office.

This paper aims to determine the usability of TrackERB as a document-tracking platform for users. Usability refers to the quality of the user's experience using a particular product or system. It revolves around effectiveness, efficiency, and overall user satisfaction. It combines several factors such as intuitive design, ease of learning, memorability, usage efficiency, subjective satisfaction, frequency, and severity of errors. (Lewis, 2018)

In the subsequent section of this paper, the researchers review applications related to TrackERB's features. This section highlights the similarities and differences between the different software and TrackERB. Next, the paper discusses the research method used. This section details the research approach, the data collection methods, the analysis methods, the application interface, and how the application was built. Afterward, the paper presents the results, analysis, and discussion of the system usability scale survey. Finally, the conclusion and recommendations are given.

### Research Objectives

The Ethical Review Board (ERB) at Holy Name University currently faces challenges in efficiently tracking research submissions. The existing system, which relies heavily on Gmail for submission management, presents several inefficiencies:

1. Difficulty Locating Submissions – Tracking and retrieving submitted documents from email threads without a centralized

system is cumbersome and time-consuming.

2. Unclear Submission Status – Research advisers and Reviewers struggle to determine a submission's status, leading to delays and miscommunications.
3. Lack of Notifications and Reminders – The absence of an automated notification system results in missed updates, deadlines, and follow-ups.
4. Reviewer Monitoring Issues – Since reviewers communicate through messenger group chat, tracking their progress and confirming whether they have completed their evaluations is difficult.

## Literature Review

This section contains a review of related software of the paper to highlight the similarities and differences between TrackERB's features and the existing applications and services in the market. The applications that focus on research will be discussed first. Research-related applications whose features primarily deal with managing and tracking documents are reviewed in the succeeding figures and paragraphs:

**WBDMS**

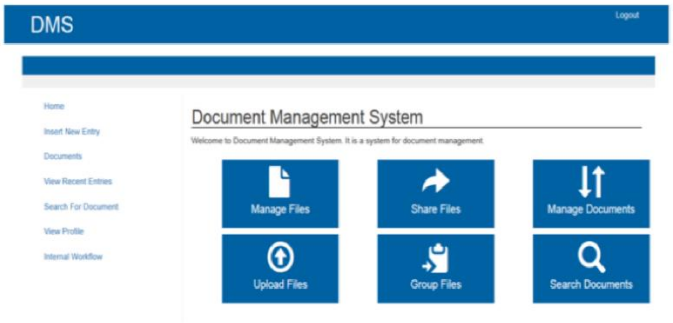


Figure 1. *Web Based Document Management System (WBDMS)*

WBDMS is a system developed by M. Alade (2023) to provide users with a user-friendly web-based Document Management System. The researchers used Object-Oriented Hypermedia Design Methodology (OOHDM) to develop the system. The system provides account creation, management of documents (Upload, View, Search, and Share), and generation of reports (M. Alade, 2023).

WBDMS provides an essential platform for users to upload and view documents. It has yet to have other features that will help users track the status of their documents.

**LEGITO**

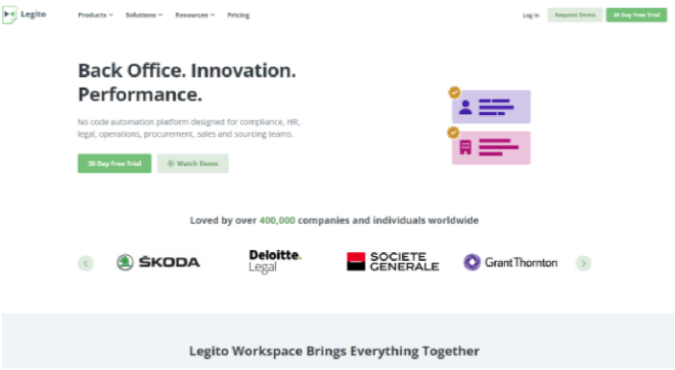


Figure 2. *Legito Home Page*

Legito is a no-code automation platform for compliance, HR, legal, operations, procurement, sales, and sourcing teams (Smart Document Workspace, n.d.). Legito provides four (4) main products: Document Cycle Management, Document Automation, Building Custom Applications, and Legito Sign.

Document cycle management allows the user to customize how a document is handled, including internal and external sharing, approvals, document changes, and reminders.

Document Automation provides the user with an AI-powered document editor that suggests logical dependencies. Building custom applications allows users to create objects such as client and vendor lists, management tools, customized knowledge repositories, and other possibilities.

Collaboration and negotiation allow users to collaborate and negotiate either Legito's smart documents or Microsoft Office documents.

They can also track changes, compare, add comments, have real-time conversations, and receive notifications. Digital signing allows users to sign documents digitally.

**MONDAY.COM**

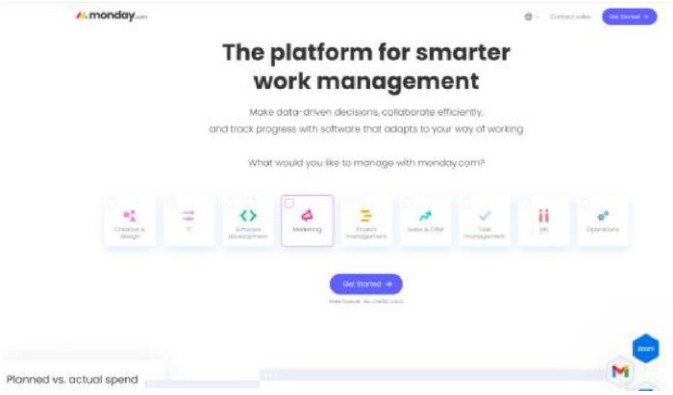


Figure 3. *Monday.com Home Page*

Monday.com is a cloud-based platform that provides project-management functionalities and allows users to create their applications using building blocks that include but are not limited to items, columns, views, automation, integrations, and widgets (monday.com, 2020).

Monday.com provides a document management feature allowing users to integrate it with their project management functionality. Thus providing collaboration across teams and ensuring team members can find documents faster. It also provides a quick preview of documents, a visual organization of files, and a common page where the user can see all the files in a project. It allows users to interact with each other through the document with its commenting feature (monday.com, 2020).

**BITRIX24**

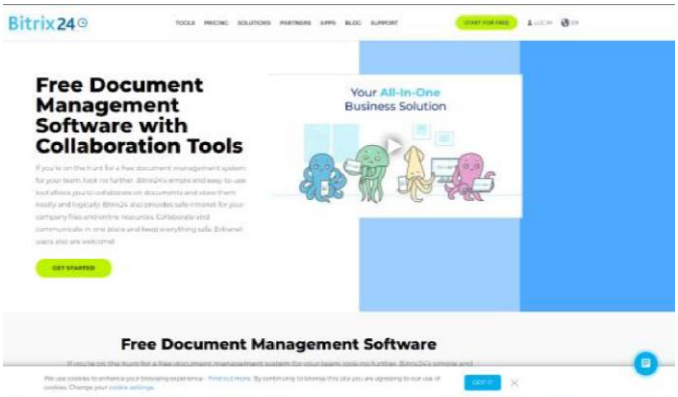


Figure 4. *Bitrix 24 Home Page*

Bitrix24 is a free collaboration platform that provides tools such as CRM, document management, tasking, time management, and project management. It also provides users a social-media environment to manage their profiles, like, comment, chat, and share content (Bitrix24 Overview, 2025).

Bitrix24 also provides a document management system that allows users to collaborate. It has unlimited free users and free cloud storage, real-time collaboration on documents, which allows users to see other users working on a document, and an access-right control that allows users to allow specific permissions on documents. It also provides a revision history that gives users a document's past version. Users can integrate it with storage applications like Dropbox, Google, or OneDrive (Free Document Management Software with File Sharing and Collaboration Features, 2025).

**AVOKAADO**

"Avokaado" is a software that specializes in legal documents and focuses on contract approval. It allows users to create, manage, and collaborate on documents at every stage of the document's lifecycle (Avokaado Overview, 2025).

Avokaado includes a private workspace that allows users to manage contacts in a Google Cloud Platform. Users can customize the branding, colors, and domain name. It also allows users to automate contracts, where they can create templates with tools that variables, choices, and conditions. It also includes an advanced collaboration, where users can collaborate. It also has an electronic signature, which uses e-signature providers like Dokobit and SignNow (Avokaado CLM Features, 2025).

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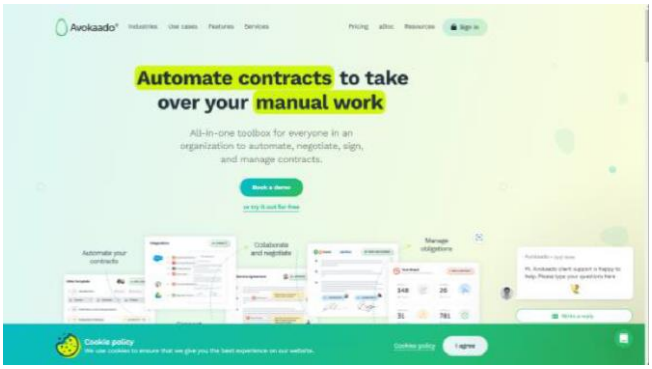


Figure 5. *Avokaado Home Page*

Table 1. *Matrix of Comparison*

| *Features* | *TrackERB* | *WBDMS* | *Legito* | *Monday.com* | *Bitrix.com* | *Avokaado* |
|---|---|---|---|---|---|---|
| Accounts Management | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Upload and Download | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Status Tagging | ✓ | | ✓ | ✓ | ✓ | ✓ |
| User Assignment | ✓ | | | ✓ | | |
| Analytics | ✓ | | ✓ | ✓ | ✓ | ✓ |
| SMS Notification | ✓ | | | | | |
| Email Notification | ✓ | | ✓ | ✓ | ✓ | ✓ |
| Status Tracking | ✓ | | | | | |
| Issues Management | ✓ | | | | | |

## Methodology

### Data Collection and Analysis Methods

To determine the respondents, the researchers used non-probability sampling methods, purposive sampling, and convenience sampling. In purposive sampling, researchers select respondents with the characteristics needed for the sample (Nikolopoulou, 2022). The identified respondents are the ERB Head, the ERB Reviewers, the Staff, and the Research Advisers, who possess the necessary knowledge and can provide insights relevant to the system. In convenience sampling, researchers selected respondents who were the easiest to access (Nikolopoulou, 2022).

For the advisers, the researchers chose to test the faculty members of his department. For the reviewers, the researchers invited them to test the system via email before the testing. They prioritized those who responded to the email. The researchers visited those who did not respond to the email in their respective offices. The researchers asked them if they would participate in the test and helped schedule a suitable time.

The researchers conducted a Usability Test to evaluate whether the system met users' expectations. System Usability Scale (SUS) (Brooke, 1995), a widely recognized and standardized questionnaire for measuring perceived usability was used to assess the system's usability (Lewis, 2018). The survey consisted of 10 statements, each rated on a Likert scale ranging from Strongly Disagree to Strongly Agree.

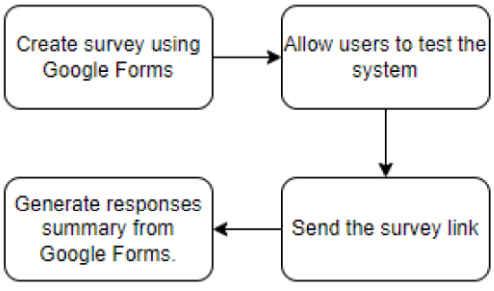


Figure 6. *Data Collection and Analysis Process*

Both the ERB head and staff willingly participated in the test. Seven (7) testers were involved for the advisers. Ten (10) testers participated from the reviewers, with a total of nineteen (19) respondents.

The software testing was done personally. The researchers used a functionality test to ensure the system's functionalities worked for a

specific user. During testing, the researchers gathered feedback from the responses to improve the system.

The nineteen (19) responses were analyzed using descriptive statistics. The graphs generated by Google Forms were used for the summary.

Google Forms was used to collect survey responses, reducing the cost of pen-and-paper surveys while streamlining data collection and analysis. The researchers used the results of the Usability Test to develop the application further.

**System Design and Specification**

This section shows the various architectures and technologies used in the development of the system.

*Laravel and the MVC Architecture*

The researchers used Laravel 10, a PHP framework, to standardize the development process, automate non-business logic relationships, and allow programmers to focus on implementing business logic (M. Alade, 2023).

Laravel uses the Model-View-Controller architecture (MVC). This three-way division of an application involves objects of different classes taking over the operations related to the application domain (model), the display of the application's state (view), and the user interaction with the model and the view (controller) (Sunardi & Suharjito, 2019).

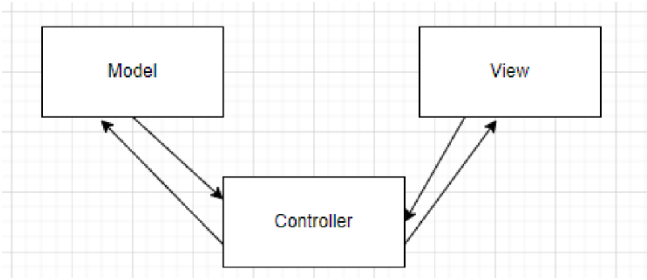


Figure 7. *MVC Architecture*

*Frameworks and APIs*

In developing the system, the researchers used various frameworks and APIs. Tailwind CSS, a CSS framework that uses utility classes to generate styles and write them on a static CSS file, was used to develop the front end along with Blade, Laravel's templating engine. Chart.JS, a charting library, was used to generate charts and reports. For the back end, the system uses Laravel's built-in functionalities. Eloquent, Laravel's built-in object-relational mapper, was used to interact with the database. Dompdf, an HTML-to-PDF converter, was used to generate PDF files. Vonage, a flexible communications platform, was used to send SMS notifications to users using its Communications API. The system uses MySQL for the database. Laragon was used for the system development environment, which works well with Laravel and MySQL.

*Use Case Diagram*

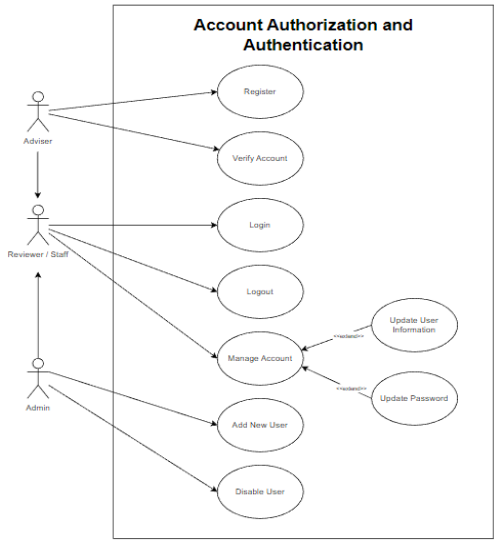


Figure 8. *Account Authorization and Authentication*

Account authorization and authentication involve all the actors. Before using the system, the adviser needs to register. After registering,

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the system will send a verification email. After clicking the link, the system automatically logs the user in. Only the admin can register accounts for Reviewers and Staff. All actors can manage their accounts. They can update their account information and passwords. The admin can also deactivate an account.

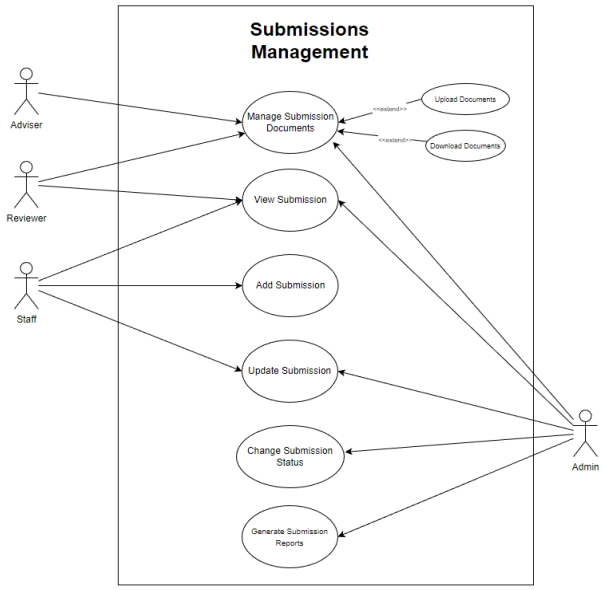


Figure 9. *Submissions Management*

Management of Submissions involves all actors. Initially, the adviser must submit hard copies of the research documents to the staff. The staff then enters the necessary information into the system. The staff can also update the submission information. After adding the submission, the adviser must submit a soft copy of the documents in the system. Upon uploading, the admin and staff can download and view the documents. Reviewers can download submission documents only if the system assigns them. The admin can update the submission status and view reports generated from the submission data stored in the database.

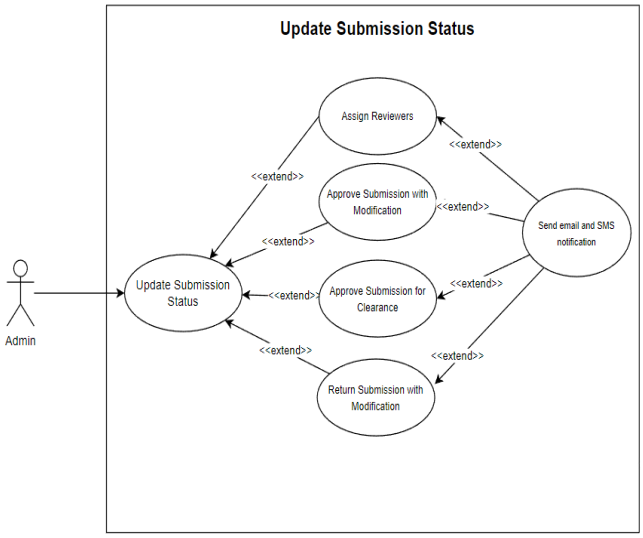


Figure 10. *Update Submission Status (Admin)*

Updating the submission status is the admin's sole responsibility. The admin can assign reviewers to specific submissions and then decide on the status: "Approved," "Approved with pending modification," or "Return submission with modification."

For submissions marked as "Approved," the research adviser can print the clearance and proceed with the research. For those marked "Approved with pending modification," the adviser can also print the clearance. However, the submission must be revised and resubmitted before the clearance can be finalized.

For submissions marked as "Return submission with modification," the submission is returned to the adviser. The adviser must update the submission, resubmit it, and wait for it to be marked as either "Approved" or "Approved with modifications" before they can print the ERB clearance.

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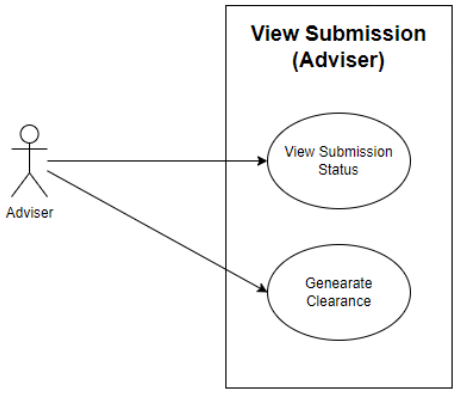


Figure 11. *View Submission (Adviser)*

In this use case, the adviser can track the status of their submissions. They can see if their status is "pending," "under review," "approved," "approved with modifications," or "returned with modifications." If their submission is approved, they can print the ERB clearance.

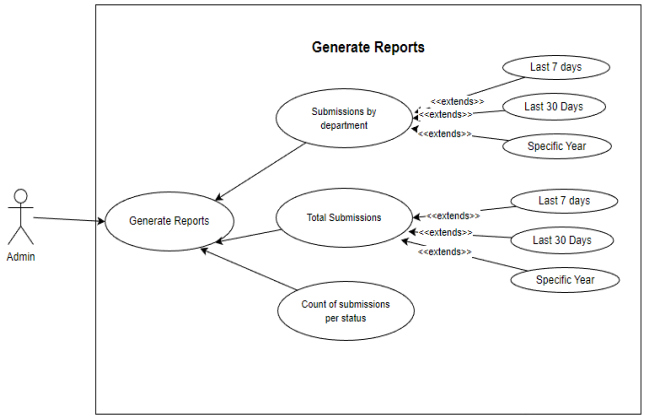


Figure 12. *Generate Reports*

This use case involves the admin. The system provides the admin with a dashboard to view reports. The reports include a submission grouped by department and total number of submissions, which can be filtered by last 7 days, last 30 days, and specific year where they can choose a specific year. The system also provides the actor with the number of submissions for each status.

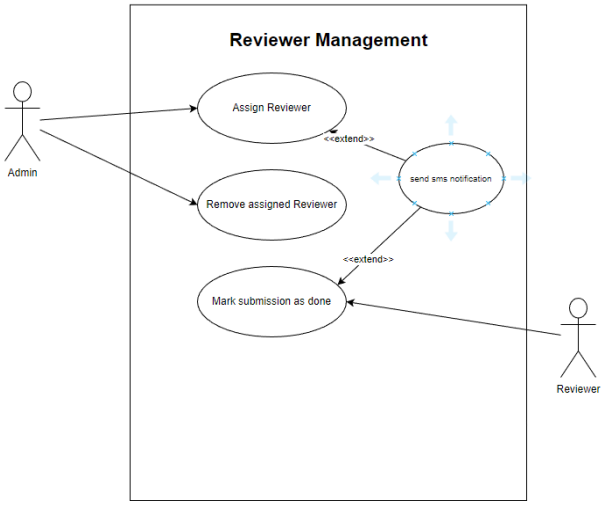


Figure 13. *Reviewer Management*

This use case involves the admin and reviewer. The admin can assign reviewers to a specific submission. Upon assigning, the reviewers will receive an SMS and Email notification to inform them that they are assigned a new submission to review. The admin can remove a reviewer only if the reviewer has not yet added an issue or changed the review status to 'done.' After all the reviewers complete their review, the system sends an SMS to the admin to notify them that the reviewers have finished reviewing the submission.

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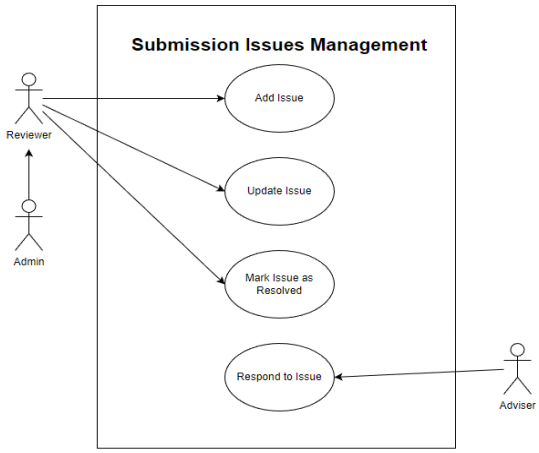


Figure 14. *Submission Issues Management*

This use case involves the reviewer, admin, and adviser. The reviewer mainly manages the submission issues. They can add and update issues. The submission must be tagged as 'approved with modifications' or 'returned with modifications' before the adviser can respond. After responding, the reviewer can then mark the issue as resolved. Both reviewer and admin have the same capabilities; the only difference is that the reviewer can only manage issues they created while the admin can manage all the issues.

*Entity Relationship Diagram*

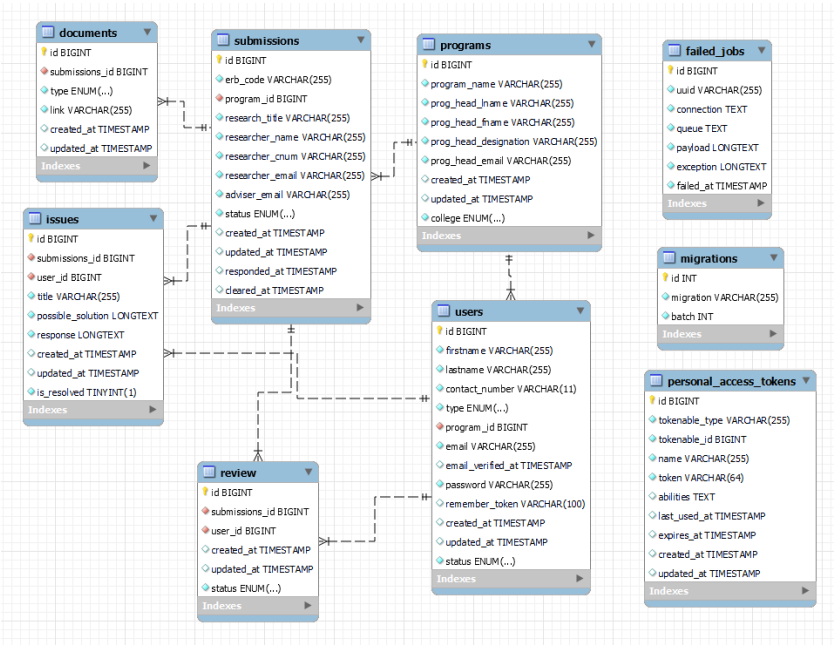


Figure 15. *TrackERB Entity Relationship Diagram*

*Class Diagram*

The class diagram shows the system's stricture regarding classes, attributes, methods, and relationships.

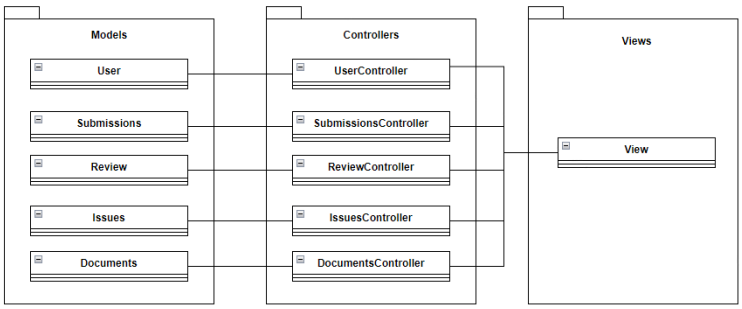


Figure 16. *Architectural Diagram of TrackERB*

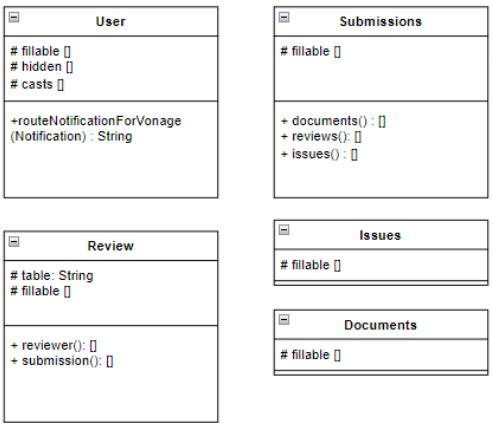


Figure 17. *Class Diagram of Models*

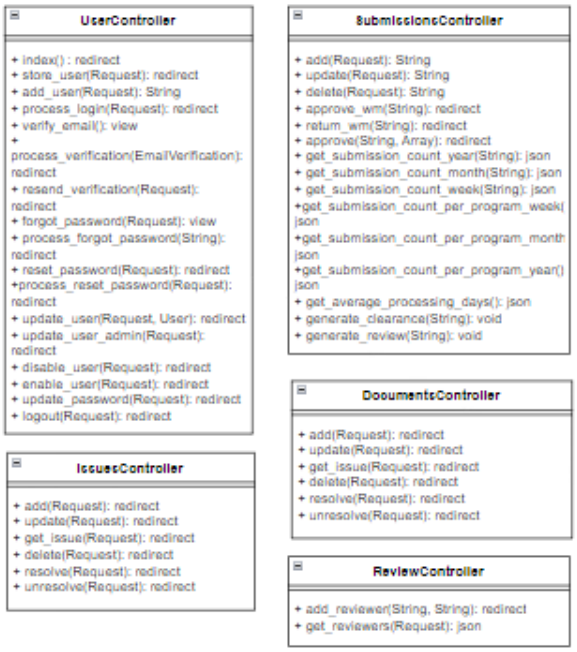


Figure 18. *Class Diagram of Controllers*

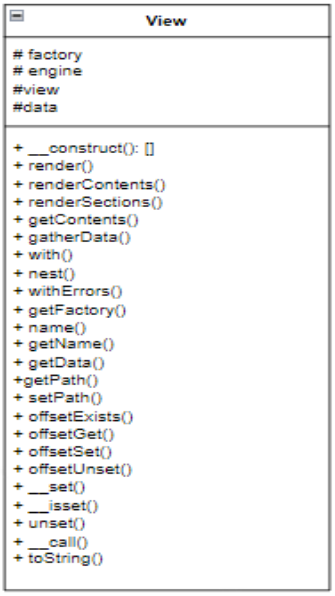


Figure 19. *Class Diagram of a generic View class in Laravel*

## Results and Discussion

This section presents the survey results, analysis, and discussion, providing insights into the system's usability, effectiveness, and overall user experience.

### System Usability Survey

The following are the results of the System Usability Survey:

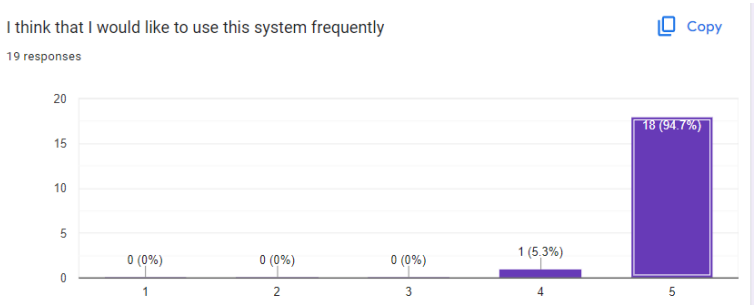


Figure 20. *I think that I would like to use this system frequently*

The bar chart showed that 94.7% of the respondents strongly agreed that they would like to use the system frequently, and 5% agreed.

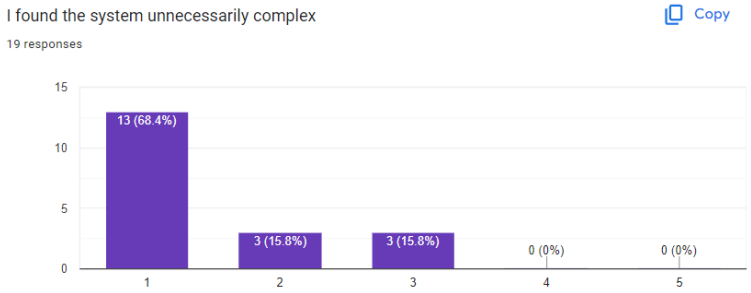


Figure 21. *I found the system unnecessarily complex*

68.4 % strongly disagree that the system is complex to use. 15.8 % agreed, and 15.8% were neutral.

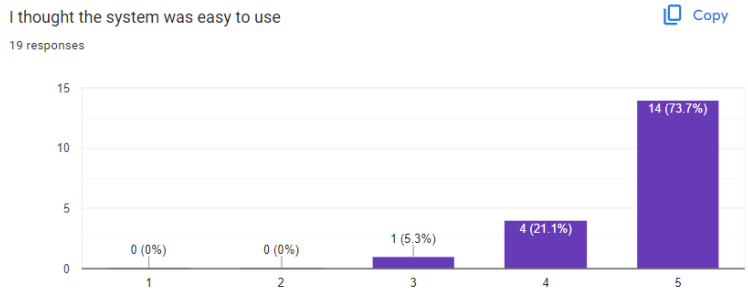


Figure 22. *I thought the system was easy to use*

The chart above shows that 73.7% strongly agree that the system was easy to use. 21.1% agreed, and 5.3% remained neutral.

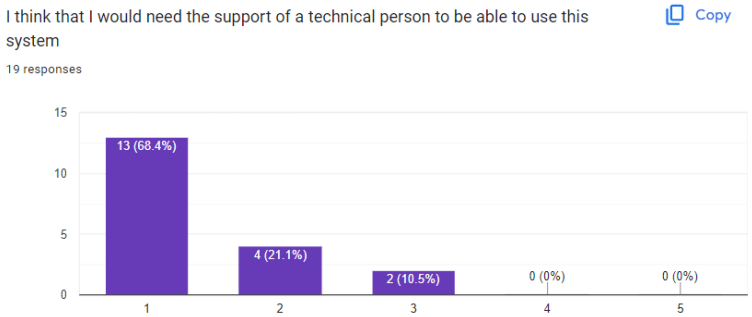


Figure 23. *I think that I would need the support of a technical person to be able to use this system*

The chart indicates that 68.4% of the respondents will not need a technical person to use the system. 21.1% agreed, while 10.5% were unsure whether they needed a technical person.

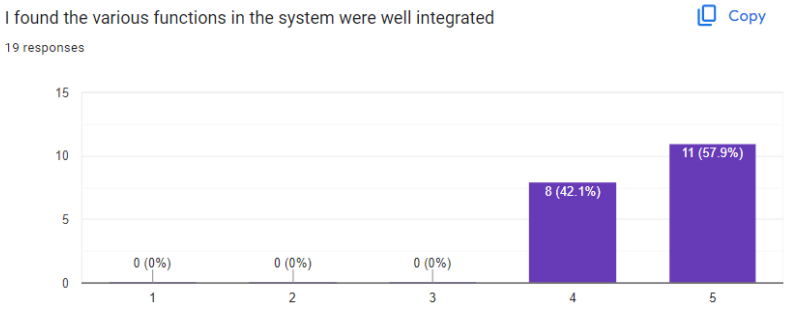


Figure 24. *I found the various functions in the system were well integrated*

The respondents generally agreed that the functions of the system are well integrated.

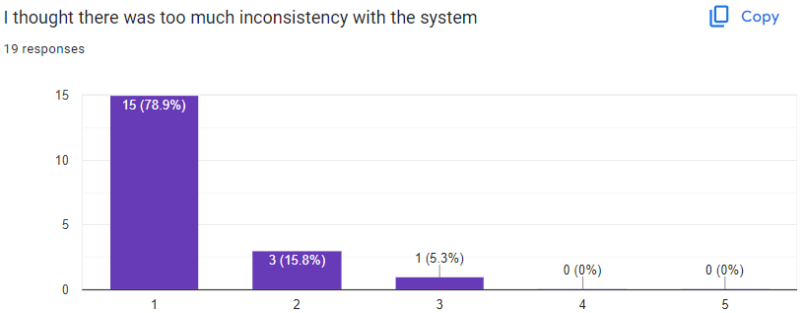


Figure 25. *I thought there was too much inconsistency with the system*

Most respondents (78.9%) strongly disagreed that the system was inconsistent. 15.8% disagreed, and 5.3% were neutral.

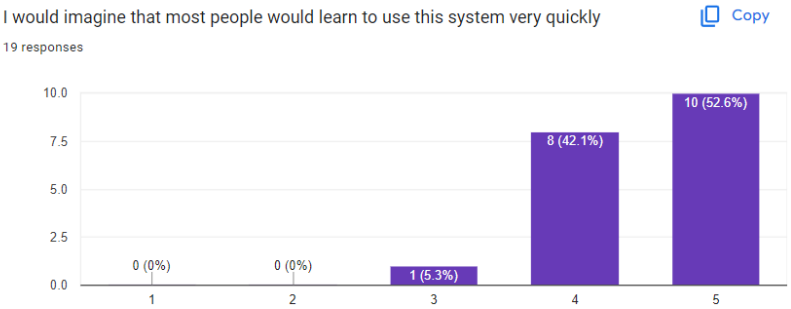


Figure 26. *I would imagine that most people would learn to use this system very quickly*

52.6% strongly agree that most people would learn to use this system very quickly, 42.1% agree, and 5.3% remain neutral.

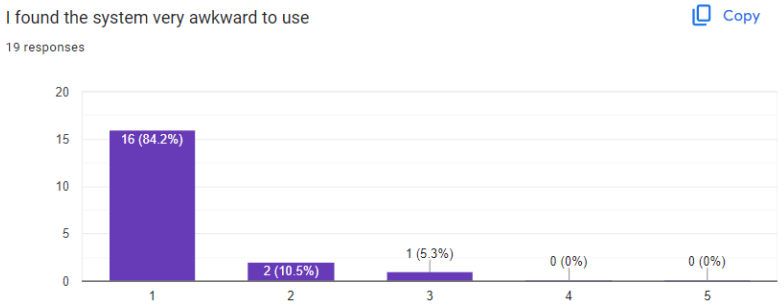


Figure 27. *I found the system very awkward to use*

The figure above shows that 84.2% strongly disagree that the system is awkward to use. 10.5% disagreed, and 5.3% remained neutral.

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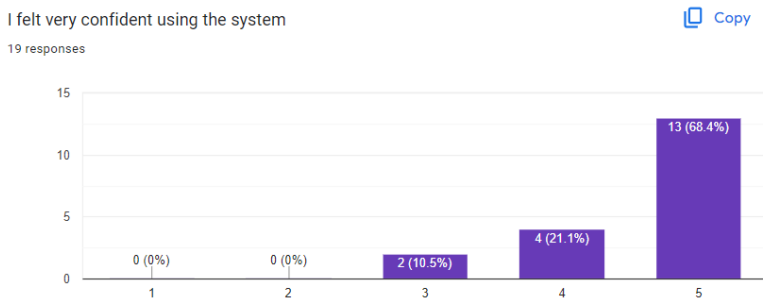


Figure 29. *I needed to learn a lot of things before I get going with the system*

57.9% of the respondents indicated that they strongly disagree that they need to learn a lot of things before getting going with the system. 26.3% agreed, and 5.3% were neutral, while 10.5% agreed that they still need to learn a lot of things before getting going with the system.

**System Usability Score**

The results of the system usability survey were used to calculate the system usability score.

The results of the system usability survey were used to calculate the system usability score. Below is the summary of the SUS Scores by User Type:

Table 2. *Summary of SUS Scores by User Type*

| *User Type* | *Total Respondents* | *Total Mean Score* |
|---|---|---|
| ERB Head | 1 | 92.5 |
| Staff | 1 | 90 |
| Reviewer | 10 | 87.25 |
| Adviser | 7 | 95 |
| Total | 19 | 91.19 |

The table represents the usability rating of each user in the system. The application received a score of 91.19, which is an above-average usability rating. The researchers also considered some of the comments provided by the users during the testing to improve the system.

**System User Interface**

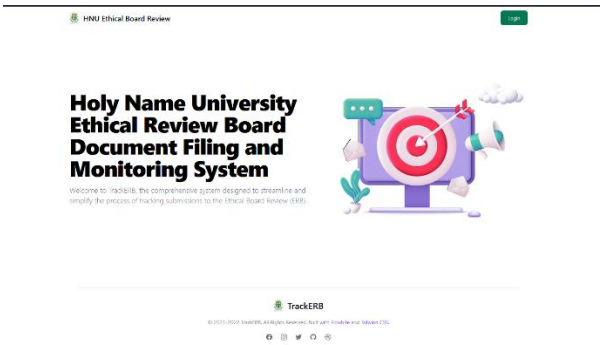


Figure 30. *TrackERB Home Page*

The landing page shows a basic page and information about the website.

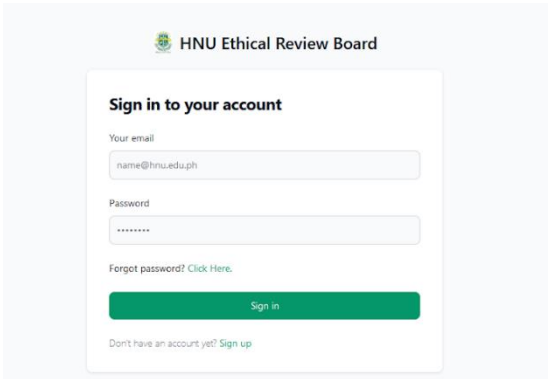


Figure 31. *User Login Page*

This is where the user logs in to their account. The adviser can also register an account. After registering, the adviser will receive a verification email.

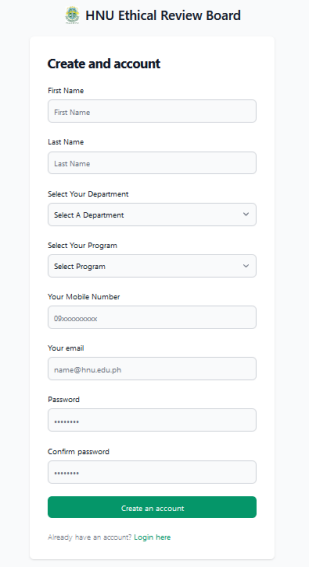


Figure 32. *Adviser Registration Page*

This page allows advisers to create their accounts. They are required to provide their Name, Department and Program, Mobile Number, Email, and Password.

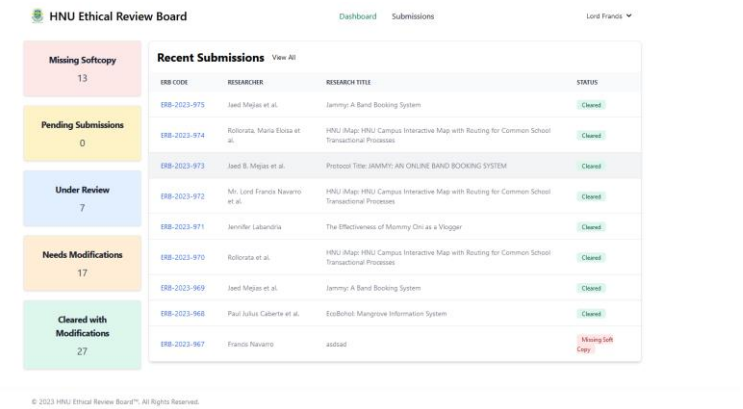


Figure 33. *Adviser Dashboard*

Upon signing in, the adviser can view information about its submissions. It can also view the recent submissions.

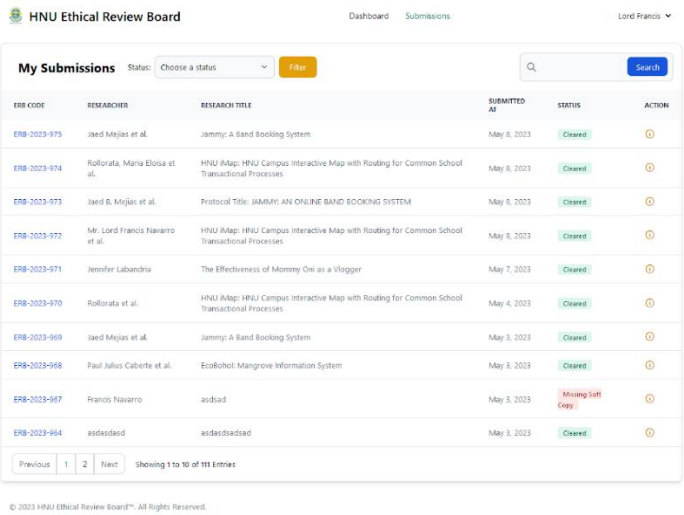


Figure 34. *Adviser Submissions Page*

This page lets users to view a list of submissions, a status filter, and a status bar. The admin and ERB staff can see all submissions, while the adviser and reviewer can only see submissions assigned to them.

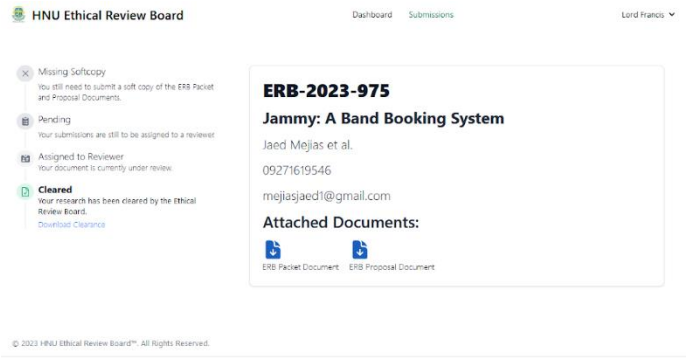


Figure 35. *Adviser Single Submission View*

This page allows the adviser to see the complete status of their submission. It is also where the adviser can upload a soft copy of its submission if it has not been uploaded yet and download a copy of it.

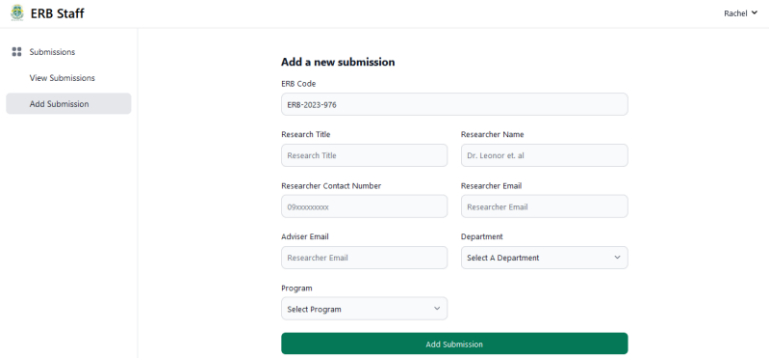


Figure 36. *Staff Add New Submission Page*

This page is where the ERB staff adds a new submission to the system. An ERB code will be automatically generated. The staff will provide the Research Title, Researcher Name, Researcher Contact Number, Researcher Email, Adviser Email, Department, and Program.

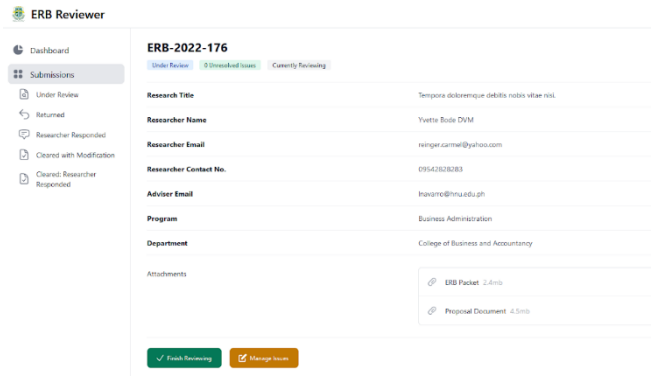


Figure 37. *Admin and Reviewer Single Submission View*

This page allows the reviewer to view the submission information, download the soft copies of the submission, mark the review as "finished," and manage the submission issues.

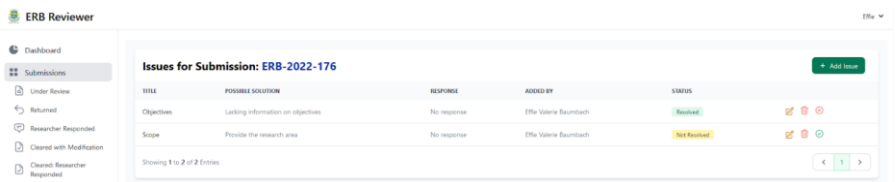


Figure 38. *Manage Issue Page*

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The reviewer and administrator can manage issues related to a specific submission. The reviewer can only manage its issues, while the admin can manage all issues assigned to a submission. The actors can add, update, delete, and mark issues as resolved / unresolved.

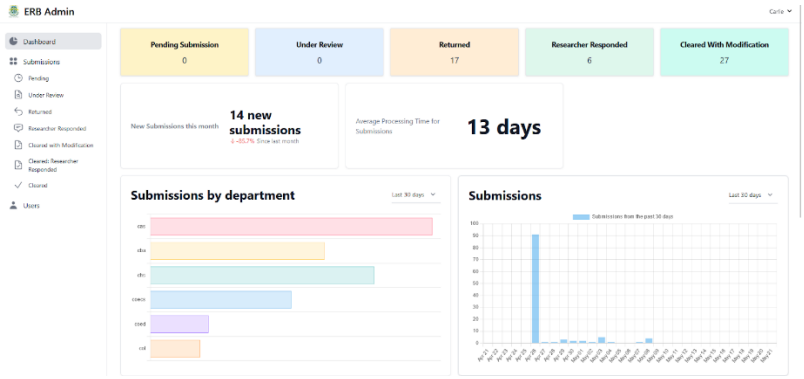


Figure 39. *Admin Dashboard and Reports*

For the admin dashboard, the actor can see the number of submissions based on status. The actor can also see the number of submissions for the current month and the percentage difference between the last month. The actor can also see the average processing time for submissions. The actor can also see detailed information on submissions grouped by department and number of submissions, which can be filtered by "Last 7 days," "Last 30 days," and year, where the actor can choose a report for a chosen year.

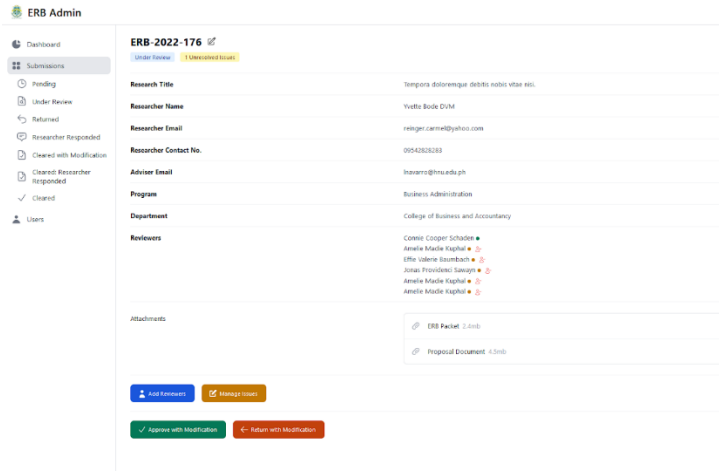


Figure 40. *Admin Single Submission View*

On this page, the admin can see details of a submission. The information includes the status, number of unresolved issues, generic information for the submission with downloading of soft copies, and the list of reviewers assigned for the submission with their reviewing status, where green means they are done reviewing the submission, while yellow means they are still reviewing the submission. The admin can also manage the issues. The actor also has a series of buttons where the admin can decide what to do with the submissions. The options include "Approve Submission," "Approve with Modification," and "Return with Modification."

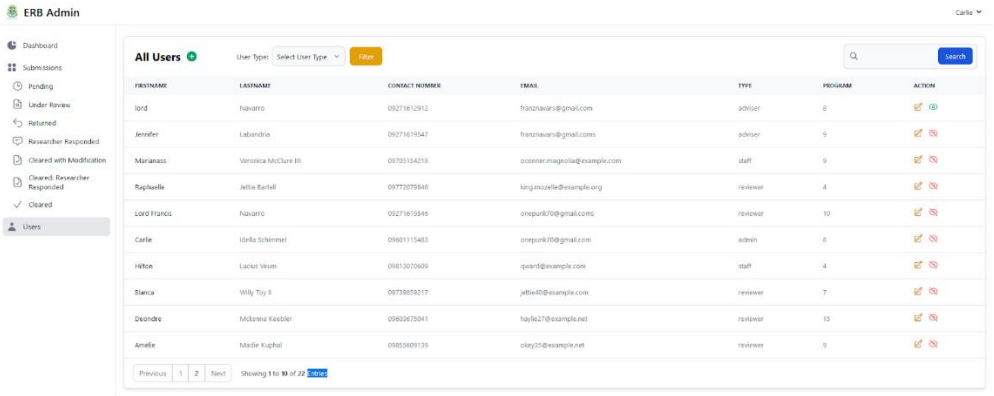


Figure 41. *User Management Page*

This page is where the admin manages the system's users. The admin can add, update, and disable a user.

## Conclusions

To address the challenges faced by the Ethical Review Board (ERB) in managing research submissions, TrackERB was developed as a web-based document tracking system to enhance efficiency and streamline the submission process. The system effectively resolves issues such as difficulties in locating submissions within Gmail, unclear submission statuses, and the lack of notifications or reminders for updates. By centralizing submission tracking, providing real-time status updates, and implementing automated email and SMS notifications, TrackERB significantly enhances the organization and transparency of the review process. Usability testing yielded a System Usability Score (SUS) of 91.19, indicating above-average usability, demonstrating that the system is intuitive, efficient, and well-integrated for its intended users. Given these findings, future improvements are recommended, including increasing the number of respondents for advisers, integrating natural language processing to provide initial insights into documents, and incorporating scheduling capabilities to further optimize the system's functionality. These enhancements will ensure that TrackERB continues to evolve as a reliable and effective document management solution that supports timely reviews and better coordination among stakeholders.

### References

Abbasova, V. S. (2020). MAIN CONCEPTS OF THE DOCUMENT MANAGEMENT SYSTEM REQUIRED FOR ITS IMPLEMENTATION IN ENTERPRISES. ScienceRise, 1, Article 1. https://doi.org/10.21303/sr.v0i1.1149

Avokaado CLM Features. (2025). https://avokaado.io/features

Avokaado Overview. (2025). GetApp. https://www.getapp.com/operations-management-software/a/avokaado/

Bitrix24 Overview. (2025). GetApp. https://www.getapp.com/collaboration-software/a/bitrix24/

Brooke, J. (1995). SUS: A quick and dirty usability scale. Usability Eval. Ind., 189.

Free Document Management Software with file sharing and collaboration features. (2025). https://www.bitrix24.com/uses/free-document-management-software.php

He, R. Y. (2015). Design and implementation of web based on laravel framework. 301–304. https://doi.org/10.2991/iccset-14.2015.66

Lewis, J. R. (2018). The System Usability Scale: Past, Present, and Future. International Journal of Human–Computer Interaction, 34(7), 577–590. https://doi.org/10.1080/10447318.2018.1455307

M. Alade, S. (2023). Design and Implementation of a Web-based Document Management System. International Journal of Information Technology and Computer Science, 15(2), 35–53. https://doi.org/10.5815/ijitcs.2023.02.04

monday.com. (2020, December 22). How to use monday.com: A step-by-step guide. Monday.Com Blog. https://monday.com/blog/product/how-to-use-monday-com/

Morley, D. (2016). Understanding computers: Today and tomorrow (16th edition). Cengage Learning.

Nikolopoulou, K. (2022, August 11). What Is Purposive Sampling? | Definition & Examples. Scribbr. https://www.scribbr.com/methodology/purposive-sampling/

Nikolopoulou, K. (2022, August 9). What Is Convenience Sampling? | Definition & Examples. Scribbr. https://www.scribbr.com/methodology/convenience-sampling/

Sewdass, N. (2005). Interrelationship between document management, information management and knowledge management. South African Journal of Information Management, 7(3). https://doi.org/10.10520/AJA1560683X_166

Smart Document Workspace. (n.d.). Legito. Retrieved May 24, 2023, from https://www.legito.com/

Sunardi, A. & Suharjito. (2019). MVC Architecture: A Comparative Study Between Laravel Framework and Slim Framework in Freelancer Project Monitoring System Web Based. Procedia Computer Science, 157, 134–141. https://doi.org/10.1016/j.procs.2019.08.150

### Affiliations and Corresponding Information

**Lord Francis B. Navarro, MIT**
Cebu Institute of Technology – Philippines

**Dr. Leah V. Barbaso**
Cebu Institute of Technology – Philippines

**Dr. Chris Jordan G. Aliac**
Cebu Institute of Technology – Philippines