

## Management Information System for Tracking On-the-Job Trainees for Cagayan State University – Aparri Campus

<sup>1</sup> Araah Francesca C. Cabalbag

<sup>2</sup> Marie Khadija Xynefida P. Ontiveros, DIT

<sup>1</sup>Student-Author, Graduate School, CSU – Aparri

<sup>2</sup>Co-author, Adviser, Cagayan State University at Aparri

### Abstract

On-the-job training (OJT) programs are essential for students, bridging the gap between theoretical knowledge and practical workplace experience. Cagayan State University - Aparri Campus (CSU Aparri) is dedicated to providing high-quality education and impactful training programs. However, the existing paper-based and manual system for tracking student progress and performance presents numerous challenges, including inefficiency, excessive time consumption, and susceptibility to data loss and unauthorized access. The current system necessitates students traveling to submit reports and imposes significant administrative burdens on advisers who must manage and review substantial volumes of paperwork.

To address these issues, we developed the Management Information System for On-the-Job Trainees (MIS-OJT), a comprehensive web-based platform designed to streamline the OJT process. MIS-OJT facilitates online submission of reports and documents, automated grade computation, data analysis, and serves as a central communication hub for announcements. Crucially, the system enhances the feedback mechanism, enabling advisers to provide timely, detailed, and constructive feedback, thus helping students identify and address areas for improvement more effectively.

The system's efficacy was evaluated by end-users and IT experts using ISO standards and the Technology Acceptance Model, receiving excellent ratings. The implementation of MIS-OJT at CSU Aparri is anticipated to significantly enhance the efficiency and effectiveness of managing and monitoring student trainees. This system not only alleviates administrative burdens but also substantially improves the feedback process, providing students with better opportunities to refine their skills. By adopting MIS-OJT, CSU Aparri can ensure a more efficient, effective, and enriching OJT program for its students.

*Keywords: On-the-job-training, Management Information System, Internship Program, Student Trainees*

### I. INTRODUCTION

On-the-job training (OJT) programs are integral components of higher education, providing students with invaluable opportunities to apply theoretical knowledge in real-world settings and to develop essential workplace skills. These programs serve as a bridge between academic learning and professional practice, preparing students for the demands of their future careers. However, the effectiveness of OJT programs is heavily influenced by the methods used to manage and monitor student progress and performance.

Cagayan State University - Aparri Campus (CSU Aparri) is committed to delivering high-quality education and robust training programs. Despite this commitment, the university has encountered significant challenges in managing its OJT program due to its reliance on a paper-based and manual system. This traditional approach is fraught with inefficiencies, including the cumbersome and time-consuming processes required for report submission and review (Villa,2021). Additionally, the manual system poses risks related to data security, as documents are susceptible to loss and unauthorized access(Villa,2021).

Recognizing these challenges, this study presents the development and implementation of the Management Information System for Tracking Student Trainees (MIS-OJT). MIS-OJT is a web-based platform designed to address the limitations of the existing system by streamlining administrative processes and enhancing the overall efficiency and effectiveness of the OJT program. Key features of the MIS-OJT include online submission of reports and documents, automated grade computation, data analysis, and a centralized communication hub for announcements (Guiqing, 2022). Furthermore, the system incorporates a robust feedback mechanism, enabling advisers to provide timely and constructive feedback to students, thereby facilitating continuous improvement in their performance.

The introduction of MIS-OJT at CSU Aparri promises to alleviate the administrative burden on OJT advisers and improve the management of student trainees. This study evaluates the system's impact on the efficiency of the OJT program and its acceptance among end-users and IT experts,

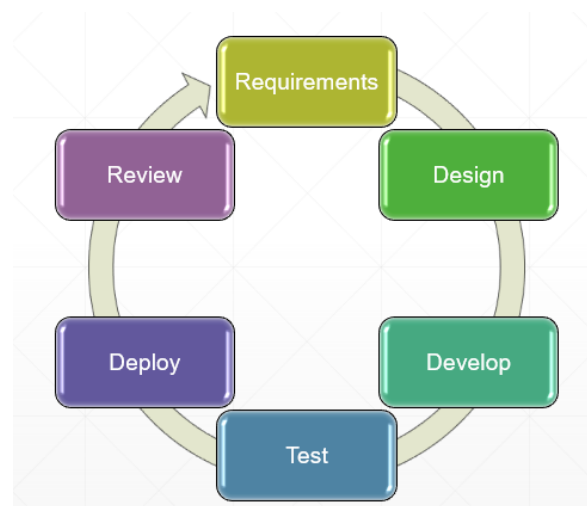
utilizing ISO standards and the Technology Acceptance Model. The findings suggest that MIS-OJT significantly enhances the management and monitoring of student trainees, offering a scalable solution that can be adopted by other educational institutions facing similar challenges.

In the following sections, this paper details the design and development process of MIS-OJT, presents an analysis of its features and functionalities, and discusses the outcomes of its implementation at CSU Aparri. The implications of these findings for the broader field of educational management systems are also considered, highlighting the potential for MIS-OJT to transform OJT programs and improve educational outcomes for students.

## II. METHODS

### 1. Research Design

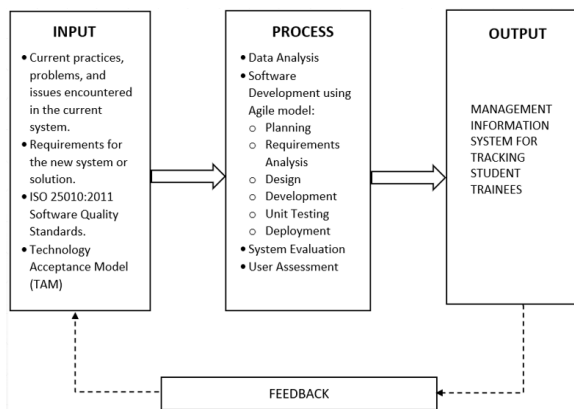
Figure 1 Agile Methodology



The study utilized the Input-Process-Output (IPO) model and Agile methodology to develop a Management Information System for Tracking Student Trainees (MIS-OJT) at CSU Aparri. In the IPO model, data from students, OJT advisers, and administrative

staff were gathered through surveys and interviews, including existing records and workflow feedback. These inputs were analyzed to design the system architecture, database, and functional components. Key processes included automation of reports, grade computation, data analysis, and communication channels. The final product was a web-based platform to streamline OJT administrative tasks, evaluated through user acceptance testing, ISO standards, and the Technology Acceptance Model, with documentation, user manuals, and training materials also produced. The Agile methodology facilitated iterative development in small iterations, focusing on specific features, with regular feedback sessions and user testing. This approach allowed for flexibility and responsiveness to new insights and requirements, ensuring continuous improvement through iterative testing, evaluation, and refinement, enhancing system functionalities and user experience.

Figure 2 Conceptual Framework used in the study



## 2. Locale of the study

The study was conducted at Cagayan State University, Aparri Campus, focusing on the university's OJT program and its

stakeholders, including students, OJT advisers, and administrative staff.

## 3. Data Gathering Tools and Instruments

The study employed **internet research, observations, interviews, and an evaluation questionnaire**, specifically using **ISO 25010:2011** for IT experts and the **Technology Acceptance Model** for users.

By combining the IPO model with Agile methodology, this study successfully developed a comprehensive and user-friendly Management Information System for Tracking Student Trainees. The structured analysis of system components through IPO, coupled with the iterative and user-focused Agile approach, ensured the creation of a highly effective solution tailored to the needs of CSU Aparri's OJT program.

## III. RESULTS AND DISCUSSION

### Current practices, policies, challenges, and issues encountered in the existing system

The existing manual system for monitoring student trainees' performance faces several challenges:

1. **Reliance on Paper-Based Submissions:** Time-consuming and costly, with students required to submit reports every Saturday.
2. **Unsecured Evaluation Reports:** Lack of proper security measures, risking data breaches and loss.
3. **Data Handling Inefficiencies:** Prone to errors and inconsistencies, causing delays in feedback and support.

- Cost and Resource Constraints:**  
High costs for printing and storage, with administrative staff spending significant time managing records.

These issues highlight the inefficiencies and risks of the current system, underscoring the need for a more streamlined and secure solution.

### The Developed System: Human Resource Information System (HRIS) for CSU-Aparri

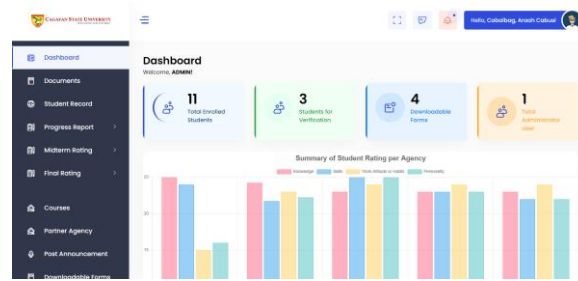


Figure 4 Dashboard (Student's Account)

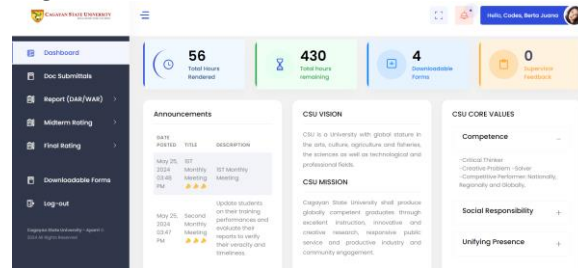
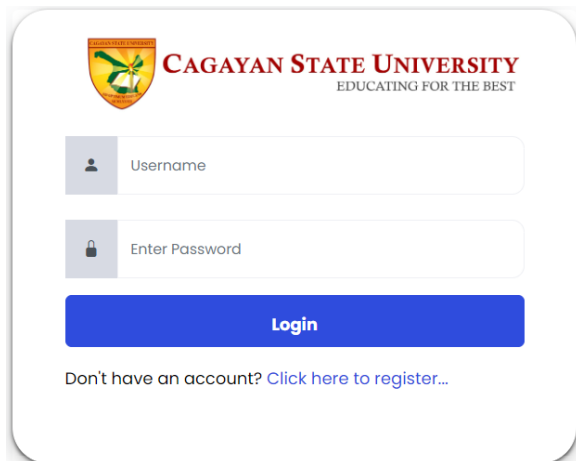


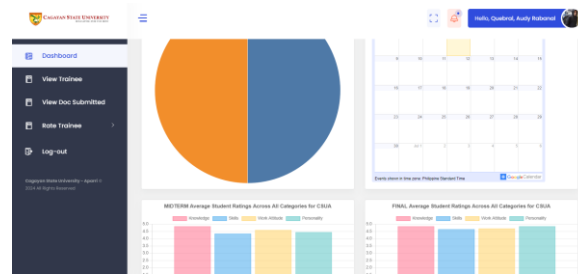
Figure 5 Dashboard (OJT Coordinator from Host Training Agency's Account)

Figure 2 Login Page



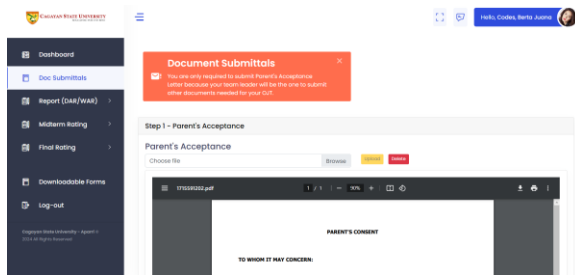
The figure above illustrates the login page of the developed system, where users must enter their username and password to access the system.

Figure 3 Dashboard (Admin's Account)



Figures 3, 4 and 5 show the monitoring and tracking dashboard of users. One of the system's standout functionalities is its robust monitoring and tracking capability, which allows for efficient oversight of student progress throughout the training period. This feature ensures that advisers can maintain a close watch on the trainees' development, address any issues promptly, and provide support as needed.

Figure 6 Preliminary Document Submission Interface



The figure illustrates the preliminary Document Submission interface for student trainees. The developed system facilitates online documents submission such as Letter of intent, Memorandum of Agreement, and Parent's Consent prior the start of their training.

Figure 7 Online Report Submission Interface

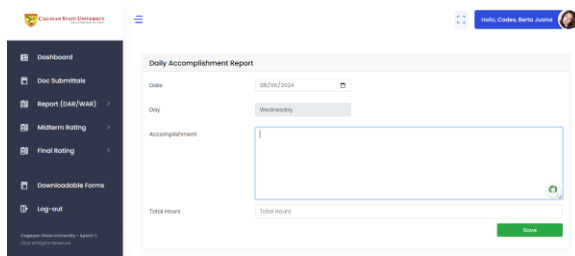


Figure 7 shows the Online Report Submission Interface for students. A key feature of the system is the capability for students to submit their reports online, which significantly reduces the physical paperwork and expedites the submission process.

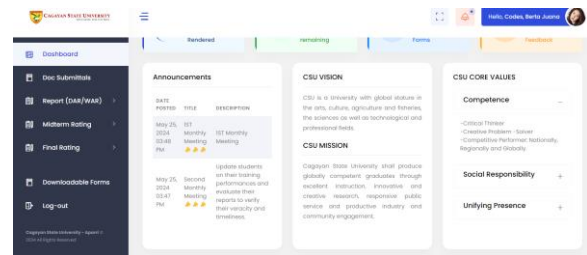
Figure 8 Evaluation and Grading Interface



The figure depicts the evaluation and grading interface. The developed system was designed to uphold the integrity and

confidentiality of student evaluations, the system provides a secure platform for advisers and supervisors to rate student performance online.

Figure 9 Centralized Communication Hub



The system also serves as a centralized communication hub, where students and associated agencies can view announcements made by OJT advisers or deans, ensuring that all parties remain informed of the latest developments and updates within the training program.

Figure 10 Evaluation and Grading Interface



The convenience extends to the ability of students to print their reports whenever necessary, providing them with tangible records of their work. A significant

advancement is the integration of e-signatures by advisers, which validates and approves the reports digitally, reducing the need for in-person meetings.

*Table 1 Summary of the respondents of the study*

### Respondents of the study

Participants	Frequency (n=98)	Percentage= (Total Frequency/n) ×100
Student Trainees	50	51
OJT Advisers	5	5.1
College Deans	5	5.1
Industry Partner	28	28.6
IT Expert	10	10.2
Total	98	100.0

The participants were taken through purposive sampling, considering the following inclusive criteria. The study required a minimum of 10 actively participating student trainees from each program, experienced OJT advisers and coordinators, industry partner representatives, and IT experts. This mix aimed to provide a comprehensive view of the OJT program from various angles.

### ISO 25010:2011 Assessment

*Table 2 Summary of Assessments of the IT Experts*

Quality Characteristic	Overall Mean	Description
Functional Suitability	4.66	Excellent
Performance	4.62	Excellent
Compatibility	4.53	Excellent
Usability	4.60	Excellent
Reliability	4.55	Excellent
Security	4.50	Excellent
Maintainability	4.59	Excellent
Portability	4.51	Excellent
Overall Mean	4.57	Excellent

Table 2 summarizes that the system received a weighted mean of 4.57 after evaluation by IT experts and industry professionals. This indicates a very high level of compliance with ISO 25010:2011.

### User Adoption of the Developed System through the Unified Theory of Acceptance and Use of Technology

*Table 3 Summary of Assessments of the end-user/s/intended user*

Assessment Category	Overall Mean	Description
Performance Expectancy	4.73	Excellent
Effort Expectancy	4.70	Excellent
Social Influence	4.48	Excellent
Facilitating Conditions	4.77	Excellent
Behavioral Intention	4.61	Excellent
Perceived Ease of Use	4.79	Excellent
Perceived Usefulness	4.89	Excellent
Self-Efficacy	4.90	Excellent
Response Efficacy	4.90	Excellent
Adoption Intentions	4.90	Excellent
Overall Mean Across All Categories	4.77	Excellent

Table 3 shows that the system received a weighted mean of 4.77 from evaluations by the intended end-users. This indicates a high level of agreement with the Technology Acceptance Model.

### IV. CONCLUSIONS

Cagayan State University - Aparri Campus (CSU Aparri) represents a significant leap forward from the traditional paper-based system used for managing on-the-job training (OJT) programs. The new system revolutionizes the way OJT programs are administered and monitored by offering a comprehensive, efficient, and user-friendly solution.

One of the key challenges of the previous system was the cumbersome nature of paper-based submissions and record-keeping. The MIS-OJT eliminates this challenge by providing an online platform for document submission, tracking, and storage. This not only saves time and resources but also reduces the risk of errors and data loss associated with manual record-keeping. Moreover, the MIS-OJT enhances communication and collaboration among stakeholders. Students can easily submit their

documents online, and advisers can provide feedback and monitor their progress in real-time. Administrative staff have access to a centralized database, allowing them to track student trainees' performance more effectively.

Overall, the MIS-OJT greatly improves the efficiency and effectiveness of the OJT program at CSU Aparri. By streamlining processes, enhancing communication, and providing a user-friendly interface, the system benefits students, advisers, and administrative staff alike, making the OJT experience more productive and rewarding for everyone involved.

## V. RECOMMENDATIONS

Based on the study's findings, the following recommendations are proposed to further enhance the system:

1. **Enhance User Training:** Provide additional training sessions to address user challenges and ensure proficiency with the system.
2. **Continuous Monitoring and Feedback:** Establish a routine for monitoring system performance and gathering user feedback to identify areas for improvement.
3. **Scalability Considerations:** Evaluate the system for scalability to accommodate growth in users and data volume.
4. **Security Enhancements:** Implement continuous security updates and audits to protect against evolving threats.
5. **Further Research:** Conduct additional research with a broader scope to validate findings across different contexts.
6. **Intellectual Property Protection:** Secure copyright or utility model registration to protect the system's intellectual property.
7. **Data Privacy Compliance:** Ensure compliance with the Data Privacy Act to

protect personal information and enhance user trust.

## VI. ACKNOWLEDGEMENT

Embarking on and completing this thesis has been a transformative journey, filled with challenges, moments of inspiration, and personal growth. I am deeply grateful to God for giving me strength and wisdom, my family for their unwavering love and encouragement, which have been my anchor and driving force throughout this endeavor.

I extend my heartfelt thanks to my advisor, Marie Khadija Xynefida P. Ontiveros, DIT, for her invaluable guidance, support, and belief in my capabilities. I also want to express my gratitude to the C.I.C.S faculty family and our CEO, Engr. Audy Quebral, for their encouragement and support.

Special appreciation goes to the Department of Science and Technology (DOST) for providing the scholarship that made my master's studies possible.

I am grateful for the friendship and collaboration of those who have joined me on this journey, as your camaraderie and feedback have added depth to my work. Additionally, I would like to express my appreciation to everyone who has contributed to the success of this project. Your support, no matter how small, has made a lasting impact on this experience. Thank you all for being a part of this incredible journey.

## REFERENCES

Karunaratne, K., Kingsley, K., & Perera, N. (2019). Students' perception on the effectiveness of industrial internship programme. *Education Quarterly Reviews*, 2(4), 822-832. Retrieved from <https://eric.ed.gov/?id=EJ1267615>

Gerken, M., Rienties, B., Giesbers, B., & Könings, K. (2012). Enhancing the academic internship learning experience for business education – A critical review and future directions. In P. Van den Bossche, W. H. Gijsselaers, & R. G. Milter (Eds.), *Learning at the Crossroads of Theory and Practice: Research on Innovative Learning Practices* (pp. 7-22). Dordrecht: Springer. [https://doi.org/10.1007/978-94-007-2846-2\\_2](https://doi.org/10.1007/978-94-007-2846-2_2)

Sarlan, A., Ahmad, W., & Bismo, D. (2008). Student industrial internship web portal. In *Proceedings of the International Symposium on Information Technology 2008*, Kuala Lumpur, Malaysia.

Scheer, R., & Moss, D. (2012). Deforestation and its extreme effect on global warming. *Scientific American*. Retrieved from <https://www.scientificamerican.com/article/deforestation-and-its-extreme-effect-on-global-warming/>

Kim, H. B., & Park, E. J. (2013). The role of social experience in undergraduates' career perceptions through internships. *Journal of Hospitality, Leisure, Sport & Tourism Education*, 13, 227-235. <https://doi.org/10.1080/jhlste.2013.0067>

Karsenti, T., & Collin, S. (2010). Can ICT help student teachers overcome teaching challenges encountered during their internship? The case of 800 student teachers in Montreal, Canada. In A. Jimoyiannis (Ed.), *Proceedings of the 7th Pan-Hellenic Conference with International Participation 'ICT in Education'* (pp. 207-214). Greece: University.

Gao, Y. (2016). Research on internship management of hotel management specialty in higher vocational colleges. In *Proceedings*

of the 2016 6th International Conference on Mechatronics, Computer and Education Informationization (MCEI 2016) (pp. 907-910). Atlantis Press. <https://doi.org/10.2991/mcei-16.2016.189>

Juhana, A., Abdullah, A. G., Somantri, M., & Aryadi, S. (2018). E-Portfolio web-based for students' internship program activities. *IOP Conference Series: Materials Science and Engineering*, 306(1), 012003. <https://doi.org/10.1088/1757-899X/306/1/012003>

ChanLin, L.-J., & Hung, W.-H. (2015). Evaluation of an online internship journal system for interns. *Procedia - Social and Behavioral Sciences*, 191, 1024-1027. <https://doi.org/10.1016/j.sbspro.2015.04.700>

Guiquing, F. (2023). Mapping of Animal Bites in Cagayan Province. *Telematique*. 22 (01)

Jaafar, M., Ahmad, F., & Mohamad Nor, M. N. (2017). Development of internship monitoring and supervising web-based system. In *Proceedings of the 2017 IEEE 15th Student Conference on Research and Development (SCORED)* (pp. 13-18). IEEE. DOI: 10.1109/SCORED.2017.8305395.

Villa, F. (2021). Bench Test of Multi-Function Coconut Husk Processing Machine. *Academy of Accounting and Financial Studies Journal*. 25(3),1-7.

Villa, F. (2021). Time-series Forecasting of COVID-19 cases using stocked-long short-term memory networks. *2021 International Conference on Innovation and Intelligence for Informatics, Computing, and Technologies (3ICT)*, 435-441.



## BIONOTE



Araah Francesca C. Cabalbag, a DOST-SEI STRAND scholar, is deeply immersed in the field of Information Technology, pursuing a master's degree at Cagayan State University, Aparri Campus. Their dedication to mastering web development for their thesis underscores their commitment to academic excellence and professional growth. Her research interests in web penetration testing and cybersecurity reveal a forward-thinking approach to addressing modern IT challenges. As a DOST-SEI scholar, she is poised to make significant contributions to the IT community, leveraging their knowledge and skills to advance technology and drive innovation. Through their research and future endeavors, Araah aims to shape the future of IT, offering valuable insights and solutions that benefit society as a whole