SOUTHEAST ASIAN JOURNAL OF SCIENCE AND TECHNOLOGY

Volume 10, Issue 1, 2025
P-ISSN: 2672-2984
E-ISSN: 2672-2992
www.sajst.org

A Data-Driven Customer Satisfaction Survey Model Integrating Sentiment and Prescriptive Analytics in Higher Educations Institutions

Jb O. Doria
Pangasinan State University

Article Info :
Received: ***20 June 2025;*** *Revised:* ***27 Aug 2025;*** *Accepted:* ***22 Oct 2025;*** *Available Online:* ***15 Dec 2025***

Abstract – *This research presents the development and implementation of A Data-Driven Customer Satisfaction Survey Model Integrating Sentiment and Prescriptive Analytics in Higher Educations Institutions, integrating sentiment analysis and prescriptive analytics to strengthen institutional decision-making. Traditional survey instruments at PSU have relied mainly on numerical ratings, which often fail to capture the deeper meaning behind stakeholder feedback. This study addresses that gap by using advanced data analytics to gain a clearer, more nuanced understanding of stakeholder experiences and to provide actionable recommendations for continuous improvement. The primary goal of the research was to design, validate, and deploy a survey system capable of systematically gathering and analyzing both quantitative and qualitative feedback from students, faculty, staff, and other stakeholders across PSU campuses. A mixed-method approach was used, combining structured survey questions with open-ended responses. The textual feedback gathered from these comments underwent several pre-processing steps, including text cleaning, tokenization, stop-word removal, lemmatization, and vectorization using BERT embeddings. These steps allowed the study to classify sentiments accurately as positive, negative, or neutral, offering insights that numbers alone could not provide. To make the findings more useful for decision-makers, the study incorporated a prescriptive analytics framework. This framework transformed sentiment results into strategic, prioritized recommendations for university leaders. The process involved data collection, pre-processing, feature extraction, model selection, training, and validation. Machine learning and artificial intelligence tools were used to ensure high accuracy in sentiment classification, improving the reliability of feedback interpretation. The prescriptive analytics outputs provided PSU administrators with clear action points to reinforce institutional strengths and address areas needing improvement. The findings revealed that, overall, stakeholders were satisfied with PSU's academic services, facilities, and administrative support. However, several recurring concerns emerged. These included issues related to technological infrastructure, communication efficiency, and student support services. The use of sentiment analysis helped uncover patterns of dissatisfaction that traditional surveys often overlook. The integration of prescriptive analytics further translated these insights into specific recommendations, such as upgrading digital platforms for student services, enhancing faculty development initiatives, and improving feedback and communication mechanisms. This study contributes significantly to the field of educational management by demonstrating the practical use of artificial intelligence—specifically sentiment analysis and prescriptive analytics—in understanding and responding to stakeholder needs. It offers a replicable framework for other higher education institutions seeking to modernize their feedback systems and adopt data-driven decision-making practices. The research supports the shift toward evidence-based governance and reinforces the importance of continuous quality assurance in academic environments. In conclusion, the newly developed survey tool strengthened PSU's capacity to capture meaningful feedback and translate it into actionable institutional strategies. By revealing both strengths and hidden challenges, the tool promotes a more responsive, transparent, and accountable governance system. The study recommends integrating this tool permanently into PSU's quality assurance processes and encourages further research to explore its use in other universities and organizational settings.*

Keywords – *Customer Satisfaction Survey, Sentiment Analysis, Prescriptive Analytics, Higher Education, Pangasinan State University*

SOUTHEAST ASIAN JOURNAL OF SCIENCE AND TECHNOLOGY

Volume 10, Issue 1, 2025
P-ISSN: 2672-2984
E-ISSN: 2672-2992
www.sajst.org

INTRODUCTION

In today's fast-paced global economy, organizations increasingly emphasize customer-centered satisfaction as a core strategy. Traditional survey tools, however, often fail to capture the depth of customer experiences, relying heavily on quantitative metrics that overlook underlying emotions and sentiments (Bataineh et al., 2022; Liu et al., 2022). To address these gaps, many institutions now utilize qualitative approaches and advanced analytics to better understand customer perceptions (Batra & Puri, 2021; Zha et al., 2021). As expectations continue to rise, placing customers at the center of service delivery has become essential for maintaining competitiveness.

This shift is also evident in government services, where digital transformation and e-government initiatives aim to provide more accessible and efficient public services. According to the 2022 UNDESA Global Survey Launch Event, e-government has become a vital tool in enabling citizen access, participation, and service efficiency. Customer satisfaction is therefore a key indicator of service quality across organizations, including government agencies, whose mandate is to uphold public welfare and integrity (Pañares & Abocejo, 2019; Andaya & Abocejo, 2019). Philippine laws such as RA 6713 and the 1987 Constitution emphasize ethical, responsive, and professional public service, while the Anti-Red Tape Act (RA 9485) promotes streamlined processes to reduce bureaucracy and improve service delivery.

Higher education institutions (HEIs) are likewise expected to provide efficient frontline services. In the digital age—where feedback spreads rapidly online—ensuring positive client experiences has become even more critical (Martins, 2016). Administrative personnel significantly shape institutional reputation (Sepitula, 2010), and competent frontline services strengthen public trust (Mengesha, 2015). For universities, customer satisfaction influences student retention, learning outcomes, and overall institutional success. Students, faculty, alumni, and community members expect seamless academic and administrative services, making satisfaction surveys a valuable tool for continuous improvement.

Pangasinan State University (PSU), established in 1979 through PD 1497, serves the province through multiple campuses offering diverse programs. Beyond academics, PSU is deeply connected to its communities through research, outreach, and development initiatives. However, like many institutions, PSU faces challenges in consistently meeting stakeholder expectations. Issues such as complex enrollment procedures, limited resources, unclear communication, and outdated administrative processes contribute to gaps in customer satisfaction. Infrequent or inadequate feedback mechanisms also hinder PSU from fully understanding stakeholder needs.

To address these challenges, PSU can benefit from integrating sentiment analysis and prescriptive analytics into its customer satisfaction system. Sentiment analysis uncovers stakeholders' emotions, allowing PSU to identify concerns, strengths, and opportunities based on comment data. Prescriptive analytics then uses these insights to recommend actionable strategies—helping the university prioritize improvements, optimize processes, and design targeted interventions. Together, these methods support a data-driven, customer-focused approach that promotes continuous quality enhancement.

The proposed study, "A Data-Driven Customer Satisfaction Survey Model Integrating Sentiment and Prescriptive Analytics in Higher Educations Institutions" offers an innovative solution to PSU's customer satisfaction challenges. By leveraging advanced analytics and emphasizing stakeholder needs, the study aims to guide PSU toward more responsive, efficient, and sustainable service delivery. Integrating these tools into existing systems can help create a more customer-centric university environment where all stakeholders feel valued and heard.

Volume 10, Issue 1, 2025
P-ISSN: 2672-2984
E-ISSN: 2672-2992
www.sajst.org

OBJECTIVES OF THE STUDY

The primary objective of this study is to enhance quality management feedback mechanism at Pangasinan State University (PSU) by developing a data driven Customer-Centered Satisfaction Survey Tool that incorporates sentiment analysis and prescriptive analytics. This tool aims to address current gaps in understanding stakeholder needs and improving overall customer satisfaction. The specific objectives are as follows:

1. Assess the level of customer satisfaction with the support office services at Pangasinan State University, specifically in the following areas:
   a. Admission, Guidance, and Testing
   b. Cashier's Office
   c. College/Department
   d. Medical and Dental Services
   e. MIS/ICTMO
   f. Registrar's Office
2. Identify the appropriate data pre-processing and feature selection techniques that can be used to clean the comments/suggestions from the customer satisfaction survey.
3. Determine the polarity of relevant tokens from the structured data using sentiment analysis.
4. Build a classifier model to categorize positive, negative or neutral comments for sentiment analysis.
5. Apply prescriptive analytics to recommend actions that support effective decision-making.

MATERIALS AND METHODS

This chapter discusses in detail the methodological processes, research design, and data-gathering procedures employed in developing the data driven customer-centered satisfaction survey tool for Pangasinan State University (PSU). The study integrates sentiment analysis and prescriptive analytics to provide a more meaningful and comprehensive evaluation of stakeholder feedback. A descriptive–developmental research design served as the foundation of the study. The descriptive component enabled the researcher to systematically examine the current level of customer satisfaction across PSU campuses and identify prevailing gaps and challenges in service delivery. Meanwhile, the developmental component guided the creation, refinement, and enhancement of an innovative survey tool that would address the limitations of the existing system. This combination ensured that the development process was grounded in real stakeholder experiences and supported by evidence-based strategies, ultimately leading to a tool capable of generating actionable recommendations for continuous quality improvement.

The study utilized data from the 2023–2024 Customer Satisfaction Survey, which was administered across all PSU campuses. This dataset included demographic variables such as age, sex, client category, frequency of transaction, office visited, and type of service availed. These demographic details were important because they provided context to the findings and allowed the researcher to understand patterns and trends among different groups of service users. Primary data were collected from multiple stakeholder groups, including students, faculty members, alumni, industry partners, suppliers, community clients, non-teaching personnel, and representatives from regulatory or partner agencies. The study employed purposive sampling, ensuring that only individuals who directly accessed and experienced PSU services were included as respondents. This guaranteed that the data reflected actual customer experiences and relevant perspectives from the university's diverse clientele.

To enrich the data and validate observations, the researcher also utilized several qualitative techniques. Personal observation allowed the identification of issues within the existing survey system, such as repetitive questions, lack of open-ended items, and limited opportunities for clients to express detailed concerns. Interviews were conducted using structured and semi-structured questions to gather deeper insights regarding stakeholder expectations, difficulties encountered, and suggestions for a more user-friendly and responsive survey tool. These interviews provided valuable narratives that helped refine the structure and content of

Volume 10, Issue 1, 2025
P-ISSN: 2672-2984
E-ISSN: 2672-2992
www.sajst.org

the new instrument. Document analysis further supported the development process, particularly the review of existing CSU forms and the EOMS ISO templates, including FM-TM-QMS-04, which outline institutional standards for customer satisfaction assessment. These documents helped ensure that the newly developed tool aligned with PSU's Quality Management System (QMS) and complied with existing protocols and performance indicators.

Both quantitative and qualitative data were collected through Likert-scale questions and open-ended items. The Likert-scale responses measured customer satisfaction across various dimensions such as efficiency, professionalism, accessibility, courtesy, and timeliness of service. Meanwhile, open-ended questions served as rich sources of qualitative data, capturing sentiments, suggestions, and concerns that could not be fully expressed through numerical ratings. These qualitative responses also served as the primary input for the sentiment analysis component of the study, which coded and classified emotions such as satisfaction, dissatisfaction, frustration, appreciation, and recommendations for improvement. With the integration of prescriptive analytics, the study translated stakeholder feedback into proposed actions that PSU could implement to enhance its frontline services, streamline its processes, and strengthen customer engagement.

Overall, the methodology ensured a systematic, data-driven, and stakeholder-centered approach to developing the Customer-Centered Satisfaction Survey Tool. By combining descriptive analysis, developmental processes, and advanced analytics, this chapter demonstrates how the study produced a comprehensive instrument capable of supporting PSU's commitment to continuous quality improvement, transparency, and customer satisfaction.

RESULTS AND DISCUSSIONS

This chapter presents a comprehensive discussion of the results generated from the development, verification, and evaluation of the *Data-Driven Customer Satisfaction Survey Model Integrating Sentiment and Prescriptive Analytics in Higher Educations Institutions*. It begins with an overview of the system's technical architecture, including its major components, workflow, and the analytical algorithms embedded in the tool. The discussion proceeds with the findings of the system verification process, which involved unit testing of each module, integration testing of the full system pipeline, and acceptance testing guided by end-user feedback. These evaluations confirm the reliability, accuracy, and functionality of the system in addressing the objectives of the study. The chapter also integrates system outputs with empirical findings from the 2023–2024 Customer Satisfaction Survey to provide deeper insight into stakeholder perceptions and service performance across various support offices of Pangasinan State University.

The data driven customer-centered satisfaction survey tool was designed as a scalable, data-driven platform to enhance quality assurance processes at PSU by enabling systematic analysis of both quantitative survey ratings and qualitative stakeholder feedback. Implemented using Python, the system leverages advanced data analytics and natural language processing tools such as the Natural Language Toolkit (NLTK), BERT for sentiment analysis, and scikit-learn for prescriptive analytics. This architecture was chosen to ensure robust processing of large datasets, contextual understanding of textual responses, and the generation of evidence-based recommendations. The system emphasizes automation, accuracy, and interpretability, making it a practical decision-support tool for administrators and quality management teams.

The results from the survey analysis reveal that PSU stakeholders generally express high levels of satisfaction with university services. Offices such as the MIS/ICTMO (4.73), Medical and Dental Services (4.59), Registrar's Office (4.55), and Admission, Guidance, and Testing (4.53) received "Very Satisfied" ratings. These high scores reflect the effectiveness and responsiveness of key service units. Respondents commended the MIS/ICTMO for its accessibility and timely information

Volume 10, Issue 1, 2025
P-ISSN: 2672-2984
E-ISSN: 2672-2992
www.sajst.org

support, though a few recommended expanding the office to accommodate more clients. Positive remarks similarly characterized Medical and Dental Services, especially about the friendliness and professionalism of staff, although additional medical equipment was suggested to further enhance service coverage. The Registrar's Office also received strong positive feedback but with recurring concerns about long queues, delays in releasing academic documents, and the need for clearer instructions and better crowd organization. These mixed sentiments suggest critical areas where process streamlining, and customer handling may be improved. Meanwhile, responses toward College and Department Offices (4.47) were generally positive but included neutral remarks related to waiting areas and internet connectivity, indicating opportunities for enhancement at the departmental level.

The workflow for analyzing these results follows the system's established data pipeline, beginning with the collection of stakeholder feedback and followed by the processing of both numerical ratings and open-ended comments. This approach ensures a holistic understanding of stakeholder experiences by combining measurable indicators with meaningful narrative insights. To prepare qualitative data for sentiment analysis, an extensive pre-processing protocol was implemented as summarized. Steps included translation of Filipino responses into English, cleaning of missing or irrelevant data, normalization of text, special character removal, tokenization, stop-word filtering, and lemmatization. These steps ensured linguistic consistency and removed noise to improve sentiment classification accuracy.

Following pre-processing, the cleaned text was transformed into numerical representations through TF-IDF, Bag-of-Words, and BERT embeddings. Feature selection further refined the dataset by prioritizing the most significant tokens. Sentiment analysis was then conducted using polarity scoring derived from token embeddings. Sentiment scores across support offices were predominantly positive. Medical and Dental Services obtained the highest polarity rating (+0.95), followed closely by Admission, Guidance, and Testing (+0.93) and College/Department Offices (+0.88). MIS/ICTMO (+0.82) and the Cashier's Office (+0.76) also reflected generally positive sentiments, though minor concerns regarding environmental comfort and internet connectivity were noted. The Registrar's Office, with a polarity score of +0.64, showed a combination of positive and negative remarks, reinforcing the need for operational improvements.

The BERT-based sentiment analysis workflow is summarized and includes steps such as tokenization, contextual embedding, polarity scoring, classification, aggregation, and visualization. The model employed the bert-base-uncased configuration, optimized with AdamW, trained at a learning rate of 2e-5, and validated using standard metrics. As shown in *Table 4*, the model achieved high performance: 92% accuracy, 0.91 precision, 0.90 recall, and an F1-score of 0.91. These results confirm the model's reliability in accurately classifying stakeholder sentiments, even in linguistically diverse comments.

The model development process began with dataset compilation from survey responses across all PSU campuses, followed by intensive pre-processing, embedding, fine-tuning, and validation. Fine-tuning was particularly important due to the Tagalog and Taglish expressions present in stakeholder comments, requiring BERT to adapt to localized linguistic contexts. Classification thresholds were applied to determine sentiment categories using standardized polarity cutoffs. The model was then deployed within the survey tool, integrated into an interactive dashboard capable of automatically classifying new comments and generating real-time sentiment summaries for administrative decision-making.

Prescriptive analytics was used to convert sentiment analysis results into actionable recommendations for enhancing university services. Each support office was evaluated based on dominant sentiment and underlying feedback patterns. For offices with predominantly positive feedback such as

Volume 10, Issue 1, 2025
P-ISSN: 2672-2984
E-ISSN: 2672-2992
www.sajst.org

MIS/ICTMO, Medical and Dental Services, and the Cashier's Office, the recommendations focus on maintaining existing strengths and continuing technology-driven improvements. For offices with mixed or neutral feedback, such as the Registrar's Office and College/Department Offices, the recommendations emphasize prioritizing operational enhancements, improving communication, and addressing specific service bottlenecks.

Overall, the results highlight that while PSU demonstrates strong performance in several service areas, especially in ICT, health services, and financial transactions, certain offices—most notably the Registrar's Office—require immediate improvements. The integration of sentiment analysis and prescriptive recommendations provides PSU with a data-driven basis for enhancing service delivery. By addressing these findings proactively, the University strengthens its commitment to quality assurance, stakeholder satisfaction, and continuous institutional improvement.

CONCLUSION AND RECOMMENDATIONS

The 2023–2024 Customer Satisfaction Survey of Pangasinan State University revealed that, overall, students and stakeholders expressed a high level of satisfaction with the services provided by the university's support offices. Analysis of both quantitative Likert scale data and qualitative feedback provided a holistic view of stakeholder perceptions. The Registrar's Office, while recognized as critical for managing student records and academic processes, received the most negative feedback due to long queues, document delays, and service access challenges, highlighting persistent inefficiencies. In contrast, the Cashier's Office was praised for efficiency, accuracy, and staff courtesy, with suggestions focused on sustaining current practices. The MIS/ICTMO Office garnered positive responses for digital accessibility and support, while Medical and Dental Services were noted for reliability and care, though ongoing monitoring was recommended. The Admission, Guidance, and Testing Office received commendation for efficient procedures and guidance services, with recommendations aimed at maintaining responsiveness. College and Department Offices mostly received positive feedback, though neutral comments indicated potential gaps in consistency and communication. Overall, positive sentiments outnumbered neutral and negative responses, indicating general satisfaction, but recurring issues—particularly in the Registrar's Office—require targeted intervention.

The study concluded that PSU's support services generally meet or exceed stakeholder expectations, with service quality, efficiency, and accessibility strongest in the Cashier's, MIS/ICTMO, and Medical and Dental offices. The Registrar's Office, however, requires immediate reform to address delays and systemic inefficiencies. Neutral responses, particularly from College and Department Offices, signal areas needing attention to prevent future dissatisfaction. Continuous monitoring, feedback integration, and responsiveness were emphasized as essential for sustaining high satisfaction levels.

Recommendations include implementing an online queuing and appointment system, digitizing records, and streamlining workflows for the Registrar's Office. The Cashier's Office should maintain service excellence using a hybrid monitoring approach combining structured surveys and sentiment analysis. The MIS/ICTMO Office should expand ICT infrastructure, conduct system audits, and provide regular training. Medical and Dental Services are advised to explore digital scheduling, electronic health information dissemination, and structured feedback integration. The Admission, Guidance, and Testing Office should strengthen counseling programs and integrate qualitative feedback on student well-being. College and Department Offices should standardize communication, hold focus group discussions, and validate survey findings. At the institutional level, a continuous monitoring and evaluation system combining sentiment analysis and prescriptive analytics should be established, with attention to data quality, ethical guidelines, and transparent reporting to foster trust and evidence-based decision-making.

Volume 10, Issue 1, 2025
P-ISSN: 2672-2984
E-ISSN: 2672-2992
www.sajst.org

REFERENCES

Alonzo, D. M., & Casiño, R. A. (2021). *Data analytics in higher education: Philippine perspectives on student retention and curriculum alignment*. Journal of Educational Policy and Management, 12(3), 45–58.

Andaya, J. F., & Abocejo, F. T. (2019). *Public service ethics and accountability in the Philippine civil service*. Public Administration Review, 4(1), 56–67.

Aguillon, M. E., Santos, L. A., & Cruz, N. P. (2021). *The impact of feedback loops in student engagement and satisfaction*. Journal of Educational Studies, 17(2), 99–112.

Bardhan, I., Chen, H., Karahanna, E., & Struik, D. (2021). *Predictive and prescriptive analytics for improving customer satisfaction in higher education*. Decision Support Systems, 142, 113453.

Bataineh, A., Hijazi, R., & Al-Madi, F. (2022). *Customer feedback in quality management: Moving from surveys to sentiment analysis*. Total Quality Management & Business Excellence, 33(5-6), 623–637.

Baticulon, R. E., Sy, J. J., Alberto, N. R., & Tiu, C. J. (2022). *Mental health support in Philippine universities: The role of student feedback in reform*. Philippine Journal of Psychology, 55(1), 23–38.

Bautista, A. L., & Santos, F. M. (2021). *Enhancing education through feedback systems: A case study of two Philippine universities*. International Journal of Learning and Teaching, 13(2), 55–69.

Batra, D., & Puri, M. (2021). *Leveraging AI-based sentiment analysis for customer satisfaction*. Journal of Business Research, 133, 1–10.

Bersales, L. G. (2021). *CHED's initiatives on quality assurance through student feedback*. Journal of Philippine Higher Education, 10(2), 35–42.

Castro, M. A., & Peralta, H. R. (2020). *Student as customer: Service quality in higher education*. Asia Pacific Education Review, 21(3), 423–432.

Cruz, J. C., Delos Reyes, M., & Padilla, K. (2021). *Curriculum reforms through feedback mechanisms in Philippine universities*. Education & Society, 29(1), 34–47.

Delgado, A. J., & Reyes, C. D. (2021). *Analyzing open-ended student feedback using sentiment analysis*. International Journal of Educational Technology, 8(4), 72–85.

Davenport, T. H., & Ronanki, R. (2018). *Artificial intelligence for the real world*. Harvard Business Review, 96(1), 108–116.

Efe, R., & Kurnaz, M. (2023). *Student satisfaction during online learning in the pandemic*. Journal of Educational Technology, 19(1), 12–26.

Evangelio, R. D., & Abocejo, F. T. (2015). *Ethics and professionalism in the Philippine public sector*. Journal of Public Administration, 7(1), 45–57.

Flores, S. A., & Fajardo, D. M. (2022). *Measuring satisfaction in state universities: A framework-based approach*. Philippine Journal of Education and Human Development, 14(2), 18–29.

García, A. G., & Rojas, M. R. (2020). *Prescriptive analytics in academic decision-making*. Journal of Analytics in Higher Education, 6(2), 102–118.

Gokhale, S., Rao, A., & Lim, S. (2023). *Sentiment analysis applications in educational services*. Journal of Artificial Intelligence in Education, 17(1), 1–12.

Gonzales, J. A., & de Guzman, R. A. (2023). *Linking student satisfaction to retention: Insights from HEIs in Luzon*. Education Policy and Practice, 12(3), 89–97.

Gonzales, V. L., & Maloles, E. C. (2022). *Applications of sentiment analysis in academic feedback*. Philippine Information Systems Journal, 11(1), 54–63.

Kothari, C. R. (2004). *Research methodology: Methods and techniques* (2nd ed.). New Age International.

Kumar, V., Natarajan, A., & Singh, M. (2022). *Data-driven decision-making in education using prescriptive analytics*. Journal of Decision Analytics, 15(3), 211–226.

Lambert, K. H., & Wong, T. S. (2020). *Feedback and policy reform in higher education*. Journal of Educational Policy Studies, 22(2), 67–79.

Liu, J., Wang, Y., & Zhang, X. (2022). *Understanding customer emotions in service quality assessment*. International Journal of Consumer Studies, 46(1), 33–45.

Martins, G. (2016). *Digital reputation and client satisfaction*. Journal of Online Trust, 9(1), 21–33.

Mengesha, Y. M. (2015). *Frontline service quality in higher education institutions*. Journal of Higher Education Studies, 5(2), 25–36.

O'Donnell, K., & Mason, R. (2021). *Institutional responsiveness to student feedback*. Journal of Student Engagement Research, 3(2), 45–61.

Oberoi, H. K., & Gupta, M. (2021). *Strategic planning through analytics in educational institutions*. Journal of Strategic Educational Leadership, 9(1), 15–29.

Pamatong, M. C., & Abocejo, F. T. (2017). *Public satisfaction and performance in frontline service delivery*. Asian Journal of Governance and Policy, 3(1), 22–34.

Pañares, M. J., & Abocejo, F. T. (2019). *Governance and accountability in Philippine public administration*. Philippine Journal of Development Administration, 8(2), 45–58.

Pandey, P. (2016). *Research methodology tools and techniques*. Bridge Center.

Pascual, M. L., & Lora, G. D. (2022). *An evaluation of academic and support services in private universities*. Philippine Education Review, 15(2), 33–46.

Peffers, K., Tuunanen, T., Rothenberger, M. A., & Chatterjee, S. (2007). *A design science research methodology for information systems research*. Journal of Management Information Systems, 24(3), 45–77.

Reyes, J. T., & Bautista, M. E. (2021). *Improving institutional quality through satisfaction metrics*. Journal of Quality in Education, 10(1), 11–28.

Romero, D. M., & Santos, L. J. (2022). *Competency-based learning through curriculum reform*. Educational Innovations Review, 13(2), 55–71.

Salvador, M. E., & Reyes, J. M. (2021). *Improving online learning through student sentiment analysis*. Philippine e-Learning Journal, 5(1), 29–42.

Santos, R. C., & Lima, P. T. (2023). *Data science in the Philippine higher education system*. Journal of Southeast Asian Research, 9(3), 78–90.

Santos, R. J., & Asuncion, A. P. (2022). *Curriculum alignment post-K to 12: A data analytics approach*. Journal of Curriculum Development, 14(1), 17–34.

Sepitula, M. R. (2010). *Administrative support and institutional image in higher education*. Journal of Institutional Research, 8(1), 47–61.

Singh, A., & Sinha, V. (2020). *Feedback-informed curriculum design in Asia*. Asian Journal of Curriculum Studies, 11(3), 62–74.

Taylor, B., & Francis, C. (2022). *Optimizing academic operations with analytics*. Higher Education Management, 14(2), 35–50.

Tobergte, D. R., & Curtis, S. (2013). *Data collection techniques for system design*. Journal of Systems Research, 6(3), 89–95.

Uy, G. C., & Marasigan, E. M. (2021). *Involving students in curriculum innovation: The Philippine experience*. Journal of Student Participation, 9(2), 41–59.

Villanueva, L. M., Santos, M. A., & Tan, F. A. (2023). *Administrative services and student satisfaction*. Journal of Institutional Effectiveness, 6(4), 73–91.

Villanueva, T., Soriano, K., & Yambao, A. (2022). *Feedback-driven improvements in university management*. Journal of Educational Effectiveness, 10(3), 88–97.

Zha, X., Zhang, Y., & Hu, H. (2021). *AI-based feedback analysis in service quality improvement*. Journal of Service Research, 24(2), 123–139.

Zhao, H., Liu, Y., & Tan, X. (2021). *Student satisfaction in campus services*. International Journal of Educational Research, 109, 101871.

Volume 10, Issue 1, 2025
P-ISSN: 2672-2984
E-ISSN: 2672-2992
www.sajst.org

Zhou, M., Wang, F., & Liu, Y. (2023). *Student sentiment during crisis: Lessons from the pandemic*. Journal of Digital Education, 16(1), 22–37.

Zhou, Y., Li, X., & Chua, R. (2022). Feedback and governance in higher education in Asia. Asian Journal of Policy and Governance, 7(2), 65–79.

CONTACT INFORMATION:
NAME: JB O. DORIA
CONTACT NO: +63915-4375-222
EMAIL ADDRESS: JB@PSU.EDU.PH