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From challenges to solutions: Development and evaluation of alumni engagement portal system for tracer studies

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Abstract

The Alumni Engagement Portal System (AEPS) is a new system at the Polytechnic University of the Philippines, designed to address limited alumni engagement caused by outdated manual methods and inconsistent monitoring. This system was developed through surveys, expert reviews, and pilot testing. A survey validated with Cronbach's Alpha yielded a score of 0.9236, confirming its high reliability. Pilot testing showed high levels of usability, acceptability, and increased alumni engagement. The system, developed using agile methodology, is recognized for its user-friendly design and data privacy compliance. It integrates functionalities such as tracer studies, networking opportunities, and data analytics for institutional decision-making. Additionally, it provides insights into employment trends, enabling the university to align curricula with industry needs. Overall, AEPS bridges the gap between alumni and the university by offering a centralized, accessible, and interactive portal. The study recommends future development explore artificial intelligence initiatives for predictive analytics and personalized experiences. This portal represents a transformative step in strengthening alumni-institution relationships and significantly contributes to higher education management practices.

Contents

Contribution of this paper to the literature
The main contribution of this paper is a model for developing an effective Alumni Engagement Portal System (AEPS) using a data-driven theoretical framework that offers a practical and secure method to enhance alumni engagement and institutional tracer studies.

1. Introduction

The Graduate School (GS) is committed to the continuous evaluation of educational programs, curriculum relevance, quality assurance, career guidance, and alumni engagement. It utilizes the Higher Education Modernization Act of 1997 to offer twelve major graduate programs, including several Master's degrees in various fields and doctorate degrees in Public Administration and Business Administration.

Graduate School has 1,100-1,300 students enrolled annually from 2019 to 2025. The university has produced competitive graduates who are now making their way into public and private institutions. These graduates play an important role in societal development, with many holding designations such as university presidents, politicians, directors, chief executives, and other middle managers.

This university ranks 6th out of 232 Philippine higher education institutions in UniRank's 2023 Philippine University Ranking (Parungao, 2023). Its graduates remain the top priority for employers, with 23.39% preferring them due to their skills in the workplace. Alumni engagement is significant for academic programs to maintain connections with the evolving health business and to create an ideal learning environment for future leaders. To help identify opportunities for participation and ensure program success, an alumni engagement framework has been created (Magkilat, 2023).

The employment status of Philippine university graduates has shown a positive impact, with 46.55% experiencing a positive change. A 2018 survey revealed that students rated the responsiveness of faculty and staff to their needs as "better," with 51.6% stating it as such. The office's efficiency and timeliness were also rated "better" in this study. Additionally, in the study of Dagñalan (2016), the Graduate School office received an average rating of 82.26%, at least "Better" or "Good." Overall, the PUP Graduate School provides quality service recognized by students and clients.

However, this data can be challenged because it was collected manually through Google Forms and does not provide continuous monitoring of graduates' status after leaving the institution. Therefore, the study proposes a new portal system that will systematically and regularly monitor graduate outcomes, aiming to continuously improve the services offered by the Graduate School and alumni offices.

This study is considered essential as tracer studies provide the necessary data to identify key areas where initiatives are required to improve the curriculum, teaching methods, and education quality. This paper also aims to address the issue of decentralized alumni interaction and career development platforms by providing a tool that resolves the gap between businesses and graduates (Broom, Hall, Mishek, Simms, & Weeden, 2023).

2. Literature Review

2.1. Issues and Challenges of Alumni Engagement

One of the main issues that tertiary schools face is that continuous interaction with alumni post-graduation can prove to be a challenge due to a lack of staff support and insufficient data regarding alumni leadership initiatives (Jepps, Gregory, & Cresswell, 2019; Unangst, 2020). A way to address this issue is the development of new methods similar to engagement activities during COVID-19 (Unangst, 2020; Veluvali & Surisetti, 2023).

Maintenance of the connection between alumni and the university is essential for the institution's success, as it provides a platform for discussing alumni experiences and external knowledge. Several studies recommend maintaining this connection to ensure continuous development in the university (Jepps et al., 2019; Unangst, 2020; Veluvali & Surisetti, 2023).

Regardless of this recommendation, universities still face difficulties in enforcing alumni engagement programs due to the following reasons. First, the technological aspect, wherein data collection, storage rules, and overall use of outdated technology lead to lower response rates in alumni surveys. Second, strategic concerns regarding funding, which lead to the final concern. From these two reasons arise interactive challenges, as a lack of proper technological support and insufficient funding lead to a lack of initiative from alumni to provide feedback essential for the improvement of the university (Veluvali & Surisetti, 2023). Regardless, decisions on the improvement of the university are not solely reliant on alumni surveys, but their feedback can provide additional support (Lambert & Miller, 2014; Veluvali & Surisetti, 2023).

2.2. Factors Affecting Alumni Engagement

Engagement from alumni post-graduation is influenced by their experiences at the university, its environment, networking opportunities provided, the sense of belonging reinforced, and their overall academic experience. When alumni continuously involve themselves with the institution, it indicates that the university addressed these factors well. Additionally, when the institution effectively addresses these factors, it increases the likelihood that graduates will donate within five years after completing their studies (Day, 2018; Goh & Kim, 2023; Sium, Prabhakaran, Iqbal, & Ramachandran, 2023). However, it is also important to acknowledge the impact that communication strategies have on alumni engagement. These include online communication strategies such as email newsletters, social media interaction, and direct mail. All of which significantly boost involvement with university programs and events (Miller & Smith, 2016). Social media platforms that are particularly effective in connecting alumni include Facebook, Twitter (now known as X), and LinkedIn. Posts from these platforms allow continuous engagement through shares, celebration of alumni achievements, and the promotion of events (Taylor, Kent, & White, 2018). Another effective method for connecting with alumni is through emotional engagement by maintaining positive experiences they had as students. This reinforces their sense of belonging and institutional pride. It is also important to sustain institutional support for alumni, including career services, networking opportunities, and continuing education, as this helps maintain the relationship between the university and alumni (Johnson & Clark, 2020).

2.3. Stages in the Development of the Alumni Engagement Portal System

The development of AEPS has been a focus of recent literature, specifically, there is a concentration in the research of its design, the integration of different technologies, improvement of the user experience, and its strategic implementation (Green & Jackson, 2017). Moreover, the principles that lead this development include creating a user-friendly interface, flexible architecture, and interactive features. These current developments aim to address the gap in balancing functionality with a user-centric design (Bista et al., 2021; Luciano, Alcantara, & Bauat, 2020; Rajini, Prasad, & Upendrasingh, 2023). Another development being focused on is the integration of social media platforms, yet further research is still required to prove its actual effectiveness in AEPS. Collaborations between industry and academia have also been a focus, as they can assist in the innovation of the alumni portal (Smith, Gearhart, & Miller, 2019).

As such, this paper aims to develop an AEPS for the Polytechnic University of the Philippines by focusing on tracer studies, a process where the information of graduates regarding their continuous educational experiences and workplace skills is tracked for the purpose of improving the academe. The information gathered from this system can greatly assist universities and other educational institutions in improving their curricula and instructional methods. This study and the AEPS use big data, web-based data warehouses, social networks, Android-based applications, and Geographic Information Systems (GIS) to analyze the experiences of recent graduates and enhance future activity planning. This web-based graduate tracer information system will help alleviate issues resulting from inefficient information gathering and disorganized compilation (Yulia, Widiaty, & Hasbullah, 2022).

Universities are now acknowledging the importance of alumni in improving their institutions' standing and attracting new students. Technology has become a powerful tool for building alumni commitment, promoting communication, involvement, and a sense of community. As such, the AEPS is a crucial technology to ensure that alumni stay connected with their alma mater. Therefore, universities must develop innovative strategies to maximize the potential of their graduates and utilize advanced technology to strengthen alumni networks and improve decision-making processes (Nabablit & Dajao, 2023).

Alumni are often willing to work in partnership with students and the university. They can participate in teaching classes, give guest lectures, moderate industry discussions, act as preceptors for residencies or internships, participate in workshops for professional development, assess students in competitions, and evaluate performance during exams. In the output stage, alumni can collaborate with the university to create case studies, supervise practical group projects, and offer ideas for theses or essays. Academic programs should align alumni preferences with academic demands and communicate these opportunities to alumni (Cownie & Gallo, 2021; Snijders, Wijnia, Rikers, & Loyens, 2019).

A study conducted at Makerere University revealed that the institution has struggled to establish a strong alumni association, leading to reduced engagement and interactions. To address this, the university proposes developing an AEPS. The platform will be a centralized system where alumni can transfer knowledge, exchange experiences, and build rapport with other alumni. It will also contribute to the Sustainable Development Goals (SDGs) by promoting cultural learning and continuous improvement. The AEPS will serve as a means for career development by providing networking opportunities, career resources, and job boards to help alumni navigate current industry trends. The project aligns with the university's mission of promoting lifelong connections with alumni and enhancing education quality. The University of the Philippines is also considering creating an AEPS for tracer studies to increase alumni engagement with the university (Clever, Fred, Elvis, & Micheal, 2020; Obeng-Ofori & Kwarteng, 2020).

2.4. Acceptability of the Alumni Engagement Portal System

In the study of Chang, Wong, and Lee (2016), AEPS were discovered to improve the connection between alumni and the university, emphasizing the role of the institution in developing a user-centered portal that caters to the specific needs of alumni. Davis, Smith, and Taylor (2018) also highlight the value of alumni portals, recommending that usability testing and updates be a continuous part of the AEPS.

The acceptability of a technology is often determined by its usefulness, convenience, and social influence (Kim & Kim, 2017). As such, AEPS serves as a useful technology for universities as they provide the necessary maintenance for sustainable relationships with graduates (Kumar & Rao, 2020). Moreover, the inclusion of social media in alumni portals enhances their overall acceptance among users (Lee, McKay, & Smith, 2022). Moreover, Patel and Johnson (2019) highlighted that personalized communication in the alumni portal increased user satisfaction and engagement.

Data security and privacy are key measures of the acceptability of alumni portals (Smith & Lopez, 2021) and must be heavily considered to ensure acceptability. Furthermore, Nguyen and Tran (2020) highlight that satisfaction with portal features strongly indicates user willingness to use the system. Finally, analytics can help improve the AEPS's acceptability (Brown & Green, 2022).

2.5. Effectiveness of Alumni Engagement Portal System

A central factor for the effectiveness of AEPS is user satisfaction (Thompson & Hughes, 2018). To satisfy users, especially alumni, include features that enable participation in the alumni community. This can be achieved through features such as event registration, online directories, career resources, and personalized content (Anderson & Garcia, 2019). Another way to enhance the effectiveness of the portal is through analytics that track user behavior and engagement metrics (Lee & Kim, 2021). Moreover, the design of the portal is crucial, and a well-designed system can influence alumni donations by providing options such as promotion campaigns, transparent reporting, and convenient donation methods (Patel & Brown, 2020).

A study by Williams and Johnson (2017) found that portals promote a sense of community among alumni through forums, discussion groups, and interactive features. As such, portals that regularly update content, offer ongoing involvement opportunities, and maintain consistent communication are more successful in retaining alumni connections. Integration with other institutional systems, such as CRM platforms and social media, also enhances the effectiveness of these portals (Chen & Liu, 2020; Martinez & Smith, 2018; Roberts & Evans, 2021).

2.6. The Purpose of the Research

With the challenges of limited alumni engagement, which weakens the university's reputation and alumni employability, this study plans to implement the AEPS. Additionally, this current point would like to address the following inquiries.

1. What are the issues and challenges of the Philippine University Graduate School alumni engagement?
2. What are the external factors that affect the Graduate School alumni engagement?
3. What are the stages in the development of the alumni engagement portal system?
4. What is the level of acceptability of the alumni engagement portal system?
5. How effective is the portal system as perceived by the alumni?

3. Methodology

3.1. Research Design

The paper focused on developing an AEPS for tracer studies. Surveys, focus groups, usability testing, interviews, and tracer study analysis were considered using a mixed-method approach. As such, the prototype for AEPS was developed utilizing previous research findings as well as stakeholder inputs. Pilot tests were also conducted during the study to test the portal. A structured plan was then implemented, which included training, user onboarding, and data migration. Key performance indicators were also established to review the quality and impact of the AEPS on alumni engagement. Ethical considerations were thoroughly implemented throughout the entire research process.

3.2. Respondents

The source of data for this study comprises 83 alumni from various graduate programs at the Polytechnic University of the Philippines, specifically the Sta. Mesa, Manila Campus. The demographics of the participants are as follows: 71.08% of respondents are in the age bracket of 26-35 years old, while 20.48% are 36-45. The smaller groups include 3.61% aged 46–55 years and 1.20% aged 56-65. Regarding sex, 59% of respondents are male, and 41% are female. In terms of employment, 89% of participants are highly engaged professionally and employed full-time. The positions held include 58% in middle-level management and 12% in top-level executive roles.

3.3. Instrument

The main instrument used for this study is a survey questionnaire based on insights gathered from the review of related literature. Specifically, this instrument aims to address five key areas. The first part focuses on collecting alumni profiles and their feedback regarding the curriculum and services offered, as well as their preferred modes of participation in the Graduate School. The second to the fifth parts of the survey explore more specific areas: (1) issues and challenges in alumni engagement, (2) external factors influencing engagement, (3) the acceptability of the alumni engagement portal system, and (4) the system's effectiveness. Each section also had an optional question wherein the alumni were allowed to give feedback beyond the predefined options.

This questionnaire was then validated by systematically ensuring that each section directly corresponds to the research objectives. A preliminary pilot test was also conducted at this phase with the assistance of university administrators and IT experts to identify any ambiguities in the questions. A Lawshe-style approach was then used to refine the language of the survey, ensuring each question is accurate and contextually appropriate for the target participants. Finally, a reliability test was performed using Cronbach's Alpha. The pilot test involved thirty (30) respondents, yielding a score of 0.9236, which indicates a highly reliable instrument for data collection.

Table 1. Issues and challenges of the Philippine university graduate school alumni engagement.

Indicators	Median	Weighted Mean
1. I find it challenging to maintain continuous and updated communication with alumni due to changing contact information and evolving alumni situations.	3	2.95
2. I struggle with inadequate support from staff and the lack of a strategic focus on alumni engagement, making it difficult to build long-term relationships with alumni.	3	2.86
3. I find that limited budget allocation for alumni relations restricts my ability to create meaningful connections and often emphasizes transactions over strong, lasting bonds.	3	3.00
4. I feel that the lack of personalized, two-way communication causes alumni to feel disengaged, especially when interactions rely on broad, one-sided messages.	3	3.14
5. I see the lack of tangible benefits or incentives for participation as a major challenge in encouraging active alumni engagement and commitment.	3	3.12
6. I notice that some alumni are hesitant to engage, especially when initial outreach emphasizes fundraising, which makes them less likely to share feedback or remain involved.	3	3.39

Note: 5–Extremely Challenging; 4–Very Challenging; 3–Moderately Challenging; 2–Slightly Challenging; 1–Not Challenging at all.

4. Results and Discussion

The findings of Table 1 indicate that alumni engagement is hindered by several "Moderately Challenging" barriers, with weighted means ranging from 2.86 to 3.39. The most significant obstacle is when alumni are reached out to for fundraising, with a weighted mean of 3.39, suggesting that financial transactions can deter graduates from forming and maintaining connections with the university. Furthermore, the lack of personalized, two-way communication, with a weighted mean of 3.14, and the absence of tangible benefits or incentives for participation, with a weighted mean of 3.12, contribute to alumni disengagement. Additionally, institutional constraints such as budget limitations, with a weighted mean of 3.00, and inadequate staff support, with a weighted mean of 2.86, restrict the school's capacity to build lasting bonds beyond simple transactions.

These findings support the argument of Veluvali and Surisetti (2023), wherein universities often fail to view that alumni involvement is a strategic initiative and thus result in one-sided interactions and a lack of feedback from graduates. They further suggest that effective engagement demands active involvement from alumni in all areas of institutional operations while promoting a strong and positive relationship rather than a purely transactional one. Another issue discovered is that communication networks can often be outdated due to changing contact information, with a weighted mean of 2.95 reflecting broader technological challenges where old technology and inaccurate databases hinder continuous engagement.

This observation is similar to the findings of Lambert and Miller (2014), wherein they mention the necessity of improved communication. They further remark that low response rates in alumni surveys are often the result of mistrust due to monetary solicitation and waning loyalty after graduation. As such, they suggest that surveys should be viewed as only a singular instrument in a larger evaluation toolbox, which can ensure high-quality and representative data. To address these challenges, a shift towards the "Mutual Benefits" framework (Broom et al., 2023) needs to be considered. This framework focuses on identifying engagement opportunities that satisfy both the program's objectives and the alumni's need for personally fulfilling endeavors. By adopting a strategic and technologically driven approach, such as the Alumni Engagement Portal System, the institution can move toward more tailored, value-driven interactions that support long-term alumni commitment.

Table 2. External factors that affect the graduate school alumni engagement.

Indicators	Median	Weighted Mean
1. Economic conditions, such as the job market and overall economy, influence my willingness to engage with and support my alma mater financially.	4	3.57
2. New communication technologies and social media influence how I connect with my alma mater and stay updated on events.	4	3.75
3. Moving away from my alma mater makes it harder to stay involved in local events and activities.	3	3.46
4. Changes in policies affecting higher education, such as funding and student debt, influence my engagement and views of the institution.	3	3.24
5. Major global events, such as pandemics or political shifts, disrupt traditional engagement methods, requiring new approaches.	4	3.69
6. Competition from other universities with attractive programs or networks can affect how engaged I feel with my alma mater.	3	3.45

Note: 5-Very High Influence: 4–High Influence: 3-Moderate Influence: 2-Low Influence: 1-No Influence.

The findings from Table 2 stress that alumni engagement is heavily influenced by digital transformation and environmental shifts. New communication techniques facilitated by technology and social media are the most significant external influences, with a weighted mean of 3.75. This indicates that alumni now view digital platforms as their primary connection to the institution. The result supports Taylor et al. (2018), who emphasized that social media is no longer just a broadcast tool but a vital space for strengthening interactive relationships. This implies that for the PUP Graduate School to remain relevant, it must maintain a digital presence where alumni can interact constantly.

In relation to the impact of major global events, the weighted mean is 3.69, and the economic conditions have a weighted mean of 3.57, highlighting a shift in how engagement is sustained during crises. The data suggests that while physical distance and policy shifts, with a weighted mean of 3.24, have a more moderate impact, the broader socio-economic landscape dictates an alumnus ' capacity for financial and emotional investment. This slightly contrasts with the findings of Nguyen and Tran (2020), who emphasized internal institutional support as the primary driver. This difference implies that PUP alumni's perspectives on external systematic shocks, like pandemics or job market fluctuations, are major factors influencing traditional engagement methods, necessitating institutions to develop more resilient and technology-driven approaches.

By linking these external factors to the conceptual framing of the Alumni Engagement Portal System, it becomes evident that it can be a direct response to these pressures. The portal's focus on social media integration and mobile accessibility can address the demands for modern communication. Its data-driven tracer studies may also provide the university with a way to monitor how economic shifts affect graduate employability. Ultimately, these results revise the assumption that alumni engagement is purely an internal administrative task; instead, it is a strategic response to a volatile external environment that requires a strong, technologically integrated platform to remain sustainable.

Table 3 presents the nine-stage development process for the Alumni Engagement Portal System, which employs a structured Software Development Life Cycle approach, establishing a clear framework for institutional technological deployment and organizational change management. The initial stages, Needs Assessment and Planning/Design, serve as critical project cornerstones, emphasizing early user input and feasibility checks to minimize deployment risks and ensure high system usability (Davis et al., 2018). The selection of a modern technical stack (React, PHP Laravel, and MySQL) is a deliberate strategy to achieve a responsive, scalable platform that supports a user-centered design, essential for enhancing engagement (Chang et al., 2016).

Furthermore, the core focus on security and data governance (Stages 3 and 4), specifically using JSON Web Token (JWT) and complying with the local Data Privacy Act, is vital for building user trust and securing sensitive data required for tracer studies (Smith & Lopez, 2021). Finally, the inclusion of comprehensive post-development phases, culminating in Evaluation and Continuous Improvement (Stage 9), transforms the portal system into a sustainable asset by establishing a closed-loop feedback system that ensures continuous relevance and iterative refinement (Roberts & Evans, 2021). This systematic approach successfully enables core institutional functions, particularly graduate tracer studies, which are crucial for quality assurance and evidence-based decision-making (Badiru & Wahome, 2016).

Table 3. Stages in the development of the alumni engagement portal system.

Stage No.	Stage Name	Key Activities and Technologies
1	Needs assessment and feasibility study	Determine requirements for alumni connection and tracer studies. Evaluate technical feasibility (React, PHP Laravel, MySQL, Laravel Echo) and financial feasibility (GoDaddy, RapidAPI costs).
2	Planning and system design	Define core features such as registration, surveys, and event management. Develop wireframes and mockups using Figma. Plan system architecture with React frontend, PHP Laravel backend, Vite, and Axios.
3	Database design and development	Design a MySQL database structure using relational principles. Develop locally with XAMPP. Implement security measures such as JWT, password hashing, and role-based access control, ensuring compliance with the Data Privacy Act of 2012.
4	Frontend and backend development	Frontend: Create a responsive UI using React and Bootstrap; focus on modular components. Backend: Use PHP Laravel for authentication, data processing, and RESTful APIs. Enable real-time features with Laravel Echo and WebSockets.
5	Integration and testing	Connect all components (frontend, backend, APIs). Conduct comprehensive testing (unit, integration, UAT). Use Vite for frontend build optimization and XAMPP for backend testing. Pre-deployment tests on Vercel/Railway for stability.
6	Deployment	Host the portal on GoDaddy, supporting React and PHP Laravel. Configure hosting, set up SSL certificates, and establish professional email accounts. Conduct final live environment testing to ensure a seamless launch.
7	Training and user onboarding	Conduct training programs for administrators on user management, content, and analytics, and provide user guides for alumni. Integrate feedback mechanisms to enhance usability and ensure effective adoption.
8	Monitoring and maintenance	Continuous monitoring for optimal performance. Use GitHub for source code management and version control. Leverage GoDaddy for hosting, domain, and SSL management. Perform regular server and database health checks.
9	Evaluation and continuous improvement	Assess effectiveness using usage metrics and user satisfaction. Collect feedback through surveys or focus groups to guide new feature development, such as personalized experiences. Ensure regular updates and alignment with evolving trends.

Table 4. Acceptability of the alumni engagement portal system.

Indicators	Median	Weighted Mean
1. The alumni-friendly, easy-to-navigate portal design enhances acceptability for convenient engagement from any device.	4	4.27
2. The portal's features are useful and easy to use, increasing its acceptability as an alumni engagement tool.	4	4.20
3. Personalized communications, such as tailored event invitations and content based on my interests, make the portal highly acceptable.	4	4.13
4. Integration with social media platforms makes the portal more acceptable by helping me stay professionally connected.	4	4.27
5. The portal's security measures and privacy policies increase its acceptability as a trustworthy platform.	4	4.11
6. I am satisfied with the portal's features and resources and find it highly acceptable as a tool for alumni engagement.	4	4.10

Note: 5–Very Acceptable; 4–Acceptable; 3–Moderately Acceptable; 2–Slightly Acceptable; 1–Not Applicable.

Table 4 reveals that a high level of institutional acceptability signals a successful transition from manual and fragmented processes previously used at the PUP Graduate School to a unified digital ecosystem. The peak ratings for alumni-friendly design and social media integration, with a weighted mean of 4.27, validate the arguments of Chang et al. (2016) and Gupta and Shah (2022), who posit that contemporary engagement tools must function as seamless extensions of an alumnus's existing digital life to be effective. This shift from a "closed" institutional database to an "open," interconnected platform implies that the portal's value is derived not just from its internal features but from its ability to facilitate professional networking in a familiar social context. Furthermore, the strong scores for personalized communication and data security, with a weighted mean of 4.13 and 4.11, respectively, support this transition, reinforce the findings of Chen and Liu (2020) and Smith and Lopez (2021). This suggests that trust and relevance are the primary currencies of digital engagement.

Analytically, these results strengthen the link between the system's design and the conceptual framework of Results-based Management (RBM). By achieving high acceptability in ease of use and functionality, the portal effectively mitigates staff support and budget challenges identified earlier. Conversely, a user-centric system reduces the need for constant administrative intervention, creating a sustainable data collection model. However, qualitative feedback regarding login difficulties serves as a critical revision to the assumption of universal seamlessness. As noted by Davis et al. (2018), even a highly acceptable system can face adoption failure if the initial point of entry is not frictionless. This indicates that while the portal successfully addresses the "strategic focus" gap identified in prior studies, its long-term effectiveness depends on continuous technical optimization to ensure that initial accessibility matches the high perceived utility of its internal features.

Table 5. Effectiveness of alumni engagement portal system.

Indicators	Median	Weighted Mean
1. The portal's ease of use, relevant content, and accessibility effectively support my engagement with the institution.	4	4.10
2. The event registration, career resources, and online directories provided by the portal effectively encourage my active involvement with alumni activities.	4	4.02
3. The portal's approach to promoting donations, providing transparent reports on fund usage, and offering convenient donation options effectively encourages my participation in giving back.	4	3.89
4. The portal's regular updates, event notifications, and personalized messaging effectively keep me informed and engaged with alumni events and news.	4	3.98
5. The forums, discussion groups, and interactive features like reunions effectively foster a sense of community among alumni.	4	3.89
6. The portal's integration with institutional systems such as social media makes it more effective in facilitating targeted outreach and meaningful interactions with alumni.	4	3.99

Note: 5-Extremely Effective: 4-Very Effective: 3-Moderately Effective: 2-Slightly Effective: 1-Not Effective at all.

The findings in Table 5 signify a successful transition from the systemic inefficiencies identified in earlier phases to a functional and highly effective digital infrastructure. The portal's overall efficacy is anchored by its ability to support engagement through relevant content and accessibility, with a weighted mean of 4.10, effectively addressing the "one-sided communication" barrier previously noted in Table 1. This outcome validates the strategic importance of technology in sustaining interaction, aligning with the literature by Chen and Liu (2020) and Gupta and Shah (2022), which emphasizes that personalized user experiences and social media integration, with a weighted mean of 3.99, are essential for modern targeted outreach. By shifting the delivery of event notifications and career resources, with a weighted mean of 4.02, to an automated platform, the system effectively mitigates the "inadequate staff support" challenge, proving that a well-integrated digital tool can compensate for traditional resource constraints.

Analysis of the findings reveals that the community-building features and philanthropic strategies both had a weighted mean of 3.89. This implies that despite effective features in administrative and information sharing, emotional loyalty still requires a more nuanced and interactive design. The relatively lower, though still positive, scores for forums and donation transparency indicate that digital tools alone do not automatically create a sense of community and trust. These findings support the papers of Goh and Kim (2023) and Williams and Johnson (2017), which highlight that deeper psychological connection and active involvement are precursors to a sense of belonging. Furthermore, the results revise the conceptual assumption that convenience alone drives giving; as Patel and Brown (2020) suggest, optimizing the philanthropic interface must be paired with clear fund usage transparency to overcome the "fundraising hesitancy" identified in the initial assessment. In conclusion, the results show that the portal has become a highly effective tool for institutional development, but its long-term success ultimately depends on continuous university involvement, focusing on changing trends and trust-building functionalities.

5. Conclusions and Recommendations

5.1. Conclusions

The development of the prototype AEPS proved to be a successful endeavor for the Polytechnic University of the Philippines Graduate School, as it provided a reliable platform that engages and monitors the career status of alumni. Overall, the platform performed effectively and received a high level of acceptability from participants. The main reason for this success can be attributed to the user experience, which is alumni-friendly in its design and well-integrated with social media platforms. This system also adheres strongly to security and privacy, making it more acceptable to participants. Moreover, the integration of personalized updates and institutional systems was impactful for the platform's effectiveness. However, it is also important to highlight the key obstacles to engagement, which were mostly moderate internal issues such as budget constraints and inconsistent communication. Additionally, the areas of "promoting donations" and "strengthening community through forums and discussion groups" in the platform were rated lower, indicating a significant opportunity for further refinement. Overall, the portal system represents a transformative step that provides essential, centralized tools for graduate tracer studies, curriculum alignment, and institutional decision-making.

5.2. Recommendations

This paper has four recommendations to enhance and maintain the long-term impact provided by the AEPS. First, it addresses the low ratings in the areas of "promoting donations" and "strengthening community through forums and discussion groups." It is recommended that this gap be addressed by improving the convenience and transparency of donation options and by further enhancing the system's interactive functionalities to reinforce the sense of community among alumni. Second, the operational efficiency of the system can be further refined, as there are still difficulties with some functionalities, such as problems during sign-up and login. Third, the Polytechnic University of the Philippines must commit to the continuous improvement cycle (Stage 9) of AEPS to ensure that the system maintains its relevance and adapts to the evolving needs of users and technological trends. Finally, it is recommended that artificial intelligence (AI) be explored as a way of integrating new technology, which can provide predictive analytics and enhance personalized user experiences of the system.

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