

Employee Engagement, Digital Competency, and Work Autonomy on Innovation in Student Services

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ABSTRACT

In the context of Education 4.0, innovation in student services has become essential for higher education institutions seeking to deliver responsive, technology-enabled, and student-centered support. This study examined how employee engagement, digital competency, and work autonomy influence innovation in student services among Student Affairs and Services practitioners in Region 10, Northern Mindanao, Philippines. A descriptive-correlational and causal-comparative design was utilized, involving 286 practitioners who answered a structured Likert-type questionnaire. Results showed that employee engagement, digital competency, work autonomy, and innovation in student services were all rated at high levels. Innovation was positively associated with organizational factors ($r = .613$, $p < .01$), digital problem-solving skills ($r = .715$, $p < .01$), and especially work autonomy, whose sub-dimensions, work method, work schedule, and work criteria autonomy demonstrated strong correlations with innovation ($r = .743$ to $.777$, $p < .01$). Overall work autonomy exhibited the strongest association with innovation ($r = .816$, $p < .01$). These findings highlight that granting SAS practitioners substantial autonomy, supported by strong digital competencies and favorable organizational conditions, is critical for fostering innovation in student services and advancing institutional transformation in a digitally driven educational landscape.

Keywords: employee engagement, digital competency, work autonomy, innovation in student services, student affairs and services

INTRODUCTION

In an era of Education 4.0, where technology, personalization, and innovation converge, higher education institutions are challenged to reimagine student services as dynamic hubs of transformation rather than mere support units. Digitally integrated ecosystems driven by real-time data, automated processes, and interconnected platforms have become essential for delivering responsive and meaningful student experiences (HolonIQ, 2023; Kahkipuro, 2020; Poszytek, 2024).

In the Philippines, however, higher education institutions continue to face fragmented digital infrastructures, outdated practices, and inconsistent implementation of technology-driven student support systems (Ampo-o & de Guzman, 2024). The World Bank (2022) reports that many institutions, particularly public HEIs, still operate with low digital readiness, constraining the development of integrated and innovative student services. As student experiences become increasingly "phygital," blending on-site interactions with technology-enabled navigation, communication, and support, student services play a critical role in addressing existing gaps and enhancing satisfaction, institutional image, and loyalty (Felix & Lerner, 2017; Cheng et al., 2019).

Policy responses, such as CHED Memorandum Order No. 8, Series of 2021, have directed institutions to adopt flexible and accessible Student Affairs and Services (SAS) programs, especially under remote and hybrid learning conditions (CHED, 2021). Yet effective implementation requires more than compliance; it demands inclusive and collaborative cultures that engage non-teaching personnel as key contributors to innovation in student services (Alshukri et al., 2024; Kuzmina et al., 2020; Wan et al., 2022). Recent studies also highlight

persistent challenges in digital competency and professional support for non-teaching staff, including digital fatigue, limited interactivity of training, and gaps in administrative-oriented digital skills (Calobag, 2024; Forneas, 2025; Huu, 2023).

Within this context, employee engagement, digital competency, and work autonomy emerge as critical conditions for innovative student services. Engagement sustains commitment and proactive behavior, digital competency enables technology-mediated solutions, and autonomy fosters creativity and initiative in aligning services with institutional goals (Artusi & Bellini, 2021; Dara et al., 2022; Takaishi et al., 2019). This study, therefore, examines the significant relationships between innovation in student services and these three key factors: employee engagement, digital competency, and work autonomy among Student Affairs and Services practitioners in Region 10. It investigates how varying levels of engagement, digital skills, and autonomy are associated with the extent to which practitioners generate, promote, and implement innovative student services in the Philippine higher education context, contributing evidence for policies and strategies that support inclusive, student-centered, and innovation-driven institutions.

Objectives

This study aims to determine the relationship between innovation in student services, employee engagement, digital competency, and work autonomy. Specifically, the study sought to answer the following questions:

1. Determine the level of employee engagement of SAS practitioners in terms of organizational, job, and individual factors.
2. Determine the level of their digital competency in terms of information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving.
3. Determine the level of their work autonomy in terms of work method, work schedule, and work criteria autonomy.
4. Determine the level of innovation in student services in terms of idea generation, idea promotion, and idea implementation.
5. Examine whether there is a significant relationship between innovation in student services and employee engagement, digital competency, and work autonomy.

THEORETICAL AND CONCEPTUAL FRAMEWORK

This study is anchored on Self-Determination Theory (SDT), the Job Demands–Resources (JD-R) Model, and Innovation Diffusion Theory, which together explain how personal motivation, job resources, and organizational processes shape innovation in student services. Self-Determination Theory offers a comprehensive account of human motivation, positing that the satisfaction of three basic psychological needs, autonomy, competence, and relatedness, promotes autonomous motivation, high-quality performance, and well-being (Deci et al., 2017; Main, 2023). In organizational settings, need-supportive environments have been linked to stronger engagement, lower turnover intentions, and reduced burnout, underscoring the importance of autonomy and competence for sustaining healthy, productive workplaces (Olafsen et al., 2017; Trepanier et al., 2015; Van den Broeck et al., 2016; Slemp et al., 2021).

The Job Demands–Resources Model provides a complementary lens by explaining how employees balance job demands with available resources such as autonomy, leadership support, and skills (Bakker & Demerouti, 2017; Schaufeli & Taris, 2014). High demands combined with insufficient resources increase the risk of strain and disengagement, whereas adequate resources foster engagement, motivation, and performance. Recent work highlights autonomy and digital skills as critical resources that buffer the impact of heavy workloads and digital stress, particularly in technology-rich environments (Liu et al., 2023; Mazzetti et al., 2021; Schaufeli, 2015). These insights are especially relevant to student services, where roles are complex and evolving, and innovation depends on a resilient and resource-supported workforce.

Innovation Diffusion Theory explains how new ideas, practices, or technologies spread over time through stages of knowledge, persuasion, decision, implementation, and confirmation (Rogers, 2003). Early stages reduce uncertainty and shape attitudes, while later stages involve adaptation, assimilation, and ongoing evaluation (Das, 2020; Hameed & Arachchilage, 2017; Pichlak, 2016; TheoryHub, 2023). Contemporary perspectives emphasize that adoption is collaborative and iterative, requiring continuous learning, social influence, and organizational support (Howaldt et al., 2025).

Guided by these theories, this study assumes that innovation in student services is more likely when SAS practitioners experience autonomy, feel competent in their roles, and remain connected to their organization and colleagues. When these needs are supported, employees display stronger motivation and engagement, creating favorable conditions for innovation. In line with the JD-R Model, employee engagement, digital competency, and work autonomy are conceptualized as key personal and job resources that help practitioners manage the demands of student services work while sustaining energy and commitment. These resources are expected to encourage the exploration of new ideas, experimentation with improved service delivery, and persistence in implementing changes despite challenges. Innovation Diffusion Theory further frames innovation in student services as a multi-stage process encompassing idea generation, promotion, and implementation. In this study, employee engagement, digital competency, and work autonomy are viewed as levers that institutions can strengthen through policies, professional development, and supportive leadership to drive innovation outcomes. This relationship is summarized in the schematic diagram, in which the three independent variables are hypothesized to influence innovation in student services jointly.

Review of Related Literature and Studies

Employee engagement has been linked not only to commitment and well-being but also to innovative behaviors in educational settings. Studies show that when staff experience supportive leadership, participatory decision-making, and organizational trust, they are more likely to go beyond routine tasks, propose improvements, and contribute to institutional innovation (Chandani et al., 2016; Celino, 2025; Labitad, 2025; Lopez & Guhao, 2025; Mostajo et al., 2025; Sun & Bunchapattanasakda, 2019). In higher education, engaged non-teaching personnel help sustain student-centered initiatives and are more willing to participate in change processes that enhance student services.

Digital competency has evolved into a multidimensional construct that includes information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving (Carretero et al., 2017;

Council of the European Union, 2018; Vuorikari et al., 2022). Empirical studies note that strong skills in communication, collaboration, and information use support effective coordination and data-driven decision-making in student and administrative services, while gaps in digital safety and problem-solving can constrain innovation and responsiveness (Al Khateeb, 2017; Benzon et al., 2023; Calobag, 2024; Dacay et al., 2024; Mengual-Andrés et al., 2016; Perdiguerra & Guillo, 2019; Reyes & Cabauatan, 2023). More advanced digital problem-solving is particularly associated with the ability to redesign processes and implement technology-enabled solutions in student services.

Work autonomy, conceptualized in terms of work method, work schedule, and work criteria autonomy, is consistently identified as a structural condition that enables creativity and innovative work behavior (Breugh, as cited in Dara, 2024; Datta et al., 2025; Takaishi et al., 2019). Research shows that when staff can choose how they carry out tasks, manage their time, and influence performance standards, they are more likely to engage in proactive problem-solving, idea generation, and continuous improvement (Sia & Appu, 2015; Theurer et al., 2018; Wang et al., 2025). In student services, such autonomy supports the design, piloting, and refinement of new programs and processes.

Innovation in student services itself is framed as a process comprising idea generation, idea promotion, and idea implementation (Lambriex-Schmitz et al., 2020). Prior work on higher education and Education 4.0 indicates that institutions are more likely to develop responsive, technology-enabled, and student-centered services when staff are engaged, digitally competent, and granted sufficient autonomy to champion and implement new ideas (Brennan et al., 2014; Felix & Lerner, 2017; Magallanes et al., 2025; Mirzajani et al., 2016; Tierney & Lanford,

2016). Collectively, these studies suggest that employee engagement, digital competency, and work autonomy function as key drivers of innovation in student services, shaping how ideas are generated, advocated, and translated into practice.

METHODOLOGY

Research Setting

The research was conducted in Region 10, Northern Mindanao, Philippines, where the Commission on Higher Education recognizes 107 operating higher education institutions. Of these, 66% are Private Higher Education Institutions, 28% are State Universities and Colleges, and 10% are Local Universities and Colleges, distributed across eleven provincial and city clusters (Lumasag & Gawahan, 2025). This setting was selected because it offers a diverse mix of institutional types and locations across all eleven clusters in Region 10—Bukidnon, Cagayan de Oro City, Camiguin, Gingoog City, Iligan City, Lanao del Norte, Misamis Occidental, Misamis Oriental, Oroquieta City, Ozamiz City, and Tangub City, providing a comprehensive regional perspective on innovation in student services. The presence of CHED-recognized institutions across these clusters ensured that data could be gathered from a broad and representative group of SAS practitioners working in varied organizational contexts and campus environments.

Research Design

This study employed a descriptive-correlational research design to examine the relationships between employee engagement, digital competency, work autonomy, and innovation in student services among Student Affairs and Services practitioners in Region 10. The descriptive component was used to measure and present the levels of these variables as they naturally occurred in the institutional context, providing a clear profile of practitioners and the phenomena under study (Barooah, 2025). The correlational component enabled the analysis of the strength and direction of the associations between employee engagement, digital competency, and work autonomy and their link to innovation in student services, without manipulating any variables (Creswell & Creswell, 2018).

Participants and Sampling Procedure

The target population consisted of SAS practitioners directly involved in the planning, implementation, and delivery of student services in HEIs across the eleven clusters of Region 10. Using proportionate stratified random sampling, 286 participants were selected from a population of 1,070 SAS practitioners to ensure representation from each cluster based on its relative size. Inclusion criteria required that respondents be currently employed in SAS roles in Region 10 HEIs and willing to participate voluntarily.

Research Instruments

The study utilized a four-part structured questionnaire administered via Google Forms as the primary data-gathering tool. It employed a five-point Likert scale (5 – Strongly Agree to 1 – Strongly Disagree), designed to capture the respondents' level of agreement with statements describing their engagement, competencies, autonomy, and innovative behaviors. The first part consisted of 30 items measuring employee engagement in terms of organizational factors, job factors, and individual factors, adapted and modified from Celino's (2025) study on internal communication, knowledge sharing, and employee engagement. The second part comprised 59 items assessing digital competency across five dimensions: information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving, adapted and modified from Al Khateeb's (2017) instrument on digital competence and ICT literacy. The same five-point response scale and interpretation ranges were used, with higher mean scores indicating higher levels of digital competency. The third part included 30 items adapted and modified from Takaishi et al. (2019), measuring work autonomy in terms of work method autonomy, work criteria autonomy, and work schedule autonomy. The fourth part contained 30 items adapted and modified from Lambriex-Schmitz et al. (2020), designed to determine the level of innovation in student services in terms of idea generation, idea promotion, and idea implementation.

Validity and Reliability

Three experts in the field of Student Affairs and Services reviewed the questionnaire to assess its content validity and relevance to the study variables. The instrument was then pilot-tested on 30 SAS practitioners who were not included in the main sample. Results of the pilot test were analyzed using Cronbach’s alpha to examine internal consistency, confirming that the scales were reliable and suitable for use in the main data collection.

Data Gathering Procedure

Data collection followed a systematic set of steps. Permission to conduct the study was first obtained from the Dean of the School of Business Management and Accountancy of Liceo de Cagayan University, followed by coordination with participating higher education institutions in Region 10. An online survey using the questionnaire was then administered to eligible Student Affairs and Services practitioners across the identified institutions.

Before accessing the survey, participants were informed about the purpose of the study, the procedures involved, and their rights as research participants, including the right to withdraw at any point without penalty; in cases of withdrawal, any submitted data were excluded from analysis and deleted upon request.

In line with the Data Privacy Act of 2012, data will be retained for five years after completion of the study and then permanently deleted. Participation involved minimal risk, as items focused on work-related experiences. Respondents could skip any question that caused discomfort, and no monetary or material incentives were provided. The researcher declared no conflict of interest, and participation or non-participation did not affect any respondent’s employment status or performance evaluation.

Statistical Analysis

Descriptive statistics, specifically means and standard deviations, were used to determine the levels of employee engagement (Problem 1), digital competency (Problem 2), work autonomy (Problem 3), and innovation in student services (Problem 4), providing a summarized view of how these variables were distributed among respondents (Bhandari, 2023). Pearson product–moment correlation was employed to assess the strength and direction of relationships between innovation in student services (Problem 5) and the exogenous variables, with Spearman’s rho used as a non-parametric alternative where normality and linearity assumptions were not fully met, consistent with recommendations for analyzing continuous and ordinal data in behavioral research (Schober et al., 2018).

RESULTS AND DISCUSSION

Level of Employee Engagement

Table 1 presents the summary of the mean and standard deviation for the level of employee engagement of student affairs and services practitioners across organizational, job, and individual factors.

Table 1. Level of Employee Engagement

Sub-constructs	Mean	SD	Description	Interpretation
Organizational factor	3.86	.891	Agree	High
Job factors	3.96	.771	Agree	High
Individual factors	4.01	.803	Agree	High
Composite Mean	3.94	.775	Agree	High

The overall composite mean of 3.94 (SD = 0.775) indicates a high level of employee engagement among Student Affairs and Services practitioners, suggesting generally positive engagement across multiple dimensions with moderate consistency in responses. Among the sub-constructs, individual factors obtained the highest mean (M = 4.01, SD = 0.803), indicating that personal attitudes, motivation, and interpersonal relationships are the strongest contributors to engagement. Job factors followed (M = 3.96, SD = 0.771), reflecting high levels of enthusiasm, initiative, and commitment toward job responsibilities, while organizational factors recorded the lowest mean (M = 3.86, SD = 0.891) but still within the high interpretation range, suggesting that institution-related aspects of engagement are perceived positively, though with relatively greater variability.

Overall, these results indicate that SAS practitioners exhibit a high level of employee engagement across all sub-constructs, with comparable mean scores and moderate standard deviations pointing to a balanced engagement profile in which individual-level characteristics emerge as the most prominent dimension. This prominence of individual factors aligns with Chandani et al. (2016), who identified personal dispositions and internal commitment as central drivers of employee engagement, and with Celino (2025) and Labitad (2025), who emphasized that participatory attitudes, trust, shared values, and meaningful workplaces enhance personal investment in work. Consistent with these findings, Van den Broeck et al. (2016) reported that satisfaction of employees' psychological needs is associated with stronger performance and reduced burnout, underscoring that intrinsic motivation and relational alignment form a primary foundation of engagement.

Level of Digital Competency

Table 2 presents the summary of the mean and standard deviation for the level of digital competency of student affairs and services practitioners across five sub-variables: information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving.

Table 2. Level of Digital Competency

Sub-variables	Mean	SD	Description	Interpretation
Information and Data Literacy;	4.09	.849	Agree	High
Communication and Collaboration;	4.22	.893	Agree	High
Digital content creation;	4.01	.893	Agree	High
Safety; and	4.01	.891	Agree	High
Problem-Solving?	3.92	.857	Agree	High
Overall Mean	4.05	.823	Agree	High

The overall mean of 4.05 (SD = 0.823) indicates a high level of digital competency among Student Affairs and Services practitioners, suggesting that respondents generally possess strong skills in using digital technologies effectively and responsibly, with moderate consistency in their responses. Across the sub-dimensions, communication and collaboration obtained the highest mean (M = 4.22, SD = 0.893), indicating that respondents are most proficient in using digital tools to communicate, share information, and collaborate with others. Information and data literacy followed (M = 4.09, SD = 0.849), reflecting strong competence in searching, evaluating, organizing, and managing digital information. Digital content creation and safety both recorded means of 4.01, signifying high levels of skill in producing digital content, managing information, and practicing safe and responsible digital behavior. Problem-solving registered the lowest mean (M = 3.92, SD = 0.857), suggesting that while respondents can apply digital tools to address challenges, this dimension shows slightly greater variability and comparatively lower confidence than the other areas, although it still falls within the high range.

Overall, these results indicate that SAS practitioners exhibit a high level of digital competency across all dimensions, with notable strengths in communication, collaboration, and information and data literacy. This pattern is consistent with Al Khateeb (2017) and Basantes-Andrade et al. (2022), who observed that digital interaction tools are among the most frequently and confidently used competencies in educational contexts, particularly as student services increasingly rely on email, messaging platforms, and virtual coordination systems. Strong performance in information and data literacy aligns with Gelbolingo and Samillano (2023), who reported substantial competence among non-teaching personnel in accessing and managing information in data-driven administrative processes. By contrast, the relatively lower performance in problem-solving reflects earlier findings by Dacay et al. (2024) and Zhao et al. (2021), which showed that staff often excel in routine digital tasks but are less consistent in complex troubleshooting and advanced digital applications, partly due to limited structured training. Carretero et al. (2017) and Vuorikari et al. (2022) further emphasized that digital problem-solving is one of the more complex dimensions of digital competence, requiring technical skill, adaptability, and continuous learning. Taken together, these findings suggest that while foundational digital skills are well established, targeted initiatives to strengthen advanced digital problem-solving could further enhance comprehensive digital competency and institutional capacity.

Level of Work Autonomy

Table 3 presents the summary of the mean and standard deviation for the level of work autonomy of student affairs and services practitioners across three sub-constructs: work method autonomy, work schedule autonomy, and work criteria autonomy.

Table 3. Level of Work Autonomy

Sub-constructs	Mean	SD	Description	Interpretation
Work method autonomy	4.01	.796	Agree	High
Work schedule autonomy	3.93	.812	Agree	High
Work criteria autonomy	3.83	.801	Agree	High
Overall Mean	3.92	.743	Agree	High

The overall mean of 3.92 (SD = 0.743) indicates a high level of work autonomy among Student Affairs and Services practitioners, suggesting that respondents generally experience substantial discretion and independence in performing their work, with moderate consistency in their responses. This aligns with the view of work autonomy as a structural factor that fosters engagement, motivation, and creativity in organizational settings (Datta et al., 2025; Takaishi et al., 2019). Work method autonomy obtained the highest mean score (M = 4.01, SD = 0.796), indicating that practitioners are most confident in determining the methods, strategies, and resources they use to accomplish tasks, consistent with studies showing that method autonomy supports proactive and innovative behaviors (Takaishi et al., 2019; Wang et al., 2025). Work schedule autonomy followed (M = 3.93, SD = 0.812), reflecting considerable control over planning, adjusting, and organizing work activities, which is in line with findings that temporal flexibility enhances creativity and performance when employees can align tasks with their most productive periods (Sia & Appu, 2015; Theurer et al., 2018), though its effects depend on organizational clarity and structural demands (Clinton & Conway, 2025). Work criteria autonomy recorded the lowest mean (M = 3.83, SD = 0.801), suggesting that, while practitioners can influence performance standards and evaluation criteria, this dimension remains more constrained—an observation consistent with Theurer et al. (2018) and Jang and Kim (2025), who noted that formal evaluation frameworks are often tightly defined at the institutional level. Overall, the findings demonstrate that SAS practitioners exhibit a high level of work autonomy, with pronounced strengths in self-directed work methods and scheduling and clear opportunities to further enhance their influence over evaluative criteria.

Level of Innovation in Student Services

Table 4 presents the summary of the mean and standard deviation for the level of innovation of student affairs and services practitioners across the three sub-constructs: idea generation, idea promotion, and idea implementation.

Table 4. Level of Innovation in Student Services

Sub-constructs	Mean	SD	Description	Interpretation
Idea Generation	3.95	.816	Agree	High
Idea Promotion	3.77	.901	Agree	High
Idea Implementation	3.82	.884	Agree	High
Overall Mean	3.85	.807	Agree	High

The overall mean of 3.85 (SD = 0.807) indicates a high level of innovation in student services, suggesting that respondents are actively engaged in generating, promoting, and implementing ideas with relatively consistent responses across the sub-constructs. Among these, idea generation obtained the highest mean score (M = 3.95, SD = 0.816), indicating particular strength in exploring alternatives, suggesting improvements, and sharing ideas with colleagues, a pattern consistent with Brennan et al. (2014) and Magallanes et al. (2025), who highlighted the role of supportive cultures in fostering ideation. Idea implementation followed (M = 3.82, SD = 0.884), reflecting the ability to put ideas into practice, monitor progress, and adapt strategies, aligning with Madrid and Patterson (2023) and Magallanes et al. (2025), who linked implementation to self-efficacy and systematic integration of innovation into daily work. Idea promotion recorded the lowest mean (M = 3.77, SD = 0.901), suggesting slightly greater variability in efforts to advocate for ideas and secure formal support from colleagues and supervisors; this mirrors Deprez et al. (2023), Edelbroek et al. (2023), Černe et al. (2024), and Mascareño et al. (2021), who emphasized that effective idea promotion depends not only on individual initiative but also on leadership and organizational climate. Overall, the findings demonstrate that Student Affairs and Services practitioners maintain a high level of innovation across all areas, with pronounced strengths in generating and implementing ideas and clear opportunities to further strengthen advocacy and support-building for innovative initiatives within their institutions.

Relationships Between Innovation in Student Services and Employee Engagement, Digital Competency, and Work Autonomy

Table 5 presents the Pearson correlation coefficients for the relationships between innovation in student services and employee engagement, digital competency, and work autonomy.

Table 5. Correlation Between Innovation in Student Services and Predictor Variables

Variable	Pearson r	p-value	N	Interpretation
ISS	1	–	286	–
OF	.613**	.000	286	Significant
Variable	Pearson r	p-value	N	Interpretation
PS	.715**	.000	286	Significant

WMA	.743**	.000	286	Significant
WSA	.769**	.000	286	Significant
WCA	.777**	.000	286	Significant
WA	.816**	.000	286	Significant

Note. $p < .01$. OF = Organizational Factors; PS = Problem-Solving; WMA = Work Method Autonomy; WSA = Work Schedule Autonomy; WCA = Work Criteria Autonomy; WA = Work Autonomy; ISS = Innovation in Students’ Services. Effect sizes interpreted according to Cohen (1988).

The Pearson correlation analysis (Table 20) showed significant positive relationships between all independent variables and innovation in student services (ISS). Organizational factors were strongly associated with ISS ($r = .613, p < .01$), indicating a large effect size, while problem-solving also demonstrated a large and significant positive correlation with ISS ($r = .715, p < .01$). Likewise, work autonomy components—including work method autonomy ($r = .743, p < .01$), work schedule autonomy ($r = .769, p < .01$), work criteria autonomy ($r = .777, p < .01$), and overall work autonomy ($r = .816, p < .01$)—were all significantly and strongly related to ISS, reflecting large effect sizes across all autonomy dimensions. These results suggest that higher levels of organizational support, problem-solving skills, and autonomy are closely linked to greater innovation in student services. The significant association between organizational factors and innovation aligns with Kwon and Kim (2020) and Sari et al. (2023), who reported that employee engagement and supportive climates enhance proactive and innovative work behaviors, and with Ergun et al. (2025), who emphasized the combined roles of engagement, psychological empowerment, and perceived organizational support in strengthening innovation. The strong positive correlation between problem-solving and innovation reinforces the role of digital competence in enabling innovative practice, consistent with Spante et al. (2018) and González-Prida et al. (2024), who identified digital problem-solving as central to flexible, technology-driven solutions. The largest coefficients for work autonomy indicate that discretion over methods, scheduling, and performance standards provides structural conditions that foster experimentation and creativity, echoing findings by Theurer et al. (2018) and Burcharth et al. (2017) on the importance of autonomy for innovative behavior. Overall, the results indicate that innovation in student services is strongly connected to organizational support, robust problem-solving skills, and, most notably, work autonomy, suggesting that when employees feel supported, capable, and free to manage their work, innovation becomes more likely.

CONCLUSION

This study examined the relationships among employee engagement, digital competency, work autonomy, and innovation in student services among Student Affairs and Services practitioners in Region 10, Northern Mindanao, Philippines. The findings provide important insights into the conditions that foster innovative student services in Philippine higher education institutions operating within an era of Education 4.0 and accelerating digital transformation.

SAS practitioners demonstrated a high level of employee engagement ($M = 3.94$), with individual factors such as personal motivation, attitudes, and interpersonal relationships emerging as the strongest dimension, followed by job-related and organizational factors. This pattern indicates that practitioners are personally invested in their roles, enthusiastic about their responsibilities, and generally view their institutional environments positively, creating a solid motivational foundation for innovative behavior.

Digital competency was also high ($M = 4.05$), with notable strengths in communication and collaboration, as well as information and data literacy, alongside strong capabilities in digital content creation and safety practices. Although problem-solving was rated slightly lower than the other dimensions, it still fell within the high range, suggesting that practitioners possess solid foundational digital skills but would benefit from further strengthening more complex, adaptive digital problem-solving abilities to fully support innovation in student services.

Work autonomy levels were similarly high ($M = 3.92$) across work method, work schedule, and work criteria autonomy, indicating that practitioners generally experience meaningful discretion in how they perform their tasks, when they complete them, and how performance standards are applied. This autonomy profile suggests a work environment that enables experimentation, initiative, and ownership, key structural conditions for innovative work behavior in student services.

Innovation in student services was likewise high ($M = 3.85$), with practitioners actively engaged in generating, promoting, and implementing new ideas. Strengths were most pronounced in idea generation and implementation, reflecting the ability to envision improvements and translate them into practice, while idea promotion showed slightly greater variability, signaling an opportunity to further strengthen advocacy and support-building processes for innovations within institutions.

Correlation analyses confirmed significant positive relationships between innovation in student services and all key variables, with organizational engagement factors, digital problem-solving, and especially work autonomy showing strong associations. Overall work autonomy displayed the largest effect size, underscoring the critical role of granting practitioners discretion over methods, schedules, and performance criteria in enabling innovation.

These findings indicate that innovation in student services is most likely to flourish when SAS practitioners are highly engaged, digitally competent, and granted substantial autonomy, suggesting that institutional efforts to enhance organizational support, advanced digital skills, and flexible work design can meaningfully strengthen innovation capacity in student services.

RECOMMENDATIONS

The following recommendations, based on the study's findings and conclusions, are intended to help CHED, higher education institutions, school administrators, SAS practitioners, students, and future researchers strengthen innovation in student services.

For **CHED**, they may consider updating policy and quality assurance guidelines for Student Affairs and Services to explicitly include indicators on employee engagement, digital competency, work autonomy, and innovation in student services. These guidelines may require HEIs to regularly document and report initiatives that enhance practitioner autonomy (work methods, scheduling, and performance criteria), digital upskilling, and implemented innovation projects in student services. CHED may also institutionalize region-wide or national capacity-building programs through memoranda, funding support, or mandated training frameworks that prioritize digital problem-solving, innovation management, and participatory performance practices for SAS units.

For **School Administrators**, they may use the results to shape institutional environments that foster innovation in student services. They may strengthen participatory management by involving SAS practitioners in defining and reviewing service standards, performance indicators, and evaluation processes, thereby enhancing work criteria autonomy and ownership. Administrators may also provide structured opportunities for flexible work methods and reasonable control over schedules, support targeted training on applied digital problem-solving and data-driven service redesign, and create formal mechanisms (e.g., innovation committees, idea platforms, recognition schemes) that enable the systematic generation, promotion, and implementation of innovative ideas.

For **SAS practitioners**, they may continue to cultivate strong personal engagement by sustaining professional commitment, motivation, and collaborative practices. They may actively participate in institutional discussions on service standards and performance expectations to strengthen autonomy and accountability. Practitioners are encouraged to enhance their applied digital competencies, especially problem-solving, through continuous learning and peer support, and to document, present, and advocate service improvement proposals in appropriate institutional forums to reinforce both idea promotion and implementation.

For **Students**, they may be engaged as co-creators of innovative student services. Institutions may regularly gather student feedback through surveys, consultations, and focus group discussions to identify service gaps and

improvement opportunities. Students may also be involved in pilot testing and evaluating new or redesigned services to ensure that innovations remain responsive, accessible, and aligned with their needs, thereby supporting a culture of shared responsibility for continuous improvement.

For **Future researchers**, they may replicate this study in other regions, institutional types, and educational levels to determine whether similar levels and patterns of employee engagement, digital competency, work autonomy, and innovation are observed elsewhere. Comparative studies between public and private HEIs, or between small and large institutions, may clarify contextual influences on innovation in student services. Qualitative or mixed-methods designs may be undertaken to explore how SAS practitioners experience engagement, autonomy, digital work, and innovation in practice, and to identify additional factors that facilitate or hinder innovation in student services over time.

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