

Original Article

Assessing the Influence of Digital Skills on Perceived Academic Performance of CBA Students: Mediation by College Environment

Esmhel Briones ^{1,*}, Randy Figueroa ¹

Received: 11 June 2026; Revised: 31 July 2026;
Accepted: 04 August 2026; Published: 09 August 2026

DOI: <https://doi.org/10.66074/V3C9K4X8B>

Abstract

This study examined the influence of digital skills on the perceived academic performance of students in the College of Business and Accountancy (CBA) at Dominican College of Tarlac, Inc., with the mediating role of the college environment. A quantitative research design employing Partial Least Squares–Structural Equation Modeling (PLS-SEM) was utilized to analyze data collected from 308 Bachelor of Science in Accountancy and Bachelor of Science in Business Administration students selected through purposive sampling. Results revealed that digital skills had a significant positive effect on students' perceived academic performance, both directly and indirectly through the college environment, indicating partial mediation. Moreover, a supportive college environment characterized by professional development support and opportunities for professional characteristics development strengthened the positive contribution of students' digital competencies to their perceived academic performance. The findings underscore the importance of strengthening institutional digital infrastructure, faculty support, and digital literacy initiatives to enhance students' academic confidence, engagement, and professional readiness. The study contributes to the growing body of literature on digital competencies in higher education by demonstrating the mediating role of the college environment in the relationship

¹ Dominican College
of Tarlac, Inc., Capas,
Tarlac, Philippines
* esmhel@gmail.com

between digital skills and perceived academic performance within the context of Philippine business education.

Keywords: business education, college environment, digital skills, higher education, perceived academic performance, PLS-SEM

1. Introduction

Today, advances in digital technology have changed how higher education institutions deliver teaching and learning. Technology is now integrated into the student's academic activities and experiences. The use of learning management systems, digital resources, and educational applications has transformed students' access to information, communication, research, and academic tasks. With this, students develop digital skills that enable them to adapt to technology-enhanced learning environments and succeed academically (Zakir et al., 2025). These emerging competencies have become imperative in business education so that graduates have the technological capabilities for this era of the digital workplace (Muammar et al., 2024).

This is likewise evident at Dominican College of Tarlac, Inc. (DCT), specifically in the College of Business and Accountancy (CBA). Enrolled students in the Bachelor of Science in Accountancy and the Bachelor of Science in Business Administration, Major in Marketing Management, utilize digital technologies for collaborative learning, research, presentations, and other academic requirements. These experiences highlight the importance of these digital competencies to support students' academic development and professional preparation. As technology continues to evolve in higher education, understanding students' digital skills that influence academic experiences has become increasingly relevant for institutions that seek to enhance the quality of instruction and student learning (Muammar et al., 2024).

Digital skills play an important role in helping students effectively access, evaluate, create, and communicate information using different digital platforms. These competencies help students engage actively in collaborative learning, solve academic problems, think critically, and complete learning tasks efficiently (Kryukova et al., 2022). However, this is not sufficient to achieve positive academic outcomes. The institutional environment can also facilitate or impede the use of these competencies. The college environment, which includes faculty support, peer interaction, opportunities for professional development, and access to physical and digital learning resources, provides the conditions that allow students to maximize the benefits of their digital competencies (Da Rocha et al., 2021). A nurturing and supportive environment promotes learning experiences, confidence, and professional growth.

In this study, academic performance is defined as perceived academic performance, which refers to students' own evaluation of how well they perform

academically, rather than objective measures such as grade point average. Verner-Filion and Vallerand (2016) define perceived academic performance as students' subjective evaluation of their academic achievement. These perceptions are influenced by students' motivation, self-regulation, and goal-setting behaviors, which shape how they assess their own academic progress and success. Since students' perceptions influence how they approach learning, persevere through academic challenges, and evaluate their own progress, perceived academic performance has become an important outcome variable.

Although previous studies have consistently shown that digital skills positively influence students' academic performance, most have focused primarily on the direct relationship between these variables (Al-Ali et al., 2024; Ibrahim & Aldawsari, 2023; Widowati et al., 2023; Zakir et al., 2025). Comparatively fewer studies have explored how digital skills contribute to academic performance, particularly through the role of the college environment. Likewise, there remains limited empirical evidence from private higher education institutions in the Philippines, especially among business and accountancy students whose academic activities heavily rely on digital technologies. Considering that institutional support, faculty guidance, collaborative learning opportunities, and digital infrastructure may strengthen students' ability to apply their digital competencies effectively, examining the mediating role of the college environment may provide a more comprehensive understanding of how digital skills contribute to students' perceived academic performance.

Guided by these considerations, the present study examined the influence of digital skills on students' perceived academic performance in the College of Business and Accountancy at Dominican College of Tarlac, Inc., with the college environment serving as the mediating variable. The study specifically examined the direct influence of digital skills on perceived academic performance, the influence of digital skills on the college environment, the influence of the college environment on perceived academic performance, and the role of the college environment as the mediating variable in the relationship between digital skills and perceived academic performance. It is expected that the findings in this study will contribute to business education research by providing empirical evidence on how institutional support nurtures students' academic experiences in higher education institutions. The results of the study may promote the strengthening of digital literacy, improve support for students, and inform the development of policies that will foster students' academic engagement and professional readiness.

2. Literature Review

2.1 Digital Skills

Digital skills are the capacity to navigate, create, communicate, and behave responsibly in various digital platforms (Kryukova et al., 2022). These skills include various competencies for navigating, evaluating, and creating digital content.

Kryukova et al. (2022) determined six dimensions or constructs: Access to and Management of Digital Content (AMDC), Digital Empathy (DE), Use of Digital Means (UDM), Digital Safety (DS), Communication of Digital Content (CMDC), and Creation of Digital Content (CRDC). The dimensions reflect a set of skills related to the use of technology, learning, work, and active engagement (Rodafinos et al., 2024). These skills enable students to retrieve, process, analyze, and apply information in innovative ways across various academic courses (Anderson et al., 2025). This is also important for academic performance, as it influences students' engagement with complex information and participation in modern learning environments (Al-Ali et al., 2024; Yuan et al., 2025).

2.2 Access to and Management of Digital Content

Access to and management of digital content is the ability to locate, retrieve, organize, and evaluate information among diverse digital platforms. These skills help students evaluate valid academic materials and unreliable sources, thereby establishing research rigor and informed decision-making (Kryukova et al., 2022). The dimension also involves students' capacity to search, retrieve, organize, and store information, which are fundamental skills for research and for managing academic resources. This will enable students to critically evaluate the credibility of sources and the organization of systemic data, which is essential for evidence-based analysis in business courses (Zakir et al., 2025).

2.3 Digital Empathy

Digital empathy helps to understand and share various emotional states of users through communication channels, enhancing awareness across diverse backgrounds and cultures in digital online engagements (Klochkova et al., 2020; Kryukova et al., 2022). This competence is important for fostering constructive collaboration and conflict resolution; it enables students to discern nonverbal cues and tone across different digital environments accurately. This is also vital for maintaining positive group dynamics and an inclusive remote learning setting (Mejías-Acosta et al., 2024). The development of DE helps students manage their digital identity and reputation through ethical online behavior and successful cross-cultural collaboration in the academic and professional landscape (Al-Ali et al., 2024; Hamburg, 2020).

2.4 Use of Digital Means

Use of digital means is the capacity to select and employ appropriate digital tools and platforms to accomplish specific tasks (Kryukova et al., 2022). It is a strategic tool for the selection and adaptation to emerging technologies. This facilitates the integration of various digital methods that involve workflow and problem-solving applied to academic practice (Kryukova et al., 2022). Almaiah et al. (2022) noted that

students' performance expectancy in learning platforms and the availability of technical support affect the sustained use of digital collaboration tools. This also noted the ability to effectively utilize various technologies for communication, problem-solving, and task execution that are relevant to advanced applications in business analytics and marketing (Timsal et al., 2023).

2.5 Digital Safety

Digital safety is imperative for the student's learning environment to mitigate risks in online activities. This importance helps students enhance their awareness of optimizing privacy settings and detecting suspicious digital behaviors. Securing their academic identities is good preparation for applying in various professional settings related to data protection (Kryukova et al., 2022). Fostering digital safety is an essential way to develop responsible users and to understand the implications of their actions while safeguarding their digital footprint online (Al-Ali et al., 2024; Glazunova et al., 2021).

2.6 Communication of Digital Content

In a digitized world, communication is a fundamental skill because every user shares information in digital platforms (Kryukova et al., 2022). This skill includes information and communication literacy, which involves the conscious selection of reliable digital channels that comply with ethical guidelines (Ogegbo et al., 2021; Mokhtari, 2023; M.S. et al., 2025). Students who have this skill can share ideas through various digital presentations. (Anwar et al., 2023) This shows the importance of digital communications for various purposes and related audience (Imaniah, 2023). Digital citizenship is related to this dimension, which focuses on ethical online behavior to nurture respect and productive academic engagement (Audrin & Audrin, 2023; Li et al., 2025).

2.7 Creation of Digital Content

Digital output creation for specific audiences and purposes represents varied abilities in the design, production, and dissemination of digital content. This skill requires technical and creative competencies, though current trends are now leaning toward generative tools that can expedite the development of ideas through human intervention, following ethical standards. In business education, these skills empower students to be creative through means of digital storytelling (Kryukova et al., 2022).

2.8 Perceived Academic Performance

There are many ways to tell if a student is performing well academically. The usual measure of a student's competency for every degree is academic performance.

This reflects the student's performance, as seen through grade point average, course completion, and learning outcomes, and, within the context of business education, through self-reported assessment and the development and readiness for future professional practice (Ibrahim & Aldawsari, 2023; Muammar et al., 2024). However, academic performance can also include students' perceptions of their overall academic performance; subjective evaluations are relevant, as they relate to objective evaluations, to assess their self-efficacy and the application of acquired knowledge. (Noviaristanti & Boon, 2022; Zakir et al., 2025). These perceptions are means of evaluating the effectiveness of educational interventions and identifying performance gaps (Muammar et al., 2024; Nammamee et al., 2025).

In business education, perceived academic performance is particularly relevant because students are expected to integrate theoretical knowledge with practical applications and to utilize digital technologies for research, communication, collaboration, and problem-solving. As higher education institutions continue to adopt technology-supported learning, students' perceptions of their academic competence increasingly depend on their ability to apply digital skills effectively within supportive institutional environments. Consequently, understanding perceived academic performance provides valuable insights into how students evaluate their own learning experiences and how both individual competencies and contextual factors influence these evaluations.

2.9 Influence of Digital Skills on Perceived Academic Performance

Extensive literature suggests that digital skill sets significantly influence academic performance by enhancing students' ability to access information, collaborate effectively, and produce high-quality work. Specifically, digital competence and literacy have been identified as direct predictors of academic success, as they enable students to navigate complex information landscapes and leverage technological resources to enhance learning (Al-Ali et al., 2024; Noviaristanti & Boon, 2022).

2.10 Influence of Digital Skills on Perceived Academic Performance

The presence of digital skills in students' academic environment enables them to excel in their academic endeavors, which influences students' perceived academic performance. This also shows the effect of digital skills on good academic performance (Al-Ali et al., 2024; Ibrahim & Aldawsari, 2023). In other studies, digital skill deficiencies have an effect on the student's ability to engage with digital course materials, resulting to low academic performance and confidence (Muammar et al., 2024). Other studies have shown a positive relationship between digital skills and participation in academic activities (Widowati et al., 2023). The integration of digital technology into students' learning environment to improve academic performance is an essential influence (Zakir et al., 2025). Drawing from these theoretical and

empirical foundations, the present study proposes that digital skills positively influence students' perceived academic performance.

2.11 Influence of Digital Skills on College Environment

A supportive college environment with technological infrastructure can impact students' digital skills and their academic performance (Aljehani, 2024). This environment improves learning and academic results when frameworks exist, with digital resources and support that influence digital learning and academic performance. Additionally, the digital infrastructure and faculty encouragement for technology integration can have an impact on student's learning and academic success (Yuan et al., 2025). This kind of environment enables students to utilize digital resources to enhance knowledge and skills (Miraj et al., 2021; Yuan et al., 2025).

2.12 The Mediating Role of College Environment

Although digital skills provide students with the competencies necessary to navigate technology-enhanced learning environments, these competencies may not automatically translate into positive academic outcomes. The extent to which students benefit from their digital skills depends largely on the institutional environment in which learning occurs. A supportive college environment provides students with faculty guidance, collaborative learning opportunities, professional development activities, and access to technological resources that encourage the effective application of digital competencies in academic tasks.

Previous studies have shown that supportive educational environments strengthen students' academic engagement, learning experiences, and confidence in utilizing digital technologies (Da Rocha et al., 2021; Ibrahim & Aldawsari, 2023; Islam & Khan, 2024). Support for students, which includes social networks and developmental opportunities, is embedded in the physical, social, and institutional conditions in which learning processes occur, showing what the college environment is (Da Rocha et al., 2021). These factors mentioned affects significantly the relationship between digital skills and perceived academic performance of students, as these salient resources facilitate the student's academic achievement hence facilitates self-directed learning. This is possible through convenient access to learning-related resources and technologies made available to students (Islam & Khan, 2024). Moreover, the existence of a supportive culture within the institution, characterized by adequate technology and faculty support, is imperative for utilizing digital competencies in the academic environment (Ibrahim & Aldawsari, 2023). Based on these theoretical and empirical arguments, the present study proposes that the college environment mediates the relationship between digital skills and perceived academic performance.

2.13 College Environment

College environment refers to the physical, social, and institutional conditions that shape students' learning experiences and support their academic and professional development (Da Rocha et al., 2021). This includes resources, opportunities, and support systems provided by the educational institution that aid students in participating meaningfully in academic activities and enhancing competencies related to their future careers. A good college environment nurtures learning through academic resources, supportive relationships with faculty and peers, and opportunities for professional growth. These aforementioned conditions encourage students to maximize their capabilities and actively participate in both academic and co-curricular activities.

In today's technology-driven educational landscape, the college environment includes digital infrastructure, technological resources, faculty support, and institutional initiatives that facilitate the effective integration of digital technologies into learning. Convenient access to learning resources, educational technologies, and digital support services enables students to use their digital competencies more effectively to accomplish academic tasks (Islam & Khan, 2024). Likewise, a supportive institutional culture characterized by adequate technological facilities and faculty encouragement fosters an environment in which students are more confident in applying their digital skills to solve academic problems, collaborate with peers, and engage in meaningful learning experiences (Ibrahim & Aldawsari, 2023). These institutional supports strengthen the connection between students' digital competencies and their perceived academic performance by creating conditions that encourage the effective use of technology in learning.

The present study adopts the framework of Da Rocha et al. (2021), which conceptualizes the college environment through two dimensions: Professional Development Support (PDS) and Professional Characteristics Development Support (PCDS). These dimensions capture how higher education institutions facilitate students' professional growth while supporting the application of their digital competencies within academic settings.

2.14 Profession Development Support

The existence of professional development support within an educational institution is essential for guiding students in their careers, as well as for building linkages to various industries and mentorship programs. This factor is the linkage between academia and current practice, which was adapted for this study from Da Rocha et al. (2021). This is to contextualize how the student's digital skills will be applied to industry practices or scenarios that foster relevance to their academic training (Chen, 2025). The college environment includes institutional infrastructure and peer networks that help enhance concrete academic outcomes through digital skills (Al-Ali et al., 2024).

2.15 Profession Characteristics Development Support (PCDS)

The specific facet that reflects professional characteristics development is through a student's innermost skills, abilities, and thoughts. This requires performing tasks aligned with educational experiences and professional demands through targeted professional development initiatives. This ensures that students' competencies apply to professional settings, thereby reinforcing the value of their academic performance (Da Rocha et al., 2021; Liu & Peng, 2025). This important configuration, in which available digital support and technological infrastructure play an essential role in effectively influencing students' competencies for academic performance (Da Rocha et al., 2021).

In summary, the literature suggests that the college environment extends beyond the availability of physical facilities and technological resources. It represents a comprehensive system of institutional support that enables students to apply their digital skills in academic and professional contexts effectively. Through professional development opportunities, faculty guidance, supportive peer networks, and an enabling learning environment, students are better positioned to transform their digital competencies into meaningful learning experiences and improved perceived academic performance. These theoretical underpinnings provide a strong basis for examining the influence of college environment on perceived academic performance and its mediating role in the relationship between digital skills and perceived academic performance.

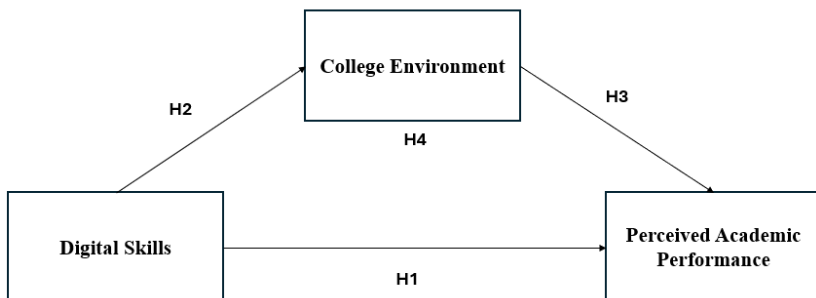


Figure 1. Conceptual framework.

3. Methodology

3.1 Research Design

The study utilized a quantitative method, Partial Least Squares Structural Equation Modeling (PLS-SEM), to analyze the influence of digital skills on perceived academic performance, with the college environment as a mediating variable. This approach was used for studies with complex models to analyze the relationships hypothesized for this study (Zakir et al., 2025). PLS-SEM is a reliable statistical method for analyzing relationships among latent variables and determining statistical significance (Al-Ali et al., 2024). This method allowed for the simultaneous assessment of direct and indirect effects of the latent constructs to know how students' digital skills influence their perceived academic performance, while determining significance of the mediating role of the college environment (Al-Ali et al., 2024; Widowati et al., 2023; Zakir et al., 2025). The study was conducted using a self-administered questionnaire to gather data from College of Business and Accountancy students, adapted from Kryukova et al. (2022), Verner-Filion & Vallerand (2016), and Da Rocha et al. (2022).

3.2 Locale of the Study

The research was conducted at Dominican College of Tarlac, Inc., a higher educational institution in Capas, Tarlac that offers various degree programs in the municipality. Specifically, the study focused on the College of Business and Accountancy, which offers the Bachelor of Science in Business Administration, Major in Marketing Management, and the Bachelor of Science in Accountancy.

3.3 Population and Sampling

The minimum sample size for this study was determined using the inverse square root and gamma-exponential methods for PLS-SEM analysis, with a minimum absolute significant path coefficient of 0.160, a 0.05 level of significance, and a required statistical power of 0.80 (Kock & Hadaya, 2016; Memon et al., 2020). The recommended minimum sample sizes were 242 using the inverse square root method and 228 using the gamma-exponential method (Jhantana, 2023; Kock & Hadaya, 2016). This study utilized a sample size of 308, which exceeds the minimum requirements for the methods mentioned.

Purposive sampling was used to select the respondents. This is appropriate since the study targeted students who regularly engaged in technology-enhanced learning and have sufficient academic experience to assess their digital skills, college environment and perceived academic performance. Hence, only second-, third-, and fourth-year students were included in the study, while first-year students were

excluded due to their relatively limited exposure to the academic environment and institutional learning experiences.

The study's respondents comprised 308 undergraduate students enrolled in the Bachelor of Science in Accountancy and Bachelor of Science in Business Administration, Major in Marketing Management programs at Dominican College of Tarlac, Inc., during the First Semester of Academic Year 2025–2026. The Bachelor of Science in Accountancy (BSA) program had 145 students, while the Bachelor of Science in Business Administration (BSBA) program had 163 students. The target population consisted of 421 eligible students. 308 students voluntarily participated in the survey on July 2025, resulting in an overall response rate of 73.16%. These respondent characteristics reinforce the adequacy of the sample for studying the influence of digital skills across varied academic and business contexts (Huang et al., 2022; Martínez & Cervantes, 2021; Ramos, 2025).

3.4 Instrumentation

The research instrument, as presented in Table 1, consists of latent variables measured by multiple indicators. The first latent variable, Digital Skills (DS), has six indicators namely: Access to and Management of Digital Content (AMDC), Digital Empathy (DE), Use of Digital Means (UDM), Digital Safety (DS), Communication of Digital Content (CMDC) and Creation of Digital Content (CRDC) and was adapted from Kryukova et al. (2022). Verner-Filion & Vallerand (2016) posited five indicators for the Perceived Academic Performance (PAP). College Environment (CE), the mediating variable, has two indicators, namely Perceived Professional Development Support (PPDS) and Perceived Professional Characteristics Development Support (PPCDS), which were adapted from Da Rocha et al. (2021). Perceptions and experiences were indicated using a 5-point Likert scale, which was utilized by the research instrument to gather respondents' perceptions and experiences across all constructs, enabling a comprehensive assessment of the hypothesized relationships in the study (Yusof et al., 2022). This approach to measurement aligns with established psychometric practices that ensure the reliability and validity of the data collected for a statistical analysis (Al-Ali et al., 2024).

Table 1. Research instrument.

Variable	Code	Source
Digital Skills		
Access to and Management of Digital Content (AMDC)	AMDC1	Kryukova et al., (2022)
	AMDC2	
	AMDC3	
	AMDC4	
	AMDC5	
	AMDC6	
Digital Empathy (DE)	DE1	Kryukova et al., (2022)
	DE2	
	DE3	
	DE4	
	DE5	
Use of Digital Means (UDM)	UDM1	Kryukova et al., (2022)
	UDM2	
	UDM3	
	UDM4	
Digital Safety (DS)	DS1	Kryukova et al., (2022)
	DS2	
	DS3	
	DS4	
	DS5	
Communication of Digital Content (CMDC)	CMDC1	Kryukova et al., (2022)
	CMDC2	
	CMDC3	
Creation of digital content (CRDC)	CRDC1	Kryukova et al., (2022)
	CRDC2	
Perceived Academic Performance (PAP)	PAP1	Verner-Filion & Vallerand (2016)
	PAP2	
	PAP3	
	PAP4	
	PAP5	
College Environment		
Perceived Profession Development Support (PPDS)	PPDS1	Da Rocha et al. (2022)
	PPDS2	
	PPDS3	
	PPDS4	
Perceived Profession Characteristics Development Support (PPCDS)	PPCDS1	Da Rocha et al. (2022)
	PPCDS2	
	PPCDS3	
	PPCDS4	
	PPCDS5	
	PPCDS6	
	PPCDS7	
	PPCDS8	
	PPCDS9	

3.5 Measurement Model

Assessment of the measurement model is important to determine the validity and reliability of the constructs before hypothesis testing. Following the recommendations of Hair et al. (2022), the assessment included item reliability, internal consistency reliability, convergent validity, and discriminant validity. These procedures ensure that the observed indicators adequately represent their respective latent constructs and that the constructs are empirically distinct before examining the structural relationships.

In this study, Digital Skills was modeled as a higher-order construct (HOC) comprising six first-order dimensions: Access to and Management of Digital Content (AMDC), Digital Empathy (DE), Use of Digital Means (UDM), Digital Safety (DS), Communication of Digital Content (CMDC), and Creation of Digital Content (CRDC). The higher-order construct represents students' overall digital competencies, while each first-order dimension captures a specific aspect of digital skills. The remaining constructs—College Environment and Perceived Academic Performance—were modeled as reflective latent constructs measured using their respective indicators.

Item reliability, convergent validity, and internal consistency were assessed for each latent variable, as shown in Table 2. The reliability of individual items was evaluated using the other loadings of each indicator within each latent construct. The loadings for each indicator ranged from 0.63 to 0.93, with most exceeding the 0.70 threshold. All indicators exhibited strong loadings, indicating a robust contribution to their respective constructs. However, two indicators for Access to and Management of Digital Content were slightly below the 0.70 threshold. The indicators were retained for their theoretical relevance and contribution to overall construct validity.

Convergent validity was assessed for all constructs using the Average Variance Extracted (AVE). Table 2 shows that all constructs met the criterion for convergent validity, as AVE values ranged from 0.52 to 0.81, exceeding 0.50, which suggests that all latent constructs account for 50% or more of the variance in their indicators (Hamid et al., 2017; Xue et al., 2024). Thus, showing adequate convergent validity. Reliability was also evaluated to determine the internal consistency of the latent variables using Composite Reliability (CR) and Cronbach's Alpha (α). Values of 0.70 or higher for both Composite Reliability and Cronbach's Alpha indicate good reliability and internal consistency (Hair et al., 2024; Abubakari et al., 2023). All constructs demonstrated good Composite Reliability with values ranging from 0.82 to 0.97. Similarly, Cronbach's alpha for most constructs ranged from 0.82 to 0.96. However, the "Creation of Digital Content" construct had a value of 0.58, below the 0.70 threshold. Though the said construct did not meet the minimum Cronbach's Alpha threshold of 0.70, its Composite Reliability of 0.82 with the acceptable AVE of 0.70 is enough to signify that the construct still possesses sufficient internal consistency. In PLS-SEM, Composite Reliability is often considered a more robust measure of

reliability (Abubakari et al., 2023; Hair et al., 2024). This assessment aligns with other studies that use PLS-SEM, in which a strong CR can compensate for slightly lower Cronbach’s Alpha values. Satisfactory values for Composite Reliability and Average Variance Extracted affirm the strong convergent validity and internal consistency (Al-Ali et al., 2024; Enríquez et al., 2023; Xu & Guo, 2024).

To summarize, the assessment of the measurement model confirmed strong psychometric properties across almost all constructs, including reliability, convergent validity, and internal consistency. This served as the foundation for structural model analysis and hypothesis testing of the relationships in the study (Churampi-Cangalaya et al., 2024; Rodafinos et al., 2024; Yuan et al., 2025).

Table 2. Validity and reliability.

Construct	Loadings	AVE	Composite Reliability	Cronbach's Alpha
Digital Skills				
Access to and Management of digital Content (AMDC)		0.52	0.87	0.82
AMDC1	0.74			
AMDC2	0.74			
AMDC3	0.76			
AMDC4	0.77			
AMDC5	0.63			
AMDC6	0.69			
Digital Empathy (DE)		0.62	0.89	0.84
DE1	0.76			
DE2	0.79			
DE3	0.82			
DE4	0.79			
DE5	0.75			
Use of Digital Means (UDM)		0.69	0.90	0.85
UDM1	0.79			
UDM2	0.84			
UDM3	0.83			
UDM4	0.86			
Digital Safety (DS)		0.72	0.93	0.90
DS1	0.86			
DS2	0.91			
DS3	0.84			
DS4	0.83			
DS5	0.81			
Communication of Digital Content (CMDC)		0.80	0.92	0.88
CMDC1	0.87			
CMDC2	0.90			
CMDC3	0.92			
Creation of Digital Content (CRDC)		0.70	0.82	0.58
CRDC1	0.90			
CRDC2	0.77			

College Environment				
Perceived Professional Development Support (PPDS)		0.81	0.94	0.92
PPDS1	0.86			
PPDS2	0.88			
PPDS3	0.93			
PPDS4	0.92			
Perceived Profession Characteristics Development Support (PCDS)		0.76	0.97	0.96
PPCDS1	0.84			
PPCDS2	0.87			
PPCDS3	0.84			
PPCDS4	0.90			
PPCDS5	0.89			
PPCDS6	0.88			
PPCDS7	0.87			
PPCDS8	0.87			
PPCDS9	0.87			
Perceived Academic Performance (PAP)		0.70	0.92	0.89
PAP1	0.86			
PAP2	0.88			
PAP3	0.84			
PAP4	0.85			
PAP5	0.76			

3.6 Discriminant Validity

A construct is empirically distinct from other constructs in the model if it has discriminant validity, ensuring that it measures something unique and not another construct. This is fundamental for interpreting relationships in a structural model (Hair et al., 2024). Table 3 shows the results for the assessment of discriminant validity using the Fornell-Larcker criterion (Fornell & Larcker, 1981). The square root of the AVE for each construct is greater than its correlation with any other construct in the model. The square roots of the AVE for each construct are shown on the diagonal, indicating that the constructs are distinct from each other (Henseler et al., 2016).

Table 3. Fornell–Larcker criterion for discriminant validity.

Variables	1	2	3	4	5	6	7	8	9
AMDC	0.723								
DE	0.597	0.785							
UDM	0.654	0.561	0.829						
DS	0.493	0.519	0.467	0.849					
CMDC	0.558	0.5	0.544	0.551	0.896				
CRDC	0.451	0.429	0.543	0.476	0.64	0.835			
PDS	0.507	0.5	0.541	0.442	0.497	0.489	0.898		
PCDS	0.49	0.542	0.535	0.44	0.502	0.53	0.844	0.87	
PAP	0.536	0.546	0.554	0.491	0.515	0.512	0.598	0.666	0.838

Furthermore, the HTMT values in Table 4 ranged from 0.471 to 0.898, all below the recommended threshold of 0.90. The highest HTMT value (0.898) was observed between Professional Characteristics Development Support (PCDS) and Professional Development Support (PDS). This result is theoretically reasonable because both dimensions represent closely related aspects of the higher-order construct College Environment. Since the HTMT value remained below the recommended cutoff, adequate discriminant validity was established (Henseler et al., 2016 and Hamid et al., 2017). Collectively, these findings indicate that the latent constructs are empirically distinct and measure separate theoretical concepts, thereby supporting the validity of the measurement model. Hence, discriminant validity is established in all constructs. Thus, each construct is conceptually and empirically unique, which provides strong support for the distinctiveness of every latent variable in the study. This enhances the credibility of the following analyses of the structural model (Hair et al., 2018).

Table 4. Heterotrait-Monotrait ratio (HTMT) matrix.

Construct	AMDC	CMDC	CRDC	DE	DS	PAP	PCDS	PDS	UDM
AMDC	—								
CMDC	0.657	—							
CRDC	0.627	0.88	—						
DE	0.718	0.575	0.594	—					
DS	0.57	0.621	0.667	0.592	—				
PAP	0.621	0.577	0.682	0.621	0.542	—			
PCDS	0.549	0.545	0.693	0.596	0.471	0.716	—		
PDS	0.579	0.553	0.654	0.562	0.485	0.656	0.898	—	
UDM	0.783	0.628	0.735	0.658	0.532	0.638	0.591	0.612	—

3.7 Data Collection Procedure

The data were collected via a self-administered questionnaire on Google Forms to obtain the required data for the study. This was done after approval from the Dean of the said college, in collaboration with the institution's Office of Research, Planning, and Quality Assurance. Data privacy protocols were implemented as instructed by the Data Privacy officer.

3.8 Data Collection Procedure

Proper ethical protocols were observed in the conduct of the study in compliance with the institution's research manual. The participation of the respondents is voluntary and was not coerced in any shape or form. The results of the study were reported only in aggregate form. Data was obtained, secured, and used only for research purposes.

4. Results

This section presents the statistical significance of the relationships among the latent variables in the study, which explains the empirical model proposed to assess the influence of digital skills on perceived academic performance. The findings revealed that Digital Skills significantly influenced Perceived Academic Performance ($\beta = 0.421$, $SE = 0.065$, $p < .001$, $f^2 = 0.288$), thereby supporting H1. This finding indicates that students with higher levels of digital skills tend to report higher levels of perceived academic performance. The result suggests that digital competencies enable students to perform academic tasks more effectively, utilize digital learning resources efficiently, and adapt to technology-enhanced learning environments.

Similarly, Digital Skills significantly influenced College Environment ($\beta = 0.674$, $SE = 0.045$, $p < .001$, $f^2 = 0.455$), thereby supporting H2. This finding implies that students with stronger digital skills are better able to maximize institutional technological resources, participate in digital learning activities, and engage in collaborative academic experiences. Consequently, digital competencies contribute to students' positive perceptions of DCT's college environment by facilitating greater interaction with institutional support systems and learning opportunities.

Furthermore, College Environment significantly influenced Perceived Academic Performance ($\beta = 0.685$, $SE = 0.037$, $p < .001$, $f^2 = 0.464$), thereby supporting H3. This finding emphasizes the important role of institutional support, technological resources, learning facilities, and DCT professional development opportunities in enhancing students' perceived academic performance. A supportive learning environment encourages students to participate in academic activities actively and to develop greater confidence in their learning.

This study also examined the direct effect of digital skills on perceived academic performance and the college environment, and the direct effect of the college environment on perceived academic performance. The study also examines the indirect effect of digital skills on perceived academic performance, with the college environment as the mediating variable, which provides a comprehensive understanding of these complex relationships. The path coefficients and their associated p-values, as shown in Table 5, substantiate the direct and indirect influences conceptualized within the study, thereby allowing for hypothesis testing.

Table 5. Path coefficient analysis and hypothesis testing.

Path	Effect Type	Coefficient (β)	SE	p-value	Effect Size (f^2)	Hypothesis	Accepted
DS→PAP	Direct	0.685	0.065	<.001	0.288	H1	Yes
DS→CE	Direct	0.674	0.045	<.001	0.455	H2	Yes
CE→PAP	Direct	0.421	0.037	<.001	0.464	H3	Yes
DS→CE→PAP	Indirect (Mediation)	0.284	0.046	<.001	0.192	H4	Yes

Note. β = standardized path coefficient; SE = standard error; f^2 = effect size.

The mediation hypothesis (H4) was also supported. As shown in Table 5, the indirect effect of Digital Skills on Perceived Academic Performance through College Environment was statistically significant ($\beta = 0.284$, $SE = 0.046$, $p < .001$, $f^2 = 0.192$). This finding indicates that the college environment in DCT serves as a significant mediating mechanism through which digital skills influence students' perceived academic performance. The significant indirect effect demonstrates that students' digital competencies enhance perceived academic performance not only through their direct influence but also by improving students' experiences within the institutional learning environment.

To further examine the mediating role of College Environment, the indirect and total effects of the structural model were analyzed. As presented in Table 6, the indirect effect of Digital Skills on Perceived Academic Performance through College Environment was statistically significant ($\beta = 0.284$, $SE = 0.046$, $p < .001$), confirming that College Environment serves as a significant mediator in the relationship between Digital Skills and Perceived Academic Performance.

The total effect analysis further revealed that Digital Skills exerted a significant overall influence on Perceived Academic Performance ($\beta = 0.685$, $p < .001$) and on College Environment ($\beta = 0.674$, $p < .001$). Likewise, College Environment maintained a significant overall influence on Perceived Academic Performance ($\beta = 0.421$, $p < .001$). The significance of both the direct effects presented in Table 5 and the indirect effect presented in Table 6 indicates that College Environment partially mediates the relationship between Digital Skills and Perceived Academic Performance.

Table 6. Indirect and total effects supporting the mediation analysis.

Structural Relationship	Indirect Effect (β)	Total Effect (β)	Standard Error (SE)	p-value	Interpretation
Digital Skills → College Environment → Perceived Academic Performance	0.284	0.685	0.046	<0.001	Partial mediation

Note. β = standardized path coefficient; SE = standard error; f^2 = effect size.

The finding suggests that although digital skills directly contribute to students' perceived academic performance, their influence is further strengthened when students learn in a supportive college environment characterized by adequate technological resources, institutional support, and meaningful learning opportunities. This result reinforces the proposition that improving students' digital competencies should be complemented by strengthening institutional learning environments to maximize students' academic experiences and perceived academic performance.

The explanatory power of the structural model was evaluated using the coefficient of determination (R^2), which measures the proportion of variance in the endogenous constructs explained by their predictor variables (Hair et al., 2024). As presented in Table 7, the R^2 value for College Environment was 0.45, indicating that

Digital Skills explained 45.0% of the variance in the college environment. Likewise, the R^2 value for Perceived Academic Performance was 0.56, indicating that Digital Skills and College Environment jointly explained 56.0% of the variance in students' perceived academic performance. Based on the guidelines of Hair et al. (2024), these results indicate that the proposed structural model has moderate explanatory power, suggesting that the predictor constructs adequately explain the study's endogenous variables.

Table 7. Indirect and total effects supporting the mediation analysis.

Endogenous Construct	R ²	Interpretation
College Environment	0.45	Moderate explanatory power
Perceived Academic Performance	0.56	Moderate explanatory power

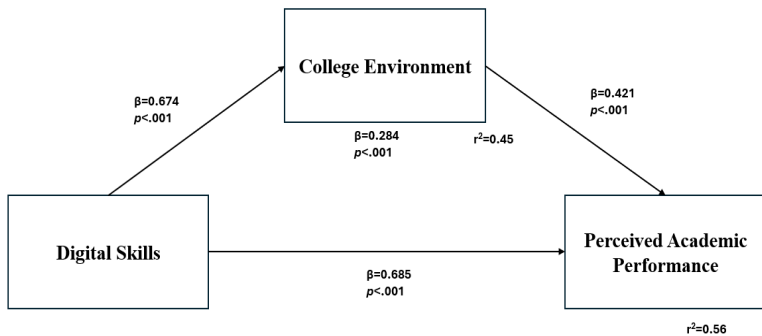


Figure 2. Structural model showing the relationships among digital skills, college environment, and perceived academic performance.

5. Discussion

The findings indicate that Digital Skills significantly influence Perceived Academic Performance and College Environment. Digital skills directly influenced Perceived Academic Performance show that the digital skillset of CBA students has a direct effect on their academic performance according to their perspective, which is in line with the studies of Al-Abdullatif and Gameil (2021) and Khan et al. (2022), who reported that students' digital competencies contribute significantly to their academic success and learning performance. The college environment significantly influenced students' perceived Academic Performance in the College of Business and Accountancy. Significant direct and indirect effects indicate partial mediation by College Environment between Digital Skills and Perceived Academic Performance. The findings suggest that digital competencies alone are insufficient to maximize CBA students' perceived academic performance. The benefits of digital skills are more evident when CBA students learn in a supportive college environment that provides

favorable technological resources, faculty guidance, collaborative learning, and academic support. This supports the studies by Al-Abdullatif and Gameil (2021), Khan et al. (2022), and Muammar et al. (2024), which emphasized that digital competencies help improve students' learning experience. However, the present study extends these findings by showing that the college environment is an important mechanism by which digital skills contribute to perceived academic performance.

The mediating role of the college environment may be explained in the context of business and accountancy education, where CBA students are expected to maximize the use of digital technologies in research, data analysis, presentations, accounting applications, and collaborative learning among students. Though it is common to assume that students possess sufficient digital skills, the application of these skills depends on the environment and conditions that support their learning. Internet connectivity, well-equipped computer laboratories, learning management systems, library resources, faculty support, and opportunities for collaborative learning enable students to utilize their digital competencies in the achievement of academic tasks. This finding is in line with the other studies of Da Rocha et al. (2021), Rodafinos et al. (2024), Widowati et al. (2023), Islam and Khan (2024), and Sun and Yoon (2025), who reported that institutional resources and supportive learning environments contribute to students' academic development.

This study contributes to the existing literature by showing that digital skills and the college environment function as complementary factors in explaining students' perceived academic performance rather than acting independently. Unlike other studies, the present findings highlight the importance of considering the relationship between students' competencies and the educational environment. Furthermore, the partial mediation indicates that other factors, such as students' motivation and self-regulated learning (Verner-Filion & Vallerand, 2016), may also influence perceived academic performance and should be examined in future studies. These findings provide empirical evidence that improving students' digital competencies is closely linked to institutional plans that strengthen the learning environment, specifically within the business and accountancy programs, where digital technologies have become integral to academic learning and professional preparation.

6. Conclusion

The study examined the influence of Digital Skills on Perceived Academic Performance and the mediating role of College Environment among College of Business and Accountancy students of Dominican College of Tarlac. Findings confirmed that Digital Skills significantly influence both Perceived Academic Performance and College Environment, while College Environment likewise significantly influences Perceived Academic Performance. Moreover, the study established partial mediation by the College Environment between Digital Skills and Perceived Academic Performance, indicating that students' digital competencies are more effective when supported by a nurturing institutional environment. These

findings contribute to the literature in demonstrating students' digital competencies and institutional support function as complementary factors in enhancing perceived academic performance.

Implications for higher education institutions showed, in particular, the need to offer business and accountancy programs, where technological resources have become a salient part of instruction and the professional preparation of students. It is also noted that, aside from digital competencies, institutional support remains imperative for maximizing the benefits of these competencies. Colleges and universities can invest in strengthening the learning environment through reliable campus internet connectivity, well-equipped computer laboratories, learning management systems, faculty development programs on technology-enhanced learning, and student support services that focus on digital skills workshops, technical assistance, and peer mentoring programs. These programs may strengthen students' academic engagement and enhance their perceived academic performance.

Despite the aforementioned contributions, the study is still subject to limitations since the respondents were limited to sophomore to senior college students enrolled in Bachelor of Science in Accountancy and Bachelor of Science in Business Administration programs of a single private higher education institution, which may limit the generalizability of the findings to other academic disciplines and institutional contexts. In addition, the study focused on perceived academic performance rather than objective academic indicators such as grade point average or academic achievement records. Future research may validate the proposed model across multiple higher education institutions and examine additional variables, such as academic motivation, self-regulated learning, digital self-efficacy, and technology acceptance, to provide a comprehensive understanding of the factors influencing students' academic performance in technology-supported learning environments.

Acknowledgment

The researchers are grateful for the respondents who participated in the study. Sr. Lorna I. Ablog, OP, the school administrator of Dominican College of Tarlac, Inc., for her support of the corresponding authors' research paper.

Conflict of Interest Statement

The respective authors declare no conflict of interest upon conducting the study.

References

- Abubakari, M. S., Zakaria, G. A. N., Musa, J., & Kalinaki, K. (2023). Assessing Digital Competence in Higher Education: A Gender Analysis of DigComp 2.1 Framework in Uganda. *SAGA Journal of Technology and Information System*, 1(4), 114. <https://doi.org/10.58905/saga.v1i4.210>

- Al-Abdullatif, A. M., & Gameil, A. A. (2021). The Effect of Digital Technology Integration on Students' Academic Performance through Project-Based Learning in an E-learning Environment. *International Journal of Emerging Technologies in Learning (iJET)*, 16(11), 189. <https://doi.org/10.3991/ijet.v16i11.19421>
- Al-Ali, A. H., Alsmairat, M. A. K., Qawasmeh, R., Mahrakani, N. J., & Alhazzani, N. (2024). Exploring the role of digital citizenship and digital empowerment to enhance academic performance of business students. *International Journal of Data and Network Science*, 8(2), 1275. <https://doi.org/10.5267/j.ijdns.2023.11.007>
- Aljehani, S. B. (2024). Enhancing Student Learning Outcomes: The Interplay of Technology Integration, Pedagogical Approaches, Learner Engagement, and Leadership Support. *Educational Administration: Theory and Practice*, 30(4), 418–437. <https://doi.org/10.53555/kuey.v30i4.1485>
- Almaiah, M. A., Alhumaid, K., Aldhuhoori, A., Alnazzawi, N., Aburayya, A., Alfaisal, R., Salloum, S. A., Lutfi, A., Mulhem, A. A., Alkhodour, T., Awad, A. B., & Shehab, R. (2022). Factors affecting the adoption of digital information technologies in higher education: an empirical study. *Electronics*, 11(21), 3572. <https://doi.org/10.3390/electronics11213572>
- Anderson, T., Ogruk-Maz, G., & Bell, T. J. (2025). Enhancing Digital Literacy in Higher Education: A Comprehensive Analysis of Digital Skill Development Among College Students. *Journal of Higher Education Theory and Practice*, 25(3). <https://doi.org/10.33423/jhetp.v25i3.7631>
- Anwar, Z., Hanurawan, F., Chusniyah, T., & Setiyowati, N. (2023). Adaptation of the Academic Digital Literacy Scale for College Students: A Validity and Reliability Study. *Psychological Science and Education*, 28(4), 98–111. <https://doi.org/10.17759/pse.2023280406>
- Audrin, C., & Audrin, B. (2023). More than just emotional intelligence online: introducing “digital emotional intelligence.” *Frontiers in Psychology*, 14. <https://doi.org/10.3389/fpsyg.2023.1154355>
- Chen, F. (2025). The relationship between digital literacy and college students' academic achievement: the chain mediating role of learning adaptation and online self-regulated learning. *Frontiers in Psychology*, 16. <https://doi.org/10.3389/fpsyg.2025.1590649>
- Churampi-Cangalaya, R. L., Inga-Ávila, M. F., Coz, K. R. L., Churampi-Cangalaya, J. J., Huamán-Pérez, F., Caballero, E. M., & Quispe, M. A. (2024). The impact of digital skills on teaching performance in higher education: A meta-analysis. *International Journal of Data and Network Science*, 8(4), 2185. <https://doi.org/10.5267/j.ijdns.2024.6.01>
- Da Rocha, A. K. L., De Moraes, G. H. S. M., & Fischer, B. (2021). The role of university environment in promoting entrepreneurial behavior: evidence from heterogeneous regions in Brazil. *Innovation & Management Review*, 19(1), 39–61. <https://doi.org/10.1108/inmr-08-2020-0112>
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39. <https://doi.org/10.1177/002224378101800104>
- Glazunova, O., Saiapina, T., Korolchuk, V., Kasatkina, O., & Voloshyna, T. (2021). Digital intelligence of a modern economist: an exploratory case study. *SHS Web of Conferences*, 104, 03001. <https://doi.org/10.1051/shsconf/202110403001>
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2018). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2. <https://doi.org/10.1108/ebrev-11-2018-0203>

- Hair, J. F., Sarstedt, M., Ringle, C. M., Sharma, P. N., & Liengard, B. D. (2024). Going beyond the untold facts in PLS-SEM and moving forward. *European Journal of Marketing*, 58(13), 81. <https://doi.org/10.1108/ejm-08-2023-0645>
- Hamburg, I. (2020). Supporting Digital Innovations By Interdisciplinary Entrepreneurial Learning. *Advances in Social Sciences Research Journal*, 7(4), 8. <https://doi.org/10.14738/assrj.74.8046>
- Hamid, M. R. A., Sami, W., & Sidek, M. H. M. (2017). Discriminant Validity Assessment: Use of Fornell & Larcker criterion versus HTMT Criterion. *Journal of Physics Conference Series*, 890, 12163. <https://doi.org/10.1088/1742-6596/890/1/012163>
- Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modeling in new technology research: Updated guidelines. *Industrial Management & Data Systems*, 116(1), 2–20. <https://doi.org/10.1108/IMDS-09-2015-0382>
- Huang, T. C.-K., Chen, S.-H., Hu, C.-C., & Lee, M.-C. (2022). Understanding the adoption of the mask-supply information platforms during the COVID-19. *Electronic Markets*, 32(4), 2405. <https://doi.org/10.1007/s12525-022-00602-7>
- Ibrahim, R. K., & Aldawsari, A. N. (2023). Relationship between digital capabilities and academic performance: the mediating effect of self-efficacy. *BMC Nursing*, 22(1). <https://doi.org/10.1186/s12912-023-01593-2>
- Imaniah, I. (2023). The Synergy of Educational Technology Advancement and Human Capabilities in the Era of Society 5.0. *E3S Web of Conferences*, 452, 7010–7010. <https://doi.org/10.1051/e3sconf/202345207010>
- Islam, Q., & Khan, S. M. F. A. (2024). Sustainability-Infused Learning Environments: Investigating the Role of Digital Technology and Motivation for Sustainability in Achieving Quality Education. *International Journal of Learning Teaching and Educational Research*, 23(1), 519. <https://doi.org/10.26803/ijlter.23.1.25>
- Jhantasana, C. (2023). Should A Rule of Thumb be used to Calculate PLS-SEM Sample Size. *Asia Social Issues*, 16(5). <https://doi.org/10.48048/asi.2023.254658>
- Khan, S., Rasheed, R., & Muhammad, G. (2022). A SEM-based approach towards the Utilization of Technology and its Relationship to the performance of private business education institutions. *Propel Journal of Academic Research*, 2(2), 1. <https://doi.org/10.55464/pjar.v2i2.37>
- Klochkova, E., Serkina, Y., Prasolov, V., & Movchun, V. (2020). The Digitalisation of the Economy and Higher Education. *Space and Culture India*, 7(4), 70. <https://doi.org/10.20896/saci.v7i4.697>
- Kock, N., & Hadaya, P. (2016). Minimum sample size estimation in PLS-SEM: The inverse square root and gamma-exponential methods. *Information Systems Journal*, 28(1), 227. <https://doi.org/10.1111/isj.12131>
- Li, F., Cheng, L., Wang, X., Shen, L., Ma, Y., & Islam, A. Y. M. A. (2025). The causal relationship between digital literacy and students' academic achievement: a eta-analysis. *Humanities and Social Sciences Communications*, 12(1). <https://doi.org/10.1057/s41599-025-04399-6>

- Liu, Q., & Peng, M. Y. (2025). Exploring factors influencing university students' entrepreneurial intentions: The role of attitudes, beliefs, and environmental support. *PLoS ONE*, 20(1). <https://doi.org/10.1371/journal.pone.0316392>
- Mejías-Acosta, A., Regnault, M. D., Vargas-Cano, E., Cobo, J., & Vidal-Silva, C. (2024). Assessment of digital competencies in higher education students: development and validation of a measurement scale. *Frontiers in Education*, 9. <https://doi.org/10.3389/feduc.2024.1497376>
- Memon, M. A., Ting, H., Cheah, J., Ramayah, T., Chuah, F., & Cham, T. (2020). Sample Size for Survey Research: Review and Recommendations. *Journal of Applied Structural Equation Modeling*, 4(2). [https://doi.org/10.47263/jasem.4\(2\)01](https://doi.org/10.47263/jasem.4(2)01)
- Miraj, M., Lu, C., Said, R. M., Osei-Bonsu, R., & Rehman, R. U. (2021). How Information-Seeking Behavior, Essential Technologies, and Resilience Enhance the Academic Performance of Students. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.651550>
- Mokhtari, F. (2023). Fostering Digital Literacy in Higher Education: Benefits, Challenges and Implications. *International Journal of Linguistics Literature & Translation*, 6(10), 160. <https://doi.org/10.32996/ijllt.2023.6.10.19>
- M.S., C., Shek, D. T. L., Fan, I. Y. H., Zhu, X., & Hu, X. (2025). The impact of digital safety competence on cognitive competence, ai self-efficacy, and character. *Applied Sciences*, 15(10), 5440. <https://doi.org/10.3390/app15105440>
- Muammar, S., Maheshwari, P., & Atalla, S. (2024). Assessing the Impact of digital literacy competency on academic outcomes: A Theoretical Model Validation study. *Research Square*. <https://doi.org/10.21203/rs.3.rs-5566588/v1>
- Nammanee, M., Jantakoon, T., & Laoha, R. (2025). AI assistant framework on competency-based learning for digital competency development. *Higher Education Studies*, 15(4), 333. <https://doi.org/10.5539/hes.v15n4p333>
- Noviaristanti, S., & Boon, O. H. (2022). *Sustainable Future: Trends, Strategies and development*. <https://doi.org/10.1201/9781003335832>
- Ogegbo, A. A., Tijani, F., Adegoke, O., Ifekoya, K., & Namusoke, J. (2021). Assessment of female university students' digital competence: potential implications for higher education in africa. *International Journal of Higher Education*, 11(3), 98. <https://doi.org/10.5430/ijhe.v11n3p98>
- Ramos, W. (2025). The university-generated social media content and students' eWOM behavior: the mediating role of student-university identification. *Innovative Marketing*, 21(3), 266. [https://doi.org/10.21511/im.21\(3\).2025.20](https://doi.org/10.21511/im.21(3).2025.20)
- Rodafinos, A., Barkoukis, V., Tzafilkou, K., Ούρδα, Δ., Economides, A. A., & Perifanou, M. (2024). Exploring the Impact of Digital Competence and Technology Acceptance on Academic Performance in Physical Education and Sports Science Students. *Journal of Information Technology Education Research*, 23, 19. <https://doi.org/10.28945/5309>
- Sun, T., & Yoon, M. (2025). The impact of digital transformation on faculty performance in higher education: the mediating role of digital self-efficacy and the moderating role of task-technology fit. *Frontiers in Psychology*, 16. <https://doi.org/10.3389/fpsyg.2025.1693375>

- Timsal, A., Shah, U., & Hodgson, V. (2023). Socio-digital disadvantage within management education: a study of MBA students' experiences of digital technologies. *Organizational Behavior Teaching Review*, 48(1), 52. <https://doi.org/10.1177/10525629231208186>
- Verner-Filion, J., & Vallerand, R. J. (2016). On the differential relationships involving perfectionism and academic adjustment: The mediating role of passion and affect. *Learning and Individual Differences*, 50, 103–113. <https://doi.org/10.1016/j.lindif.2016.07.018>
- Widowati, A., Siswanto, I., & Wakid, M. (2023). Factors affecting students' academic performance: self efficacy, digital literacy, and academic engagement effects. *International Journal of Instruction*, 16(4), 885. <https://doi.org/10.29333/iji.2023.16449a>
- Xu, Q., & Guo, J. (2024). Digital literacy in a global context: constructing models for international Chinese teachers across regions and countries. *International Journal of Learning Teaching and Educational Research*, 23(7), 539. <https://doi.org/10.26803/ijlter.23.7.27>
- Yuan, N., Yu, Q., & Liu, W. (2025). The impact of digital literacy on learning outcomes among college students: the mediating effect of digital atmosphere, self-efficacy for digital technology and digital learning. *Frontiers in Education*, 10. <https://doi.org/10.3389/educ.2025.1641687>
- Yusof, R., Yin, K. Y., Norwani, N. M., Ahmad, N. L., & Ismail, Z. (2022). Investigating the role of digital learning in enhancing educational values: online socialization and its effect on peer learning, collaborative skills and knowledge construction. *International Journal of Learning Teaching and Educational Research*, 21(9), 441. <https://doi.org/10.26803/ijlter.21.9.24>
- Zakir, S., Hoque, M. E., Susanto, P., Nisaa, V., Alam, Md. K., Khatimah, H., & Mulyani, E. (2025). Digital literacy and academic performance: the mediating roles of digital informal learning, self-efficacy, and students' digital competence. *Frontiers in Education*, 10. <https://doi.org/10.3389/educ.2025.1590274>
-

Author Contributions: Briones, E.; Study design, methodology, conceptualization, data collection, formal analysis, data validation, and manuscript writing. Figueroa, R.; Data collection, formal analysis, and critical review of the manuscript.