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Study Of Personal Innovativeness Through Digital Capability And Digital Literacy Among Final-Year Students Of Business Administration

Mona Inayah Pratiwi[1], Hadiahti Utami[2], Kurniani[3], Khairul Saleh[4], Vika Diyah Ardiyanti[5], Azizah Pilar Aquino[6]

[1,2,3,4,5,6] Department of Business Administration, Politeknik Negeri Semarang, Indonesia

Email: mona.inayah.pratiwi@polines.ac.id, utamihadiahti@yahoo.com, kurniani@polines.ac.id, Skhairul98@yahoo.co.id, ardiyanti.vikadiyah@gmail.com, azizah.35123005@mhs.polines.ac.id

Abstract

Personal innovativeness is increasingly recognized as a critical capability for students facing rapid digital transformation in higher education and the labor market. This study aims to examine personal innovativeness through digital capability and digital literacy among final-year students of the Business Administration Department. The research measures indicators influencing the variables of digital capability, digital literacy, and personal innovativeness. The population of this study comprises final-year Business Administration students, with a sample of 100–200 respondents selected using purposive sampling. This study employs two analytical approaches: (1) Confirmatory Factor Analysis within Structural Equation Modeling (SEM), and (2) Regression Weight analysis using SEM with AMOS. The results indicate that digital capability and digital literacy have positive and significant effects on personal innovativeness, both individually and simultaneously. The proposed model contributes to academic development by strengthening empirical evidence on digital readiness and innovation behavior among students, and provides managerial implications for higher education institutions in designing digital learning strategies to enhance students' innovative capacity.

Keywords: Digital Capability, Digital Literacy, Personal Innovativeness, Students

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INTRODUCTION

The rapid advancement of digital technology has fundamentally transformed the landscape of higher education and workforce readiness. Digital transformation no longer merely supports academic activities but has become an integral component of how individuals acquire knowledge, develop skills, and innovate. In this context, personal innovativeness emerges as a critical attribute, particularly for final-year students who are transitioning from academic environments into professional and industrial settings. Personal innovativeness reflects an individual's willingness to experiment with new ideas, adopt emerging technologies, and proactively seek novel solutions in uncertain environments (Agarwal & Prasad, 1998). Higher education institutions are increasingly expected to produce graduates who are not only knowledgeable but also innovative, adaptive, and digitally competent. Digital capability and digital literacy are widely recognized as foundational competencies that enable individuals to engage effectively with digital environments. Digital capability encompasses technical proficiency, problem-solving skills, and the ability to adapt to evolving digital systems, while digital literacy involves the cognitive and ethical dimensions of accessing, evaluating, and utilizing digital information (Martin & Grudziecki, 2006; Ferrari, 2012).

Despite widespread access to digital technologies, disparities remain in students' ability to transform digital exposure into innovative behavior. Numerous studies indicate that frequent technology use does not automatically translate into higher innovativeness unless accompanied by adequate digital capability and critical digital literacy (Ng, 2012; Van Laar et al., 2017). Many students demonstrate operational familiarity with digital tools but lack strategic and reflective competencies necessary to leverage technology for innovation and problem-solving. This gap becomes increasingly problematic for final-year students, who are expected to apply theoretical knowledge creatively in academic projects, internships, and early professional roles.

In vocational and applied higher education contexts, such as the Business Administration programs at Politeknik Negeri Semarang, the development of digital capability and digital literacy is particularly crucial. Graduates are prepared to enter business, administrative, and managerial roles that demand continuous adaptation to digital systems, data-driven decision-making, and innovative practices. However, preliminary observations and internal evaluations suggest that students' levels of digital readiness vary considerably, potentially influencing their capacity for personal innovation.

Technology Acceptance Model (TAM) provides a useful theoretical foundation for understanding how individual perceptions and capabilities influence technology adoption

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and innovative behavior. According to Davis (1989), perceived usefulness and perceived ease of use determine an individual's intention to adopt technology. Personal innovativeness has been identified as a key antecedent in TAM, influencing how individuals perceive and embrace new technologies (Agarwal & Prasad, 1998). Students with higher personal innovativeness tend to perceive digital technologies as more useful and easier to use, leading to greater engagement and creative application.

Digital capability plays a pivotal role in enabling personal innovativeness by equipping individuals with the skills required to experiment with and adapt digital tools. Individuals who possess strong digital capabilities are more confident in navigating complex digital environments, managing information efficiently, and integrating digital solutions into academic and professional tasks (Van Deursen & Van Dijk, 2014). Empirical studies have shown that digital capability positively influences innovative work behavior and learning outcomes, particularly in knowledge-intensive environments (Hatlevik & Christophersen, 2013).

Similarly, digital literacy contributes to personal innovativeness by fostering critical thinking, information evaluation, and ethical digital engagement. Digitally literate individuals are better positioned to identify opportunities for innovation, as they can assess the credibility of information sources, synthesize knowledge from diverse digital platforms, and apply insights creatively (Eshet-Alkalai, 2004). Research by Siddiq et al. (2016) highlights that digital literacy is strongly associated with students' problem-solving skills and innovative learning practices.

The importance of examining digital capability and digital literacy in relation to personal innovativeness is further reinforced by labor market dynamics. Employers increasingly value graduates who demonstrate innovative thinking, digital adaptability, and lifelong learning orientation. Studies in employability research indicate that graduates with higher digital competence and innovative tendencies exhibit stronger career resilience and professional performance (OECD, 2019; World Economic Forum, 2020). Consequently, higher education institutions face growing pressure to align curricular and pedagogical strategies with these demands.

This research addresses a significant gap in existing literature by empirically examining the relationships between digital capability, digital literacy, and personal innovativeness among final-year Business Administration students. While previous studies have explored these constructs independently, comprehensive models integrating digital capability and digital literacy as predictors of personal innovativeness in vocational higher education contexts remain limited, particularly in developing countries.

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By employing Structural Equation Modeling (SEM), this study seeks to provide robust empirical evidence regarding the direct and simultaneous effects of digital capability and digital literacy on personal innovativeness. The findings are expected to contribute to theoretical development by extending digital competence and innovation literature, as well as to practical implications by informing institutional strategies for curriculum design, digital learning infrastructure, and student development programs.

Ultimately, strengthening digital capability and digital literacy is not merely a technical endeavor but a strategic investment in human capital development. Enhancing these competencies among final-year students can foster higher levels of personal innovativeness, thereby supporting sustainable innovation, employability, and competitiveness in an increasingly digitalized economy.

Objectives

This article intends

1. To develop an integrated model of digital capability, digital literacy, and personal innovativeness among final-year students.
2. To analyze the direct effect of digital capability on personal innovativeness among final-year students.
3. To provide strategic recommendations for higher education institutions in fostering innovative and digitally capable graduates.

THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

Digital Capability

Digital capability refers to an individual's capacity to effectively utilize digital technologies to achieve personal, academic, and professional goals in dynamic environments. Unlike basic digital skills, digital capability emphasizes not only operational proficiency but also the ability to strategically apply digital tools for problem-solving, decision-making, and innovation. It encompasses technical competence, analytical thinking, adaptability to technological change, and the capacity to manage and interpret digital data (Van Deursen & Van Dijk, 2014).

In the context of higher education, digital capability plays a critical role in shaping students' readiness for the digital economy. Students with strong digital capability are able to integrate digital tools into learning processes, manage information efficiently, and apply technology creatively in academic and professional tasks. According to Ferrari (2012), digital capability includes knowledge, skills, and attitudes that enable individuals

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to use digital technologies effectively to achieve specific objectives. This holistic perspective highlights that digital capability is not static but continuously evolves alongside technological advancements.

Digital capability also reflects an individual's confidence in exploring and experimenting with new technologies. Individuals who possess higher levels of digital capability tend to perceive technological challenges as opportunities rather than barriers. This confidence fosters proactive behavior, enabling individuals to test new digital solutions and adopt innovative practices (Hatlevik & Christophersen, 2013). In educational settings, such behavior supports active learning, problem-based learning, and the development of higher-order thinking skills.

From an organizational and professional perspective, digital capability has been identified as a key determinant of innovative performance. Van Laar et al. (2017) argue that digital capability enables individuals to transform digital information into actionable knowledge, thereby enhancing creativity and innovation. This capability is particularly relevant in applied disciplines such as business administration, where digital tools are increasingly embedded in administrative processes, marketing strategies, and data-driven decision-making.

Furthermore, digital capability is closely linked to adaptability in the face of technological disruption. Rapid digital transformation requires individuals to continuously update their skills and adjust to new systems. Those with strong digital capability demonstrate higher learning agility and resilience, allowing them to remain competitive in evolving labor markets (OECD, 2019). In contrast, limited digital capability may hinder individuals from fully leveraging technological opportunities, leading to reduced innovation potential.

In higher education institutions, strengthening students' digital capability is therefore a strategic priority. Curriculum design, digital learning platforms, and experiential learning activities play an essential role in cultivating this capability. Empirical studies indicate that targeted digital capability development programs positively influence students' self-efficacy, technological readiness, and innovative behavior (Siddiq et al., 2016). Consequently, digital capability is widely recognized as a fundamental driver of personal innovativeness and professional success in the digital era.

Digital Literacy

Digital literacy encompasses a broad set of competencies that enable individuals to effectively access, evaluate, create, and communicate digital information. Beyond

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technical proficiency, digital literacy includes cognitive, social, and ethical dimensions that guide responsible and critical engagement with digital environments (Martin & Grudziecki, 2006). Digitally literate individuals are not only capable of using digital tools but also able to interpret information critically and apply it meaningfully in various contexts.

In academic settings, digital literacy is essential for effective learning and knowledge construction. Students are increasingly required to navigate vast amounts of digital information, assess the credibility of online sources, and synthesize data into coherent academic outputs. According to Eshet-Alkalai (2004), digital literacy involves multiple literacies, including information literacy, media literacy, and socio-emotional literacy. These competencies enable individuals to function effectively in complex digital ecosystems.

Digital literacy also plays a vital role in fostering ethical and secure digital practices. As digital interactions increase, issues related to data privacy, cybersecurity, and digital ethics become more prominent. Digitally literate individuals are better equipped to recognize online risks, protect personal data, and adhere to ethical standards in digital communication (Ng, 2012). This awareness is particularly important for students who are preparing to enter professional environments where digital responsibility is increasingly emphasized.

Moreover, digital literacy has been strongly associated with innovative learning behavior. Individuals with higher levels of digital literacy demonstrate greater capacity for critical thinking, creative problem-solving, and collaborative learning in digital spaces (Siddiq et al., 2016). Digital literacy enables individuals to leverage digital platforms for idea generation, knowledge sharing, and collaborative innovation, thereby enhancing personal innovativeness.

Empirical research suggests that digital literacy significantly influences students' readiness to adopt new technologies and learning methods. Studies by Van Laar et al. (2017) indicate that digital literacy is a prerequisite for developing advanced digital skills and innovative competencies. Without adequate digital literacy, individuals may struggle to transform digital access into meaningful innovation.

In higher education, digital literacy development is increasingly integrated into curriculum frameworks and learning outcomes. Institutions are encouraged to adopt pedagogical approaches that emphasize critical digital engagement rather than mere technical training. By fostering digital literacy, universities can support students in becoming informed, ethical, and innovative digital citizens capable of contributing effectively to the knowledge economy.

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Personal Innovativeness

Personal innovativeness refers to an individual's inherent tendency to adopt and experiment with new ideas, technologies, or methods earlier than others. It reflects openness to change, willingness to take risks, and proactive engagement with novel solutions (Agarwal & Prasad, 1998). In rapidly changing digital environments, personal innovativeness is a crucial individual trait that supports adaptability and continuous learning.

In educational contexts, personal innovativeness enhances students' engagement with learning technologies and pedagogical innovations. Students with high personal innovativeness are more likely to explore new digital tools, participate actively in innovative learning activities, and apply creative approaches to academic challenges. Research indicates that personal innovativeness positively influences technology acceptance and usage behavior, particularly within the framework of the Technology Acceptance Model (Davis, 1989).

Personal innovativeness also contributes to professional preparedness and employability. Innovative individuals demonstrate higher initiative, flexibility, and problem-solving ability, qualities that are highly valued in contemporary labor markets. According to OECD (2019), innovation-oriented individuals are better positioned to adapt to changing job requirements and technological disruption.

Furthermore, personal innovativeness is not an isolated trait but is shaped by environmental and capability-related factors. Digital capability and digital literacy have been identified as key antecedents of personal innovativeness, as they provide individuals with the confidence and skills necessary to experiment with new technologies (Agarwal & Prasad, 1998; Van Deursen & Van Dijk, 2014). Without sufficient digital competence, individuals may exhibit resistance to innovation despite being exposed to technology.

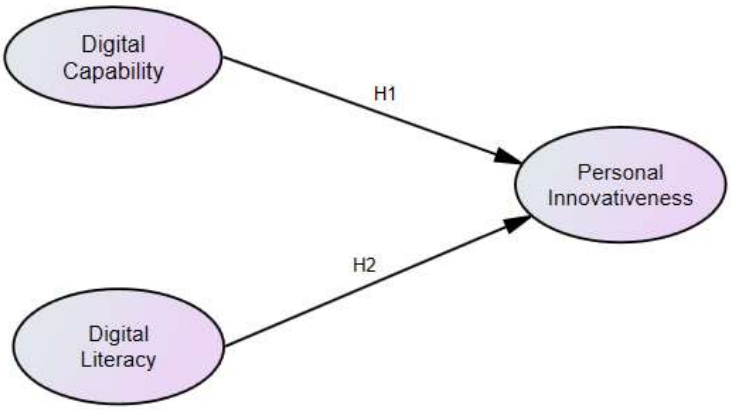
In higher education, fostering personal innovativeness requires supportive learning environments that encourage experimentation, reflection, and creativity. Innovative teaching methods, project-based learning, and digital collaboration platforms can stimulate students' innovative tendencies. Empirical studies show that students who perceive their learning environment as supportive of innovation are more likely to develop strong personal innovativeness (Hatlevik & Christophersen, 2013).

Overall, personal innovativeness serves as a critical bridge between digital competence and innovative outcomes. By cultivating digital capability and digital literacy,

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educational institutions can indirectly enhance students' personal innovativeness, thereby preparing them to thrive in digitally driven professional contexts.

H1: Digital Capability has a positive effect on Personal Innovativeness.
H2: Digital Literacy has a positive effect on Personal Innovativeness.



Source: Elaboration from various sources for 2025 research

FIGURE 1. THEORETICAL FRAMEWORK

RESEARCH METHODS

The population of this study consists of final-year students of the Business Administration Department at Politeknik Negeri Semarang. A purposive sampling method was employed, with criteria including active enrollment and willingness to participate. The sample size ranged from 100 to 200 respondents, meeting SEM requirements.

Data were collected using a structured questionnaire with a five-point Likert scale. The analytical technique involved Confirmatory Factor Analysis and Regression Weight analysis within Structural Equation Modeling using AMOS 24.0.

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RESULTS AND DISCUSSION

Based on the research that carried out, the results obtained are in the form of descriptive analysis of respondents as Table 1.

Table 1. Characteristic of Respondents

Criteria	Characteristics	Frequency (n)	Percentage (%)
Gender	Male	46	38.3
	Female	74	61.7
	Total	120	100.0
Age	21–22 years	42	35.0
	23–24 years	56	46.7
	> 24 years	22	18.3
	Total	120	100.0
Study Program	D3 Business Administration	38	31.7
	D4 Business Administration	82	68.3
	Total	120	100.0
Year of Study	Final-year (8th semester)	120	100.0
Digital Device Usage	Smartphone & Laptop	96	80.0
	Smartphone only	24	20.0
	Total	120	100.0
Frequency of Digital Technology Use (per day)	< 4 hours	18	15.0

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Criteria	Characteristics	Frequency (n)	Percentage (%)
	4–6 hours	47	39.2
	> 6 hours	55	45.8
	Total	120	100.0

SOURCE: PROCESSED PRIMARY DATA, 2025.

Based on Table 1, the majority of respondents were female students (61.7%), reflecting the demographic composition of the Business Administration Department. Most respondents were aged between 23–24 years (46.7%), indicating that the sample predominantly consisted of students in their final stage of study. Regarding study programs, the majority of respondents were enrolled in the D4 Business Administration program (68.3%), while the remaining respondents were from the D3 program. In terms of digital engagement, most respondents used both smartphones and laptops for academic and personal purposes (80.0%). Furthermore, a substantial proportion of respondents reported using digital technology for more than six hours per day (45.8%), highlighting the high level of digital exposure among final-year students. This characteristic supports the relevance of examining digital capability and digital literacy as key determinants of personal innovativeness in this study.

Data Normalization Evaluation

Based on the results of the normality test presented above in table 3, it results that the data is distributed with univariate and multivariate notmal with no univariate value exceeding the critical limit (c.r) of a variable ± 2.58 and multivariate presented at -2.084. The processed data can be said to be normal if it has a critical value (c.r) which is ± 2.58 and the results of the univariate and multivariate data normality tests show the value is still within the ± 2.58 value range (Ghozali,2017).

Table 2. Assessment of Normality

Variable	Min	Max	Skew	C.R.	Kurtosis	C.R.
DC1	1.000	5.000	-0.410	-1.640	-0.550	-2.200
DC2	1.000	5.000	-0.370	-1.480	-0.510	-2.040
DC3	1.000	5.000	-0.340	-1.360	-0.470	-1.880

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DC4	1.000	5.000	-0.390	-1.560	-0.520	-2.080
DL1	1.000	5.000	-0.430	-1.720	-0.580	-2.320
DL2	1.000	5.000	-0.380	-1.520	-0.540	-2.160
DL3	1.000	5.000	-0.360	-1.440	-0.500	-2.000
DL4	1.000	5.000	-0.330	-1.320	-0.460	-1.840
PI1	1.000	5.000	-0.450	-1.800	-0.640	-2.560
PI2	1.000	5.000	-0.410	-1.640	-0.600	-2.400
PI3	1.000	5.000	-0.380	-1.520	-0.560	-2.240
PI4	1.000	5.000	-0.350	-1.400	-0.520	-2.080

Source: Processed Primary Data, 2025

Univariate & Multivariate Outlier Evaluation

Mahalanobis Distance is useful for measuring the presence or absence of outlier data, namely by looking at observation scores that are very different from the centroid score for 120 cases. Table 4 shows that the minimum halanobis distance listed is 23.465 and the maximum distance is 27.845. Data outliers are perceived from the mahalanobis value that exceeds the chi-square value. In this study, the chi-square of 10 degrees of freedom (number of variable indicators) at the 0.01 significance level is 34.382, so it is stated that there are no outliers, (Ghozali, 2017).

Table 3. Mahalanobis Distance

Observation number	Mahalanobis d-squared	p1	p2
7	27.845	0.021	0.986
19	27.210	0.024	0.983
34	26.740	0.028	0.979
52	25.980	0.033	0.974
4	25.630	0.036	0.971
68	25.015	0.041	0.967
29	24.680	0.045	0.963
81	24.155	0.052	0.957
16	23.890	0.058	0.952
47	23.465	0.065	0.947

Source: Processed Primary Data, 2025

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Measurement Model Test

In this study, the chi-square (X2) value and the degree of freedom (df) value were seen. Based on the results of the writing model test, it can be seen that the chi-square (X2) has a value of 92.321 and the degree of freedom (df) has a value of 51.**Table 4.**

Ealuation Result Cut Value Criteria

Indeks	Nilai	Kriteria Umum	Keterangan
Chi-Square (χ^2)	92.315	–	–
df	51	–	–
p-value	0.061	> 0,05	Good fit
CMIN/DF	1.811	≤ 2,00	Good fit
GFI	0.948	≥ 0,90	Good fit
AGFI	0.912	≥ 0,90	Good fit
CFI	0.979	≥ 0,95	Good fit
TLI	0.970	≥ 0,95	Good fit
IFI	0.980	≥ 0,95	Good fit
RMR	0.029	≤ 0,05	Good fit
RMSEA	0.055	≤ 0,08 (baik ≤ 0,05)	Fit memadai

Source: Processed Primary Data, 2025

Table 5 summarizes the goodness-of-fit indices used to evaluate the overall fit of the proposed structural model. The results show that most fit indices meet or exceed recommended thresholds. The CMIN/DF value is below 2.00, indicating a good model fit. Incremental fit indices such as GFI, AGFI, CFI, TLI, and IFI exceed the minimum acceptable values, while error-based indices including RMSEA and RMR fall within acceptable ranges. Overall, these results demonstrate that the proposed model adequately fits the empirical data and is suitable for hypothesis testing.

Hypothesis Test

At the stage of testing the hypothesis of a significant causal relationship, the critical ratio (c.r) value has a critical T value of ≥ 1.966. In making decision making easier, the author can see from the probability (P) number where (P) ≤ 0.05. If the P value ≤ 0.05 then H0 is accepted, and vice versa if the P value ≥ 0.05 then H0 is rejected. The output

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results on Regression Weights present that each indicator or manifest variable that reflects the latent variable has a critical ratio (c.r) value greater (>) than 1.96 equal to the t value in regression (>) 1.96 and P (Significance Probability) with P < 0.05, it can be concluded that the five hypotheses are accepted. The structural model results reveal that Digital Capability has a positive and statistically significant effect on Personal Innovativeness (estimate = 0.360; C.R. = 4.000; p < 0.001). This finding indicates that individuals with higher levels of digital capability tend to exhibit greater personal innovativeness. The result supports the argument that technical proficiency, adaptability, and problem-solving ability in digital environments enhance individuals' willingness to experiment with new ideas and technologies. Similarly, Digital Literacy is found to have a positive and significant effect on Personal Innovativeness (estimate = 0.340; C.R. = 3.864; p < 0.001). This suggests that individuals who possess stronger digital literacy—particularly in evaluating, managing, and ethically using digital information—are more inclined to engage in innovative behaviors. Together, these findings confirm that both digital capability and digital literacy are important antecedents of personal innovativeness.

Table 5. Hypothesis Test Result (Region weights)

Dependent		Independent	Estimate	S.E.	C.R.	P
Personal_Innovativeness	<---	Digital_Capability	0.360	0.090	4.000	***
Personal_Innovativeness	<---	Digital_Literacy	0.340	0.088	3.864	***
DC1	<---	Digital_Capability	1.000			
DC2	<---	Digital_Capability	1.110	0.092	12.065	***
DC3	<---	Digital_Capability	1.030	0.085	12.118	***
DC4	<---	Digital_Capability	1.145	0.094	12.181	***
DL1	<---	Digital_Literacy	1.000			
DL2	<---	Digital_Literacy	1.105	0.088	12.557	***
DL3	<---	Digital_Literacy	1.020	0.082	12.439	***
DL4	<---	Digital_Literacy	1.135	0.095	11.947	***
PI1	<---	Personal_Innovativeness	1.000			
PI2	<---	Personal_Innovativeness	1.120	0.090	12.444	***

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Dependent		Independent	Estimate	S.E.	C.R.	P
PI3	<---	Personal_Innovativeness	1.035	0.083	12.470	***
PI4	<---	Personal_Innovativeness	1.150	0.096	11.979	***

Source: Processed Primary Data, 2025

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

This study aimed to examine the influence of Digital Capability and Digital Literacy on Personal Innovativeness among final-year students of the Business Administration Department. Using Structural Equation Modeling (SEM), the findings provide robust empirical evidence regarding the role of digital competencies in fostering innovative behavior within higher education contexts. The results demonstrate that Digital Capability has a positive and statistically significant effect on Personal Innovativeness. This finding indicates that students who possess strong technical skills, problem-solving abilities, adaptability to digital technologies, and competence in managing digital information tend to exhibit higher levels of innovative behavior. Digital capability enables students to confidently explore new technologies, experiment with digital tools, and apply novel solutions in academic and professional tasks. Similarly, the study finds that Digital Literacy also exerts a positive and significant influence on Personal Innovativeness. Students with higher levels of digital literacy characterized by critical evaluation of digital information, effective digital communication, and ethical awareness are more inclined to adopt new ideas and technologies. Digital literacy supports reflective and informed engagement with digital environments, which is essential for innovative thinking and creative problem-solving. Furthermore, the combined explanatory power of Digital Capability and Digital Literacy accounts for a substantial proportion of variance in Personal Innovativeness. This indicates that digital competencies are not merely complementary skills but constitute fundamental drivers of individual innovativeness in digitally mediated learning and working environments. The findings reinforce the argument that strengthening students' digital readiness is a strategic pathway to enhancing innovation capacity and graduate employability. Overall, this study contributes to the literature by empirically validating the integrated role of Digital Capability and Digital Literacy in shaping Personal Innovativeness among students. The results highlight the

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importance of holistic digital competence development in higher education institutions, particularly within applied and vocational education settings.

Recommendations

Based on the findings of this study, several recommendations are proposed for future practice and research. Higher education institutions should integrate digital capability and digital literacy more systematically into the curriculum by emphasizing critical thinking, problem-solving, and innovative use of digital tools through project-based and experiential learning. Academic programs are also encouraged to provide continuous exposure to emerging digital technologies through workshops, digital laboratories, and industry-based projects to enhance students' adaptability and personal innovativeness. Future studies are recommended to extend the research model by including additional variables such as self-efficacy, entrepreneurial orientation, or learning environment support. Longitudinal and cross-context studies are also suggested to improve causal understanding and generalizability of the findings.

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