

A Data-Driven Structural Framework Linking Digital Transformation and Islamic Leadership to Academic Performance

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Abstract

Digital transformation has become a strategic organizational capability for improving academic performance in higher education; however, existing studies generally examine leadership, organizational values, digital transformation, and quality assurance as separate phenomena, providing limited understanding of how these factors interact to enhance institutional performance. This study develops, tests, and validates an integrated structural framework explaining how Islamic Leadership and Islamic Values influence Academic Performance through Digital Transformation and National Higher Education Standards. A sequential explanatory mixed-methods design was employed using data collected from 196 academic leaders, faculty members, and administrative staff. The quantitative data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), followed by Importance-Performance Map Analysis (IPMA) and SWOT analysis to identify institutional strategic priorities. The measurement model demonstrated satisfactory reliability and validity (Cronbach's $\alpha = 0.896$ - 0.921 , Composite Reliability = 0.921 - 0.938 , AVE = 0.660 - 0.717). The structural model explained 70.4% of the variance in Digital Transformation, 58.2% in National Higher Education Standards, and 68.1% in Academic Performance. Digital Transformation emerged as the strongest predictor of both National Higher Education Standards ($\beta = 0.764$, $p < 0.001$) and Academic Performance ($\beta = 0.601$, $p < 0.001$), while Islamic Leadership ($\beta = 0.495$, $p < 0.001$) and Islamic Values ($\beta = 0.398$, $p < 0.001$) significantly enhanced Digital Transformation. Furthermore, National Higher Education Standards significantly mediated the relationship between Digital Transformation and Academic Performance, while IPMA and SWOT identified Digital Transformation as the highest managerial priority and positioned the institution within a growth-oriented strategic quadrant. This study contributes by introducing and validating an integrated organizational capability framework that explains how value-based leadership is translated into superior academic performance through digital transformation and institutional quality assurance, providing a novel data-driven perspective for higher education digital transformation research and practice.

Keywords: Digital Transformation, Islamic Leadership, Academic Performance, PLS-SEM, Quality Assurance.

1. Introduction

The rapid advancement of information and communication technologies (ICT), including artificial intelligence (AI), cloud computing, learning management systems (LMS), and data analytics, has transformed higher education into an increasingly data-driven environment. Digital transformation has evolved beyond technology adoption into a strategic capability that enables universities to improve educational quality, operational efficiency, institutional competitiveness, and long-term sustainability [1]. Recent studies have demonstrated that digital technologies facilitate evidence-based decision making, optimize academic services, strengthen organizational agility, and improve institutional performance [2], [3]. Nevertheless, many higher education institutions continue to experience inconsistent digital transformation outcomes because technological investment alone is insufficient to achieve sustainable improvements in academic performance [4].

Current research has generated substantial knowledge regarding the individual determinants of institutional performance. Digital transformation has been widely recognized as a key driver of organizational innovation, educational effectiveness, and operational excellence [5]. Likewise, leadership research has shown that effective leadership enhances organizational commitment, technology adoption, and institutional change management [6], [7]. Studies on organizational values further suggest that ethical values strengthen organizational culture, collaboration, and sustainable governance [8], [9]. In parallel, quality assurance research emphasizes the importance of higher education standards in maintaining educational quality, institutional accountability, and continuous improvement [10],

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[11]. These studies collectively demonstrate that leadership, organizational values, digital transformation, and quality assurance each contribute to institutional success. Despite these advances, existing studies have primarily examined these factors independently or through isolated relationships. Limited research has investigated how value-based leadership, organizational values, digital transformation, and quality assurance collectively interact within a unified structural framework to explain academic performance. In particular, the organizational mechanisms through which leadership and institutional values are translated into measurable academic outcomes through digital transformation and quality assurance remain insufficiently understood [12]. Consequently, the absence of an integrated analytical model limits both theoretical understanding and evidence-based decision making for higher education institutions undergoing digital transformation [13].

Higher education institutions operating within Islamic educational environments provide an important context for addressing this limitation because institutional governance is influenced not only by managerial practices but also by ethical leadership and organizational values. Islamic leadership emphasizes justice (*adl*), trustworthiness (*amanah*), consultation (*shura*), and social responsibility (*maslahah*), while Islamic values encourage ethical governance, knowledge sharing, and responsible technology utilization. These principles have the potential to strengthen organizational readiness for digital transformation and improve institutional performance through sustainable quality assurance mechanisms. To address this gap, this study develops and validates a data-driven structural framework that explains how Islamic Leadership (ISL) and Islamic Values (ISV) influence Academic Performance (ACP) through Digital Transformation (DGT) and National Higher Education Standards (NHE). The proposed framework is evaluated using Partial Least Squares Structural Equation Modeling (PLS-SEM), while Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis together with Importance Performance Map Analysis (IPMA) are employed to identify strategic priorities for institutional development.

This study makes three contributions to the information systems and applied data science literature. First, it proposes an integrated structural model that connects value-based leadership, organizational values, digital transformation, quality assurance, and academic performance within a single analytical framework. Second, it demonstrates the mediating role of National Higher Education Standards in translating digital transformation into sustainable academic performance, thereby extending the organizational capability perspective in higher education. Third, by integrating PLS-SEM, SWOT, and IPMA, the study provides a data-driven decision-support framework that enables university leaders to prioritize digital transformation initiatives based on empirical evidence and strategic importance.

2. Literature Review

2.1. Islamic-Based Leadership and Digital Transformation

Islamic leadership is a value-based leadership approach rooted in the principles of the Qur'an and Sunnah, emphasizing justice (*adl*), trustworthiness (*amanah*), consultation (*shura*), and service (*khidmah*) as fundamental values for organizational governance [12]. Unlike conventional leadership theories that primarily focus on managerial efficiency, Islamic leadership integrates ethical responsibility with organizational decision making. Within higher education institutions, these principles foster transparency, accountability, participation, and mutual trust among institutional stakeholders. Such leadership characteristics create an organizational environment that supports innovation while ensuring that institutional development remains aligned with ethical and educational values [13].

Previous studies consistently demonstrate that leadership plays a critical role in organizational digital transformation. Leaders establish strategic direction, allocate organizational resources, encourage innovation, and reduce resistance to organizational change [6], [7]. In higher education institutions, digital transformation requires substantial organizational adjustments involving technology adoption, business process redesign, and changes in institutional culture. Effective leadership therefore becomes essential for promoting collaboration among faculty members, administrative staff, and institutional managers while facilitating the successful implementation of digital initiatives. From the organizational capability perspective, leadership functions as an intangible organizational resource that enables institutions to transform technological investments into sustainable organizational capabilities. Islamic leadership strengthens institutional readiness for digital transformation by promoting shared vision, ethical governance,

and stakeholder participation throughout the digital transformation process. Consequently, institutions demonstrating stronger Islamic leadership are expected to achieve higher levels of digital transformation.

H1: Islamic Leadership positively influences Digital Transformation.

2.2. Islamic Values and Digital Transformation

Islamic values represent ethical principles that guide individual behavior, organizational culture, and institutional governance. These values emphasize integrity, justice, responsibility, cooperation, and continuous knowledge development, creating an organizational culture that supports sustainable institutional development [14], [15]. Within higher education institutions, Islamic values extend beyond curriculum implementation to influence organizational policies, governance structures, and technology utilization. The integration of these values ensures that technological innovation remains consistent with institutional missions and ethical responsibilities.

Recent studies indicate that digital technologies provide effective platforms for promoting ethical learning, collaborative knowledge sharing, and responsible organizational practices [16], [17]. Institutions that successfully integrate Islamic values into digital governance tend to demonstrate stronger organizational commitment toward technology adoption because institutional members perceive digital transformation as supporting organizational values rather than disrupting existing practices. Ethical organizational cultures also strengthen trust among stakeholders, thereby facilitating organizational change and technological innovation [18]. Organizational values are increasingly recognized as strategic resources that influence institutional adaptability during periods of technological change. When Islamic values are embedded within digital governance, organizational members are more willing to adopt new technologies, collaborate across organizational units, and participate in digital innovation initiatives. Therefore, Islamic values are expected to strengthen institutional digital transformation.

H2: Islamic Values positively influence Digital Transformation.

2.3. Digital Transformation and National Higher Education Standards

Digital transformation refers to the systematic integration of digital technologies into organizational processes, governance systems, academic services, and institutional decision making to improve organizational performance [1]. In higher education, digital transformation includes the implementation of learning management systems, enterprise resource planning systems, artificial intelligence, cloud computing, learning analytics, and integrated academic information systems [6], [7]. These technologies improve operational efficiency while enabling institutions to manage educational processes using real-time information and data-driven decision making.

The implementation of digital technologies has significantly transformed institutional quality assurance practices. Previous studies report that integrated information systems facilitate institutional monitoring, automate quality assurance documentation, improve accreditation processes, and strengthen evidence-based evaluation [19], [20]. Digital transformation also enhances organizational transparency and enables universities to continuously evaluate institutional performance through integrated performance indicators. Consequently, digital capability has become an important prerequisite for maintaining compliance with higher education quality standards. Organizational capability theory suggests that digital technologies create institutional value when they are integrated into organizational processes and governance mechanisms. Universities with stronger digital capabilities are therefore more capable of implementing quality assurance systems, managing institutional data efficiently, and maintaining compliance with National Higher Education Standards. Accordingly, digital transformation is expected to positively influence institutional quality assurance.

H3: Digital Transformation positively influences National Higher Education Standards.

2.4. National Higher Education Standards and Academic Performance

National Higher Education Standards establish a comprehensive quality assurance framework governing curriculum implementation, learning processes, student assessment, research, community engagement, institutional governance, and financial management [19]. These standards provide measurable institutional benchmarks that promote educational quality, accountability, and continuous improvement. Compliance with quality assurance standards enables universities

to systematically evaluate institutional performance while ensuring consistency across academic and administrative processes.

Previous studies indicate that institutions implementing comprehensive quality assurance systems demonstrate higher educational quality, stronger institutional reputation, and improved organizational performance [20], [21]. Digital quality assurance systems further strengthen institutional effectiveness by supporting continuous monitoring, performance evaluation, and evidence-based decision making. As a result, quality assurance contributes not only to accreditation outcomes but also to long-term institutional development and academic excellence [22], [23]. Within organizational capability theory, quality assurance represents the institutional mechanism that translates organizational resources into measurable educational outcomes. Institutions with stronger compliance with National Higher Education Standards are better positioned to improve learning quality, research productivity, graduate competence, and institutional performance. Therefore, compliance with National Higher Education Standards is expected to positively influence academic performance.

H4: National Higher Education Standards positively influence Academic Performance.

2.5. Digital Transformation and Academic Performance

Digital transformation has become an important strategic capability for improving academic performance in higher education. By integrating digital technologies into teaching, research, administration, and institutional governance, universities are able to enhance educational quality, improve organizational efficiency, and strengthen institutional competitiveness [1], [6]. Technologies such as artificial intelligence, learning analytics, cloud computing, and integrated information systems enable institutions to deliver more responsive academic services while supporting evidence-based institutional management.

Empirical studies consistently demonstrate that digital transformation positively influences learning effectiveness, research productivity, administrative efficiency, and institutional innovation [7], [8]. Digital technologies improve communication among institutional stakeholders, optimize resource utilization, facilitate collaborative research, and enhance student engagement through technology-supported learning environments. These improvements collectively contribute to better academic outcomes and institutional performance. From the organizational capability perspective, digital transformation represents a strategic capability that enables universities to integrate technological resources with institutional knowledge and organizational processes. Institutions possessing higher digital maturity are therefore more capable of improving educational quality, organizational responsiveness, and institutional competitiveness. Consequently, digital transformation is expected to directly improve academic performance [24], [25].

H5: Digital Transformation positively influences Academic Performance.

3. Methodology

3.1. Research Design

This study employed a sequential explanatory mixed-methods design to investigate the relationships among Islamic Leadership (ISL), Islamic Values (ISV), Digital Transformation (DGT), National Higher Education Standards (NHE), and Academic Performance (ACP). This design integrates quantitative and qualitative approaches to provide both statistical validation of the proposed structural model and strategic interpretation of the empirical findings [26]. The quantitative phase constituted the primary component of the study and focused on testing the proposed hypotheses using survey data, while the qualitative phase complemented the quantitative results by translating the validated model into institutional strategies. The mixed-methods approach was selected because it provides a comprehensive understanding of organizational phenomena by combining causal explanation with practical decision support.

The quantitative analysis employed Partial Least Squares Structural Equation Modeling (PLS-SEM) to evaluate the measurement and structural models simultaneously. PLS-SEM was selected because the proposed research framework involves multiple latent constructs, direct and indirect relationships, and emphasizes prediction-oriented analysis. Following model validation, Importance-Performance Map Analysis (IPMA) was conducted to identify managerial priorities by comparing the relative importance of each construct with its observed performance. Subsequently, a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis was performed to interpret the empirical findings

from a strategic perspective by evaluating internal organizational capabilities and external environmental conditions. The integration of PLS-SEM, IPMA, and SWOT provides a complementary analytical framework that combines hypothesis testing, managerial prioritization, and strategic planning.

The overall research framework is presented in [figure 1](#). Islamic Leadership (ISL) and Islamic Values (ISV) are conceptualized as organizational antecedents that enhance Digital Transformation (DGT). Digital Transformation subsequently strengthens the implementation of National Higher Education Standards (NHE) and directly improves Academic Performance (ACP), while NHE further contributes to Academic Performance through institutional quality assurance mechanisms. The research process began with the development of the conceptual model and hypotheses based on the relevant literature, followed by questionnaire development, data collection, and PLS-SEM analysis. The validated structural model subsequently informed the IPMA and SWOT analyses to determine managerial priorities and strategic directions for institutional digital transformation. This sequential process ensures that the proposed strategic recommendations are firmly grounded in empirical evidence.

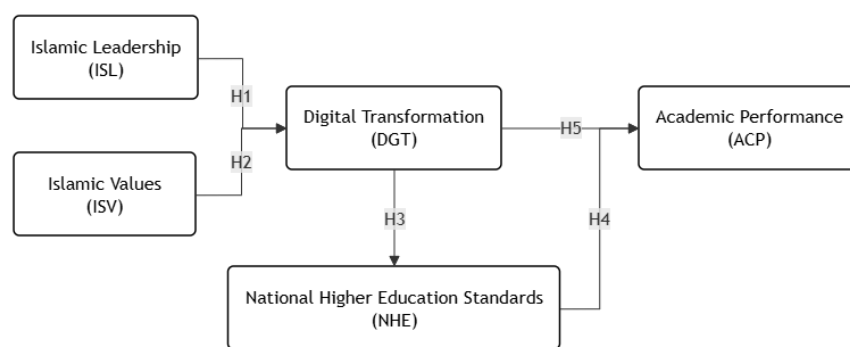


Figure 1. Research Framework

3.2. Population, Sampling, and Data Collection

The target population comprised academic leaders, faculty members, and administrative staff actively involved in digital transformation initiatives within higher education institutions. These groups were selected because they participate directly in institutional governance, academic management, quality assurance, and digital technology implementation, enabling them to provide informed assessments of the organizational capabilities examined in this study. The empirical investigation was conducted at Institut Informatika dan Bisnis (IIB) Darmajaya, an institution implementing digital transformation as part of its long-term strategy toward World-Class University (WCU) development. A purposive sampling technique was employed to ensure that only respondents with relevant knowledge and experience were included in the study. Data were collected over a three-month period using a structured self-administered questionnaire distributed in both printed and electronic formats. Participation was voluntary, and respondents were informed of the study objectives before completing the survey. To encourage honest responses and minimize social desirability bias, anonymity and confidentiality were assured, and no personally identifiable information was collected. The demographic characteristics of the respondents are presented in [table 1](#).

Table 1. Demographic Characteristics of Respondents (N = 196)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	114	58.2
	Female	82	41.8
Age	< 30 years	42	21.4
	30-39 years	76	38.8
	40-49 years	51	26.0
	≥ 50 years	27	13.8
Position	Faculty Member	118	60.2
	Administrative Staff	53	27.0

	Institutional Leader	25	12.8
Highest Educational Qualification	Bachelor's Degree	41	20.9
	Master's Degree	123	62.8
	Doctoral Degree	32	16.3
Years of Service	< 5 years	49	25.0
	5-10 years	68	34.7
	11-15 years	46	23.5
	> 15 years	33	16.8

A total of 239 completed questionnaires were returned without missing values. Prior to statistical analysis, the data underwent response screening, multivariate outlier detection, and measurement quality evaluation. Eight responses exhibiting extreme response patterns were excluded during the initial screening stage, while additional observations that consistently reduced indicator reliability and construct validity were removed during measurement model refinement. The final dataset comprised 196 valid responses, which was considered adequate for Partial Least Squares Structural Equation Modeling (PLS-SEM). The sample size exceeded the minimum recommendation based on the ten-times rule, as the most complex endogenous construct in the proposed model received only two direct structural paths, thereby ensuring sufficient statistical power for model estimation.

3.3. Measurement Instrument

The measurement instrument was developed by adapting previously validated scales from the literature on information systems, digital transformation, leadership, organizational values, higher education quality assurance, and academic performance. The proposed research model consisted of five reflective latent constructs, namely Islamic Leadership (ISL), Islamic Values (ISV), Digital Transformation (DGT), National Higher Education Standards (NHE), and Academic Performance (ACP). Each construct was measured using six reflective indicators, resulting in a total of 30 questionnaire items. The reflective measurement specification was selected because the observed indicators represent manifestations of the underlying latent constructs rather than forming them.

All questionnaire items were measured using a ten-point Likert scale ranging from 1 ("Strongly Disagree") to 10 ("Strongly Agree"). A ten-point scale was selected to provide greater response discrimination and improve the sensitivity of the measurement compared with conventional five-point or seven-point scales. The original instruments were carefully adapted to the higher education context by revising terminology, organizational references, and examples of digital transformation practices while preserving the conceptual meaning of each construct. Table 2 summarizes the measurement constructs, the number of indicators, measurement specifications, and literature sources.

Table 2. Measurement Constructs and Instrument Summary

Construct	Measurement Type	Items	Description	Source
ISL	Reflective	6	Measures leadership behaviors based on Islamic principles that promote ethical governance, participatory decision making, organizational trust, and digital transformation.	[12], [13]
ISV	Reflective	6	Measures the extent to which Islamic ethical values are embedded in organizational culture, institutional governance, digital policies, and academic practices.	[14], [15], [16], [17], [18]
DGT	Reflective	6	Measures ICT adoption, information system integration, digital infrastructure, organizational digital capability, and staff digital competency.	[1], [6], [7], [8], [9], [10], [11]
NHE	Reflective	6	Measures institutional implementation of quality assurance standards through digital governance, monitoring, and continuous quality improvement.	[19], [20]
ACP	Reflective	6	Measures institutional academic outcomes, including teaching quality, research productivity, graduate employability, and organizational performance.	[1], [5], [20]

*Total questionnaire items = 30 (five reflective latent constructs).

To ensure measurement quality, the questionnaire underwent a systematic validation process before the main survey. First, content validity was evaluated through expert review involving specialists in information systems, educational leadership, higher education management, and research methodology. The experts assessed the relevance, clarity, and

representativeness of each measurement item, leading to minor revisions in wording and contextual adaptation. Second, a pilot study was conducted with a small group of university employees to evaluate questionnaire readability, completion time, and item comprehensibility. Feedback obtained during the pilot study was incorporated into the final questionnaire before large-scale data collection. The operational definitions together with representative measurement items for each construct are presented in [table 3](#).

Table 3. Operational Definitions and Representative Measurement Indicators

Construct	Operational Definition	Representative Measurement Indicator*
ISL	Leadership practices based on Islamic principles that support ethical governance, organizational participation, accountability, and institutional digital transformation.	Institutional leaders encourage participatory decision making during digital transformation initiatives.
ISV	Organizational values derived from Islamic ethical principles that influence institutional culture, governance, and technology utilization.	Islamic values are consistently reflected in institutional digital policies and organizational practices.
DGT	The integration of digital technologies into academic, administrative, and managerial processes to improve institutional capability and performance.	Digital technologies are effectively integrated across academic and administrative functions.
NHE	Institutional implementation of quality assurance standards through systematic planning, monitoring, evaluation, and continuous quality improvement.	Digital information systems effectively support institutional quality assurance and accreditation activities.
ACP	Institutional achievement reflected in educational quality, research productivity, graduate outcomes, and overall organizational performance.	Digital transformation has contributed to improvements in the institution's academic performance.

*Representative indicators are presented for illustrative purposes. Each construct was measured using six reflective indicators adapted from previously validated instruments.

3.4. Data Analysis

The proposed research model was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) implemented in SmartPLS 4. PLS-SEM was selected because the study aims to examine complex relationships among multiple latent constructs while simultaneously estimating direct and indirect effects within a prediction-oriented framework. Following the recommended two-stage approach, the analysis first evaluated the measurement model by assessing indicator reliability (outer loadings), convergent validity using the Average Variance Extracted (AVE), internal consistency reliability through Cronbach's alpha, Composite Reliability (CR), and ρ_A , discriminant validity using the Fornell-Larcker criterion and the Heterotrait-Monotrait Ratio (HTMT), and multicollinearity using the Variance Inflation Factor (VIF). After confirming satisfactory measurement quality, the structural model was evaluated using a bootstrapping procedure with 5,000 resamples to estimate standardized path coefficients (β), t -statistics, and p -values. Model explanatory power and predictive capability were further assessed using the coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), and mediation analysis to examine the indirect role of National Higher Education Standards (NHE) in the relationship between Digital Transformation (DGT) and Academic Performance (ACP).

To complement the structural model assessment, Importance-Performance Map Analysis (IPMA) was performed to identify managerial priorities by comparing the relative importance of each construct with its observed performance. Subsequently, a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis was conducted to translate the validated quantitative findings into strategic institutional recommendations. Internal organizational capabilities and external environmental conditions were identified through institutional documents, field observations, and qualitative questionnaire responses, and subsequently synthesized using the Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS) matrices. The integration of PLS-SEM, IPMA, and SWOT provides a comprehensive analytical framework that combines empirical hypothesis testing, managerial prioritization, and strategic planning to support sustainable digital transformation and continuous improvement in higher education institutions.

4. Results and Discussion

4.1. Descriptive Statistics and Normality

Descriptive statistics and normality assessments were conducted prior to structural model evaluation to examine the distributional characteristics of the collected data. Table 4 summarizes the descriptive statistics for the five latent constructs, including mean, standard deviation, minimum and maximum values, skewness, and kurtosis. Overall, the respondents reported highly positive perceptions across all constructs, with mean scores ranging from 8.84 for Digital Transformation to 8.96 for Academic Performance. The relatively small standard deviations, ranging from 0.74 to 0.81, indicate a high level of consistency in respondents' evaluations, suggesting that perceptions of leadership, institutional values, digital transformation, quality assurance, and academic performance were generally homogeneous.

The normality assessment demonstrated that the dataset satisfied the distributional assumptions required for PLS-SEM analysis. Skewness values ranged from -1.32 to -0.81, remaining well within the recommended threshold of ± 2.00 , indicating moderate negative skewness consistent with respondents' favorable evaluations. Likewise, kurtosis values ranged from 1.87 to 3.68, which fall below the commonly accepted threshold of ± 7.00 , suggesting that the distributions did not exhibit excessive peakedness. Although one individual indicator (NHE3) showed a kurtosis value of 7.084, its deviation was considered marginal and did not substantially affect the analysis because PLS-SEM is robust to moderate departures from normality. Therefore, the dataset was considered appropriate for subsequent measurement and structural model evaluation.

Table 4. Descriptive Statistics and Normality Assessment

Construct	Mean	SD	Minimum	Maximum	Skewness	Kurtosis
Islamic Leadership (ISL)	8.91	0.78	6.50	10.00	-1.18	2.64
Islamic Values (ISV)	8.88	0.74	6.67	10.00	-1.09	2.31
Digital Transformation (DGT)	8.84	0.81	6.17	10.00	-0.81	1.87
National Higher Education Standards (NHE)	8.93	0.76	6.50	10.00	-1.32	3.68
Academic Performance (ACP)	8.96	0.79	6.33	10.00	-1.27	3.14

Note: Overall item means ranged from 8.63 (ACP6) to 9.10 (ACP1). Item-level skewness ranged from -1.723 to -0.337, while item-level kurtosis ranged from -0.711 to 7.084. The highest kurtosis value was observed for NHE3 (7.084) but was retained because the deviation was marginal and PLS-SEM is robust to moderate non-normality.

4.2. Measurement Model Assessment

The measurement model was evaluated to assess the reliability and validity of the proposed latent constructs before testing the structural relationships. As presented in table 5, all measurement indicators demonstrated satisfactory reliability, with standardized outer loadings ranging from 0.757 to 0.887, exceeding the recommended threshold of 0.70. Convergent validity was confirmed as the Average Variance Extracted (AVE) values ranged from 0.660 to 0.717, indicating that each construct explained more than 50% of the variance of its indicators. Internal consistency reliability was also satisfactory, with Cronbach's alpha values ranging from 0.896 to 0.921, rho_A values ranging from 0.898 to 0.925, and Composite Reliability (pc) values ranging from 0.921 to 0.938. Collectively, these results demonstrate that all measurement constructs satisfy the recommended criteria for indicator reliability, convergent validity, and internal consistency.

Table 5. Convergent Validity and Internal Consistency Reliability

Construct	Outer Loading Range	Cronbach's α	rho_A	Composite Reliability (pc)	AVE
Academic Performance (ACP)	0.762-0.885	0.915	0.919	0.934	0.702
Digital Transformation (DGT)	0.791-0.843	0.901	0.902	0.924	0.669
Islamic Leadership (ISL)	0.757-0.841	0.896	0.898	0.921	0.660
Islamic Values (ISV)	0.793-0.887	0.921	0.925	0.938	0.717

National Higher Education Standards (NHE)	0.770-0.876	0.906	0.908	0.928	0.681
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Discriminant validity was subsequently assessed using both the Heterotrait-Monotrait Ratio (HTMT) and the Fornell-Larcker criterion. As shown in [table 6](#), all HTMT values ranged from 0.766 to 0.894, remaining below the recommended threshold of 0.90, indicating adequate discriminant validity among the constructs. Likewise, the square root of the AVE for each construct exceeded its correlations with other constructs, satisfying the Fornell-Larcker criterion. These findings indicate that each latent construct captures a unique conceptual domain and that no substantial overlap exists among the measurement constructs.

Table 6. Discriminant Validity Assessment

Construct	ACP	DGT	ISL	ISV	NHE
<i>HTMT</i>					
ACP	—				
DGT	0.894	—			
ISL	0.812	0.861	—		
ISV	0.766	0.823	0.848	—	
NHE	0.857	0.883	0.791	0.784	—
<i>Fornell-Larcker Criterion</i>					
ACP	0.838				
DGT	0.756	0.818			
ISL	0.681	0.742	0.812		
ISV	0.654	0.701	0.726	0.847	
NHE	0.738	0.763	0.665	0.649	0.825

Note: Bold diagonal values represent the square root of the Average Variance Extracted (AVE).

Because all data were collected from the same respondents using a self-administered questionnaire, an assessment of common method bias (CMB) was performed. Following Kock's full collinearity approach, all latent construct Variance Inflation Factor (VIF) values were below the recommended threshold of 3.30, ranging from 2.05 to 2.71, indicating that common method bias is unlikely to threaten the validity of the structural relationships ([table 7](#)). As an additional diagnostic procedure, Harman's single-factor test showed that the first unrotated factor accounted for less than 50% of the total variance, further suggesting that no single latent factor dominated the covariance among the observed variables. Therefore, the measurement model was considered free from substantial common method variance and suitable for structural model evaluation.

Table 7. Common Method Bias Assessment

Construct	Full Collinearity VIF
Islamic Leadership (ISL)	2.11
Islamic Values (ISV)	2.05
Digital Transformation (DGT)	2.63
National Higher Education Standards (NHE)	2.34
Academic Performance (ACP)	2.71

4.3. Structural Model Assessment

Following the satisfactory evaluation of the measurement model, the structural model was assessed to examine the proposed hypotheses and evaluate the predictive capability of the research framework. Prior to hypothesis testing, multicollinearity among predictor constructs was examined using the Variance Inflation Factor (VIF). All predictor-endogenous combinations produced VIF values ranging from 1.000 to 2.465, well below the recommended threshold of 5.00, indicating that multicollinearity was not a concern. The structural relationships were subsequently estimated

using the bootstrapping procedure with 5,000 resamples, generating standardized path coefficients (β), t -statistics, confidence intervals, and p -values for hypothesis testing.

As presented in [table 8](#), all five proposed hypotheses were statistically supported ($p < 0.05$). Islamic Leadership exhibited a significant positive effect on Digital Transformation ($\beta = 0.495$, $t = 6.906$, $p < 0.001$), supporting H1, while Islamic Values also positively influenced Digital Transformation ($\beta = 0.398$, $t = 5.021$, $p < 0.001$), supporting H2. Digital Transformation demonstrated the strongest structural relationship within the proposed model by significantly influencing National Higher Education Standards ($\beta = 0.764$, $t = 19.607$, $p < 0.001$), confirming H3. Furthermore, both National Higher Education Standards ($\beta = 0.271$, $t = 2.690$, $p = 0.007$) and Digital Transformation ($\beta = 0.601$, $t = 6.405$, $p < 0.001$) significantly improved Academic Performance, providing empirical support for H4 and H5, respectively.

Table 8. Structural Model Assessment

Hypothesis	Structural Path	β	SE	95% Bootstrap CI	Adjusted R ²	f ²	t-value	p-value	Decision
H1	ISL → DGT	0.495	0.072	[0.358, 0.636]	0.704	0.340	6.906	<0.001	Supported
H2	ISV → DGT	0.398	0.079	[0.234, 0.543]	—	0.220	5.021	<0.001	Supported
H3	DGT → NHE	0.764	0.039	[0.674, 0.831]	0.582	1.403	19.607	<0.001	Supported
H4	NHE → ACP	0.271	0.101	[0.080, 0.475]	0.681	0.097	2.690	0.007	Supported
H5	DGT → ACP	0.601	0.094	[0.406, 0.770]	—	0.475	6.405	<0.001	Supported

The explanatory power of the structural model was evaluated using the adjusted coefficient of determination (Adjusted R²). The model explained 70.4% of the variance in Digital Transformation, 58.2% of the variance in National Higher Education Standards, and 68.1% of the variance in Academic Performance, indicating moderate to substantial explanatory power. Effect size (f²) analysis further revealed that the influence of Digital Transformation on National Higher Education Standards (f² = 1.403) represented a large effect, while the effects of Islamic Leadership (f² = 0.340) and Islamic Values (f² = 0.220) on Digital Transformation were moderate. The direct influence of Digital Transformation on Academic Performance also demonstrated a moderate-to-large effect (f² = 0.475), whereas the contribution of National Higher Education Standards to Academic Performance was relatively small (f² = 0.097), suggesting that Digital Transformation remained the dominant predictor of institutional performance.

[Figure 2](#) illustrates the validated structural model together with the standardized path coefficients obtained from the PLS-SEM analysis. Overall, the findings indicate that Digital Transformation occupies a central position within the proposed framework by directly improving Academic Performance while simultaneously strengthening the implementation of National Higher Education Standards. The significant relationships observed across all structural paths provide empirical support for the proposed organizational capability model and establish the foundation for the subsequent mediation, managerial prioritization, and strategic analyses.

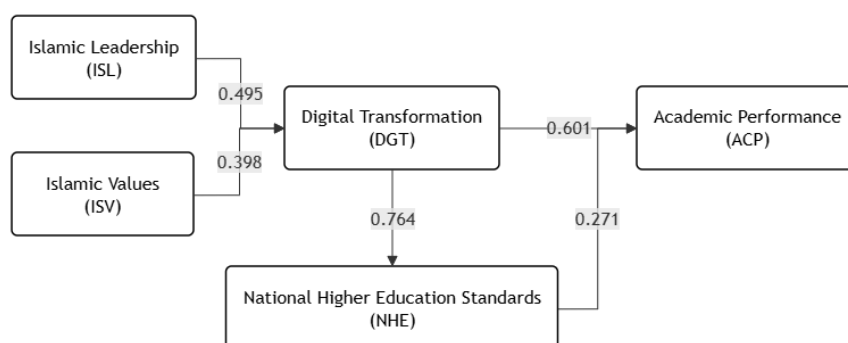


Figure 2. Structural Model Results

4.4. Mediation Analysis

The mediation analysis was conducted using the bootstrapping procedure with 5,000 resamples to examine the indirect relationships among the proposed constructs. The significance of each indirect effect was evaluated using standardized path coefficients (β), t -statistics, p -values, and 95% bias-corrected bootstrap confidence intervals. As presented in [table 9](#), all indirect effects were statistically significant because the corresponding confidence intervals did not include zero and all p -values were below the significance level of 0.05. These findings indicate that Digital Transformation and National Higher Education Standards play important intermediary roles within the proposed structural framework.

Digital Transformation significantly transmitted the effects of Islamic Leadership ($\beta = 0.298, t = 6.842, p < 0.001$) and Islamic Values ($\beta = 0.172, t = 4.931, p < 0.001$) to Academic Performance. Furthermore, National Higher Education Standards significantly mediated the relationship between Digital Transformation and Academic Performance ($\beta = 0.207, t = 2.714, p = 0.007$). The sequential indirect pathways comprising Islamic Leadership $\rightarrow$ Digital Transformation $\rightarrow$ National Higher Education Standards $\rightarrow$ Academic Performance ($\beta = 0.103, t = 2.364, p = 0.018$) and Islamic Values $\rightarrow$ Digital Transformation $\rightarrow$ National Higher Education Standards $\rightarrow$ Academic Performance ($\beta = 0.083, t = 2.112, p = 0.035$) were also statistically significant. Collectively, these results provide empirical evidence that institutional leadership and organizational values influence Academic Performance through successive organizational capability mechanisms involving Digital Transformation and institutional quality assurance.

Table 9. Indirect Effect and Mediation Analysis Results

Indirect Path	β	SE	t-value	p-value	95% Bootstrap CI	Decision
ISL $\rightarrow$ DGT $\rightarrow$ ACP	0.298	0.044	6.842	<0.001	[0.214, 0.386]	Supported
ISV $\rightarrow$ DGT $\rightarrow$ ACP	0.172	0.035	4.931	<0.001	[0.101, 0.249]	Supported
DGT $\rightarrow$ NHE $\rightarrow$ ACP	0.207	0.076	2.714	0.007	[0.066, 0.351]	Supported
ISL $\rightarrow$ DGT $\rightarrow$ NHE $\rightarrow$ ACP	0.103	0.044	2.364	0.018	[0.025, 0.191]	Supported
ISV $\rightarrow$ DGT $\rightarrow$ NHE $\rightarrow$ ACP	0.083	0.039	2.112	0.035	[0.014, 0.164]	Supported

4.5. Importance-Performance Map Analysis

To complement the structural model assessment, an Importance-Performance Map Analysis (IPMA) was conducted using Academic Performance (ACP) as the target construct. Unlike conventional path analysis, IPMA simultaneously evaluates the relative importance of each antecedent construct and its observed performance, thereby identifying priority areas for managerial improvement. As presented in [table 10](#), Digital Transformation (DGT) demonstrated the highest importance score (0.808) with a performance value of 79.34, indicating that improvements in digital transformation are likely to produce the greatest impact on institutional academic performance. National Higher Education Standards (NHE) achieved the highest performance score (83.68) but exhibited comparatively lower importance (0.271), suggesting that institutional quality assurance practices are relatively well established. Islamic Leadership (ISL) and Islamic Values (ISV) showed moderate importance and performance levels, reflecting their roles as upstream organizational enablers of Digital Transformation.

The IPMA results further indicate that managerial priorities should be determined by considering both the importance and performance of each construct. Although National Higher Education Standards achieved the highest performance level, its relatively lower importance suggests that maintaining existing quality assurance practices may be sufficient. In contrast, Digital Transformation combined the highest importance with comparatively lower performance, indicating the greatest potential for improving Academic Performance through additional institutional investment and capability development. Meanwhile, Islamic Leadership and Islamic Values exhibited balanced importance and performance levels, highlighting their complementary role in supporting sustainable digital transformation initiatives. Overall, the IPMA findings reinforce the structural model by identifying Digital Transformation as the primary organizational capability requiring continuous improvement to maximize institutional academic performance.

Table 10. Importance-Performance Map Analysis Results

Construct	Importance	Performance	Priority
Digital Transformation (DGT)	0.808	79.34	High
Islamic Leadership (ISL)	0.400	81.26	Moderate
Islamic Values (ISV)	0.322	80.18	Moderate
National Higher Education Standards (NHE)	0.271	83.68	Maintain

4.6. SWOT Analysis

Following the quantitative analyses, a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis was conducted to provide a strategic interpretation of the validated structural model. The analysis was performed by evaluating internal organizational factors using the Internal Factor Analysis Summary (IFAS) and external environmental factors using the External Factor Analysis Summary (EFAS). The results were subsequently used to determine the institution's strategic position and identify the most appropriate development strategy for supporting sustainable digital transformation.

As presented in [table 11](#), the institution achieved an overall IFAS score of 3.57, consisting of a total strength score of 2.23 and a weakness score of 1.34. The higher strength score indicates that the institution possesses considerable internal capabilities, including strong leadership commitment, supportive organizational governance, and adequate digital infrastructure, which provide a solid foundation for implementing digital transformation initiatives. Although several internal weaknesses remain, particularly in staff digital competencies, artificial intelligence adoption, and cybersecurity readiness, their overall influence is substantially lower than the institution's existing strengths.

Table 11. Internal Factor Analysis Summary (IFAS)

Internal Factors	Weight	Rating	Weighted Score
Strengths			
Strong institutional commitment to digital transformation	0.18	4.00	0.72
Supportive Islamic leadership and governance	0.15	3.80	0.57
Established digital infrastructure	0.13	3.60	0.47
Staff commitment to organizational improvement	0.12	3.90	0.47
Total Strength Score			2.23
Weaknesses			
Uneven digital competencies among staff	0.15	2.20	0.33
Limited AI integration in academic services	0.14	2.10	0.29
Cybersecurity and data governance challenges	0.13	2.00	0.26
Limited financial resources for ICT expansion	0.10	2.30	0.23
Total Weakness Score			1.34
Overall IFAS Score			3.57

The external environmental assessment presented in [table 12](#) produced an overall EFAS score of 3.54, comprising an opportunity score of 2.20 and a threat score of 1.34. These findings indicate that the external environment offers favorable conditions for institutional development, supported by national digital transformation initiatives, advances in artificial intelligence, opportunities for international collaboration, and government support for higher education quality improvement. Nevertheless, institutions must continue to address external challenges such as rapid technological change, increasing competition among universities, cybersecurity risks, and financial uncertainty to sustain long-term organizational competitiveness.

Table 12. External Factor Analysis Summary (EFAS)

External Factors	Weight	Rating	Weighted Score
Opportunities			
National digital transformation initiatives	0.18	4.00	0.72

Expansion of AI-based educational technologies	0.15	3.80	0.57
International academic collaboration	0.12	3.80	0.46
Government support for institutional quality improvement	0.12	3.75	0.45
Total Opportunity Score			2.20
Threats			
Rapid technological change	0.15	2.20	0.33
Increasing competition among universities	0.13	2.20	0.29
Cybersecurity risks	0.12	2.20	0.26
Budget uncertainty	0.10	2.30	0.23
Total Threat Score			1.34
Overall EFAS Score			3.54

The combined IFAS and EFAS scores position the institution in Quadrant I (Growth Strategy), indicating that strong internal capabilities are supported by favorable external opportunities. As summarized in [table 13](#), the Strength-Opportunity (SO) strategy achieved the highest combined score (4.43), suggesting that leveraging institutional strengths to capitalize on external opportunities represents the most appropriate strategic direction. The remaining strategic alternatives were ranked sequentially as Strength-Threat (ST), Weakness-Opportunity (WO), and Weakness-Threat (WT). Overall, the SWOT analysis complements the quantitative findings by demonstrating that the institution possesses both the internal capacity and external support necessary to sustain digital transformation and continuous quality improvement.

Table 13. SWOT Strategic Priority Ranking

Strategy	Combined Score	Priority
Strength-Opportunity (SO)	4.43	1
Strength-Threat (ST)	3.57	2
Weakness-Opportunity (WO)	3.54	3
Weakness-Threat (WT)	2.68	4

4.7. Discussion

The findings identify Digital Transformation as the primary organizational capability driving institutional performance in higher education. The significant positive effects of Digital Transformation on both National Higher Education Standards and Academic Performance, together with its substantial effect sizes, demonstrate that digital capability extends beyond technology adoption to become a strategic mechanism for improving institutional quality. The structural model further indicates that Digital Transformation explains a considerable proportion of the variance in Academic Performance, emphasizing its central role in organizational development. These findings are consistent with previous studies reporting that learning management systems, artificial intelligence, cloud computing, learning analytics, and integrated information systems improve operational efficiency, institutional responsiveness, and educational outcomes [1], [6], [7]. The IPMA results reinforce this conclusion by identifying Digital Transformation as the construct with the highest managerial importance, indicating that investments in digital capability are likely to generate the greatest improvements in institutional performance.

The results also demonstrate that Islamic Leadership and Islamic Values significantly promote Digital Transformation, highlighting the importance of organizational factors in enabling successful digital initiatives. Leadership characterized by justice, trustworthiness, consultation, and service creates an environment that encourages innovation, stakeholder participation, and organizational commitment, thereby reducing resistance to technological change [12], [13]. Likewise, Islamic Values strengthen institutional readiness by fostering integrity, collaboration, responsibility, and continuous learning, allowing digital transformation to be perceived as an extension of institutional values rather than as organizational disruption [14], [15]. These findings support previous studies showing that value-based leadership and ethical organizational cultures facilitate technology adoption, digital governance, and organizational innovation [6], [7], [16], [17], [18]. Collectively, the results suggest that successful digital transformation depends not only on technological resources but also on leadership quality and organizational values that sustain institutional change.

Another important contribution of this study is the identification of National Higher Education Standards as an institutional mechanism linking Digital Transformation to Academic Performance. The significant mediation effect indicates that digital capabilities generate greater organizational benefits when embedded within formal quality assurance processes. Digital technologies facilitate institutional monitoring, accreditation management, evidence-based evaluation, and continuous quality improvement, enabling universities to institutionalize digital capabilities through standardized governance practices. These findings are consistent with previous research demonstrating that integrated information systems improve institutional quality assurance and educational performance by supporting systematic monitoring and data-driven decision making [19], [20], [21], [22]. Rather than operating independently, Digital Transformation and National Higher Education Standards function as complementary organizational capabilities that jointly strengthen institutional effectiveness and long-term academic performance.

The consistency of the findings across PLS-SEM, Importance-Performance Map Analysis (IPMA), and SWOT analysis further strengthens the robustness of the proposed framework. While PLS-SEM statistically validates the causal relationships among the constructs, IPMA identifies Digital Transformation as the highest managerial priority, and SWOT positions the institution within the Growth Strategy (Quadrant I), indicating that strong internal capabilities are supported by favorable external opportunities. The convergence of these analytical approaches demonstrates that the proposed framework not only explains organizational performance empirically but also provides strategic guidance for institutional decision making. These complementary findings suggest that universities seeking sustainable performance improvement should integrate digital transformation initiatives with organizational capabilities and quality assurance systems rather than implementing technology in isolation.

This study contributes theoretically by integrating Islamic Leadership, Islamic Values, Digital Transformation, National Higher Education Standards, and Academic Performance into a unified organizational capability framework. Unlike previous studies that generally examine these constructs independently [6], [7], [12], [14], [19], the proposed framework explains how value-based leadership and organizational values are translated into improved academic performance through digital transformation and institutional quality assurance. From a practical perspective, the findings indicate that higher education institutions should prioritize investments in integrated digital infrastructure, artificial intelligence applications, faculty digital competencies, cybersecurity, and data-driven quality assurance while simultaneously strengthening ethical leadership and organizational values. Aligning these technological and organizational capabilities enables universities to sustain digital transformation and achieve continuous improvements in institutional quality and academic performance.

5. Conclusion

This study developed and empirically validated an integrated structural framework explaining how Islamic Leadership, Islamic Values, Digital Transformation, and National Higher Education Standards collectively influence Academic Performance in higher education institutions. The findings demonstrate that all proposed hypotheses are supported, confirming that Islamic Leadership and Islamic Values significantly promote Digital Transformation, which subsequently improves both the implementation of National Higher Education Standards and Academic Performance. Among all examined relationships, Digital Transformation emerged as the strongest predictor of institutional performance, while National Higher Education Standards functioned as an important organizational mechanism through which digital capabilities were translated into sustainable improvements in educational quality. The complementary results obtained from PLS-SEM, Importance-Performance Map Analysis (IPMA), and SWOT analysis consistently indicate that digital capability constitutes the primary organizational resource for strengthening institutional competitiveness and academic excellence.

This study contributes to the literature by integrating value-based leadership, organizational values, digital transformation, institutional quality assurance, and academic performance into a unified organizational capability framework. Unlike previous studies that examine these constructs independently, the proposed framework explains how ethical leadership and institutional values indirectly improve academic performance through the development of digital capabilities and the implementation of quality assurance systems. From a practical perspective, the findings provide evidence-based guidance for higher education leaders by highlighting the importance of aligning digital transformation initiatives with ethical governance, organizational participation, and continuous quality assurance.

Institutional investment should therefore extend beyond digital infrastructure to include digital competency development, integrated information systems, artificial intelligence applications, cybersecurity, and data-driven institutional governance.

Despite these contributions, this study has several limitations. The empirical analysis was conducted within a single higher education institution, which may limit the generalizability of the findings to institutions operating under different organizational, cultural, or regulatory environments. Furthermore, the study relied primarily on cross-sectional perceptual data, preventing the examination of longitudinal changes in digital transformation capability and institutional performance. Future research is encouraged to validate the proposed framework across multiple universities and diverse national contexts, employ longitudinal research designs to capture organizational change over time, and incorporate objective institutional performance indicators together with emerging digital technologies such as artificial intelligence, big data analytics, and digital governance platforms. Such investigations would further strengthen the understanding of how digital transformation contributes to sustainable academic performance in higher education.

6. Declarations

6.1. Author Contributions

Conceptualization: A.S., M.S.H., and A.; Methodology: A.S.; Software: Y.A.; Validation: M.T., M.S.H., and A.S.; Formal Analysis: A.S., M.T., and A.; Investigation: A.; Resources: Y.; Data Curation: Y.; Writing Original Draft Preparation: A.S., M.S.H., and A.; Writing Review and Editing: M.S.H., A.S., and A.; Visualization: Y.; All authors have read and agreed to the published version of the manuscript.

6.2. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

6.3. Funding

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6.4. Institutional Review Board Statement

Not applicable.

6.5. Informed Consent Statement

Not applicable.

6.6. Declaration of Competing Interest

Not applicable

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