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Organizational Change and Innovation in West Kalimantan HEIs

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Abstract

In the context of digital transformation within the bureaucratic system, namely in West Kalimantan, the effect of organizational change on innovative behavior in Indonesian Higher Education Institutions (HEIs) is investigated. A number of mediating elements, such as change management, employee competency, and digital culture, to examine the intricate processes behind corporate transformation. Data were gathered quantitatively through disproportional random sampling from 300 staff members at six public HEIs in West Kalimantan. The examination of both direct and indirect effects among variables was conducted utilizing partial least squares structural equation modeling, commonly referred to as PLS-SEM. With a Variance Accounted For (VAF) of 95.4%, the findings show that organizational change has a fully mediated effect on innovative behavior, with employee competency, digital culture, and change management acting as the primary mediators. Digital culture and change management are the next most important mediators, after employee competency. In order to achieve innovation outcomes, these studies emphasize the necessity of integrating cultural transformation, human resource capacity development, and an organized change management framework. By creating a thorough theoretical framework, this result fills the knowledge gap about the function of different mediators in the setting of bureaucratic higher education, this study contributes to the existing body of knowledge regarding organizational change. Practical implications suggest that to ensure the success of digital transformation and foster innovative behavior in public institutions, prioritizing competency development and cultural adaptation is essential in legislative reforms and strategic efforts.

Keywords: Change Management, Digital Culture, Employee Competence, Innovative Behavior, Organizational Change.

Introduction

The rapid advancement of digital technology has transformed organizational management techniques, particularly within public organizations. Digital transformation requires organizations to adapt their structures, processes, and human resource capabilities in order to remain effective and competitive (1). However, numerous studies indicate that 70–88% of digital transformation programs fail to reach their stated goals, indicating that this change encounters substantial obstacles (2, 3). For universities, this transformation is crucial because they act as policy implementers and agents of societal change. In Indonesia, bureaucratic reform and digitalization efforts have presented both significant challenges and opportunities for public universities to improve service delivery and innovation capabilities, as well as reduce costs (4, 5) .

Technological developments present opportunities for behavioral change within organizations (6). Management must ensure that technology adoption and employees' innovative behavior aligned with organizational goals (7). Digital tools can transform performance management by providing real-time feedback and encouraging innovation (8). As part of government reforms, such as structural simplification and the functionalization of administrative posts, organizational change—characterized by a deliberate shift from an existing condition to a targeted future condition—is becoming more and more common in public universities (9). In Indonesia, the National Civil Service Agency (BKN) reported that the bureaucratic work style remains hierarchical, authority-based, and procedurally rigid, thereby limiting employee innovation and creativity.

This transformation extands beyond structural change to encompass cultural shifts, competency enhancement, and strategic management approaches. Despite the fact that numerous research show that organizational transformation

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and innovation are positively correlated (10, 11), others reveal negative impacts such as burnout and resistance to innovation (12, 13). Research reveals that 72% of transformation failures stem from insufficient management support (33%) and employee resistance (39%), underscoring the pivotal importance of human dynamics in the success of organizational change (14). This inconsistency occurs globally, including in developing countries such as Indonesia, where digital revolution in higher education encounters distinct bureaucratic obstacles (13). Researchers (15) highlighted the deficiency of skilled human resources or competence in digital transformation as the primary obstacle to effective digitalization initiatives in Indonesia.

Digital culture, employee competencies, and change management function as key intermediaries explaining the correlation between organizational change and innovative behavior (16, 17). Digital culture reflects the values, practices, and expectations related to digital interaction and collaboration (17), which require changes in attitudes and norms to adapt to Industry 4.0 (18). Recent studies confirm that a supportive organizational culture plays a significant intermediary between digital transformation and employee innovative behavior (19, 20). Employee competencies, knowledge, skills, and attributes for superior performance are fundamental to facing transformation (21). Based on KPMG International (22), 54% of employees feel unprepared for changes brought about by new technologies, emphasizing the importance of competency development. Change management offers a systematic methodology for executing organizational transformations, considering both technical and human factors (23, 24).

Globally, higher education institutions face similar challenges in balancing bureaucratic compliance with innovation (23). Public universities in Indonesia exemplify this paradox, operating under rigid structures yet requiring flexibility to innovate (25). This study addresses critical gaps in the existing literature. There is a significant absence of a cohesive model that integrates several mediators to elucidate the connection between organizational characteristics and innovation outcomes. Secondly, research is constrained about public higher education institutions in poor nations, where unique institutional and cultural dynamics may influence these relationships differently than in developed nations. Third, there is insufficient understanding of how digital culture functions as a mediator within bureaucratic systems, particularly given the increasing importance of digital transformation in contemporary organizations. Fourth, the mechanisms through which multiple mediators collectively influence innovation remain unclear. As some researchers (26) emphasize, the underlying mechanisms of the correlation between organizational change and employee inventive performance require further exploration.

Predicated on these gaps, this investigation aims to examine the impacts of organizational change on innovative behavior as mediated by digital culture, employee competencies, and change management in public universities in West Kalimantan, Indonesia. This investigation seeks to tackle three main inquiries. The initial inquiry investigates the direct impact of organizational change on digital culture., employee competencies, change management, and innovative behavior. The second question investigates how digital culture, employee competencies, and change management influence innovative behavior. The third question explores the intermediary function of digital culture, employee competencies, and change management in explaining the association between organizational change and innovative behavior.

This work aims to offer both theoretical and practical contributions. Theoretically, this research contributes by: (a) integrating Organizational Behavior Theory with Bureaucracy and Adhocracy perspectives into a comprehensive framework; (b) developing a multi-mediator model that examines the simultaneous roles of digital culture, employee competency, and change management; and (c) extending the organizational change literature to the context of public higher education in developing countries, such research remains limited. Practically, the results of this investigation are anticipated to: (a) furnish evidence-based direction for higher education leaders in designing effective transformation strategies; (b) provide recommendations for higher education policymakers in formulating bureaucratic reform policies that support innovation; and (c) identify priority interventions whether related to digital culture, employee

competency, or change management that are most effective in encouraging employee innovative behavior. The hypothesis development is based on the following theoretical literature.

Organizational transformation denotes the process of shifting from an existing state to a preferred future state, encompassing alterations in structure, processes, and culture to enhance organizational efficacy (9). In public higher education, organizational change often stems from regulatory reforms, such as structural simplification and digital bureaucracy policies in Indonesia. Although change initiatives aim to improve efficiency and service quality, they often generate uncertainty and resistance among employees, necessitating comprehensive strategies for successful implementation (27). Previous research highlights the mixed results of organizational change on performance, with some studies reporting a positive impact on innovation (10), while others identify negative consequences such as reduced motivation or burnout (12, 13).

Innovative conduct encompasses the creation, advocacy, and execution of novel concepts to enhance an organization's operations, goods, or services (28). Innovative behavior is a critical component for maintaining competitive advantage in a rapidly changing environment (6). Factors influencing innovative behavior include leadership support, organizational culture, and individual competencies (10, 29–32). In higher education, promoting innovation is essential for enhancing teaching, research, and administrative systems, particularly amid the challenges of digital transformation and globalization.

Digital culture includes the organizational principles, norms, and practices that facilitate the utilization of digital technologies for communication, collaboration, and decision-making. (17). Digital culture involves openness to change, flexibility, and a willingness to adopt technological solutions in daily operations as a foundation for adapting to new organizational realities in the digital age (33). Building a strong digital culture enables institutions to effectively integrate technology, reduce barriers to innovation, and improve overall performance (18). At public universities, building a digital culture requires not only technological infrastructure but also behavioral changes among staff and faculty.

Employee competency denotes the amalgamation of knowledge, abilities, and traits essential for executing duties proficiently and advancing organizational objectives (21). Competency is especially important during periods of organizational change, when employees must adapt to new systems and processes (33). Competency development ensures that employees can leverage technology, collaborate across digital platforms, and engage in innovative practices. Research indicates that elevated competency levels are positively associated with preparedness for change and the embrace of innovation (34, 35).

Change management is a structured approach aimed at assisting individuals, teams, and organizations in transitioning from their current state to a desired future state (36). This approach emphasizes communication, participation, and leadership commitment to overcoming barriers and ensuring the successful implementation of change initiatives (37). Effective change management mitigates risks associated with organizational transitions and aligns employee behavior with strategic objectives (24). In higher education, managing change requires a balance between bureaucratic compliance and flexibility for innovation.

Existing literature suggests that organizational change can influence innovative behavior through several mechanisms. However, findings remain inconsistent. Some studies confirm a direct positive effect (10), while others report no significant relationship or even negative results due to increased stress or resource constraints (12). These inconsistencies highlight the need to explore mediating variables that explain the change-innovation relationship. Digital culture, employee competency, and change management are proposed as key mediators in these studies. A robust digital culture fosters innovation by establishing an environment conducive to experimentation and cooperation. Employee competency ensures that staff have the necessary skills to adapt and innovate, while a structured change management process reduces uncertainty and increases commitment to change.

Notwithstanding the comprehensive studies on organizational transformation and innovation, a research deficit persists. Limited research has employed a multidisciplinary approach to investigate the collective impact of digital culture,

competency, and change management in the context of public higher education. Furthermore, most previous research has focused on private organizations or Western institutions, limiting generalizability to bureaucratic systems in developing countries. This investigation highlights these deficiencies by presenting a thorough framework that analyzes the direct and indirect impacts of organizational change on innovative behavior through many mediators in Indonesian public universities. Through multiple mediators in Indonesian public institutions, thereby addressing existing gaps. Based on the existing literature, this study formulates ten hypotheses organized into three categories. Regarding the direct impact of organizational change, the first hypothesis (H1) asserts that organizational reform positively influences digital culture according to. The second hypothesis (H2) suggests that organizational change has a positive effect on employee competence. The third hypothesis (H3) posits that organizational change has a positive effect on change management. The fourth hypothesis (H4) proposes that organizational change has a positive effect on innovative behavior. Concerning the direct impact of mediating variables on innovative behavior, the fifth hypothesis (H5) suggests that digital culture has a positive impact on innovative behavior. The sixth hypothesis (H6) posits that employee competence positively influences innovative behavior. The seventh hypothesis (H7) posits that change management exerts a beneficial influence on innovative conduct. With respect to mediation effects, the eighth hypothesis (H8) proposes that digital culture mediates the correlation between organizational transformation and innovative conduct. The ninth hypothesis (H9) suggests that employee competence mediates the correlation between organizational transformation and innovative behavior. Finally, the tenth hypothesis (H10) posits that change management facilitates the connection between organizational change and innovative behavior.

A conceptual framework was developed to guide this study, based on the literature review and the formulated hypothesis. Figure 1 illustrates organizational evolution. acts as an independent variable, digital culture, employee competency, and change management act as mediators, while innovative behavior acts as a dependent variable.

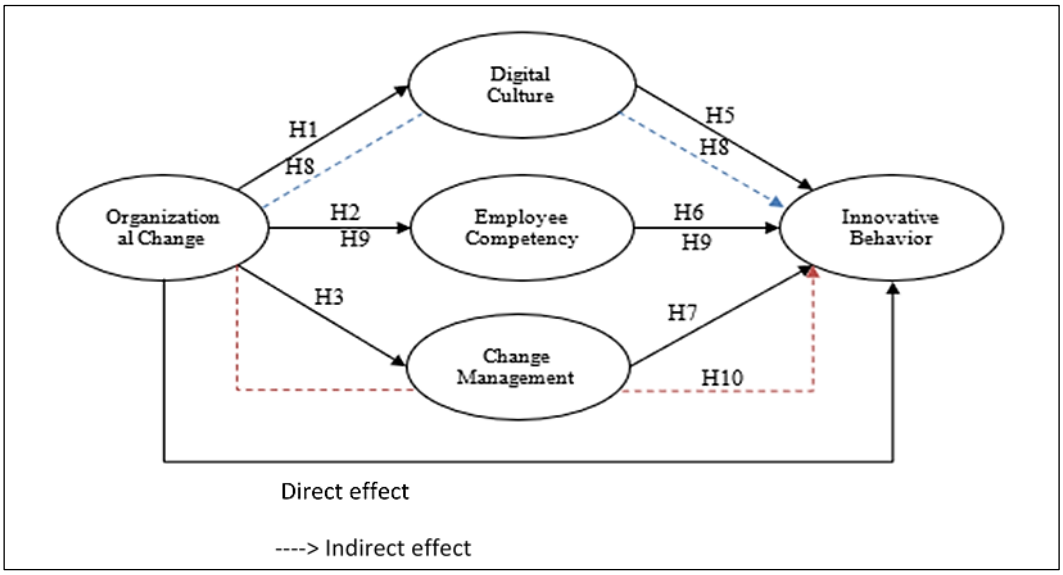

Figure 1: Research Framework

Methodology

Research Design

This study utilized a quantitative explanatory design utilizing a cross-sectional survey method to investigate the interrelations among organizational change, digital culture, employee skills, change management, and innovative behavior. The cross-sectional design was chosen for its appropriateness, for testing theoretical models and proposed hypotheses at a specific moment (38). Data collection was conducted from March to May 2025.

Population and Sample

The study cohort comprised 3,784 employees from six state universities in West Kalimantan, Indonesia, under the supervision of the Ministry of Education, Culture, Research, and Technology, as well as the Ministry of Religious Affairs. The six institutions included: Tanjungpura University, Pontianak State Polytechnic, Pontianak State Islamic Institute (IAIN), Sultan Syarif Kasim State Islamic University (UIN) Singkawang, Pontianak Ministry of Health Polytechnic of Health, and Sambas Regency State Community Academy.

The sample size was established for PLS-SEM analysis (39). Employing a disproportionate random sampling technique, a total sample of 300 respondents was selected to ensure statistical power and institutional representation. Respondents included academic staff (lecturers) and administrative staff. Data were gathered using a standardized questionnaire disseminated online through Google Forms.. This instrument was adapted from a scale validated in previous research, utilizing a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree).

Inclusion and Exclusion Criteria

The criteria for including respondents were as follows: 1. permanent employees (civil servants or PPPK); 2. actively working at the institution during the data collection period; and 3. involved in activities related to digital transformation or bureaucratic reform at their respective institutions. Exclusion criteria included: 1. employees on extended leave (maternity leave, unpaid leave); 2. employees with less than one year of service; and 3. employees who are unwilling to participate in the study.

Research Instrument

Table 1 presents the operationalization of the variables and the sources for instrument adaptation as follows:

Table 1: Variable Operational Definition

Variable	Theoretical Definition	Indicator
Organizational Change	The transition of an organization from its existing condition to a targeted future condition aimed at enhancing its effectiveness (9)	1) Structural Change; 2) Technological Change; 3) People/Employees; 4) Conflict ((9, 40, 41)
Digital Culture	Digital culture is defined as a collection of attitudes, practices, and expectations that arise about individuals' behaviors and interactions within modern networked society (17)	1) Global Connectivity; 2) Interactivity and Participation; 3) Media Convergence; 4) Shifting Information Values; 5) The Influence of Technology on Communication and Cognition Models (16)
Employee Competence	Competence is a person's general knowledge, motives, traits, social roles, or skills related to superior performance in a job (42)	1)Motives; 2) Traits; 3) Self-concepts; 4) Knowledges; 5) Skills; 6) Decision Making (21, 43)
Change Management	A systematic methodology for executing and regulating organizational transformations, involving strategies, processes, and activities designed to adjust to new objectives, technologies, or procedures (37)	1) Organizational Readiness for Change; 2) Resistance Management; 3) Management Support; 4) Adaptability (44)
Innovative Behavior	The intentional and multidimensional actions of employees who actively generate, promote, and implement new ideas within their work role, group, or organization, aimed at enhancing performance at various levels (45)	1) Idea Exploration; 2) Idea Generation; 3) Idea Championing; 4) Idea Implementation (45)

Data Analysis Procedure

The analysis of data was performed utilizing PLS-SEM through SmartPLS version 4.0, following the procedures proposed by some researchers (39, 46). The examination was conducted in three phases. The measurement model was assessed through several criteria: indicator reliability (outer loadings > 0.70), internal consistency reliability (Cronbach's Alpha and Composite Reliability > 0.70), convergent validity (Average Variance Extracted [AVE] > 0.50), and discriminant validity evaluated using the Fornell–Larcker criterion and the Heterotrait–Monotrait (HTMT) ratio (< 0.90). The structural model was assessed through the evaluation of collinearity (VIF < 5), path coefficients via a bootstrapping procedure with 5,000 subsamples, coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2 > 0). Mediation analysis was conducted utilizing the Preacher and Hayes method, incorporating bias-corrected bootstrap confidence intervals. The classification of mediation was established according to the Variance Accounted For (VAF) metric: Values of VAF below 20% indicate the absence of mediation, values ranging from 20% to 80% suggest partial mediation, and values above 80% reflect complete mediation.

Results

The PLS-SEM analysis was performed in three primary stages: assessment of the measurement model, analysis of model fit, and examination of the structural model before hypothesis testing. This systematic method guarantees the model's validity, reliability, and explanatory capacity (32, 33).

Measurement Model Evaluation

The first step in PLS-SEM analysis is to evaluate the measurement model to confirm reliability and construct validity prior to examining structural relationships. This assessment encompasses the reliability of indicators, internal consistency, convergent validity, and discriminant validity. Table 2 displays the outer loading values for all indicators associated with each construct. All indicators exhibited loading values exceeding the suggested threshold of 0.70 as established by Hair (39), with values ranging from 0.732 (BD2) to 0.947 (MP3). The highest loading value was found for the Change Management construct, indicating that the measurement items for this construct have very strong coherence in representing its latent variable.

Table 2: Indicator Loadings for the Reflective Construct

Variable	Indicator	Outer loading	Scale
Organizational Change	PO1	0.859	"Reflective"
	PO2	0.877	"Reflective"
	PO3	0.906	"Reflective"
	PO4	0.758	"Reflective"
Digital Culture	BD1	0.755	"Reflective"
	BD2	0.732	"Reflective"
	BD3	0.856	"Reflective"
	BD4	0.875	"Reflective"
	BD5	0.855	"Reflective"
Employee Competence	KP1	0.863	"Reflective"
	KP2	0.779	"Reflective"
	KP3	0.868	"Reflective"
	KP4	0.896	"Reflective"
	KP5	0.878	"Reflective"
	KP6	0.908	"Reflective"
Change Management	MP1	0.924	"Reflective"
	MP2	0.936	"Reflective"
	MP3	0.947	"Reflective"
	MP4	0.877	"Reflective"
Innovative Behavior	PI1	0.852	"Reflective"
	PI2	0.918	"Reflective"
	PI3	0.921	"Reflective"
	P14	0.929	"Reflective"

Table 3: Reliability and Validity Constructs

Variable	Composite Reliability	Cronbach's Alpha	Average Variance Extraction (AVE)	Square Root of AVE	Information
Organizational Change (OC)	0.913	0.872	0.726	0.852	Very Reliable
Digital Culture (DC)	0.909	0.873	0.667	0.817	Very Reliable
Employee Competence (EC)	0.947	0.933	0.750	0.866	Very Reliable
Change Management (CM)	0.957	0.940	0.849	0.922	Very Reliable
Innovative Behavior (IB)	0.948	0.927	0.820	0.906	Very Reliable

Upon confirming the dependability of the indicators via outer loading values, the subsequent step is to assess reliability and validity at the construct level. Table 3 displays the outcomes of the Composite Reliability (CR), Cronbach's Alpha, and Average Variance Extracted (AVE) assessments for all variables in the study.

The measurement model evaluation results, detailed in Table 3, indicate that all constructs satisfy rigorous psychometric standards. Composite reliability values varied between 0.909 and 0.957, significantly surpassing the recommended threshold of 0.70, thereby demonstrating excellent internal consistency. AVE values ranged from 0.667 to 0.849, demonstrating that over 50% of the indicator variance is accounted for by the latent construct, thereby satisfying the criteria for convergent validity. Specifically, the Change Management construct demonstrated the highest measurement quality (CR = 0.957; AVE = 0.849), indicating that the change management measurement items were highly coherent in measuring the intended construct. The findings establish a robust basis for advancing with the structural model analysis, ensuring that the results accurately represent genuine theoretical relationships rather than measurement artifacts.

An evaluation of discriminant validity was conducted to ensure that each construct was empirically separate from the others. Table 4 displays the correlation matrix among constructs, with the square roots of the AVE values located on the diagonal. The Fornell-Larcker criterion stipulates that the square root of the Average Variance Extracted (AVE) for each construct must exceed the correlation of that construct with other constructs. The study indicates that all constructs satisfy this condition; for instance, the square root of the AVE for Organizational Change (0.852) exceeds its correlations with Digital Culture (0.721), Employee Competence (0.681), Change Management (0.693), and Innovative Behavior (0.665). A comparable trend is noted across all other conceptions, indicating that each variable assesses conceptually distinct events. The findings indicate that the constructs exhibit both reliability and validity for further testing of the structural model.

Table 4: Correlations between Construct Scores (AVE Root in Diagonal)

Construct	OC AVE=0.852	DC AVE=0.667	EC AVE=0.750	CM AVE=0.849	IB AVE=0.820
Organizational Change	**0.852**	0.721	0.681	0.693	0.665
Digital Culture	0.721	**0.817**	0.798	0.541	0.716
Employee Competence	0.681	0.798	**0.866**	0.520	0.713
Change Management	0.693	0.541	0.520	**0.922**	0.624
Innovative Behavior	0.665	0.716	0.713	0.624	**0.906**

Table 5: Model Fit and Model Quality Indicators

Indicator	Value	Criteria	Interpretation
"Average Path Coefficient (APC)"	0.439***	Value p < 0.05	Meets criteria
"Average R-squared (ARS)"	0.546***	Value p < 0.05	Meets criteria
"Adjusted Average R-squared (AARS)"	0.543***	Value p < 0.05	Meets criteria
"Block Mean VIF (AVIF)"	2.709	≤ 5, ideally ≤ 3.3	Ideal
"Full Collinearity Mean VIF (AFVIF)"	2.903	≤ 5, ideally ≤ 3.3	Ideal
"Tenenhaus GoF"	0.645	Small ≥ 0.1, Medium ≥ 0.25, Large ≥ 0.36	Large (very good)
"Simpson's Paradox Ratio (SPR)"	1.000	≥ 0.7, ideally = 1	Ideal
"R-squared Contribution Ratio (RSCR)"	1.000	≥ 0.9, ideally = 1	Ideal
"Statistical Suppression Ratio (SSR)"	1.000	≥ 0.7	Ideal
"Nonlinear Bivariate Causality Direction Ratio (NLBCDR)"	1.000	≥ 0.7	Ideal

***p < 0,001

Model Fit Assessment

Before testing the hypotheses, the overall fit and quality of the model were evaluated to confirm its appropriateness as a foundation for inference. Table 5 presents ten recommended model fit indicators for PLS-SEM analysis. The Average Path Coefficient (APC = 0.439, p < 0.001) indicates a strong and significant average relationship among constructs in the model.

The Average R-squared (ARS = 0.546) is categorized as considerable for social science research, signifying that the model accounts for over half of the variance in the endogenous variables. Multicollinearity indicators (AVIF = 2.709; AFVIF = 2.903) are within the ideal range (< 3.3), ensuring the absence of collinearity issues that could distort parameter estimates. The Tenenhaus Goodness of Fit (GoF) value of 0.645 falls within the substantial category (> 0.36), confirming the strong global validity of the model. Furthermore, four additional quality indicators—Simpson's Paradox Ratio (SPR), R-squared Contribution Ratio (RSCR), Statistical Suppression Ratio (SSR), and Nonlinear Bivariate Causality Direction Ratio (NLBCDR)—each reached the ideal value of 1.000, indicating that the model is free from bias and suppression problems.

Structural Model Evaluation

The structural model underwent evaluation to assess its explanatory power and predictive relevance. Figure 2 presents a path diagram displaying standardized coefficients and R^2 values for the endogenous variables. Organizational Change acts as the exogenous construct, influencing three mediators—Digital Culture, Employee Competence, and Change Management—and ultimately, Innovative Behavior as the dependent construct.

This model demonstrates strong explanatory capacity. R^2 values ranged from 0.485 to 0.527 for the mediator variables, while Innovative Behavior showed an R^2 of 0.674, showing that 67.4% of the variance was accounted for by the model. The adjusted R^2 values closely matched the initial R^2, confirming the stability of the model. Predictive relevance, evaluated through the Stone–Geisser Q^2 index, exceeded 0.35 for all endogenous constructs, which fall into the high predictive relevance category.

The R^2 and Q^2 values presented in Table 6 offer quantitative insights into the model's ability to explain and predict outcomes. Innovative Behavior, the primary dependent variable, demonstrated an R^2 of 0.674, suggesting that 67.4% of the variability in employee innovative behavior is explained by the combination of organizational change and the three mediators. According to the classification (47), this value falls into the large effect category, indicating that this research model has substantial explanatory power. The Q^2 values, exceeding 0.35 for all endogenous constructs, indicate strong predictive relevance. This suggests that the model effectively explains the existing data and demonstrates robust predictive capability for external samples. This finding strengthens the argument that a theoretical framework integrating digital culture, employee competency, and change management as a valid model for understanding innovation mechanisms in public universities.

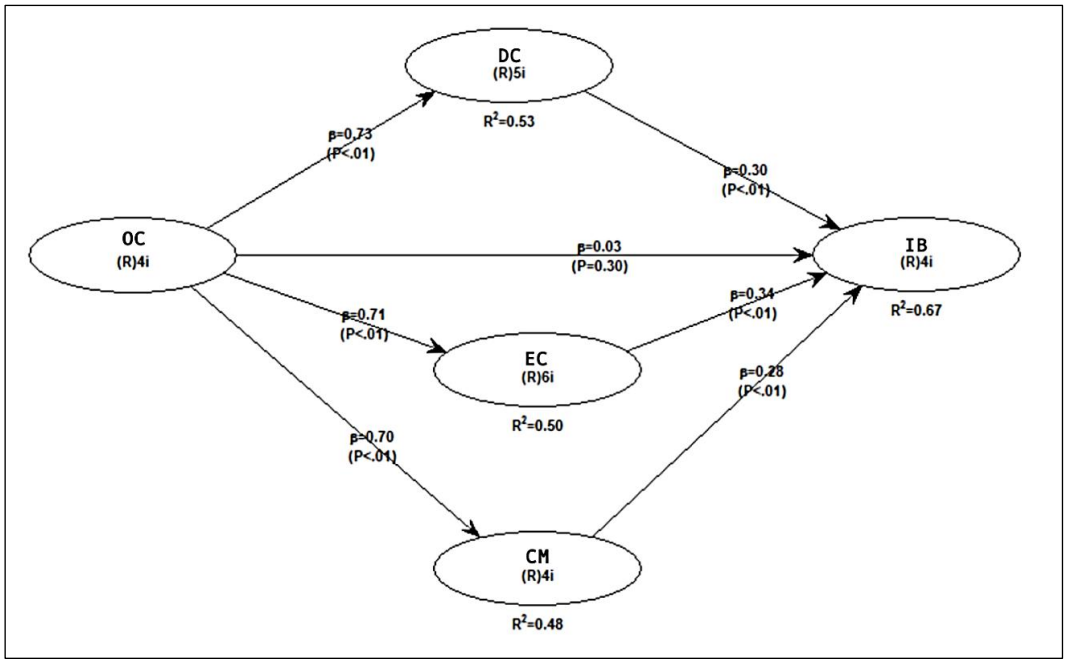

Figure 2: Hypothesis Model and Results

Table 6: R-squared and Q-squared Coefficient Models

Endogenous Variables	R-squared	Adjusted R-squared	Interpretation of R^2	Q-squared	Interpretation of Q^2
Digital Culture (DC)	0.527	0.526	Moderate-Substantial	0.527	Large
Employee Competence (EC)	0.498	0.496	Moderate-Substantial	0.496	Large
Change Management (CM)	0.485	0.483	Moderate-Substantial	0.485	Large
Innovative Behavior (IB)	0.674	0.669	Large	0.668	Large

Hypothesis Testing

Hypothesis testing was performed via a bootstrapping method to evaluate the significance of direct and indirect pathways. The results of the direct effects are presented in Table 6. The first hypothesis (H1), which states that there is a direct effect of Organizational Change on Innovative Behavior, is not supported (β = 0.031, p = 0.295), indicating that organizational change alone does not directly increase innovative behavior. However, Organizational Change strongly and significantly influences the three mediators: Digital Culture (β = 0.726, p < 0.001), Employee Competence (β = 0.705, p < 0.001), and Change Management (β = 0.696, p < 0.001). Furthermore, Digital Culture (β = 0.296, p < 0.001), Employee Competence (β = 0.344, p < 0.001), and Change Management (β = 0.275, p < 0.001) each have a significant positive effect on Innovative Behavior.

The outcomes of the direct hypothesis testing presented in Table 7 indicate theoretically meaningful results. The rejection of H1 (β = 0.031, p = 0.295) indicates that organizational change does not directly drive innovative behavior—a finding that initially seems counterintuitive, but instead confirms the complexity of the association between structural change and innovation. The very small effect size (f^2) (0.021) reinforces the conclusion that this direct path is practically meaningless. In contrast, organizational change exhibits a very strong influence on all three mediators with large effect sizes ($f^2 > 0.35$): Digital Culture (β = 0.726, f^2 = 0.527), Employee Competence (β = 0.705, f^2 = 0.498), and Change Management (β = 0.696, f^2 = 0.485). This pattern indicates that organizational change operates as a necessary but not sufficient condition—necessary to activate the mediators, but not sufficient to directly generate innovation. These findings align with the first and second research questions and provide an empirical answer that the process by which organizational change affects innovation is indirect.

Table 7: Outcomes of Direct Hypothesis Evaluation

Hypothesis	Statement	Path Coefficient	P-value	Effect Size (f^2)	Decision
H1	Organizational Change Positively Influences Innovative Behavior.	0.031	0.295	0.021	Rejected
H2	Digital Culture Positively Affects Innovative Behavior	0.296	<0.001	0.218	Accepted
H3	Employee Competence Positively Affects Innovative Behavior	0.344	<0.001	0.257	Accepted
H4	Change Management Positively Affects Innovative Behavior	0.275	<0.001	0.178	Accepted
H5	Organizational Change Positively Affects Digital Culture	0.726	<0.001	0.527	Accepted
H6	Organizational Change Positively Affects Employee Competence	0.705	<0.001	0.498	Accepted
H7	Organizational Change Positively Affects Change Management	0.696	<0.001	0.485	Accepted

Table 8: Outcomes of Indirect Hypothesis Evaluation

Hypothesis	Statement	Indirect Coefficient	P-value	Total Effect	RDA Value (%)	Types of Mediation
H8	Organizational Change Positively Impacts Innovative Behavior Through Digital Culture	0.215	<0.001	0.680***	31.6%	Full Mediation
H9	Organizational Change Positively Impacts Innovative Behavior Through Employee Competence	0.243	<0.001	0.680***	35.7%	Full Mediation
H10	Organizational Change Positively Impacts Innovative Behavior Through Change Management	0.191	<0.001	0.680***	28.1%	Full Mediation
Total Indirect Effects		0.649	<0.001	0.680***	95.4%	Full Mediation

Mediation Analysis

The analysis of indirect effects, presented in Table 7, demonstrates the complete mediation of the relationship between Organizational Change and Innovative Behavior via the three mediators. The Total Variance Accounted for (VAF) was 95.4%, indicating that almost all of the impact of Organizational Change on Innovative Behavior occurs through Digital Culture, Employee Competence, and Change Management. Among the three, Employee Competence provided the largest mediation contribution (35.7%), followed by Digital Culture (31.6%) and Change Management (28.1%). The mediation analysis in Table 8 answers the third research question regarding the mediating role of intervening variables. The total VAF value of 95.4% indicates complete mediation, signifying that nearly the whole impact of organizational change on innovative behavior is conveyed through the three mediators. The hierarchy of mediator contributions—Employee Competence (35.7%) > Digital Culture (31.6%) > Change Management (28.1%)—provides important implications for intervention priorities. The dominance of employee competency as the strongest mediator indicates that human resource capability is a major bottleneck in the transformation process: without adequate competency enhancement, structural change will not translate into innovative behavior. This discovery aligns with Human Capital Theory, which underscores the pivotal importance of individual knowledge and skills in creating organizational value. This study's conclusions affirm that organizational change functions through a cascade mechanism that activates cultural transformation, enhances competency, and initiates change management methods, collectively fostering employee innovative behavior.

Discussion

Organizational transformation at a public university in West Kalimantan demonstrates that structural change through bureaucratic reform significantly fosters the formation of a digital culture, enhances competency, and fosters change management capacity. These findings emphasize

that organizational design, a supportive work environment, and integrated digital systems accelerate adaptation to digital technology. As key operational actors, educational staff become agents of change, strengthening the digital ecosystem and creating a multiplier effect on service improvement, process effectiveness, and the development of a professional digital identity.

Organizational change also proves to be a catalyst for enhancing employee competency and organically developing change management capabilities. Learning occurs not only through formal training but also through direct experience in facing the pressures of change, which stimulates the cultivation of hard and soft skills, resilience, and learning agility. Employee competency develops into a collective organizational asset and serves as a powerful mediator, transforming bureaucratic pressure into innovative energy. Furthermore, change management can strengthen organizational readiness, foster dialogic communication, empower employees, and institutionalize best practices, strengthening long-term adaptive capacity.

While organizational change does not directly influence innovative behavior, its overall effect is significant through the interplay of digital culture, employee competency, and change management. This reveals the paradox that innovation does not emerge from structural change alone, but rather through complex and integrated transmission mechanisms. Each institution observed demonstrated a consistent pattern that bureaucratic reform creates dynamic stability, horizontal coordination, a continuous learning ecosystem, and structural-behavioral synergy that generates sustained innovative behavior. These findings confirm that holistic, systemic, and human-centered organizational transformation is key to the higher education sector's competitive advantage.

The primary discovery reveals that there is no direct impact of organizational change on innovative behavior (H1 rejected). This finding contrasts with multiple earlier studies that indicated a positive direct relationship (10, 11), but aligns with research identifying the complexity of the relationship (12, 13). This difference can be explained by the research context: studies that found a direct effect were generally conducted in private organizations with more flexible structures, while this study took place in a public university operating within a rigid bureaucratic framework. This finding confirms the argument (26) that the mechanisms of the organizational change-innovation relationship require further exploration, especially within the realm of public institutions.

The dominance of employee competency as the strongest mediator (VAF 35.7%) is consistent with the finding (15) that identified a shortage of human resources and digital skills as the main barriers to transformation in Indonesia. This finding further supports the principles of Human Capital Theory, highlighting that the investment in personal knowledge and skills plays a vital role in determining organizational performance. In the context of public universities, these findings indicate that bureaucratic reforms that focus solely on structural changes without accompanying employee capacity building are unlikely to succeed—a pattern consistent with the high reported failure rate of transformations (70-88%) (2, 3).

The role of digital culture as the second-strongest mediator (VAF 31.6%) confirms studies (19, 20) that found organizational culture to be a significant mediator between digital transformation and innovative behavior. The results of this study extend the literature by demonstrating that a similar pattern holds true in the higher education context of developing countries, where traditional bureaucratic values often conflict with demands for innovation. Digital culture serves as an enabling environment that transforms organizational norms and expectations, allowing employees to adopt innovative practices without fear of violating bureaucratic procedures.

Conclusion

This study presents several significant findings that enhance both theoretical and empirical insights into the connection between organizational change and innovative behavior in the context of higher education.

Practical Implications

Drawing from the findings, a number of recommendations can be adopted by different stakeholders within universities in West Kalimantan. Higher education leaders should prioritize employee competency development as a primary intervention, given its largest mediation contribution of 35.7 percent. Concrete steps to achieve this include developing a digital competency map for all employees, allocating a minimum of twenty hours of digital training per employee per year, and integrating digital competency into the performance appraisal system. Leaders should also systematically build a digital culture through several strategic initiatives, including appointing digital champions in each work unit, providing incentives for employees who adopt digital innovations, and creating an innovation lab that allows employees to test new ideas without fear of failure. Moreover, it is crucial to implement organized change management practices. This includes forming a cross-unit change management team, creating a three-to-five-year digital transformation roadmap with measurable objectives, and consistently communicating changes through multiple channels to keep all stakeholders informed and engaged during the transformation process.

The results of this study hold considerable importance for accreditation organizations like BAN-PT and LAM, suggesting the need to reorient the accreditation paradigm from an approach that has tended to emphasize hardware aspects such as the availability of technological infrastructure to a more balanced emphasis on software aspects including digital culture and human capabilities. Accreditation bodies should consider integrating indicators of digital culture and innovative behavior as assessment components, as research shows that these two aspects are critical determinants of the success of organizational transformation. Developing measurable digital competency standards for educational staff will provide a clear reference for higher education institutions in preparing their human resources for the digital era. Giving recognition or weight to evidence of systematic change management practices, such as the existence of a transformation roadmap, change communication mechanisms, and resistance mitigation strategies, will encourage higher education institutions not only to implement change but to manage it in a planned and sustainable manner.

The regional government of West Kalimantan is pivotal in facilitating the digital transformation of higher education institutions via three primary interventions. A collaborative forum between state universities in West Kalimantan needs to be initiated to facilitate the sharing of best practices in digital transformation, allowing institutions with higher capacity to become catalysts for other institutions. Considering West Kalimantan's geographical challenges as the largest province on the island of Borneo with remote and difficult-to-reach areas, the local government needs to provide equitable digital infrastructure support to address the connectivity gaps that have hampered technology adoption in universities. Integrating universities into the regional innovation ecosystem through strategic partnerships with the industrial sector and government agencies will create mutually beneficial synergies, with universities acting as centers for innovation development while industry and government provide the context for real-world applications for these innovations.

Limitations and Further Research

Although this study presents a noteworthy addition to the literature on organizational change as well as innovative behavior, certain limitations need to be recognized for proper interpretation of the findings. First, the study's limited geographic scope to public universities in West Kalimantan could constrain the external applicability of the results. The unique characteristics of this region—including its archipelagic geography, relatively low digital penetration rates compared to Java, and local bureaucratic dynamics—may result in different patterns of relationships in other contexts. Consequently, it is essential to replicate the study in various provinces that exhibit a range of socioeconomic characteristics and digital infrastructure to evaluate the reliability of the proposed model. Second, the cross-sectional design used restricts the capacity to draw

definitive causal inferences. While PLS-SEM analysis allows for testing structural relationships, the direction of causality remains theoretical. Organizational transformation represents a dynamic process which develops over time, so a longitudinal or panel data approach would offer a more thorough understanding of the way organizational change gradually shapes digital culture, enhances competencies, and ultimately drives innovative behavior. Third, this study focused on three main mediators, but the organizational change-innovation relationship is likely influenced by other factors not examined. Variables such as transformational leadership style, organizational psychological climate, information technology support, or even individual employee characteristics (such as self-efficacy and openness to change) could act as additional mediators or moderators that enrich theoretical understanding.

Based on these limitations, further research agendas could be directed at several areas. Cross-regional comparative studies, for example, comparing universities in Western, Central, and Eastern Indonesia, could reveal contextual variations in organizational transformation mechanisms. A comprehensive approach that combines quantitative surveys with qualitative case studies would enhance comprehension of the processes and dynamics that underpin the relationships between variables. Furthermore, testing moderation models, for example, to determine whether leadership support strengthens or weakens the mediation effect, could provide richer theoretical nuance.

Abbreviations

None.

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Author Contributions

Syarif Zulkifli: conceptualisation, design of the study, data collection, analysis, interpretation of results, preparation of the draft, approved the final version of the manuscript, Rizky Fauzan: conceptualisation, design of the study, analysis, interpretation of results, preparation of the draft, approved the final version of the manuscript, Ilzar Daud: conceptualisation, design of the study, analysis, interpretation of results, preparation of the draft, approved the final version of the manuscript.

Conflict of Interest

The authors declare that there are no conflicts of interest.

Declaration of Artificial Intelligence (AI) Assistance

An AI tool (Claude and ChatGPT) was utilized to enhance the readability and language of the manuscript. The author meticulously examined and refined all content following the utilization of the tool and assumes complete accountability for the integrity, accuracy, and originality of the final manuscript.

Ethics Approval

The relevant institutions have granted approval for this study, and all respondents provided informed consent before participating.

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