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Employee knowledge acquisition as the central mechanism for creativity in an Indonesian petrochemical state-owned enterprise: A PLS-SEM study of transformational leadership, ambidextrous organisational culture, and employee personality

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Abstract: This study examines how transformational leadership (TL), ambidextrous organisational culture (AC), and employee personality (EP) influence employee creativity (EC), positing employee knowledge acquisition (EKA) as a central mediating mechanism within an Indonesian state-owned petrochemical enterprise. A quantitative cross-sectional survey was administered to 238 permanent employees, analysed using PLS-SEM with a two-stage higher-order construct approach in SmartPLS 4 with 5,000-sample bootstrapping. EP is the strongest predictor of EKA ($\beta = 0.666$, $p < .001$) and EC ($\beta = 0.445$, $p < .001$). AC significantly predicts EKA ($\beta = 0.203$, $p < .05$) but not EC directly. TL shows no significant effect on EKA or EC. EKA is the dominant predictor of EC ($\beta = 0.560$, $f^2 = 0.808$), explaining 88.1% of EC variance. EKA fully mediates the AC–EC relationship and partially mediates EP–EC (VAF = 45.6%). EKA is the critical cognitive conversion mechanism through which organisational context and individual disposition generate creativity. Organisations should prioritise personality-informed recruitment, embedded knowledge infrastructure, and systemic leadership design to maximise creative output in state-owned enterprises.

Keywords: *Ambidextrous organisational culture, Employee creativity, Employee knowledge acquisition, Employee personality, PLS-SEM, Transformational leadership.*

1. Introduction

Creativity at the individual level is the primary source material from which innovation is built. Without employees generating novel and useful ideas, organisations cannot sustain competitive advantage, adapt to market shifts, or develop new products and processes [1, 2]. This foundational relationship makes employee creativity one of the most studied constructs in organisational behaviour, yet it remains poorly understood in large, institutionalised settings where the majority of the global workforce operates [3].

Indonesia presents a particularly instructive case. The World Intellectual Property Organization [4] recorded only 4,800 patent applications from Indonesian organisations in 2023, placing the country 35th globally, well behind China (1,642,582), the United States (518,791), and Japan (414,479). This gap reflects a structural deficit in the cultivation of creative output at the individual employee level, particularly within state-owned enterprises, which employ hundreds of thousands of workers but operate under formal governance structures, standardized procedures, and centralized decision-making [5].

Three antecedents have attracted sustained theoretical attention as drivers of employee creativity: transformational leadership, organisational culture, and individual personality. Transformational leadership (TL), characterised by idealised influence, inspirational motivation, intellectual stimulation, and individualised consideration, is widely theorised to stimulate creative behaviour by expanding

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followers' cognitive horizons and reinforcing intrinsic motivation [6-8]. Ambidextrous organisational culture (AC), which simultaneously promotes exploration of new knowledge and exploitation of existing competencies, is understood to create the conditions necessary for sustained innovation [9-12]. Employee personality (EP), particularly traits associated with creative disposition such as openness to experience, curiosity, and tolerance for ambiguity, establishes stable individual differences in creative propensity [13-15].

Despite the theoretical grounding of all three antecedents, empirical findings remain inconsistent. Several studies report that TL does not directly predict creativity in highly procedural or institutionalised contexts [16, 17]. Others find that ambidextrous culture influences innovative outcomes primarily through intermediary mechanisms rather than directly [18, 19]. The question of *how* these macro-level factors translate into micro-level creative behaviour remains undertheorised.

A compelling but underexplored mechanism is employee knowledge acquisition (EKA), the active processes by which individuals seek, absorb, integrate, and apply new knowledge in their work [20-22]. Drawing on Kolb [21] and Social Cognitive Theory [23-25], EKA positions creativity not as a spontaneous response to leadership inspiration or cultural cues, but as the end product of reflective, purposive knowledge-building. The literature on knowledge-based creativity supports this framing [26, 27], yet EKA as a formal mediator between organisational antecedents and creative output has rarely been tested quantitatively, particularly in Indonesian industrial contexts.

This study identifies four gaps in the existing literature. First, there is insufficient integration of TL, AC, and EP within a single, theoretically grounded model. Second, EKA has not been rigorously positioned as a central mediating mechanism; prior studies rely on other intermediaries (psychological empowerment, intrinsic motivation, knowledge sharing). Third, the vast majority of empirical work draws on samples from developed-country, SME, or educational contexts; findings from large-scale, state-owned industrial enterprises in Southeast Asia are sparse. Fourth, quantitative multi-hypothesis models employing higher-order construct modelling and bootstrapped mediation analysis are underrepresented in this literature strand.

To address these gaps, this study poses ten research questions: Does TL positively predict EKA (H1) and EC (H4)? Does AC positively predict EKA (H2) and EC (H5)? Does EP positively predict EKA (H3) and EC (H6)? Does EKA positively predict EC (H7)? Does EKA mediate the effects of TL (H8), AC (H9), and EP (H10) on EC? Data were collected from 238 employees of a state-owned petrochemical holding enterprise in Indonesia and analysed using PLS-SEM with a two-stage higher-order approach. The theoretical contribution lies in demonstrating that EKA functions as the critical conversion mechanism through which organisational context and individual disposition produce creativity.

2. Literature Review

2.1. Transformational Leadership and Employee Creativity

Transformational leadership was first systematically articulated by Burns [28] and later operationalised by Bass [6] and Bass and Avolio [7] through the Multifactor Leadership Questionnaire. The model identifies four core behavioural dimensions: idealised influence (charismatic role modelling), inspirational motivation (articulating compelling visions), intellectual stimulation (encouraging novel thinking), and individualised consideration (tailored developmental support). These dimensions are theorised to increase followers' intrinsic motivation, self-efficacy, and psychological safety, conditions regarded as prerequisites for creative risk-taking [8, 29].

Empirical support for a direct TL–creativity link exists but is notably context-dependent. Shin and Zhou [30] found a significant positive effect in Korean manufacturing. Bashir and Nazir [31] reported significant effects in Indian hospitality; Veasna [32] demonstrated significant cross-level effects in Asian manufacturing, mediated by psychological empowerment. However, a growing body of work finds no significant direct effect: Alshawabkeh et al. [16], studying 429 Malaysian customer service employees, found that TL had no significant direct effect on creativity, though psychological empowerment mediated a positive indirect effect. Lukitasari and Etikariena [17], examining 210 Indonesian civil servants,

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similarly found that TL did not directly predict innovative work behaviour. These inconsistencies suggest that TL's effect on creativity is conditional on intermediary mechanisms and organisational context [33].

2.2. Ambidextrous Organisational Culture and Employee Creativity

Organisational ambidexterity, the simultaneous pursuit of exploration and exploitation, was introduced as a strategic imperative by March [9] and Levinthal and March [34] later operationalised at the cultural level by Gibson and Birkinshaw [11]; O Reilly and Tushman [10] and O'Reilly III and Tushman [35]. Exploration encompasses discovery-oriented activities such as experimentation, learning, and the search for new knowledge, while exploitation involves refining, optimising, and applying existing capabilities. Raisch and Birkinshaw [12] demonstrated that ambidextrous organisations show superior long-term performance, and contextual ambidexterity, in which employees allocate effort between exploration and exploitation, has been linked to learning behaviour and creative performance [11, 36].

Yet the direct AC–creativity link is theoretically ambiguous. When exploitation norms dominate in compliance-oriented organisations, the exploration dimension of ambidexterity may be suppressed, reducing the room for creative experimentation Levinthal and March [34]. Munoz-Pascual and Galende [19] showed that ambidextrous knowledge orientation predicts creativity through capability-building rather than through direct stimulus. Liu et al. [18] found that ambidextrous culture influenced innovative behaviour primarily via psychological empowerment, confirming the role of intermediate mechanisms. This suggests that AC may act as an *enabling context* rather than a direct creativity driver.

2.3. Employee Personality and Employee Creativity

Personality influences creativity both directly and by shaping how individuals engage with learning opportunities. The Big Five model [37] identifies openness to experience as the most consistent personality predictor of creative performance [13, 14, 38]. The Creative Personality Inventory (CPI) adopted in this study [15, 39, 40] offers a targeted operationalisation, measuring creativity-relevant traits: originality, curiosity, divergent thinking, imagination, tolerance for ambiguity, openness to experiences, self-confidence, and autonomy. This aligns with Amabile [40] componential theory, which identifies creativity-relevant cognitive processes and task motivation as the dispositions through which individuals generate novel and useful ideas.

Empirical evidence confirms EP's dual role. Nam and Nga [41], studying 261 Vietnamese private-sector employees, found openness to experience, extraversion, and conscientiousness to be significant positive predictors of employee creativity. Liu [42] showed the same three Big Five dimensions to be positively correlated with supervisor-rated creativity. Xu and Cheng [43] confirmed a significant conscientiousness–creativity link moderated by time pressure and supervisor trust. Collectively, these findings establish personality as a stable, proximal predictor of creative output.

2.4. Employee Knowledge Acquisition as a Mediating Mechanism

EKA denotes the processes through which employees proactively seek, obtain, internalise, and apply new knowledge relevant to their work roles [20, 22, 44]. Grounded in Kolb [21] Experiential Learning Theory, EKA encompasses five stages: exposure to new knowledge, reflective learning, conceptual integration, application of new knowledge, and self-initiated knowledge seeking. Cohen and Levinthal [26] concept of absorptive capacity provides complementary theoretical grounding: individuals with higher capacity to recognise, assimilate, and exploit new information are better positioned to generate creative recombinations.

Theoretically, EKA bridges macro-level organisational stimuli and micro-level creative behaviour. A culture that legitimises exploration and demands exploitation provides normative support for knowledge-seeking; a creative personality provides the motivational energy; and EKA converts both into the cognitive raw material from which creativity emerges. Kucharska and Erickson [45] demonstrated that tacit knowledge acquisition significantly influences radical innovation. Imran et al. [27] showed that knowledge processes are the strongest determinants of employee creativity in service-sector firms. Liao

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et al. [46] confirmed that knowledge acquisition mediates the relationship between knowledge-sharing climate and innovative capability. Despite this evidence, no prior quantitative study has simultaneously tested TL, AC, and EP as predictors of EKA, with EKA as the formal mediator of all three antecedents on EC, particularly in the Indonesian state-owned petrochemical holding enterprise context. This constitutes the primary theoretical gap addressed by the present study.

3. Methods

3.1. Research Design and Setting

This study employs a quantitative cross-sectional research design. The research setting is a state-owned petrochemical holding enterprise in Indonesia, a conglomerate operating in the petrochemical sector comprising a parent company and multiple subsidiaries. The organisation is characterised by formal governance structures, standard operating procedures (SOPs), and regulated operational practices, making it a theoretically relevant context for studying creativity under structural constraint.

3.2. Population, Sampling, and Participants

The population comprised all permanent employees across all functional units of the state-owned petrochemical holding enterprise. A minimum sample size of 129 was estimated using G*Power 3.1 for PLS-SEM (f^2 = 0.15, power = 0.95, α = .05, 4 predictors), with the study adopting a conservative minimum of 132. Actual data collection yielded 238 valid responses after excluding incomplete questionnaires, substantially exceeding the minimum threshold. *Purposive sampling* was employed to ensure respondents had sufficient organisational experience and familiarity with the relevant work practices, covering diverse subsidiaries and functional units. Ethical clearance for this study was secured through the institutional review process of Universitas Brawijaya, and operational research permission was granted by the management of the participating enterprise. Data were collected via a structured online questionnaire from October to November 2025.

3.3. Measurement Instrument

All constructs were measured using reflective, multi-item Likert scales (1 = Strongly Disagree to 5 = Strongly Agree). TL was operationalised through four dimensions (TL1: Idealised Influence; TL2: Inspirational Motivation; TL3: Intellectual Stimulation; TL4: Individual Consideration), adapted from Bass and Avolio [7]. Following the reflective-reflective higher-order construct (HOC) specification endorsed by Hair et al. [47] and Sarstedt et al. [48], TL is modelled as a single second-order construct in which the four first-order dimensions serve as reflective indicators of the overarching TL latent variable. This specification is theoretically justified because the four Bass–Avolio dimensions are conceptually distinct yet co-varying facets of a common transformational leadership disposition [49]. Modelling TL as a unidimensional HOC preserves the theoretical integrity of the Bass–Avolio model while offering a recognised PLS-SEM advantage: reducing structural collinearity among lower-order constructs and enabling parsimonious estimation of the construct's total effect in the structural model [47].

AC was measured through 10 sub-dimensions (AC1: Learning from Failure; AC2: External Collaboration; AC3: Taking Risk; AC4: Experimentation; AC5: Create New Idea; AC6: Using Past Experience; AC7: Working Consistency; AC8: Best Practice; AC9: Efficiency Process; AC10: Systematic Implementation of Idea), adapted from O Reilly and Tushman [10]. EP was operationalised via eight sub-dimensions (EP1: Originality; EP2: Curiosity; EP3: Divergent Thinking; EP4: Imagination; EP5: Tolerance for Ambiguity; EP6: Openness to Experiences; EP7: Self-Confidence; EP8: Autonomy) based on the CPI [15, 39, 40]. EKA was assessed through five sub-dimensions (EKA1: Exposure to New Knowledge; EKA2: Reflective Learning; EKA3: Conceptual Integration; EKA4: Application of New Knowledge; EKA5: Knowledge-Seeking Initiative) grounded in Kolb [21] Experiential Learning Theory. EC was measured through 11 sub-dimensions (EC1: Factual Knowledge; EC2: Technical Skill; EC3: Prior

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Experience; EC4: Cognitive Flexibility; EC5: Task Enjoyment; EC6: Self-Initiative; EC7: Flow State; EC8: Challenge of the Work; EC9: Analytical Thinking; EC10: Metacognitive Awareness; EC11: Problem Sensitivity) derived from Amabile [40] and Amabile and Pratt [50] Componential Theory of Creativity. The complete instrument totalled 118 items across 38 lower-order constructs (LOCs), forming five higher-order constructs (HOCs) in a two-stage approach. A pilot study (n = 30) confirmed the reliability and content validity of all subscales.

3.4. Analytical Approach

PLS-SEM was selected over covariance-based SEM (CB-SEM) for three reasons: (1) the model contains higher-order reflective constructs; (2) the primary goal is explanatory and predictive; and (3) PLS-SEM accommodates complex models with a relatively modest sample size [47]. Analysis was conducted in SmartPLS 4 using a two-stage approach: Stage 1 evaluated LOC measurement properties, and Stage 2 evaluated the HOC structural model. Model assessment followed Hair et al. [47] protocol: indicator reliability (outer loading ≥ 0.70), internal consistency reliability (Cronbach's α, Composite Reliability, and Dijkstra–Henseler's $\rho_A \geq 0.70$), convergent validity (AVE ≥ 0.50), and discriminant validity (cross-loadings, Fornell–Larcker criterion, HTMT < 0.90 [51]). Path significance was assessed via 5,000-sample bootstrapping with BCa 95% confidence intervals. Predictive relevance was evaluated using blindfolding (Q^2) and PLS Predict.

Figure 1 illustrates the full research workflow.

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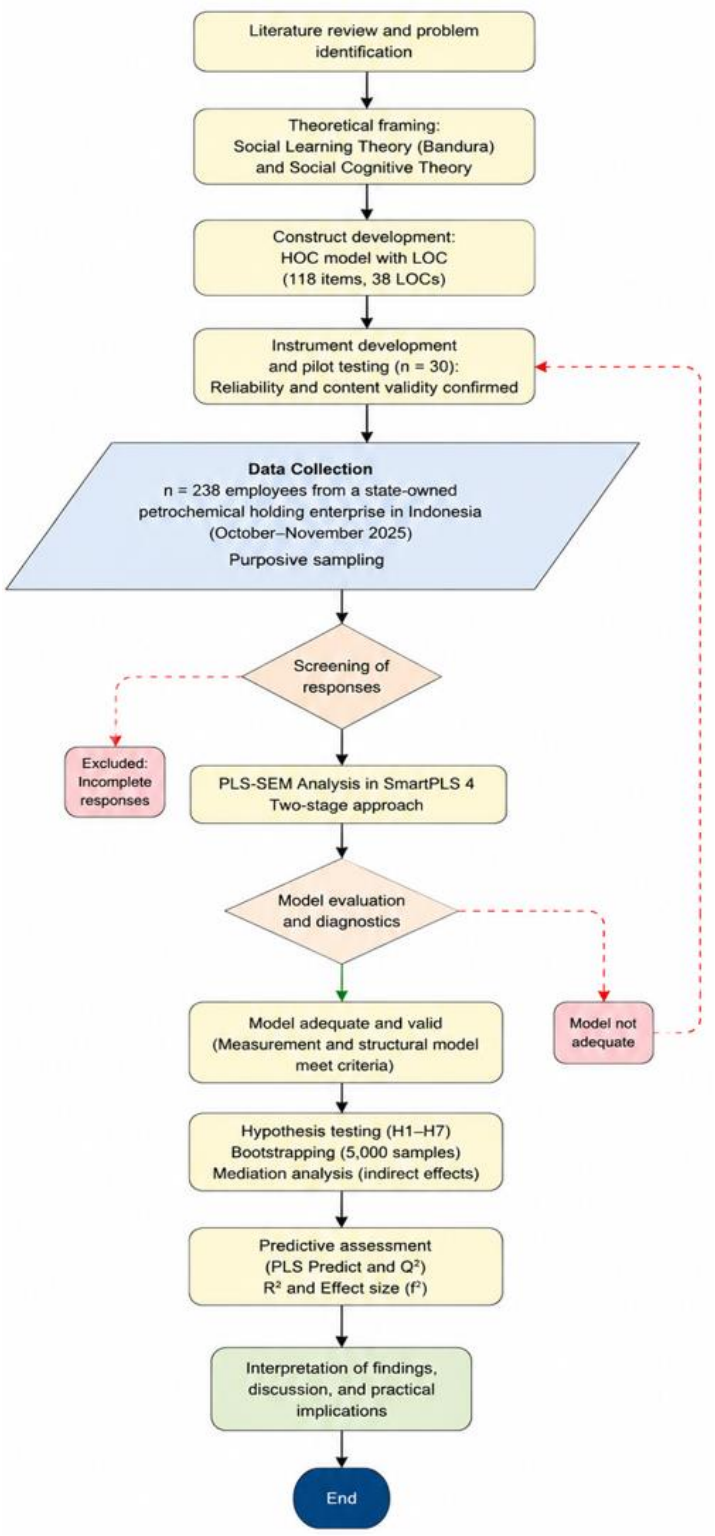

Figure 1.
Research Flowchart: Sequential Steps from Literature Review to Findings Interpretation in the PLS-SEM Study

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4. Results and Discussion

4.1. Respondent Profile

Of the 238 respondents, 74.8% were male (n = 178) and 25.2% were female (n = 60). Age distribution was concentrated in the 41–50 bracket (41.2%, n = 98), followed by 31–40 (37.0%, n = 88), 51–60 (13.0%, n = 31), and 21–30 (8.8%, n = 21), yielding a mean age of 41.55 years. Educational attainment was predominantly at the undergraduate level (51.7%, n = 123), followed by master's degree (42.9%, n = 102), doctoral degree (2.5%, n = 6), senior high school (2.5%, n = 6), and diploma (0.4%, n = 1). Tenure was distributed across four bands: more than 15 years (29.0%, n = 69), 5–10 years (27.3%, n = 65), less than 5 years (22.3%, n = 53), and 11–15 years (21.4%, n = 51), yielding a mean tenure of 11.89 years. Positions spanned Vice President (38.2%, n = 91), Staff/Team Members (36.1%, n = 86), Senior Vice President (14.3%, n = 34), Assistant Vice President (6.7%, n = 16), Director (3.4%, n = 8), and Senior Project Manager (1.3%, n = 3), reflecting diverse hierarchical perspectives.

4.2. Measurement Model Results

Table 1 reports the measurement-model results for Stage 2 higher-order constructs. All constructs exceed the required thresholds for reliability and convergent validity.

Table 1.
Measurement Model Results — Stage 2 Higher-Order Constructs.

Construct	n	AVE	CR	α	ρA	Outer Loading Range
Transformational Leadership (TL)	4	0.877	0.966	0.953	0.954	0.931–0.945
Ambidextrous Culture (AC)	10	0.651	0.949	0.939	0.946	0.548–0.874
Employee Personality (EP)	8	0.643	0.935	0.919	0.924	0.668–0.874
Employee Knowledge Acq. (EKA)	5	0.828	0.960	0.948	0.950	0.894–0.935
Employee Creativity (EC)	11	0.733	0.968	0.963	0.964	0.826–0.893

Note: n = number of HOC indicators; AVE = Average Variance Extracted; CR = Composite Reliability; α = Cronbach's Alpha; ρA = Dijkstra–Henseler's rho. All AVE ≥ 0.50; all CR, α, ρA ≥ 0.70. Source: authors' elaboration based on SmartPLS 4 output.

Discriminant validity was assessed using three complementary criteria [51]. Cross-loadings confirmed that all 38 indicators loaded highest on their designated constructs, with no misclassification. The Fornell–Larcker criterion was largely met, with borderline violations for the EC–EKA and EC–EP pairs, reflecting genuine nomological proximity among creativity, knowledge acquisition, and personality. Table 2 presents both the Fornell–Larcker inter-construct correlations (above diagonal) and HTMT ratios (below diagonal); bootstrapped confidence intervals confirmed all upper bounds remained below 1.00, including the three closest-to-threshold pairs (EC–EKA: CI_upper = 0.985; EC–EP: 0.964; EKA–EP: 0.913), establishing that no two constructs are empirically identical.

Table 2.
Fornell–Larcker Matrix (diagonal = √AVE) and HTMT Ratios — Stage 2.

	AC	EC	EKA	EP	TL	HTMT CI 95% upper bound
AC	0.807	0.622	0.655	0.635	0.764	—
EC	0.647	0.856	0.903	0.882	0.467	—
EKA	0.692	0.943	0.910	0.812	0.496	EC–EKA: 0.985
EP	0.681	0.936	0.867	0.802	0.454	EC–EP: 0.964; EKA–EP: 0.913
TL	0.811	0.486	0.520	0.487	0.936	all < 0.90

Note: Diagonal (bold) = √AVE. Above diagonal = inter-construct correlations. Below diagonal = HTMT ratios [51]. All HTMT CI upper bounds < 1.00. Source: SmartPLS 4, 5,000 bootstrap resamples.

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4.3. Structural Model: Direct Effects (H1–H7)

Collinearity diagnostics confirmed all variance inflation factors (VIFs) were well below 5.0. Figure 2 presents the conceptual framework with Stage 2 path results. The model explains 88.1% of the variance in EC (R^2=0.881) and moderate-to-strong variance in EKA (R^2=0.693). Table 3 reports the full bootstrapping results.

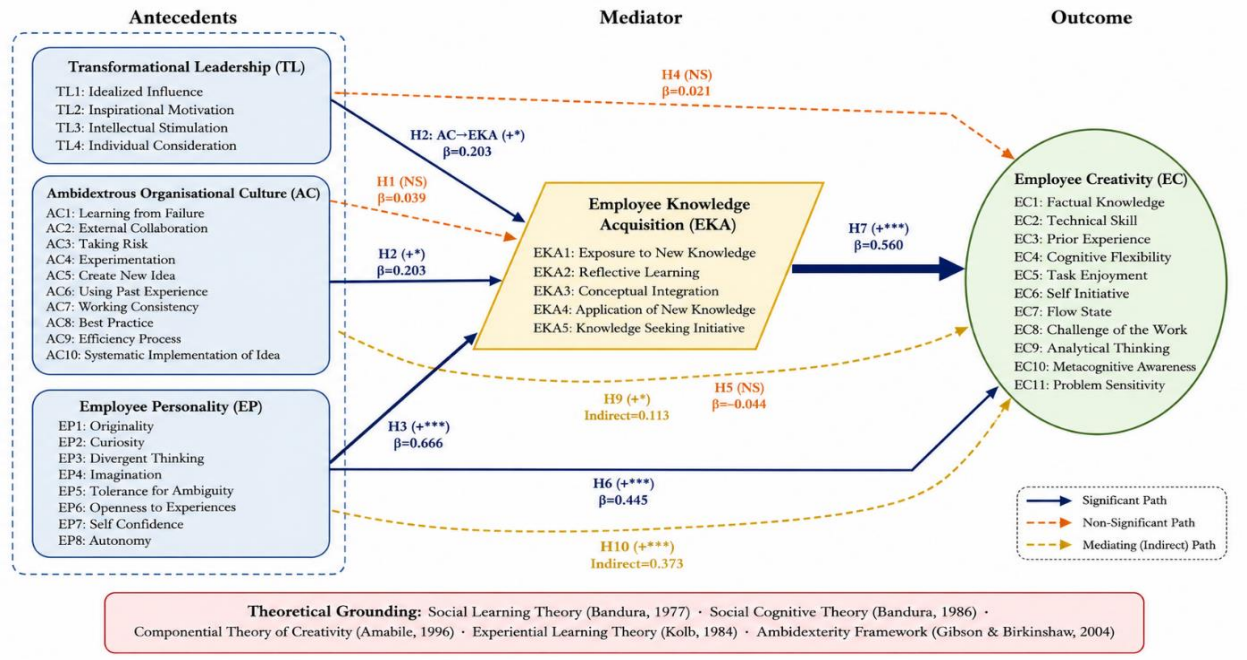

Figure 2.
Conceptual Framework with Indicator Names and Stage 2 PLS-SEM Path Results (TL, AC, EP → EKA → EC).
Note: Solid lines = significant paths; dashed lines = non-significant. * p < .05; *** p < .001; NS = not significant.

Table 3.
Path Coefficients and Bootstrapping Results — Direct Hypotheses (H1–H7).

H	Path	β	t	p	CI 2.5%	CI 97.5%	Decision
H1	TL → EKA	0.039	0.484	0.628	−0.114	0.192	Rejected
H2	AC → EKA	0.203	2.185	0.029	0.052	0.407	Accepted
H3	EP → EKA	0.666	11.909	<0.001	0.530	0.745	Accepted
H4	TL → EC	0.021	0.533	0.594	−0.060	0.095	Rejected
H5	AC → EC	−0.044	1.015	0.311	−0.121	0.050	Rejected
H6	EP → EC	0.445	6.330	<0.001	0.306	0.576	Accepted
H7	EKA → EC	0.560	6.758	<0.001	0.402	0.702	Accepted

Note: CI = BCa 95% bootstrap confidence interval; n = 238; Bootstrap resamples = 5,000. Source: authors' elaboration based on SmartPLS 4 output.

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Figure 3. Standardised Path Coefficients for Direct Effects (Stage 2, Bootstrapping)

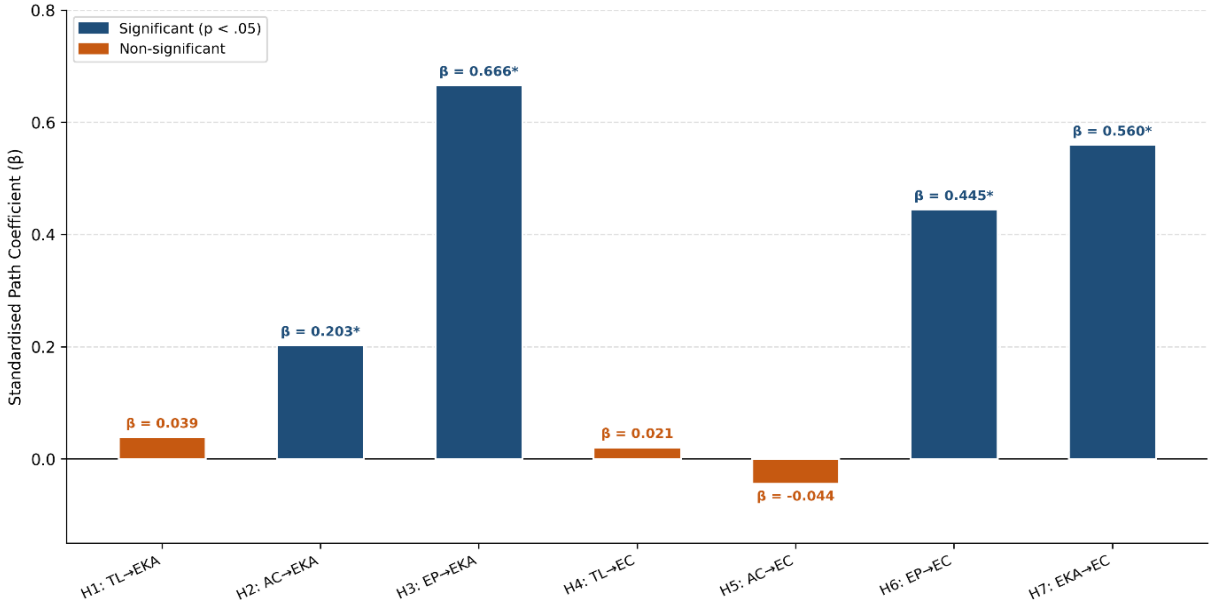

Figure 3.
Standardised Path Coefficients for Direct Effects (H1–H7): Summary of Direct Hypotheses Testing.
Note: Blue bars = significant ($p < 0.05$); orange bars = non-significant. * $p < .05$.

H1 and H4 were both rejected (TL → EKA: β = 0.039, $p = .628$; TL → EC: β = .021, $p = .594$). Both path coefficients are positive in direction, consistent with theoretical expectation; however, they fall short of statistical significance in this organisational context. This indicates that transformational leadership does not produce a direct, statistically meaningful effect on either knowledge acquisition behaviour or creative output within a large-scale, state-owned petrochemical enterprise operating under formal governance structures. Alshawabkeh et al. [16], studying 429 Malaysian customer service employees, found that TL had no significant direct effect on creativity, with the TL–creativity pathway operating exclusively through psychological empowerment. Lukitasari and Etikariena [17], examining 210 Indonesian civil servants, similarly found that TL did not directly predict innovative work behaviour. Prasetyo et al. [52] replicated this pattern in Indonesian state enterprise contexts. Saif et al. [53] demonstrated that knowledge sharing failed to mediate TL's effect on innovative work behaviour in Pakistani higher education institutions, arguing that in bureaucratic environments, knowledge acquisition is governed by institutional norms rather than individual leader behaviour.

The theoretical explanation draws on two complementary frameworks. First, the substitutes for leadership literature [33] holds that when organisations operate under dense formal systems, SOPs, regulated workflows, centralised decision-making, and structured training programmes, these institutional arrangements absorb the directional and motivational functions that leadership might otherwise provide. Second, the knowledge acquisition literature increasingly supports the view that proactive knowledge-seeking is driven more strongly by individual disposition and enabling cultural conditions than by leadership style *per se*. Imran et al. [27] showed that knowledge processes were primarily determined by individual and cultural variables. Kucharska and Erickson [45] similarly demonstrated that tacit knowledge acquisition was more closely tied to individual learning orientation than to top-down leadership signals. EP (β = 0.666) and AC (β = 0.203) account for 69.3% of EKA variance, leaving little residual variance for TL to explain. TL appears to operate as a *distal antecedent*, setting strategic direction and signalling that innovation matters, while the proximal mechanisms are

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governed by individual personality traits, enabling cultural conditions, and entrenched organisational routines.

H2 was accepted (AC → EKA: β = 0.203, p = .029). Ambidextrous culture creates a normative climate in which knowledge-seeking becomes an expected and rewarded professional behaviour [19, 36]. AC does not significantly predict EC (H5 rejected: β = −0.044, p = .311), suggesting that culture's effect on creativity runs through experiential learning rather than direct stimulation.

H3 was the strongest direct path (EP → EKA: β = 0.666, p < .001), establishing creative personality as the most proximal driver of knowledge acquisition behaviour [54, 55]. H6 (EP → EC: β = 0.445, p < .001) and H7 (EKA → EC: β = 0.560, p < .001) were both accepted. EKA's large effect size (f^2 = 0.808) dwarfs all other predictors, underscoring that creativity in this context is a learned, accumulated outcome, not an impulsive response to leadership cues.

4.4. Structural Model Fit and Predictive Relevance

Table 4 reports predictive and model quality statistics. The Standardised Root Mean Square Residual (SRMR) value was within acceptable limits for PLS-SEM. Blindfolding (Q^2 > 0 for both endogenous constructs) confirms predictive relevance. PLS Predict analysis confirmed that the PLS model outperformed the naïve linear model (LM) benchmark across the majority of EC and EKA indicators.

Table 4.
Structural Model Fit and Predictive Statistics — Stage 2.

Indicator	EKA	EC	Threshold / Criterion
R^2 (Coefficient of Determination)	0.693	0.881	>0 (strong ≥ 0.75)
Q^2 (Predictive Relevance, Blindfolding)	>0	>0	>0 indicates predictive relevance
f^2 EKA → EC (Effect Size)	—	0.808	Large: ≥ 0.35
SRMR (HOC Model)	—	< 0.08	< 0.08 acceptable
PLS Predict vs. LM (RMSE)	PLS superior	PLS superior	PLS RMSE < LM RMSE

4.5. Mediation Analysis: H8–H10

Table 5 reports the mediation results; Figure 4 illustrates indirect and direct effect magnitudes.

Table 5.
Mediation Analysis Results (H8–H10).

H	Indirect Path	Indirect β	Direct β	t	p	CI 95%	Mediation Type
H8	TL → EKA → EC	0.022	0.021	0.478	0.633	[−0.063; 0.118]	No mediation (rejected)
H9	AC → EKA → EC	0.113	−0.044	2.162	0.031	[0.027; 0.229]	Indirect-only (accepted)
H10	EP → EKA → EC	0.373	0.445	5.734	<0.001	[0.249; 0.489]	Partial complementary (accepted, VAF = 45.6%)

Note: CI = BCa 95% bootstrap confidence interval; n = 238; resamples = 5,000. VAF = Variance Accounted For. Source: authors' elaboration based on SmartPLS 4 output.

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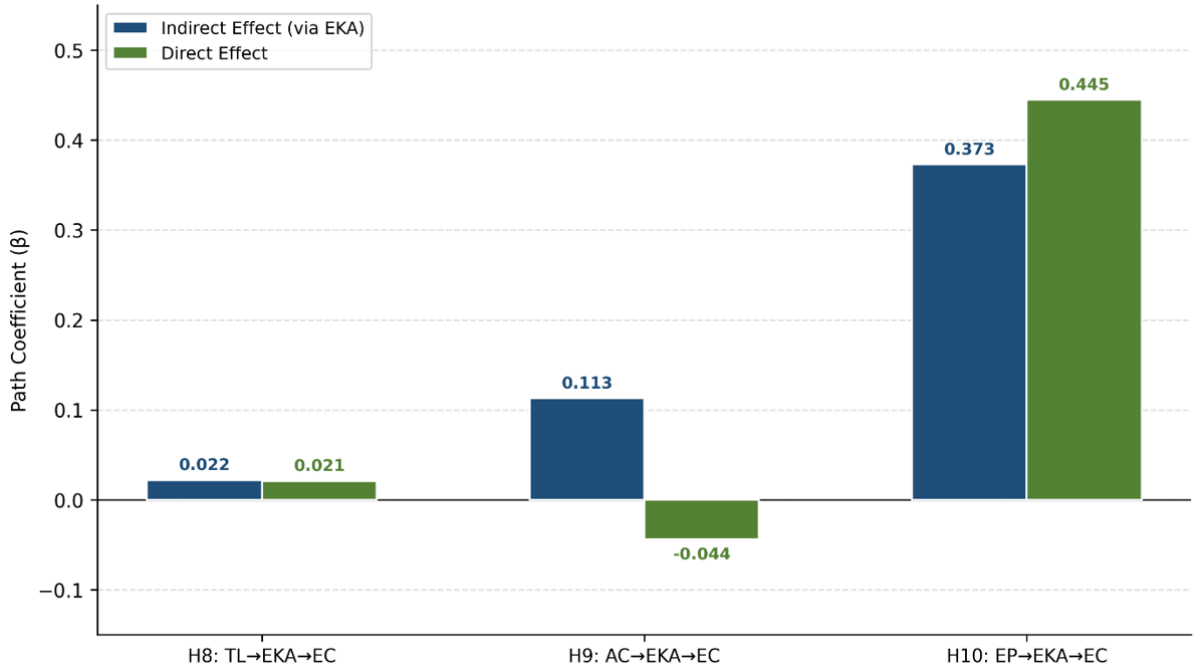

Figure 4.
Indirect and Direct Effects for Mediation Hypotheses (H8–H10): EKA as Mediator.
Note: Blue bars = indirect effect through EKA; green bars = direct effect. Source: authors' elaboration.

H8 was rejected. The near-zero indirect effect (β = 0.022, CI = [−0.063, 0.118]) is mechanistically inevitable because TL does not significantly predict EKA (H1 rejected), and there is no causal energy to transmit through the mediator. This parallels Saif et al. [53], who found that knowledge sharing failed to mediate TL's effect on innovative work behaviour in Pakistani higher education institutions.

H9 revealed an *indirect-only* mediation pattern (indirect β = 0.113, p = .031; direct β = −0.044, NS). Ambidextrous culture produces creativity exclusively through the EKA mechanism: culture normalises knowledge-seeking, EKA converts that legitimacy into cognitive enrichment, and enriched cognition generates creative recombinations. Liu et al. [18] demonstrated an analogous indirect-only structure in which ambidextrous culture predicted innovative behaviour through psychological empowerment.

H10 revealed *partial complementary* mediation (indirect β = 0.373, p < .001; direct β = 0.445, p < .001; VAF = 45.6%). Creative personality works on two levels simultaneously: certain traits directly lower the threshold for ideation; the same traits drive proactive knowledge-seeking that enriches the cognitive material available for creative work [55, 56].

4.6. Theoretical Contributions

The overall pattern demonstrates that EKA functions as the critical conversion engine: AC provides the normative climate for learning; EP provides the motivational energy; and EKA converts both into cognitive raw material from which creativity is produced. TL operates at the symbolic level, absorbed by the organisation's formal infrastructure rather than transmitted to individual behaviour.

Four theoretical contributions follow. First, the study strengthens the *distal antecedent* logic of TL by demonstrating its boundaries in institutionally dense settings, a boundary condition for TL theory. Second, it extends the ambidexterity literature by specifying EKA as the individual-level micro-foundation through which contextual ambidexterity generates creative output. Third, it affirms creative personality as both a direct determinant of creativity and a proximal driver of knowledge acquisition. Fourth, it establishes EKA as a *central causal mechanism*: the model's high explanatory power (R^2 = 0.881)

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and the outsized effect of EKA (f^2 = 0.808) indicate that employee creativity in this context is fundamentally a *knowledge-route* phenomenon. Table 6 summarises hypothesis testing results.

Table 6.
Summary of Hypothesis Testing Results.

H	Hypothesis	β	p	CI 95%	Decision
H1	TL → EKA	0.039	.628	[−0.114; 0.192]	Rejected
H2	AC → EKA	0.203*	.029	[0.052; 0.407]	Accepted
H3	EP → EKA	0.666***	<.001	[0.530; 0.745]	Accepted
H4	TL → EC	0.021	.594	[−0.060; 0.095]	Rejected
H5	AC → EC	−0.044	.311	[−0.121; 0.050]	Rejected
H6	EP → EC	0.445***	<.001	[0.306; 0.576]	Accepted
H7	EKA → EC	0.560***	<.001	[0.402; 0.702]	Accepted
H8	TL → EKA → EC	0.022	.633	[−0.063; 0.118]	Rejected
H9	AC → EKA → EC	0.113*	.031	[0.027; 0.229]	Accepted
H10	EP → EKA → EC	0.373***	<.001	[0.249; 0.489]	Accepted

Note: * p < .05; *** p < .001. For H8–H10, β refers to the indirect effect. CI = BCa 95% bootstrap confidence interval. Source: authors' elaboration based on SmartPLS 4 output.

4.7. Practical Implications

The findings carry direct implications for human resource development and knowledge management practice in state-owned enterprises. First, the dominant role of employee personality in predicting both EKA and EC suggests that personality-informed recruitment and role design can yield substantial returns on creative output. Selection processes for innovation-oriented roles should specifically assess creativity-relevant traits, curiosity, openness to experience, tolerance for ambiguity, and autonomous motivation, as proxies for both direct creative capability and proactive knowledge-seeking propensity. Second, the indirect-only AC–EC pathway underscores that ambidextrous cultural declarations alone are insufficient to produce creative returns. Organisations must translate cultural values into operational knowledge infrastructure: learning forums, structured knowledge repositories, cross-functional project rotations, after-action review practices, and communities of practice. Third, the non-significant direct TL effects do not undermine the overall importance of leadership in state-owned enterprises. Rather, they reframe leadership's role: transformational leaders should focus developmental energy on systemic design, building the cultural and structural conditions that activate employee personality and support knowledge acquisition, rather than expecting direct behavioural change through inspirational messaging alone.

4.8. Limitations and Directions for Future Research

Four limitations should be noted. First, the cross-sectional design precludes temporal causal inference: EKA is theorised as a dynamic, accumulative process, and a single-wave survey cannot capture how knowledge acquisition evolves in response to leadership behaviour or cultural change. Longitudinal or experience-sampling designs would allow researchers to track intra-individual variation in EKA and its downstream consequences for creativity. Second, the single-sector, single-enterprise context limits external validity. The substitutes for leadership pattern observed here may not replicate in private-sector firms, SMEs, technology-intensive organisations, or state-owned enterprises (SOEs) in different institutional environments. Third, common method variance cannot be fully eliminated because all constructs were self-reported via the same questionnaire. Future studies should consider multi-source designs in which supervisor ratings supply an alternative measure of creative output. Fourth, the model positions EKA as the sole mediating mechanism. Future research should test expanded architectures incorporating psychological safety, intrinsic motivation, psychological empowerment, knowledge-sharing climate, and supervisory developmental feedback as additional mediators or moderators.

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5. Conclusion

This study set out to examine how transformational leadership, ambidextrous organisational culture, and employee personality influence employee creativity, with employee knowledge acquisition as a theorised mediating mechanism. Analysing data from 238 employees of a state-owned petrochemical holding enterprise in Indonesia using PLS-SEM with higher-order construct modelling, the study produced three primary conclusions.

First, employee personality is the most consistent predictor in the model, the only variable that significantly predicts both EKA ($\beta = 0.666$) and EC directly ($\beta = 0.445$). Creative disposition, operationalised through curiosity, openness, divergent thinking, and autonomous motivation, produces creative output both directly and through expanding the individual's knowledge base. Organisations cannot rely solely on structural interventions; they must factor personality into talent acquisition, role design, and learning programme design.

Second, ambidextrous organisational culture shapes creativity exclusively through knowledge acquisition (H9 accepted: indirect $\beta = 0.113$). Culture does not produce creativity directly; instead, it creates a normative climate that legitimises and sustains knowledge-seeking behaviour, which then fuels creative output. Organisations that articulate ambidextrous values but fail to embed them in operational mechanisms will not realise creative returns from their cultural investments.

Third, transformational leadership does not produce significant direct effects on EKA or EC. In an organisation with formal SOPs, structured knowledge channels, and hierarchical governance, leadership's influence is absorbed at the systems level. TL functions as a distal antecedent, necessary for strategic direction but insufficient to alter proximal learning and creative behaviours already regulated by organisational infrastructure. Both TL–EKA and TL–EC paths are positive in direction but non-significant, suggesting that TL's potential contribution to creativity may be realised only when appropriate mediating mechanisms, such as psychological empowerment or knowledge-sharing climate, are present and measurable.

Institutional Review Board Statement:

This study was conducted in accordance with the ethical guidelines of Universitas Brawijaya. Research permission was granted by the management of the participating state-owned petrochemical enterprise prior to data collection. All participants were informed of the study's purpose and voluntarily provided consent. Participation was anonymous, and data confidentiality was maintained throughout. No personally identifying information was collected or disclosed.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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