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Organizational Commitment as a Necessary Mechanism Linking Developmental Performance Appraisal and Adaptive Resilient Leadership to Innovative Work Behavior in Five-Star Hotels

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ABSTRACT: Innovative work behavior (IWB) is increasingly important for sustaining service quality and competitiveness in the hospitality industry. This study examines the relationships between Developmental Performance Appraisal (DPA), Adaptive Resilient Leadership (ARL), and IWB, with Organizational Commitment (OC) as a mediating variable among employees of five-star hotels in Yogyakarta, Indonesia. Using a quantitative cross-sectional design, data were collected from 182 permanent employees across 12 five-star hotels and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) and Necessary Condition Analysis (NCA). The PLS-SEM results indicate that DPA and ARL are positively and significantly associated with both OC and IWB, while OC is positively associated with IWB and serves as a complementary partial mediator in both relationships. ARL demonstrates a stronger direct association with IWB ($\beta = 0.364$) than DPA ($\beta = 0.152$). Conversely, NCA reveals that DPA has the largest necessity effect size for IWB ($d = 0.4927$), followed by ARL ($d = 0.3114$) and OC ($d = 0.2423$). These findings highlight that stronger structural associations do not necessarily correspond to greater necessity constraints. By integrating PLS-SEM and NCA, this study contributes to hospitality management literature by distinguishing factors associated with innovative behavior from conditions necessary for achieving higher innovation levels. The findings suggest integrating developmental performance appraisal and adaptive leadership practices, although limitations in discriminant validity warrant cautious interpretation.

1. INTRODUCTION

Innovative work behavior (IWB) is increasingly important for hospitality organizations facing changing guest expectations, intense competition, and demands for continuous service improvement. Tourism dynamics influence hotel marketing performance (Supriadi, 2025), while climate change knowledge and destination safety considerations shape tourists' destination decisions and revisit intentions (Sunardi et al., 2026). In five-star hotels, IWB involves employees' ability to identify operational problems, generate ideas, and implement service improvements. Previous studies highlight the importance of employee innovation and leadership in service organizations (Asghar et al., 2023; Barkat et al., 2024; Farrukh et al., 2023). This is particularly relevant to Yogyakarta's tourism-oriented hospitality industry, where maintaining service quality while encouraging innovation remains a managerial challenge. Accordingly, how can organizational practices encourage employees to engage in innovative behavior?

Developmental Performance Appraisal (DPA) and Adaptive Resilient Leadership (ARL) offer two perspectives on organizational conditions associated with IWB. Studies of development-oriented performance management emphasize

employee improvement and performance-related development (Giamos et al., 2025), while research on appraisal practices has examined their relationships with employee innovation (Thneibat et al., 2025; Zreen et al., 2025). Meanwhile, leadership studies have investigated the relevance of adaptive and supportive managerial behavior to employee outcomes (Cai et al., 2024; Yan & Nie, 2025). Although these studies provide insights into the respective roles of performance management and leadership, their different conceptual approaches leave an important question insufficiently addressed: how do these organizational antecedents relate to innovative behavior when considered within the same explanatory framework?

A further analytical gap concerns the role of Organizational Commitment (OC). Existing research has examined employee commitment and innovation-related outcomes (Lee & Kim, 2024; Munoz et al., 2023), yet the potential indirect relationships linking DPA and ARL to IWB through OC require further examination. Related evidence from Indonesia further highlights the relevance of employee-related psychological mechanisms, as Kurniasih et al. (2026) demonstrated the mediating role of work engagement in the relationships between organizational conditions and sustainable performance. This distinction matters because managerial practices may be associated with innovative behavior both directly and through employees' organizational attachment. Self-Determination Theory (SDT) provides a relevant interpretive perspective, suggesting that organizational environments supportive of competence, autonomy, and relatedness may encourage constructive employee behavior (Ryan & Deci, 2000). Nevertheless, because psychological need satisfaction is not directly measured in this study, SDT serves as a theoretical foundation rather than an empirically tested motivational mechanism.

Another gap concerns the analytical distinction between organizational factors associated with higher IWB and conditions necessary to attain particular levels of IWB. Although structural equation modeling can estimate direct and indirect relationships, it does not establish whether insufficient levels of an antecedent constrain the achievement of a desired outcome. Necessary Condition Analysis (NCA) provides a complementary perspective by examining necessity relationships and bottleneck levels (Dul et al., 2023). Recent organizational research has further demonstrated the value of integrating PLS-SEM and NCA to distinguish structural associations from necessary conditions for achieving organizational performance (Ulum et al., 2026). Accordingly, integrating Partial Least Squares Structural Equation Modeling (PLS-SEM) and NCA allows the proposed organizational relationships to be examined from both structural and necessity-based perspectives. The methodological contribution lies in distinguishing these perspectives rather than treating statistically significant relationships as evidence of necessity.

Against this background, this study aims to examine the relationships among DPA, ARL, OC, and IWB among employees of five-star hotels in Yogyakarta, Indonesia. Specifically, it evaluates the direct relationships among these constructs, investigates OC as a potential mediator, and identifies necessary conditions associated with different levels of IWB. The study seeks to contribute to hospitality management literature by integrating performance appraisal and adaptive resilient leadership within a unified explanatory model, clarifying the potential mediating role of organizational commitment, and combining PLS-SEM with NCA to distinguish structural associations from necessity constraints. These insights may inform managerial efforts to support employee innovation in hospitality organizations.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Theoretical Foundation: Self-Determination Theory

Self-Determination Theory (SDT) explains how organizational environments may influence employee motivation through the psychological needs for autonomy, competence, and relatedness (Ryan & Deci, 2000). In hospitality organizations, development-oriented performance appraisal and adaptive resilient leadership may provide conditions conducive to employee involvement, organizational attachment, and innovative behavior. Developmental Performance Appraisal (DPA) emphasizes employee improvement, whereas Adaptive Resilient Leadership (ARL) concerns managerial adaptability and constructive responses to workplace challenges. These practices may be associated with Organizational Commitment (OC) and Innovative Work Behavior (IWB). However, because psychological need satisfaction and autonomous motivation are not directly measured, SDT serves as an interpretive theoretical foundation rather than a tested motivational mechanism. The mediating role of OC is therefore developed through organizational commitment literature and the proposed relationships among the constructs.

2.2 Organizational Practices and Innovative Work Behavior

Developmental Performance Appraisal emphasizes the developmental function of performance evaluation, including identifying improvement needs and supporting employee growth. Such practices may encourage employees to recognize operational problems and propose improvements. Research on developmental performance management and performance-related employee outcomes provides a basis for examining this relationship (Bindel Sibassaha et al., 2025; Giamos et al., 2025; Thneibat et al., 2025; Zreen et al., 2025). In hospitality settings, appraisal practices perceived as supportive of development may be associated with employees' willingness to generate and implement service-related ideas. Accordingly, the following hypothesis is proposed.

H1a. Developmental Performance Appraisal is positively associated with Innovative Work Behavior.

Adaptive Resilient Leadership reflects managerial adaptability, composure, consistency, and constructive responses to changing organizational conditions. Such leadership may encourage employees to address unexpected service challenges and propose operational improvements. Previous research has examined adaptive leadership and employee outcomes (Cai et al., 2024; Yan & Nie, 2025), while hospitality studies have investigated leadership approaches associated with innovative behavior (Asghar et al., 2023; Barkat et al., 2024). These perspectives suggest that adaptive and resilient leadership may be positively associated with employee innovation (Gil et al., 2026).

H1b. Adaptive Resilient Leadership is positively associated with Innovative Work Behavior.

2.3 Organizational Practices and Organizational Commitment

Organizational Commitment reflects employees' psychological attachment to their organization. Meyer and Allen (1997) distinguish affective, continuance, and normative commitment as conceptually different dimensions. Development-oriented performance appraisal may strengthen organizational commitment when employees perceive appraisal practices as recognition of their contributions and support for professional improvement. Research on developmental performance management provides a relevant basis for examining this association (Giamos et al., 2025; Mounir, 2022). Therefore, DPA is expected to be positively associated with OC.

H2a. Developmental Performance Appraisal is positively associated with Organizational Commitment.

Adaptive Resilient Leadership may also be associated with organizational commitment by fostering employees' confidence in managerial responses to workplace challenges. Consistent and adaptive leadership may support positive organizational attitudes and continued employee involvement. Research examining adaptive leadership and employee-related outcomes provides a conceptual foundation for this relationship (Cai et al., 2024; Yan & Nie, 2025). Accordingly, the following hypothesis is proposed.

H2b. Adaptive Resilient Leadership is positively associated with Organizational Commitment.

2.4 Organizational Commitment and Innovative Work Behavior

Organizational Commitment may encourage employees to contribute beyond their formal responsibilities because they identify with organizational objectives and value organizational success. Employees with stronger commitment may consequently demonstrate greater willingness to generate, promote, and implement ideas that improve service delivery. Research on organizational commitment and employee outcomes provides a basis for examining this association (Almagro et al., 2024; Meyer et al., 2002). Nevertheless, commitment alone does not guarantee innovation, as implementation may also depend on organizational resources and opportunities. Therefore, the following hypothesis is proposed.

H3. Organizational Commitment is positively associated with Innovative Work Behavior.

2.5 The Mediating Role of Organizational Commitment

Organizational Commitment may mediate the relationship between Developmental Performance Appraisal and Innovative Work Behavior. Development-oriented appraisal may strengthen employees' organizational attachment by signaling organizational attention to their improvement and professional growth. Stronger commitment may subsequently be associated with greater willingness to contribute innovative ideas. Research on developmental performance management (Giamos et al.,

2025) and organizational commitment (Meyer et al., 2002) provides a conceptual foundation for examining this indirect relationship. Accordingly, the following hypothesis is proposed.

H4a. Organizational Commitment mediates the relationship between Developmental Performance Appraisal and Innovative Work Behavior.

Similarly, Organizational Commitment may mediate the relationship between Adaptive Resilient Leadership and Innovative Work Behavior. Adaptive and resilient managerial behavior may contribute to positive organizational attitudes through constructive guidance and consistent responses to workplace challenges. Employees with stronger organizational commitment may, in turn, be more willing to participate in service innovation. Research on adaptive leadership and employee outcomes provides a basis for examining this proposed indirect pathway (Cai et al., 2024; Yan & Nie, 2025). Therefore, the following hypothesis is proposed.

H4b. Organizational Commitment mediates the relationship between Adaptive Resilient Leadership and Innovative Work Behavior.

Organizational Commitment (OC) is examined from two analytically distinct perspectives in this study. Within the PLS-SEM framework, OC serves as a mediator through which Developmental Performance Appraisal (DPA) and Adaptive Resilient Leadership (ARL) are indirectly associated with Innovative Work Behavior (IWB). In contrast, Necessary Condition Analysis (NCA) evaluates whether a minimum level of OC is required to achieve a specified level of IWB. Thus, mediation assesses the magnitude and statistical significance of indirect relationships, whereas NCA identifies potential necessity constraints and bottleneck levels. These approaches provide complementary but conceptually distinct insights, as a statistically significant mediation effect does not necessarily imply that OC constitutes a necessary condition for IWB (Dul et al., 2023).

The conceptual framework illustrating the seven hypothesized relationships is presented in Figure 1.

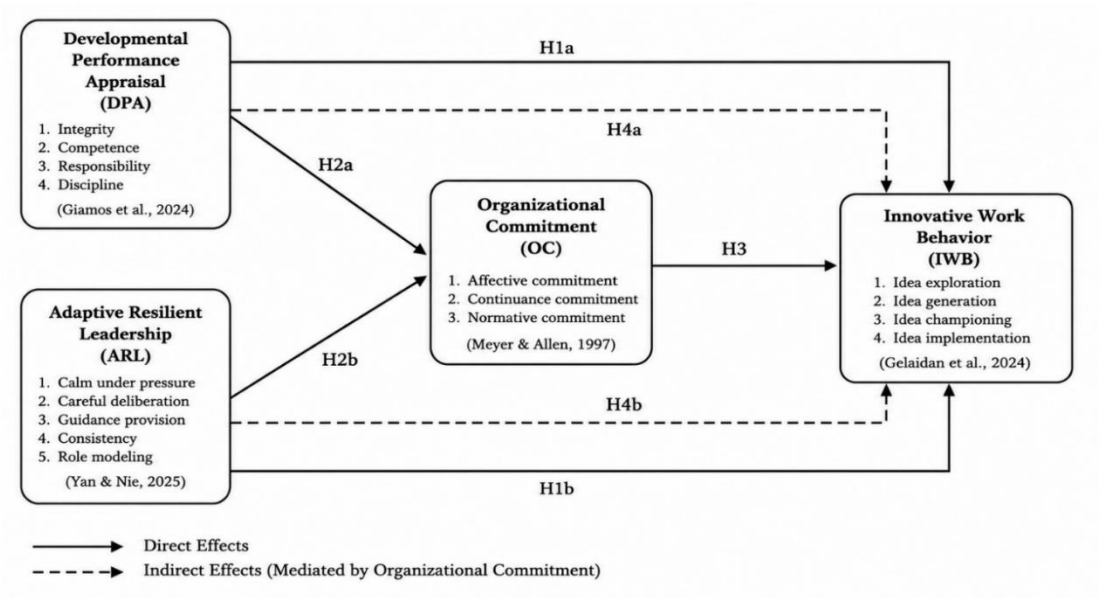


Figure 1. Conceptual Research Framework

3. METHODOLOGY

3.1 Research Design and Context

This study employed a quantitative cross-sectional survey design to examine the relationships among Developmental Performance Appraisal (DPA), Adaptive Resilient Leadership (ARL), Organizational Commitment (OC), and Innovative Work Behavior (IWB) among employees of five-star hotels in Yogyakarta, Indonesia.

The study integrated Partial Least Squares Structural Equation Modeling (PLS-SEM) and Necessary Condition Analysis (NCA) to provide complementary analytical perspectives. PLS-SEM was used to estimate direct and indirect relationships among the

constructs, whereas NCA was employed to identify the minimum levels of antecedent conditions associated with specified levels of organizational commitment and innovative work behavior.

3.2 Population and Sampling

The study population comprised 1,675 permanent employees across 12 five-star hotels in Yogyakarta, Indonesia. Permanent employees were selected as the target population because their relatively stable employment relationships were considered more appropriate for examining organizational commitment. The sample size was determined using Slovin's formula with a 7% margin of error, yielding 181.91, rounded to 182 respondents. Proportional sample allocation was applied according to the employee population of each participating hotel, resulting in an overall sampling fraction of approximately 10.9%. Respondents were recruited using a non-probability quota sampling approach, whereby questionnaires were distributed to available permanent employees at each hotel until the predetermined proportional quota was fulfilled. All 182 respondents were permanent employees. The population and sample distributions across the 12 hotels are presented in Table 1.

Table 1. Population and Sample Distribution Across Participating Hotels

No.	Hotel	Population	Sample
1	Hotel Tentrem Yogyakarta	250	27
2	Hotel Hyatt Regency Yogyakarta	175	19
3	Mustika Hotel Yogyakarta	95	10
4	Royal Ambarrukmo Yogyakarta	180	20
5	Eastparc Hotel Yogyakarta	125	14
6	Meliá Purosani Yogyakarta	185	20
7	Yogyakarta Marriott Hotel	205	22
8	Jambuluwuk Malioboro Hotel	75	8
9	Grand Mercure Yogyakarta	105	11
10	Amaranta Prambanan Yogyakarta	116	13
11	ARTOTEL Suites Bianti Yogyakarta	85	9
12	The Phoenix Hotel Yogyakarta	79	9
Total		**1,675**	**182**

Source: Perhimpunan Hotel dan Restoran Indonesia, Daerah Istimewa Yogyakarta; processed by the researchers (2026).

3.3 Research Instruments

Data were collected using a structured questionnaire comprising 32 items representing 16 indicators across four constructs. Developmental Performance Appraisal was measured using eight items covering integrity, competence, responsibility, and discipline. The conceptual relevance of developmental performance feedback was informed by Kaymaz (2011), while the four measurement dimensions were operationalized within the context of the present study. Adaptive Resilient Leadership was assessed using ten items encompassing calmness under pressure, careful decision-making, adaptability, consistency, and role modeling, adapted from Yan and Nie (2025). Organizational Commitment was measured using six items representing affective, continuance, and normative commitment, based on Meyer and Allen (1997). Innovative Work Behavior was measured using eight items covering idea exploration, idea generation, idea championing, and idea implementation, based on De Jong and Den Hartog (2010).

All questionnaire items were assessed using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The analytical measurement model comprised four DPA indicators, five ARL indicators, three OC indicators, and four IWB indicators. Each indicator was represented by two questionnaire items.

3.4 Data Analysis

Data were analyzed using PLS-SEM with SmartPLS 4. The measurement model was evaluated through standardized outer loadings, Cronbach's alpha, rho_A, composite reliability (CR), average variance extracted (AVE), and the heterotrait–monotrait ratio (HTMT). Composite reliability values above 0.70 and AVE values above 0.50 were used as reference criteria for internal consistency reliability and convergent validity, respectively (Hair et al., 2021). Discriminant validity was evaluated against the HTMT threshold of 0.90.

The structural model was assessed using inner variance inflation factors (VIF), standardized path coefficients, coefficients of determination (R^2), and effect sizes (f^2) (Hair et al., 2021). Statistical significance was evaluated through bootstrapping, with

direct and indirect effects assessed using p-values and 95% bias-corrected confidence intervals. Mediation was examined through the specific indirect effects of DPA and ARL on IWB via OC, together with the corresponding direct effects.

NCA was conducted using latent variable scores obtained from the PLS-SEM estimation. The Ceiling Envelopment–Free Disposal Hull (CE-FDH) technique was applied to estimate necessity effect sizes, with statistical significance assessed using 2,000 permutations. Ceiling accuracy and bottleneck analysis were used to identify the minimum observed levels of DPA, ARL, and OC associated with specified outcome levels. Bottleneck values were expressed as percentages relative to the observed ranges of the latent variable scores.

3.5 Respondent Profile

The final sample comprised 182 respondents, including 114 women (62.6%) and 68 men (37.4%). Most respondents were aged 21–30 years (89.0%) and had worked for one to five years (63.7%). Regarding educational qualifications, 84 respondents (46.2%) held diploma-level qualifications (D1), while 87 (47.8%) held bachelor's degrees. In terms of employment status, 182 respondents (100%) were permanent employees.

4. RESULTS

4.1 Measurement Model (Outer Model)

The measurement model was evaluated using internal consistency reliability, convergent validity, and discriminant validity. As shown in Table 2, all constructs demonstrated acceptable composite reliability (0.817–0.885) and average variance extracted (AVE = 0.535–0.654), exceeding the recommended thresholds of 0.70 and 0.50, respectively. However, Cronbach's alpha values for Developmental Performance Appraisal (DPA = 0.698) and Organizational Commitment (OC = 0.667) were below 0.70, indicating some limitations in internal consistency reliability.

Table 2. Construct Reliability and Convergent Validity

Construct	Cronbach's α	rho_A	CR	AVE
Developmental Performance Appraisal (DPA)	0.698	0.723	0.818	0.535
Adaptive Resilient Leadership (ARL)	0.837	0.847	0.885	0.606
Organizational Commitment (OC)	0.667	0.672	0.817	0.598
Innovative Work Behavior (IWB)	0.825	0.832	0.883	0.654

Note: CR = Composite Reliability; AVE = Average Variance Extracted. Source: Authors' calculations using SmartPLS 4.

Discriminant validity was assessed using the heterotrait–monotrait ratio (HTMT), the Fornell–Larcker criterion, and bootstrapped HTMT confidence intervals. As presented in Table 3, three construct pairs exceeded the HTMT threshold of 0.90: ARL–OC (0.922), ARL–IWB (0.962), and OC–IWB (1.088).

Table 3. Discriminant Validity Assessment Using HTMT

Construct	DPA	ARL	OC	IWB
Developmental Performance Appraisal (DPA)	—			
Adaptive Resilient Leadership (ARL)	0.897	—		
Organizational Commitment (OC)	0.757	**0.922**	—	
Innovative Work Behavior (IWB)	0.871	**0.962**	**1.088**	—

Note: Bold values indicate HTMT ratios exceeding 0.90. Source: Authors' calculations using SmartPLS 4.

The Fornell–Larcker results (Table 4) further indicated insufficient discriminant validity between ARL and IWB and between OC and IWB. Additionally, bootstrapped HTMT confidence intervals (Table 5) showed that only DPA–OC had an upper confidence limit below 0.90. The OC–IWB pair exhibited the greatest concern, with a 95% confidence interval of [1.013, 1.178].

Table 4. Fornell–Larcker Criterion

Construct	DPA	ARL	OC	IWB
Developmental Performance Appraisal (DPA)	**0.731**			
Adaptive Resilient Leadership (ARL)	0.680	**0.779**		
Organizational Commitment (OC)	0.541	0.702	**0.773**	
Innovative Work Behavior (IWB)	0.674	0.807	0.822	**0.809**

Note: Diagonal values represent the square roots of AVE. Source: Authors' calculations using SmartPLS 4.

Table 5. Bootstrapped HTMT Confidence Intervals

Construct Pair	HTMT	95% CI Lower	95% CI Upper
DPA–ARL	0.897	0.804	0.991
DPA–OC	0.757	0.651	0.893
DPA–IWB	0.871	0.769	0.982
ARL–OC	0.922	0.826	1.018
ARL–IWB	0.962	0.886	1.028
OC–IWB	1.088	1.013	1.178

Note: CI = Confidence Interval. Source: Authors' calculations using SmartPLS 4.

Overall, the measurement model demonstrated acceptable composite reliability and convergent validity, but discriminant validity was not fully established, particularly between Organizational Commitment and Innovative Work Behavior. Consequently, structural relationships and mediation effects involving overlapping constructs should be interpreted cautiously.

4.2 Structural Model (Inner Model)

The structural model was evaluated using collinearity statistics, standardized path coefficients, bootstrapping results, coefficients of determination (R^2), and effect sizes (f^2). The inner variance inflation factor (VIF) values were below the commonly applied threshold of 3.3, indicating no substantial collinearity among the predictor constructs.

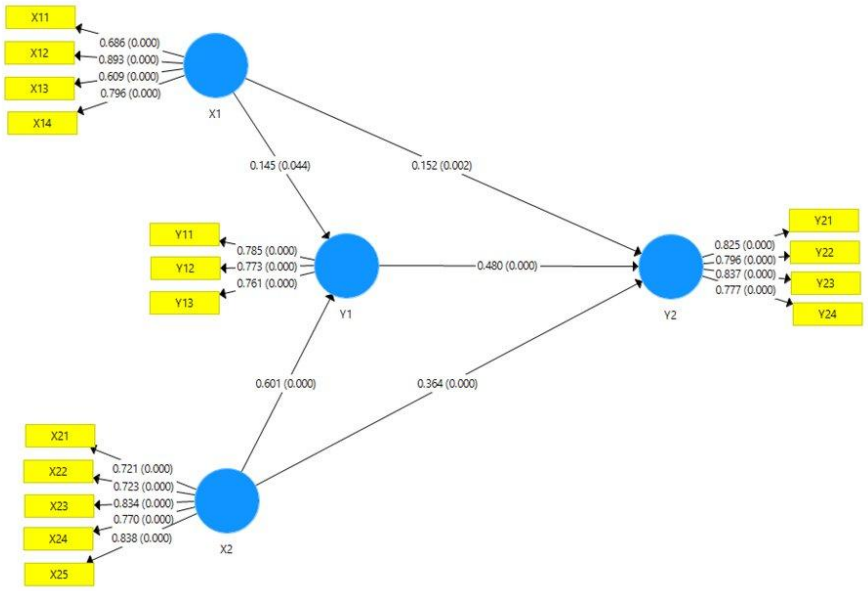


Figure 2. PLS-SEM Path Diagram with Standardized Path Coefficients and p-Values

As presented in Table 6, all five direct relationships were positive and statistically significant, with their 95% bootstrap confidence intervals excluding zero. Adaptive Resilient Leadership (ARL) showed stronger direct associations with Organizational Commitment (OC) and Innovative Work Behavior (IWB) than Developmental Performance Appraisal (DPA). Organizational Commitment was also positively associated with IWB.

Table 6. Direct Effects and Hypothesis Testing

Structural path	β	t-value	p-value	95% CI
DPA → OC	0.145	2.091	0.037	[0.003, 0.264]
DPA → IWB	0.152	3.147	0.002	[0.065, 0.244]
ARL → OC	0.601	8.606	<0.001	[0.463, 0.730]
ARL → IWB	0.364	5.245	<0.001	[0.223, 0.499]
OC → IWB	0.480	9.676	<0.001	[0.382, 0.578]

Note: β = standardized path coefficient; CI = 95% bias-corrected bootstrap confidence interval.

Table 7 summarizes the explanatory power and effect sizes of the structural model. The model explained 50.4% of the variance in OC and 79.1% of the variance in IWB. The effect sizes varied across the structural paths, with OC exhibiting the largest effect size in explaining IWB. These results describe the explanatory performance of the estimated structural model.

Table 7. Structural Model Assessment

Endogenous construct	R^2	Adjusted R^2	Predictor	f^2	Inner VIF
OC	0.504	0.499	DPA	0.022	1.938
			ARL	0.376	1.938
IWB	0.791	0.788	DPA	0.056	1.980
			ARL	0.238	2.667
			OC	0.548	2.017

Note: R^2 = coefficient of determination; f^2 = effect size; VIF = variance inflation factor.

4.3 Mediation Analysis

The mediating role of Organizational Commitment (OC) was examined using bootstrapped specific indirect effects. As presented in Table 8, both Developmental Performance Appraisal (DPA) and Adaptive Resilient Leadership (ARL) exhibited statistically significant indirect associations with Innovative Work Behavior (IWB) through OC, with their 95% bias-corrected bootstrap confidence intervals excluding zero.

The corresponding direct effects remained positive and significant, indicating complementary partial mediation for both relationships. The indirect effect of ARL on IWB through OC was larger than that of DPA. Thus, OC partially mediated both relationships in the estimated structural model.

Table 8. Direct, Indirect, and Total Effects of Organizational Commitment Mediation

Mediation path	Direct effect (β)	Indirect effect (β)	Total effect (β)	Indirect p-value	Indirect 95% CI	Mediation
DPA → OC → IWB	0.152	0.070	0.222	0.041	[0.003, 0.134]	Partial
ARL → OC → IWB	0.364	0.289	0.653	<0.001	[0.206, 0.379]	Partial

Note: β = standardized coefficient; CI = 95% bias-corrected bootstrap confidence interval. Direct effects refer to the predictor–IWB paths. Total effects represent the sum of direct and indirect effects. Both direct effects are statistically significant, as reported in Table 3.

4.4 Necessary Condition Analysis (NCA)

Necessary Condition Analysis (NCA) was performed using the Ceiling Envelopment–Free Disposal Hull (CE-FDH) technique to assess the necessary conditions for Organizational Commitment (OC) and Innovative Work Behavior (IWB). The analysis used latent variable scores from 182 respondents, with statistical significance evaluated through 2,000 permutations.

As presented in Table 9, all five necessity relationships were statistically significant. Developmental Performance Appraisal (DPA) exhibited the largest necessity effect size for both OC and IWB, while Adaptive Resilient Leadership (ARL) and OC showed comparatively smaller effect sizes for IWB. Ceiling accuracy reached 100% across all relationships.

Table 9. Necessary Condition Analysis Results

Necessary condition relationship	Effect size (d)	Ceiling accuracy (%)	Permutation p-value
DPA → OC	0.5523	100.00	0.0005
ARL → OC	0.2564	100.00	0.0005
DPA → IWB	0.4927	100.00	0.0005
ARL → IWB	0.3114	100.00	0.0005
OC → IWB	0.2423	100.00	0.0005

Note: d = necessity effect size. CE-FDH technique; 2,000 permutations. All reported relationships are statistically significant at $p < 0.05$.

The bottleneck results in Tables 10 and 11 indicate the minimum levels of the predictor constructs associated with achieving specified outcome levels. For OC, DPA consistently required a higher minimum level than ARL at the higher outcome thresholds. For IWB, DPA also exhibited the highest minimum requirement at the 80% and 90% outcome levels. These percentages are expressed relative to the observed ranges of the latent variable scores.

Table 10. Bottleneck Analysis for Organizational Commitment

OC level (%)	DPA required (%)	ARL required (%)
0	0.00	0.00
10	0.00	15.34
20	0.00	15.34
30	29.59	15.75
40	29.59	22.05
50	86.52	22.05
60	86.52	22.05
70	86.52	22.05
80	86.52	22.05
90	86.52	56.79
100	86.52	56.79

Note: Required levels represent minimum percentages relative to the observed ranges of predictor latent variable scores.

Table 11. Bottleneck Analysis for Innovative Work Behavior

IWB level (%)	DPA required (%)	ARL required (%)	OC required (%)
0	0.00	0.00	0.00
10	0.00	0.00	0.00
20	0.00	15.34	20.49
30	29.59	15.75	20.49
40	29.59	15.75	20.49
50	76.20	37.36	20.49
60	76.20	37.36	26.42
70	76.20	37.36	26.42
80	80.35	47.33	41.23
90	86.52	68.42	41.23
100	86.52	68.42	41.23

Note: Required levels represent minimum percentages relative to the observed ranges of predictor latent variable scores, rather than percentages of respondents or raw Likert-scale scores.

5. DISCUSSION

5.1 Developmental Performance Appraisal and Innovative Work Behavior

The findings demonstrate that Developmental Performance Appraisal (DPA) is positively associated with Organizational Commitment (OC) and Innovative Work Behavior (IWB), indicating that development-oriented appraisal practices are relevant to both employees' organizational attachment and their willingness to engage in innovation. These findings align with previous research highlighting the relevance of performance appraisal practices to affective organizational commitment (Mounir, 2022), the developmental orientation of performance management (Giamos et al., 2025), and the motivational implications of continuous performance feedback (Giamos et al., 2024).

However, whereas these studies primarily address performance management and feedback processes, the present research demonstrates that DPA is associated with innovative behavior both directly and indirectly through organizational commitment. This interpretation is also compatible with Thneibat et al. (2025), who examine appraisal-related pathways to innovative work behavior, and Zreen et al. (2025), who investigate performance appraisal and self-efficacy in relation to innovation. Similarly, Bindel Sibassaha et al. (2025) highlighted the positive relationship between challenging appraisal and employee innovative behavior, further supporting the relevance of performance appraisal practices in fostering workplace innovation. The findings therefore suggest that developmental appraisal may have relevance beyond performance evaluation by supporting organizational attachment and employees' innovative contributions.

From the perspective of Self-Determination Theory (SDT), development-oriented appraisal may represent a competence-supportive organizational practice because constructive evaluation and feedback can help employees recognize opportunities for improvement (Ryan & Deci, 2000). Nevertheless, the present study did not directly assess psychological need satisfaction or autonomous motivation. Accordingly, the results should be interpreted as consistent with SDT rather than as evidence that competence satisfaction explains the observed relationships. In five-star hotels, where service quality depends partly on employees' ability to respond to diverse customer expectations, the association between developmental appraisal and innovative behavior highlights the potential relevance of employee development practices to service innovation.

5.2 Adaptive Resilient Leadership and Innovative Work Behavior

Adaptive Resilient Leadership (ARL) exhibited positive associations with both OC and IWB, with stronger direct relationships than DPA. This finding indicates that employees who perceive their leaders as adaptive, resilient, and consistent also tend to report stronger organizational commitment and innovative work behavior. Yan and Nie (2025) identify resilient leadership as relevant to employees' responses to workplace adversity, while Prayag et al. (2024) emphasize the importance of leadership in fostering resilience within tourism organizations. The present findings complement these perspectives by associating adaptive resilient leadership with organizational commitment and innovative behavior among five-star hotel employees. Unlike research focused primarily on resilience-related outcomes, this study places employee innovation at the center of the leadership relationship.

The findings are also consistent with broader research highlighting the relevance of various leadership approaches to innovative work behavior (Gelaidan et al., 2024; Gil et al., 2026; Hussain et al., 2025; Saif et al., 2024). Furthermore, Junkrapor and Chienwattanasook (2026) emphasized the role of authentic leadership and psychological mechanisms in explaining employee performance, while Yahya et al. (2026) highlighted the relevance of strategic leadership to organizational innovation, change management, and sustainability. Although these studies examine different leadership approaches, mechanisms, and organizational contexts, they collectively underscore the importance of leadership in shaping employee and organizational outcomes.

The present research contributes a distinct perspective by examining adaptive resilient leadership alongside developmental appraisal and organizational commitment. In relation to SDT, adaptive leadership may provide conditions compatible with autonomy and relatedness needs (Ryan & Deci, 2000). However, because these psychological needs were not directly measured, their explanatory role remains a proposition for future research rather than an established finding.

5.3 The Mediating Role of Organizational Commitment

The mediation analysis indicates that OC serves as a complementary partial mediator in the relationships between DPA and IWB and between ARL and IWB. The persistence of significant direct relationships suggests that organizational commitment

constitutes an important, but not exclusive, pathway connecting managerial practices with innovative behavior. This finding is consistent with Meyer and Allen's (1997) conceptualization of organizational commitment as a multidimensional employee–organization relationship. It also corresponds with Munoz et al. (2023), who examine organizational support, affective commitment, and innovative behavior, and Lee and Kim (2024), who identify organizational commitment as relevant to innovation-related outcomes. Together, these studies support the relevance of employees' organizational attachment to innovative behavior, although their contexts and explanatory models differ (Almagro et al., 2024).

An important distinction concerns the nature of the mediating construct. Thneibat et al. (2025) examine affective commitment within an appraisal-related mediation framework, whereas the present study operationalizes OC through affective, continuance, and normative dimensions. Therefore, the observed indirect relationships cannot be attributed solely to employees' emotional attachment. The findings instead indicate that overall organizational commitment is associated with the translation of developmental appraisal and adaptive leadership into innovative behavior. The partial nature of the mediation further suggests that additional explanatory mechanisms may be relevant.

This finding is also consistent with Kurniasih et al. (2026), who demonstrated that work engagement serves as a mediating mechanism linking organizational practices and employee attitudes to sustainable performance. Although their study examined different constructs and organizational contexts, it reinforces the importance of psychological mechanisms in explaining how organizational conditions are associated with employee outcomes. Similarly, Binsaeed et al. (2023) demonstrated that knowledge sharing mediates the relationship between network capability and innovative work behavior, highlighting the relevance of alternative organizational mechanisms in explaining employee innovation. Future research could examine psychological need satisfaction, creative self-efficacy, or knowledge sharing as potential mechanisms, drawing on the perspectives of Ryan and Deci (2000), Gelaidan et al. (2024), Saif et al. (2024), and Binsaeed et al. (2023).

5.4 Necessary Conditions for Innovative Work Behavior

The findings reveal an important distinction between the structural relationships estimated through PLS-SEM and the necessity constraints identified through NCA. Adaptive Resilient Leadership demonstrates a stronger direct association with Innovative Work Behavior than Developmental Performance Appraisal, whereas NCA identifies Developmental Performance Appraisal as having the largest necessity effect size, followed by Adaptive Resilient Leadership and Organizational Commitment. Whereas standardized path coefficients quantify relationships within the structural model, NCA effect sizes quantify the extent of the observed outcome space constrained by insufficient levels of an antecedent. Therefore, a stronger structural association does not necessarily imply a stronger necessary condition. These complementary findings suggest that adaptive leadership and developmental appraisal may play distinct but mutually supportive roles in fostering innovative work behavior. Nevertheless, the discriminant validity concerns, particularly between Organizational Commitment and Innovative Work Behavior, warrant caution when interpreting these findings.

The bottleneck analysis further indicates that progressively higher levels of IWB require higher minimum observed levels of developmental appraisal and adaptive leadership. OC also emerged as a statistically significant necessary condition, although its necessity effect size was smaller than those of DPA and ARL. These findings suggest that organizational commitment is relevant to innovative behavior without establishing it as the dominant necessity constraint. The distinction is particularly important because the mediation results identify OC as an indirect pathway, whereas NCA assesses its role as a minimum condition associated with specified levels of IWB. Following Dul et al. (2023), meeting a necessary condition should not be interpreted as sufficient to produce the desired outcome. The bottleneck estimates are also specific to the observed data and should not be generalized as universal thresholds for hospitality organizations.

5.5 Measurement Validity and Interpretation of Findings

The measurement model revealed limitations in discriminant validity, particularly among Adaptive Resilient Leadership (ARL), Organizational Commitment (OC), and Innovative Work Behavior (IWB). Although composite reliability and convergent validity were generally acceptable, the HTMT and Fornell–Larcker assessments indicated substantial empirical overlap, especially between OC and IWB (HTMT = 1.088). This finding suggests that the constructs, despite their theoretical differences, were not sufficiently distinguishable in the present sample. Such overlap may reflect limitations in construct operationalization or shared response patterns.

These limitations warrant caution when interpreting the structural relationships and mediation effects, particularly those involving OC and IWB. The significant coefficients should not be regarded as definitive evidence of distinct causal mechanisms, while the additional validity assessments do not resolve the underlying measurement concerns. Future research should refine and independently validate the measurement instruments, employ longitudinal or multisource designs, and examine the robustness of the findings using alternative measurement specifications.

5.6 Practical Implications

The findings suggest that hotel managers should integrate adaptive leadership development with developmental performance appraisal rather than prioritize either practice solely based on its structural coefficient. Leadership development should emphasize adaptability, constructive responses to operational challenges, and support for employee initiatives, while developmental appraisal should provide regular feedback, identify competency gaps, and support individual development plans. The NCA findings indicate that insufficient developmental appraisal may constrain the attainment of higher innovative work behavior, even when adaptive leadership is present. Therefore, integrating supportive leadership, continuous developmental feedback, and organizational commitment may offer a more comprehensive approach to encouraging employee innovation.

6. CONCLUSION

This study examined the relationships among Developmental Performance Appraisal (DPA), Adaptive Resilient Leadership (ARL), Organizational Commitment (OC), and Innovative Work Behavior (IWB) among employees of five-star hotels in Yogyakarta, Indonesia. The findings indicate positive structural relationships among the constructs, with OC serving as a complementary partial mediator in the relationships between DPA and IWB and between ARL and IWB. Although ARL demonstrated a stronger direct association with IWB than DPA, Necessary Condition Analysis (NCA) identified DPA as having the largest necessity effect size for IWB. These findings highlight the distinct yet complementary insights obtained from structural and necessity-based analyses.

Theoretically, this study contributes to hospitality management research by integrating developmental performance appraisal, adaptive resilient leadership, and organizational commitment within a single framework for understanding innovative work behavior. The findings are consistent with the broader perspective of Self-Determination Theory, although the underlying motivational mechanisms were not directly examined. The integration of PLS-SEM and NCA further demonstrates the importance of distinguishing positive structural relationships from necessary conditions. Practically, hotel managers may consider strengthening developmental appraisal practices, fostering adaptive leadership, and supporting organizational commitment as organizational priorities associated with employee innovation.

This study has several limitations. Its cross-sectional design and reliance on self-reported data restrict causal interpretation and may introduce common method bias. The sample was limited to permanent employees of five-star hotels in Yogyakarta, Indonesia, which constrains the generalizability of the findings. Moreover, potential organizational differences among the participating hotels were not explicitly examined. Importantly, insufficient discriminant validity, particularly between Organizational Commitment and Innovative Work Behavior, limits confidence in the empirical distinctiveness of these constructs and warrants caution when interpreting structural relationships, mediation effects, and necessity findings. Future research should refine and independently validate the measurement instruments, employ longitudinal and multisource designs, account for organizational heterogeneity, and replicate the study across different hospitality settings using alternative measurement specifications.

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AUTHOR CONTRIBUTIONS

Tri Nur Rohmah: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Software, Visualization, Writing – original draft.

Bambang Supriadi: Conceptualization, Formal analysis, Funding acquisition, Methodology, Project administration, Resources, Supervision, Validation, Writing – review & editing.

Grahita Chandrarin: Formal analysis, Methodology, Supervision, Validation, Writing – review & editing.

Iwan Budiherwanto: Investigation, Resources, Visualization, Writing – review & editing.

CONFLICT OF INTEREST

The authors have no conflicts of interest to declare that are relevant to the content of this article.

ETHICS STATEMENT

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and applicable institutional guidelines for research involving human participants. Ethical approval for this study was obtained from the Research Ethics Committee of Universitas Merdeka Malang (Ethical Approval No. 05.1/LPPM/UM/ETIK/V/2026). All participants were informed about the purpose and procedures of the study and provided written informed consent prior to their participation. Participation was entirely voluntary, and participants were assured of the confidentiality and anonymity of their responses. No personally identifiable information was collected, and participants were informed of their right to withdraw from the study at any stage without any adverse consequences.

DATA AVAILABILITY STATEMENT

The data supporting the findings of this study were collected through a questionnaire survey involving employees of five-star hotels in Yogyakarta, Indonesia. Due to confidentiality and privacy considerations, the raw data are not publicly available. However, the data may be obtained from the corresponding author upon reasonable request, subject to applicable confidentiality requirements.

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