https://doi.org/10.63985/ttbr.v1i2.13

The Mediating Role of Organizational Learning in the Relationship Between Innovation Culture and Business Performance in Tech Startups

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Abstract : This study explores the mediating role of organizational learning in the relationship between innovation culture and business performance among technology startups in Indonesia. The research is driven by the high failure rate of startups in developing countries, often caused by inadequate adaptability and weak internal knowledge systems. Using a quantitative explanatory approach, data were collected from 125 respondents consisting of founders and functional managers of digital startups located in the Greater Jakarta area. Respondents completed structured online questionnaires, and the data were analyzed using multiple linear regression and the Sobel test to assess the mediation effect. The findings indicate that innovation culture significantly influences organizational learning ($\beta = 0.62$, $p < 0.001$) and business performance ($\beta = 0.58$, $p < 0.001$). Organizational learning also has a significant impact on business performance ($\beta = 0.53$, $p < 0.001$). The Sobel test reveals a significant partial mediation effect ($Z = 3.97$, $p < 0.001$), suggesting that organizational learning acts as a crucial mechanism in translating innovation culture into improved performance outcomes. These results highlight the need for startups to not only foster innovation but also invest in structured internal learning systems as a strategic driver for sustainable competitive advantage.

Keywords : Innovation Culture; Organizational Learning; Business Performance

Cite : Judijanto, Loso. (2025). The Mediating Role of Organizational Learning in the Relationship Between Innovation Culture and Business Performance in Tech Startups. *TechTalent & Business Review*. 1(2), 63-72. https://doi.org/10.63985/ttbr.v1i2.13

1. Introduction

Technology-based startups or tech startups have developed into one of the main driving forces in the global digital economy. Their role is not only limited to providing innovative services, but also being a catalyst for economic and social transformation, especially in the era of Industry 4.0 and Society 5.0. According to the Startup Genome report (2022), more than 90% of global startups fail in the first three years due to an inability to adapt to market dynamics and weaknesses in internal organizational structures. In Indonesia, the number of startups continues to increase from year to year, making the country one of the largest startup ecosystems in Southeast Asia (Bekraf, 2020). However, the high number of occurrences is not accompanied by a high level of sustainability. Many startups fail due to the lack of an adaptive organizational management system, including a weak organizational culture of innovation and learning (Kusumawati Rina Lestari; Fitrani, Eka, 2021). Therefore, there needs to be a conceptual and empirical approach that examines the relationship between innovation culture, organizational learning, and startup business performance.

A culture of innovation is a set of values, norms, and beliefs that encourage the creation of new ideas, experimentation, and acceptance of risk and failure as part of the learning process (Martins F., 2021). In the startup environment, this culture is key because organizations must continue to innovate in products, services, and business processes to survive in competitive market pressures (Dobni et al., 2019). A study by Kusumawati Rina Lestari; Fitrani, Eka (2021) confirms that innovation culture plays an important role in shaping the strategic orientation of organizations that are more agile and responsive to external changes. However, other studies show that the existence of a culture of innovation does not necessarily guarantee the achievement of optimal business performance. An innovative culture without a strong organizational learning structure can result in innovation bias that is not applicable or fails in the implementation process (Sawy P. A., 2020) . This is where organizational learning plays an important role as a mechanism that allows startups to absorb, adapt, and disseminate knowledge to produce effective and sustainable actions (Crossan et al., 1999; Marsick Karen E., 2003)

Lopez José M. M.; Ordás, Camilo J. V., (2005) explain that companies that develop systematic internal learning processes tend to show improvements in operational efficiency, strategic decision-making, and product development accuracy. Research by Andreeva & Kianto (2018) shows that the interaction between innovation culture and organizational learning has a synergistic impact on the innovative capabilities of organizations. This means that a strong culture of innovation without effective organizational learning is likely to fail in generating a sustained competitive advantage. In Indonesia, research on the relationship between innovation culture, organizational learning, and business performance is still relatively limited, especially in the context of technology startups. Most previous research has been conducted more on the manufacturing sector (Jiménez-Jiménez R., 2011), state-owned enterprises (Pratama A. AU3-Wibowo, S., 2022) , or large-scale companies (Hurley & Hult, 1998), so they do not reflect the characteristics of startups that are more dynamic and have a more flexible organizational structure. The research of Fitriani & Hapsari (2021), for example, only examines the direct influence of innovation culture on performance, without considering internal mechanisms such as organizational learning.

From the description above, it is clear that there is a gap in the literature that simultaneously discusses the influence of innovation culture on business performance with organizational learning as a mediating variable, especially in the context of technology startups in developing countries. Most studies are still descriptive or correlative, having not tested tripartite structural models based on Resource-Based View theory (Barney, 1991) and dynamic capabilities (Teece, 2020). The latest in this study is that this research can analyze the mediating role of organizational learning in the relationship between innovation culture and business performance in technology startup companies. So with this update, the purpose of this research is to analyze the mediating role of organizational learning in the relationship between innovation culture and business performance in technology startup companies.

The conceptual framework in this study is based on the theory of Resource-Based View (RBV) and Dynamic Capabilities. RBV states that unique and non-replicable internal resources such as organizational culture and learning capabilities can be a sustainable competitive advantage (Barney, 1991) . In the context of startups, innovation culture serves as a strategic resource that shapes innovative mindsets and behaviors, while organizational learning is a dynamic capability that allows startups to survive in uncertainty. Dynamic capability theory expands RBV by emphasizing an organization's ability to respond to environmental change through innovation, resource reallocation, and knowledge-based decision-making (Teece Margaret A.; Leih, Sohvi, 2016) . Tech startups, operating in high uncertainty, need the ability to sense (detect opportunities), seize (take action), and

transform (adapt internally) (Eisenhardt & Martin, 2020). Organizational learning is a medium for the transformation process.

Previous research integrating RBV and dynamic capabilities in the startup context includes a study by Nguyen Liem Viet; Bucic, Tania; Phong, Nguyen Dinh (2021) that showed that innovation culture has a significant effect on the speed of adaptation of digital business strategies through the mediation of organizational agility. Another study by Safitri Reni; Wibowo, Agus (2022) on Indonesian fintech startups shows that team learning capabilities have an impact on time-to-market and user engagement, especially when the culture of innovation is strengthened by transformative leadership. In addition, a study by Raharjo H., (2023) confirms that the integration of innovation culture and team learning contributes directly to improved financial performance and market growth, especially in startups that are still in the early stages of growth. This reinforces the importance of testing the organizational learning mediation model in the relationship between innovation culture and startup performance conducted in this study. However, there are still few studies that structurally examine these relationships using quantitative methods based on structural equation models.

Studies from developing countries such as India, Vietnam, and Nigeria show a similar pattern: many startups have a high culture of innovation but fail to execute business strategies due to weak internal learning and evaluation systems (Genome, 2022; Wijaya B., 2021) . In Indonesia, startups are often trapped in the euphoria of user growth without adequate investment in the organization's knowledge management and learning systems(Amir et al., 2020). This leads to low internal readiness in dealing with external pressures such as regulations, technological disruptions, and market shifts. Therefore, this research has a high contextual urgency because it discusses how to manage the culture of innovation so that it is not only symbolic, but truly internalized through continuous organizational learning, so that it has an impact on real performance. This study also complements the literature gap in the development of conceptual models that are applicable in the context of Indonesian startups, which have limited resources but enormous growth potential.

There remains a gap in the literature regarding how innovation culture translates into business performance through organizational learning, particularly in the startup context in developing countries. Most studies are descriptive or correlational and do not test comprehensive structural models grounded in Resource-Based View (Barney, 1991) and Dynamic Capabilities Theory (Teece, 2020). Therefore, this study aims to analyze the mediating role of organizational learning in the relationship between innovation culture and business performance in technology startups. This research contributes to theory development by integrating RBV and dynamic capability frameworks, and offers practical insight into how internal learning systems can strengthen the strategic impact of innovation in startup environments.

2. Method

This study employed a quantitative approach with an explanatory design aimed at analyzing the mediating role of organizational learning in the relationship between innovation culture and business performance in technology startup companies. The research was conducted in the Greater Jakarta area, which represents the central hub of Indonesia's digital startup ecosystem. The study was carried out between February and April 2025. The target population comprised technology-based startups that had been operating for at least two years, with formal organizational structures and a focus on developing digital-based products or services (e.g., fintech, edutech, healthtech, SaaS). A purposive sampling technique was used, targeting startups with more than 10 employees and a record of

customer growth within the past two years. A total of 125 respondents participated in the study, consisting of founders, co-founders, or functional managers familiar with the internal organizational dynamics.

Data collection was conducted using an online questionnaire based on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The research instrument measured three primary variables. The independent variable, Innovation Culture (X), was assessed using indicators such as support for new ideas, tolerance for failure, innovation drive, and cross-functional collaboration, adapted from Dobni (2008) and Kusumawati et al. (2021). The mediating variable, Organizational Learning (M), included dimensions such as knowledge acquisition, internal reflection, knowledge-sharing systems, and adaptive capability, referring to Marsick and Watkins (2003). The dependent variable, Business Performance (Y), was measured based on managerial perceptions of revenue growth, customer acquisition, process efficiency, and competitive advantage, following the scale developed by Delaney and Huselid (1996).

To ensure measurement quality, a validity test was conducted using Pearson correlation analysis. All questionnaire items showed significant item-total correlations ($r > 0.30$, $p < 0.05$), indicating strong construct validity. Reliability testing was carried out using Cronbach's Alpha, with results indicating satisfactory internal consistency: innovation culture ($\alpha = 0.84$), organizational learning ($\alpha = 0.87$), and business performance ($\alpha = 0.81$), all exceeding the minimum threshold of 0.70. Data analysis was performed in three stages of multiple linear regression: (1) testing the direct effect of innovation culture on business performance (total effect), (2) examining the effect of innovation culture on organizational learning, and (3) testing the effect of organizational learning on business performance while controlling for innovation culture. To assess the mediating effect, the Sobel test was applied using a manual Excel-based calculator. The Z-value was computed based on the coefficients and standard errors from the a-path (X → M) and b-path (M → Y), following the standard Sobel test formula. Significance was determined by comparing the resulting Z-score to the critical value ($p < 0.05$). Prior to regression analysis, standard assumption tests including normality, multicollinearity, and heteroscedasticity were performed to confirm the appropriateness of the regression model.

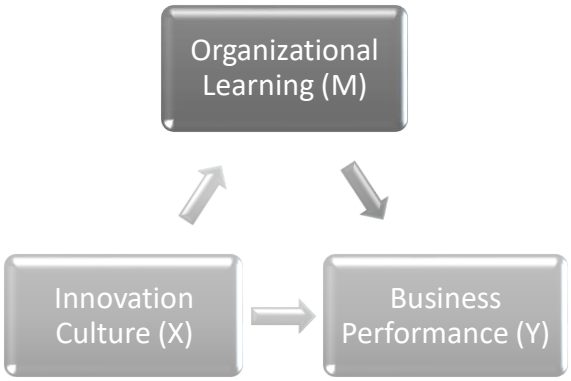

Figure 1. Research Framework

3. Results and Discussion

3.1 Normality Test

The following results of the normality test with the graph method can be seen in the following figure 2.

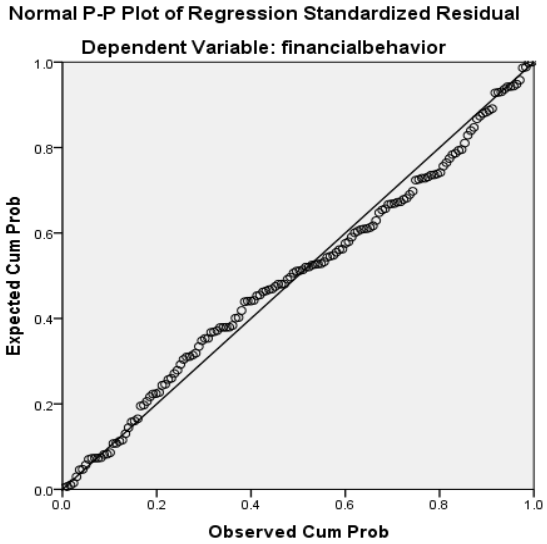

Figure 2. Normality Test Results

Based on figure 1, it can be seen that there is a normal probability *plot graph* showing a normal graph pattern. This can be seen from the point that spreads around the normal chart and the spread follows a diagonal line. In addition, the results of the normality test using statistical tests on the SPSS application can be seen in table 1 of the Kolmogorov-Smirnov One-Sample test.

Table 1. One-Sample Kolmogorov-Smirnov Test Results

		Unstandardized Residual
N		154
Normal Parameters[a,b]	Mean	.0000000
	Hours of deviation	3.81294214
Most Extreme Differences	Absolute	.062
	Positive	.062
	Negative	-.055
Test Statistic		.062
Asymp. Sig. (2-tailed)		.200c,d
a. Test distribution is Normal.		

Based on the results of the above outuput, it can be seen that the significance value is 0.200. Because the significance is more than 0.05 (0.200 > 0.05), it can be concluded that the data in the study conducted are normally distributed. If the data has been distributed normally, the regression model can be used because it meets the assumption of normality.

3.2 Multicollinearity Test

The results of the multicollinearity test using statistical tests on the SPSS application can be seen in table 2 of the multicollinearity test.

Table 2. Multicollinearity Test

Coefficientsa

Model		Unstandardized Coefficients B	Std. Error	Itself.	Collinearity Statistics Tolerance	BRIGHT
1	(Constant)	63.163	7.693	.000		
	innovationculture	-.029	.078	.708	.994	1.006
	organizationallearning	-.005	.074	.948	.940	1.063
a. Dependent Variable: business performance						

Based on the table above in the "Collinearity Statistics" section, it is known that the Tolerance value for the innovation culture variable (X) is 0.994 > 0.10 and the Tolerance value for the organizational learning mediation variable (M) is 0.940 > 0.10 While the VIF value for the innovation culture variable (X) is 1.006 < 10.00 and the VIF value for the organizational learning mediation variable (M) is 1.063 < 10.00. Based on the basis of the multicollinearity test, it can be concluded that there are no symptoms of multicollinearity in the regression model.

3.3 Heteroscedasticity Test

The results of the heteroscedasticity test using statistical tests on the SPSS application can be seen in table 3 of the heteroscedasticity test

Table 3. Heteroscedasticity test

Coefficientsa

Model		Unstandardized Coefficients B	Std. Error	Itself.	Collinearity Statistics Tolerance	BRIGHT
1	(Constant)	5.310	5.117	.301		
	innovationculture	.013	.052	.804	.994	1.006
	organizationallearning	-.041	.049	.407	.940	1.063

a. Dependent Variable: Abs_RES

Based on the results of the above output, it is known that the significance value (Sig.) for the innovation culture variable (X) is 0.804, and the significance value (Sig.) for the organizational learning mediation variable (M) is 0.407. Because the Sig. value > 0.05 is in accordance with the basis of decision-making in the glycer test, it can be concluded that there are no symptoms of heteroscedasticity in the regression model

3.4 Partial T-Test in Regression Analysis

The results of the regression test are in the following table

Table 5. Regression Test Results (Regression Coefficient)

Coefficientsa

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Itself.
1	(Constant)	40.425	6.665		6.066	.000
	Innovation culture	.162	.074	.173	2.196	.030
	Organizationallearning	.186	.077	.191	2.432	.016

a. Dependent Variable: business performance

Based on the table above, for the financial literacy variable, the significance value obtained is 0.030. Since the significance is less than 0.05 (0.000 < 0.05), it can be concluded that the innovation culture variable (X) has a significant influence on the business performance variable (Y). As for the organizational learning mediation variable (M), the significance value obtained was 0.016. Because the significance is less than 0.05 (0.000 < 0.05), it can be concluded that the organizational learning mediation variable (M) has a significant influence on the business performance variable (Y).

3.5 Sobel Test

The first regression showed that innovation culture (X) had a significant effect on business performance (Y), with a coefficient of $\beta = 0.58$, $t = 7.24$, and $p < 0.001$. In the second regression, innovation culture (X) had a significant effect on organizational learning (M) with $\beta = 0.62$, $t = 8.10$, and $p < 0.001$. The third regression was that when X and M were included together as predictors of Y, innovation culture (X) remained significant with $\beta = 0.25$ ($t = 2.58$, $p = 0.011$) and organizational learning (M) had a significant effect on business performance (Y) with $\beta = 0.53$ ($t = 5.96$, $p < 0.001$). A decrease in the coefficient from 0.58 to 0.25 indicates partial mediation.

To test the significance of the mediated effect of organizational learning on the relationship between innovation culture and business performance, the Sobel test was calculated. The value of path a (the influence of innovation culture on organizational learning) was 0.62 with a standard error (SEa) of 0.09, and the coefficient of path b (the effect of organizational learning on business performance with innovation culture control) was 0.53 with a standard error (SEb) of 0.11. Here are the results of the Sobel test:

Table 6. Sobel Test

Mediation Pathway	Coefficients (β)	HERSELF	From Sobel	p-value	Conclusion
Culture of Innovation → Organizational Learning (a)	0.62	0.09			
Organizational Learning → Business Performance (b)	0.53	0.11			
Total Mediation (a × b)	0.3286	-	3.97	< 0.001	Significant Mediation

Thus, it can be concluded that organizational learning significantly mediates the influence of innovation culture on business performance. This means that the culture of innovation in tech startups not only has a direct impact on improving performance, but also indirectly through strengthening the organization's learning process. The existence of partial mediation shows that some of the influence of the innovation culture works through organizational learning, and some of it still has a direct effect on business results.

3.6 Innovation Culture Has a Significant Impact on Business Performance

The first regression results showed that the culture of innovation had a positive and significant effect on business performance ($\beta = 0.58$, $p < 0.001$). This supports the findings of Hurley & Hult (1998) and Dobni et al. (2019) that organizations with innovative cultures tend to have greater strategic flexibility and business growth. In the context of startups, innovation culture helps organizations adapt quickly to market changes, accelerate the product innovation process, and foster competitive advantage (Kusumawati Rina Lestari; Fitrani, Eka, 2021) . These results are consistent with the theory of Resource-Based View (Barney, 1991) which places the culture of innovation as a resource that is not easy to imitate and is a differentiator of performance.

3.7 Culture of Innovation Influences Organizational Learning (a = 0.62, p < 0.001)

Further regression analysis showed that the culture of innovation had a significant positive influence on organizational learning ($\alpha = 0.62$, $p < 0.001$). This is consistent with the theory of Dynamic Capabilities (Teece et al., 2016), which states that the ability to innovate and learn quickly is a dynamic ability that is very important for organizational survival. A culture of innovation creates a climate that supports continuous learning through values such as experimentation, empowerment, and tolerance for failure. Andreeva & Kianto (2018) research supports these findings, asserting that innovative cultures are able to build a robust learning framework through strengthening internal structures and processes, including training, team reflection, and knowledge-sharing forums. In the context of startups, support for new ideas and a work environment that does not punish mistakes becomes a conducive space for simultaneous learning and innovation.

3.8 Organizational Learning Has a Significant Effect on Business Performance (b = 0.53, p < 0.001)

Furthermore, organizational learning was found to have a positive and significant effect on business performance ($b = 0.53$, $p < 0.001$). These results support Crossan et al.,

(1999) and Marsick Karen E., (2003), who state that learning organizations are able to adapt effectively to change and create sustainable innovations that support performance growth. The ability to process experience into collective knowledge makes organizations more adaptive to market uncertainties and opportunities. In the context of startups, these results confirm the importance of the learning-by-doing process in the face of competition and rapidly changing market demands. Startups that systematically evaluate internal processes, manage experiences, and shape learning cycles, are able to avoid stagnation and maintain competitiveness (Safitri Reni; Wibowo, Agus, 2022). Thus, organizational learning serves as a catalyst for innovation and information-driven decision-making.

3.9 Organizational Learning Mediates the Relationship of Innovation Culture → Business Performance (Z Sobel = 3.97, p < 0.001)

The Sobel test shows that organizational learning significantly mediates the influence of innovation culture on business performance. This means that most of the impact of innovation culture does not work directly, but through internal mechanisms in the form of organizational learning. These results show the existence of partial mediation, as seen from the decrease in the coefficient from $\beta = 0.58$ to $\beta = 0.25$ when a mediator is inserted. These findings enrich the literature that has been dominated by a direct approach in assessing the influence of innovation culture on business performance, as criticized by Fitriani & Hapsari (2021). By adding mediation variables, this study provides a more comprehensive and contextual understanding of the mechanisms that work within startup organizations. This approach also reinforces the ideas of Lopez José M. M.; Ordás, Camilo J. V., (2005) and Nguyen Liem Viet; Bucic, Tania; Phong, Nguyen Dinh (2021), who suggest the need to explore indirect pathways through organizational learning, although it has not been extensively tested quantitatively in the context of developing countries such as Indonesia. Based on the results of the regression and Sobel test:

- Innovation culture has been proven to have a direct and indirect influence on business performance.
- Organizational learning plays a significant mediator in these relationships.
- Mediation is partial, meaning that organizational learning reinforces but does not completely replace the direct influence of the culture of innovation on business outcomes.

4. Conclusion

From the research that has been conducted, it can be concluded that organizational learning plays a significant role as a partial mediating variable in the relationship between innovation culture and business performance in technology startup companies. Innovation culture is proven not only to have a direct effect on improving business performance, but also indirectly through strengthening organizational learning capacity. This indicates that the success of an innovation culture in driving performance does not depend solely on the creation of new ideas, but also on the organization's ability to acquire, manage, and transform knowledge on an ongoing basis. Thus, organizational learning is an essential internal mechanism in optimizing the influence of innovation culture on the achievement of superior and sustainable business performance in the context of dynamic and competitive startups.

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