

The Influence of Learning Organizations and Innovation on Sustainable Village Development

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ARTICLE INFO

Keywords: Learning, Innovation, Sustainability Organization

Received : 21 May

Revised : 21 June

Accepted: 25 July

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ABSTRACT

Village governments face complex problems and challenges in development. Sustainable village development is an approach that will lead villages toward economic, social, and environmental improvement and balance. The purpose of this study is to analyze the influence of learning organizations and innovation on sustainable village development. The research was conducted in 105 (one hundred and five) self-reliant villages in the Village Development Index (IDM) in Lampung Province in 2022 from March to May 2025, with respondents being village heads and village secretaries. Data collection was conducted using a Google Form (GF) questionnaire. Data analysis was performed using Structural Equation Modeling (SEM) with the SmartPLS application. The results of the study indicate that learning organizations have a significant influence on innovation. Learning organizations have no significant influence on sustainable village development. Innovation has a significant influence on sustainable village development. Learning organizations have an influence on sustainable village development through the mediator of innovation.

INTRODUCTION

Amidst rapid social change with various complex and uncertain challenges of the times, village governments in Indonesia still face various obstacles and problems, including the quality of village head services to the community, which is not yet optimal, ranging from time discipline, responsiveness in taking action, and the long time required to complete administrative procedures (Telaumbanua et al., 2022). a lack of cooperation among village government institutions, the presence of programs that are not targeted effectively, and the village government's slow response in addressing the aspirations and needs of the village community (Rudiadi et al., 2021); insufficient coordination between the government and other village apparatus and a lack of firmness in fulfilling their roles as village governments or village heads (Simbolon et al., 2021); and a lack of assertiveness from the village government (Palakua et al., 2021). The village government is not yet communicative and creative, both in its approach and in addressing village issues (Pandjaitan, R. H., 2020). In facing these various problems, the village government must have competence and commitment (Prestya, 2022), good leadership with good governance of the village administration system (Ali and Saputra, 2020), improvements in village administration management (Arwildayanto et al., 2022), management commitment, budget participation, implementation of internal control systems (Sofyani and Ardiyanto, 2022), and the existence of a performance evaluation process for village officials (Alaslan, A., 2016). With this, the village government will be able to adapt to various changes and challenges, thereby achieving sustainable village development. A sustainable village is defined as a village that is able to manage its natural resources and environment sustainably, provide adequate basic services, and have a high level of welfare for its residents (World Bank, 2021).

In assessing the sustainability of village development, the Village Development Index (IDM) can be reviewed. This is based on the similarity between sustainability indicators and the composite index in the Village Development Index (IDM), which serves as the basis for determining a village's status across three (3) main indicators: economic, social, and environmental (ecological). In the Regulation of the Minister of Villages, Development of Disadvantaged Regions, and Transmigration of the Republic of Indonesia No. 2 of 2016 on the Village Development Index, it is explained that the Village Development Index (IDM) is a composite index assessed through three measurements of resilience in the fields of (1) social, (2) economic, and (3) environmental or ecological. Based on these three indices, villages are categorized into five statuses: (1) extremely underdeveloped villages, (2) underdeveloped villages, (3) developing villages, (4) advanced villages, and (5) self-reliant villages (<https://idm.kemendesa.go.id/view/detil/1/tentang-idm>).

Based on the 2022 Village Development Index (IDM) progress data published by the Lampung Province Village Community Empowerment and Transmigration Office, out of a total of 2,435 villages in Lampung Province, there are 38 underdeveloped villages, 1,489 developing villages, 803 advanced villages, and 105 self-reliant villages (Table 1).

Table 1. Summary of IDM Status in Lampung Province in 2022

NO	REGENCY	SUB-DISTRICT	VILLAGE	IDM STATUS				
				VERY UNDERDEVELOPED	UNDERDEVELOPED	DEVELOPING	ADVANCED	INDEPENDENT
1	South Lampung	17	256	0	1	165	90	0
2	Central Lampung	28	301	0	0	138	147	16
3	North Lampung	23	232	0	2	194	36	0
4	West Lampung	15	131	0	0	21	63	47
5	Tulang Bawang	15	147	0	3	107	33	4
6	Tanggamus	20	299	0	3	220	76	0
7	Lampung Timur	24	264	0	4	160	96	4
8	Way Kanan	15	221	0	2	155	54	10
9	Pesawaran	11	144	0	0	103	31	10
10	Pringsewu	9	126	0	0	32	82	12
11	Mesuji	7	105	0	9	51	45	0
12	Tulang Bawang Barat	9	93	0	0	64	28	1
13	Pesisir Barat	11	116	0	14	79	22	1
JUMLAH		204	2435	0	38	1489	803	105

Source: Lampung Provincial Office of Village Community Empowerment and Transmigration, 2022

From this data, it can be seen that 63% (1,527) of villages in Lampung province are still in the underdeveloped and developing categories, 32.9% (803) of villages are classified as advanced villages, and only 4.3% (105) of villages are classified as independent villages.

The self-reliant village status in the IDM has indicators similar to sustainable development, aiming for villages to have value and culture, self-reliance, and sustainability across three main aspects: social, economic, and ecological. Self-reliant villages are those that have achieved the highest composite index scores in social, economic, and ecological (environmental) indicators. Based on this, the researchers selected self-reliant villages as the research location because they meet the indicators of sustainable development, which are also grounded in social, economic, and environmental aspects.

Research on learning organizations has been conducted in educational institutions (Filho et al., 2018), (Firmansyah et al., 2022) and companies (Malik and Garg, 2020), (Chen et al., 2018). However, there has been little research on learning organizations in public institutions, particularly village governments. Existing research on village innovation includes studies related to village public service innovation (Heri et al., 2022), (Idwar, 2022), (Muhammad, 2022), (Lambuaso, 2020), and village innovation actors (Rahmawati, 2022), all of which use a qualitative approach. Few studies have combined village innovation with learning organization variables using a quantitative approach. This study will

describe sustainable village development from the perspective of learning organizations and innovation as a form of organizational transformation in public services in villages.

This study aims to test and analyze the influence of learning organizations and innovation on sustainable village development through the following questions: (1). Does the learning organization have a significant influence on innovation? (2). Does the learning organization have a significant influence on sustainable village development? (3) Does innovation significantly influence sustainable village development? and (4) Does innovation mediate the influence of learning organizations on sustainable village development?

LITERATURE REVIEW

A learning organization is an entity that continuously improves its capabilities to create a desired future through collective learning and adaptation to change. This concept was first popularized by Peter Senge in his book *The Fifth Discipline: The Art and Practice of the Learning Organization* (1990), where he emphasized the importance of systemic learning and systems thinking. A learning organization does not only focus on individual knowledge but also on the organization's ability to adapt and grow amid the dynamics of external and internal environments (Senge, 1990). Senge emphasizes that a learning organization consists of five core disciplines: personal mastery, mental models, shared vision, team learning, and systems thinking. Senge stresses the importance of organizations in facilitating continuous learning to enhance performance and adaptability. Learning organizations encourage continuous learning at all levels to improve capabilities and competitiveness. Marsick and Watkins (2003) argue that a learning organization is not merely a collection of individuals who learn within the organization but rather focuses on the learning processes that emerge at different levels within the organization. Marsick & Watkins (2003) state that a learning organization is one that is capable of learning and requires ongoing efforts to engage in learning and transform itself through the involvement of all employees in collaborative processes and collective changes guided by shared values.

Marsick and Watkins emphasize seven key actions as the foundation for change: (1) Creating opportunities for continuous learning, (2) Promoting inquiry and dialogue, (3) Encouraging collaboration and team learning, (4) Establishing a system that captures and shares learning (embedded system), (5). Empowering people toward a shared vision (empowerment) (6). Connecting the organization with its surrounding environment (system connection) (7). Providing strategic leadership for learning (strategic leadership).

Marsick and Watkins state that to build a learning organization, it is necessary to examine the organization's capacity for learning and change at four levels, including (1) changes in behavior, knowledge, motivation, and learning capacity at the individual level, and (2). Changes in the capacity for innovation and the creation of new knowledge at the group level (3). Changes in the organization's capacity to innovate and create new knowledge (4). Changes in the overall capacity of the community and society through work quality and other factors. This learning organization theory is relevant to this study because

learning organizations can contribute to sustainable village development by enhancing the village's adaptability and innovation capabilities.

Previous studies have shown that there is an influence between learning organizations and sustainability. (Abdullahi et al., 2025) in their study conducted in public sector organizations (PSOs) in Nigeria stated that there is a strong and positive predictive relationship between organizational learning and organizational sustainability, confirming the important role of learning organizations in promoting sustainable organizational practices. Learning can also contribute to the design and implementation of educational interventions and learning assessments toward sustainability (Rodríguez and Barth, 2020).

Rogers (2003) states that innovation is an idea, practice, or object that is considered new by an individual or other adoption unit. It does not matter, as far as human behavior is concerned, whether an idea is objectively new as measured by the time interval since its first use or discovery. The perceived novelty of the idea to the individual determines the reaction. If the idea appears new to the individual, it is an innovation.

Rogers (2003) describes the innovation process as a process of reducing uncertainty, and he proposes attributes of innovation that help reduce uncertainty about innovation. The development of public service innovation prioritizes the public interest as the main benchmark in providing quality services. Innovation has five attributes, including Relative Advantages, Compatibility, Complexity, Trialability, and Observability.

(Lejbert and Kovyazin, 2022) state that innovation has a positive impact on achieving sustainable development through social, environmental, and economic innovation. Within the rural context, (Stojanova et al., 2022) state that one feasible solution for rural development is the Rural Digital Innovation Center, an efficient way to enhance the local environment sustainably, thereby influencing local businesses, communities, and local governments. Village innovation will provide technological solutions and skilled labor that lead to optimal business processes, cost reduction, and employment opportunities, as well as contribute to social sustainability by promoting digital inclusion and a more equitable distribution of social opportunities.

From the above literature review, the research framework can be described as follows (Figure 1).

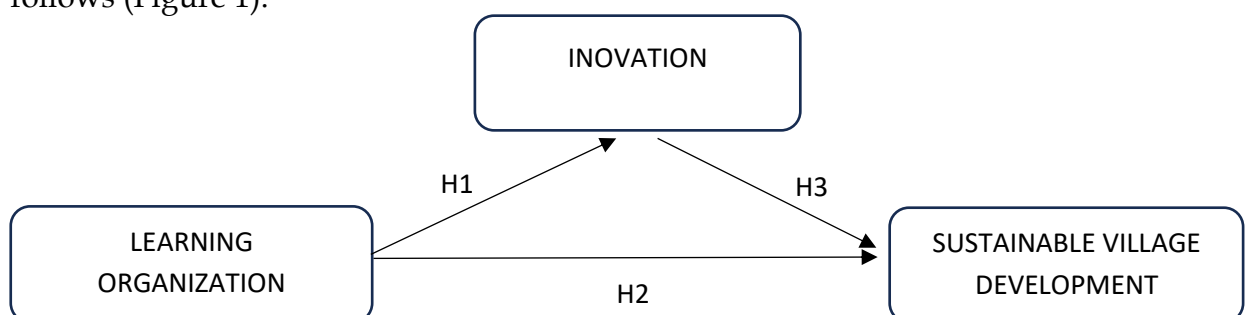


Figure 1. Conceptual Framework

The hypotheses developed from this study are (H1) Learning organizations have a positive influence on innovation. (H2) Learning

organizations have a positive influence on sustainable village development. (H3) Innovation has a positive influence on sustainable village development. (H4) Learning organizations have a positive influence on sustainable village development with innovation as a mediator.

METHODOLOGY

The population in this study includes all 2,435 villages in Lampung Province. Sampling was conducted using purposive sampling, a sampling technique based on specific considerations. In this case, the main consideration was that the villages had specific criteria, namely independent village status based on IDM. This selection was made to ensure that the villages included in the study met specific criteria relevant to the research objectives (Tongco, 2007).

The study was conducted in 105 (one hundred and five) villages with independent village status on the IDM list, spread across 9 districts in Lampung Province from March to May 2025. There were 2 (two) respondents per village, consisting of the Village Head and Secretary, with a total of 105 villages x 2 people = 210 respondents in this study.

The names of the villages selected as research subjects are listed in Table 2 below.

Table 2. Location of Research Villages

No	NAMA KABUPATEN	NAMA KECAMATAN	NAMA DESA	NILAI IDM
1	Central Lampung	Kalirejo	Kalirejo	0.837
2	Central Lampung	Kalirejo	Ponco Warno	0.824
3	Central Lampung	Bangun Rejo	Bangun Rejo	0.827
4	Central Lampung	Trimurjo	Pujo Kerto	0.820
5	Central Lampung	Punggur	Tanggul Angin	0.821
6	Central Lampung	Seputih Raman	Rama Indra	0.824
7	Central Lampung	Seputih Raman	Rukti Harjo	0.820
8	Central Lampung	Seputih Banyak	Tanjung Harapan	0.822
9	Central Lampung	Seputih Surabaya	Gaya Baru li	0.818
10	Central Lampung	Terusan Nunyai	Bandar Agung	0.892
11	Central Lampung	Terusan Nunyai	Tanjung Anom	0.869
12	Central Lampung	Bumi Ratu Nuban	Wates	0.829
13	Central Lampung	Bandar Mataram	Jatidatar Mataram	0.827
14	Central Lampung	Sendang Agung	Sendang Agung	0.821
15	Central Lampung	Kota Gajah	Kota Gajah	0.825
16	Central Lampung	Bumi Nabung	Sri Kencono	0.848
17	West Lampung	Balik Bukit	Gunung Sugih	0.823
18	West Lampung	Balik Bukit	Kubu Perahu	0.836
19	West Lampung	Balik Bukit	Sebarus	0.840
20	West Lampung	Balik Bukit	Wates	0.829
21	West Lampung	Sumber Jaya	Way Petai	0.825
22	West Lampung	Belalau	Hujung	0.873

23	West Lampung	Belalau	Kejadian	0.863
24	West Lampung	Belalau	Kenali	0.820
25	West Lampung	Way Tenong	Karang Agung	0.842
26	West Lampung	Way Tenong	Puralaksana	0.877
27	West Lampung	Way Tenong	Sukaraja	0.817
28	West Lampung	Way Tenong	Tanjunggraya	0.819
29	West Lampung	Sekincau	Giham Sukamaju	0.881
30	West Lampung	Sekincau	Pampangan	0.859
31	West Lampung	Sekincau	Waspada	0.827
32	West Lampung	Suoh	Banding Agung	0.849
33	West Lampung	Suoh	Ringin Sari	0.858
34	West Lampung	Suoh	Suka Marga	0.855
35	West Lampung	Suoh	Sumber Agung	0.859
36	West Lampung	Suoh	Tugu Ratu	0.881
37	West Lampung	Batu Brak	Pekon Balak	0.825
38	West Lampung	Sukau	Tanjung Raya	0.860
39	West Lampung	Gedung Surian	Ciptawaras	0.838
40	West Lampung	Gedung Surian	Gedung Surian	0.819
41	West Lampung	Gedung Surian	Puramekar	0.831
42	West Lampung	Gedung Surian	Trimulyo	0.907
43	West Lampung	Kebun Tebu	Muara Baru	0.834
44	West Lampung	Kebun Tebu	Muara Jaya I	0.841
45	West Lampung	Kebun Tebu	Muara Jaya li	0.845
46	West Lampung	Kebun Tebu	Pura Jaya	0.836
47	West Lampung	Kebun Tebu	Pura Wiwitan	0.858
48	West Lampung	Air Hitam	Gunungterang	0.884
49	West Lampung	Air Hitam	Semarang Jaya	0.865
50	West Lampung	Air Hitam	Sidodadi	0.867
51	West Lampung	Air Hitam	Sri Menanti	0.858
52	West Lampung	Air Hitam	Sumber Alam	0.883
53	West Lampung	Pagar Dewa	Sidomulyo	0.827
54	West Lampung	Batu Ketulis	Argomulyo	0.828
55	West Lampung	Batu Ketulis	Batu Kebayan	0.825
56	West Lampung	Lumbok Seminung	Keagungan	0.839
57	West Lampung	Lumbok Seminung	Lombok	0.856
58	West Lampung	Lumbok Seminung	Suka Banjar	0.839
59	West Lampung	Lumbok Seminung	Suka Maju	0.821
60	West Lampung	Bandar Negeri Suoh	Gunung Ratu	0.838
61	Tulang Bawang	Bandar Negeri Suoh	Sri Mulyo	0.864
62	Tulang Bawang	Bandar Negeri Suoh	Suoh	0.880

63	Tulang Bawang	Bandar Negeri Suoh	Tri Mekar Jaya	0.856
64	Tulang Bawang	Banjar Agung	Dwi Warga Tunggal Jaya	0.821
65	East Lampung	Banjar Agung	Tunggal Warga	0.871
66	East Lampung	Banjar Margo	Penawar Jaya	0.847
67	East Lampung	Banjar Margo	Penawar Rejo	0.854
68	East Lampung	Sukadana	Sukadana Ilir	0.836
69	Way Kanan	Sekampung	Sumber Gede	0.824
70	Way Kanan	Sekampung Udik	Banjar Agung	0.836
71	Way Kanan	Bandar Srihawono	Srimenanti	0.816
72	Way Kanan	Blambangan Umpu	Bumi Baru	0.825
73	Way Kanan	Baradatu	Bhakti Negara	0.847
74	Way Kanan	Baradatu	Gunung Katun	0.867
75	Way Kanan	Baradatu	Setia Negara	0.827
76	Way Kanan	Pakuan Ratu	Serupa Indah	0.843
77	Way Kanan	Negeri Agung	Tanjung Rejo	0.869
78	Way Kanan	Rebang Tangkas	Gunung Sari	0.822
79	Pesawaran	Rebang Tangkas	Lebak Peniangan	0.825
80	Pesawaran	Negara Batin	Negara Batin	0.839
81	Pesawaran	Bumi Agung	Pisang Baru	0.872
82	Pesawaran	Gedong Tataan	Sukaraja	0.863
83	Pesawaran	Negeri Katon	Rowo Rejo	0.911
84	Pesawaran	Tegineneng	Batang Hari Ogan	0.824
85	Pesawaran	Tegineneng	Trimulyo	0.817
86	Pesawaran	Padang Cermin	Padang Cermin	0.834
87	Pesawaran	Punduh Pidada	Bangun Rejo	0.818
88	Pesawaran	Teluk Pandan	Hanura	0.959
89	Pringsewu	Way Ratai	Bunut	0.820
90	Pringsewu	Way Ratai	Gunung Rejo	0.851
91	Pringsewu	Way Ratai	Wates Way Ratai	0.972
92	Pringsewu	Pringsewu	Podomoro	0.860
93	Pringsewu	Pringsewu	Sidoharjo	0.872
94	Pringsewu	Gading Rejo	Tambah Rejo Barat	0.877
95	Pringsewu	Gading Rejo	Tambahrejo	0.898
96	Pringsewu	Gading Rejo	Wates	0.853
97	Pringsewu	Gading Rejo	Wonodadi	0.914
98	Pringsewu	Ambarawa	Ambarawa	0.862
99	Pringsewu	Pagelaran	Bumi Ratu	0.897
100	Tulang Bawang Barat	Pagelaran	Pagelaran	0.829
101	Pesisir Barat	Adiluwih	Adiluwih	0.851
102	Central Lampung	Adiluwih	Bandung Baru	0.822

103	Central Lampung	Sukoharjo	Sukoharjo Iii	0.927
104	Central Lampung	Tulang Bawang Tengah	Pulung Kencana	0.834
105	Central Lampung	Lemong	Lemong	0.858

Source: Lampung Province Village Community Empowerment and Transmigration Office 2022

Data collection through questionnaires in the form of Google Forms (GF) sent to respondents. Data analysis using Structural Equation Modeling (SEM) with the SmartPLS application.

RESEARCH RESULT

The following data analysis was obtained from this study:

1. Measurement Model Testing (Outer Model)

1.1 Convergent Validity

Convergent validity is a test measurement model that has value based on the correlation between item scores and construct values. The criteria in this measurement are measured by outer loading values. The following are the results of the outer model test showing outer loading values using smartPLS application analysis.

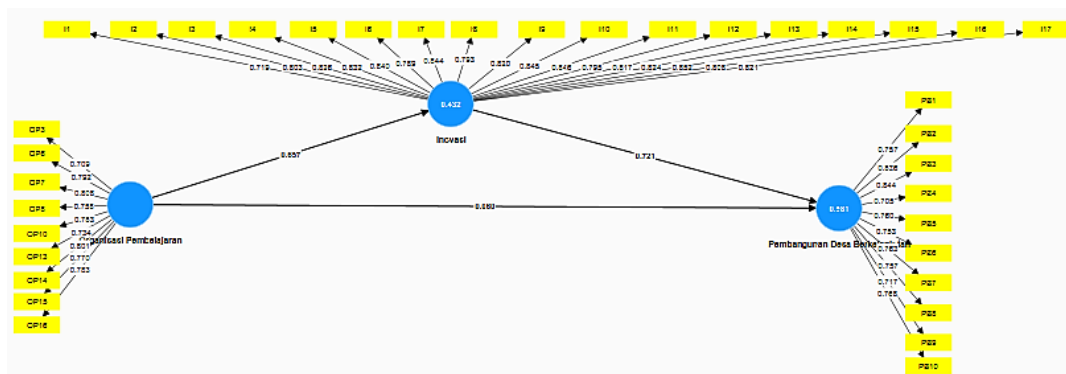


Figure 2. Measurement Model Test Results (Outer Model)

Table 3. Outer Loading Test Results

Variabel Laten	Variabel Manifes	Loadings Factor	Signifikansi
Learning Organization	OP3	0.709	Valid
	OP6	0.792	Valid
	OP7	0.808	Valid
	OP8	0.758	Valid
	OP10	0.783	Valid
	OP13	0.734	Valid
	OP14	0.801	Valid
	OP15	0.770	Valid
Innovation	I1	0.719	Valid
	I2	0.802	Valid
	I3	0.826	Valid
	I4	0.834	Valid

	I5	0.841	Valid
	I6	0.788	Valid
	I7	0.844	Valid
	I8	0.790	Valid
	I9	0.819	Valid
	I10	0.845	Valid
	I11	0.846	Valid
	I12	0.795	Valid
	I13	0.817	Valid
	I14	0.825	Valid
	I15	0.851	Valid
	I16	0.810	Valid
	I17	0.820	Valid
Sustainable Village Development	PB1	0.758	Valid
	PB2	0.836	Valid
	PB3	0.844	Valid
	PB4	0.705	Valid
	PB5	0.759	Valid
	PB6	0.752	Valid
	PB7	0.762	Valid
	PB8	0.756	Valid
	PB9	0.719	Valid
	PB10	0.769	Valid

Table 3 of the outer loading significance test results shows that all data items in this study have a significance level smaller than α (0.05). These data indicate that all items have a good convergent validity index, meaning that the questionnaire items in this study have good convergent validity.

1.2 Discriminant Validity

Discriminant validity is a test conducted to ensure that each concept of each latent variable is different from the other variables. A model has good discriminant validity if each loading value of each item of a latent variable has the largest loading value compared to the loading values of other latent variables. The results of the discriminant validity test are presented in Table 4 below:

Table 4. Discriminant Validity

Code	Innovation	Learning Organization	Sustainable Village Development
I1	0.719	0.542	0.616
I10	0.845	0.498	0.625
I11	0.846	0.574	0.681
I12	0.795	0.543	0.601
I13	0.817	0.553	0.603
I14	0.824	0.466	0.623
I15	0.852	0.573	0.627
I16	0.808	0.496	0.628
I17	0.821	0.543	0.649

I2	0.803	0.549	0.588
I3	0.826	0.538	0.629
I4	0.832	0.484	0.626
I5	0.840	0.558	0.616
I6	0.789	0.549	0.575
I7	0.844	0.542	0.657
I8	0.793	0.573	0.603
I9	0.820	0.524	0.598
OP10	0.493	0.783	0.465
OP13	0.474	0.734	0.414
OP14	0.587	0.801	0.412
OP15	0.494	0.770	0.369
OP16	0.503	0.783	0.392
OP3	0.461	0.709	0.412
OP6	0.542	0.792	0.395
OP7	0.532	0.808	0.444
OP8	0.464	0.758	0.402
PB1	0.572	0.382	0.757
PB10	0.627	0.406	0.768
PB2	0.660	0.445	0.836
PB3	0.658	0.505	0.844
PB4	0.487	0.261	0.705
PB5	0.465	0.402	0.760
PB6	0.557	0.479	0.753
PB7	0.540	0.422	0.763
PB8	0.593	0.449	0.757
PB9	0.620	0.317	0.717

Table 4 above shows that the loading factor for the AVE root value is higher than the correlation between constructs, thus the items are considered valid. Meanwhile, the AVE value is above 0.5 or shows that all outer loadings of the variable dimensions have values > 0.5. In addition, the discriminant validity index of the AVE square root correlation value against the latent construct can be seen that the AVE value is higher than the correlation between other variables, indicating that the variable is said to have good discriminant validity. Based on the results of the discriminant validity test using cross-loadings and comparing the AVE square root correlations between other variables, the variables in this study have good discriminant validity indices.

1.3 Composite Reliability

Testing the composite reliability of a construct in SEM-PLS using SmartPLS can be done in two ways: Cronbach's Alpha and Composite Reliability. As shown in Table 5 below, all variable values in the reliability testing, whether using Cronbach's Alpha or Composite Reliability, have values above 0.7, and the validity testing using AVE has values above 0.5. Therefore, it can be concluded

that the tested variables are valid and reliable, thus allowing for structural model testing.

Table 5 Reliability Test Results

Variabel	Cronbach Alpha	Composite Reliability
Learning Organization	0.969	0.969
Innovation	0.915	0.916
Sustainable Village Development	0.922	0.926

Composite reliability, it can be seen that Cronbach's Alpha and Composite Reliability are greater than 0.7. This shows that the research variables are reliable (Yusup, 2018).

2. Testing the Structural Model (Inner Model)

The structural model is used to test the causal relationships between latent variables. This test involves estimating path coefficients, R-squared (R^2) to measure the predictive power of the model, and statistical tests to determine the significance of the relationship (Chin, 1998).

The structural model is evaluated using R-square for dependent constructs, Stone-Geisser Q-square test for Q2 predictive relevance, significance test of structural path parameter coefficients, quality index.

2.1 Determination Test (R^2)

The Determination Test (R^2) is used to measure the predictive power of the structural model. R-Squares can explain the effect of certain exogenous latent variables on endogenous latent variables that whether they have a substantive effect. The R^2 value has a value if $R^2 \geq 0.67 =$ strong, if $0.33 \leq R^2 < 0.67 =$ moderate and if $R^2 < 0.33 =$ weak (Chin, 1998).

Table 6. Determination Test Results (R^2)

Variabel	R-square adjusted
Innovation	0.429
Sustainable Village Development	0.577

The value of the coefficient of determination (R^2) of the innovation variable in this study is 0.4. Thus, it can be concluded that the innovation variable has a moderate influence on sustainable village development.

2.2 Significance Test (Bootstrapping)

Hypotheses can be accepted or rejected by looking at the significance value between constructs, t-statistics and p-values. With this technique, the measurement estimates and standard errors are no longer calculated with statistical assumptions, but based on empirical observations. The interpretation of the results and conclusions of this study are:

- a. If t-statistic > 1.96 and p-value < 0.05 , then the hypothesis is accepted.
- b. If the mediation is significant, then innovation acts as a mediator between learning organization and sustainable village development.

Table 7. T-Statistic Test Results

Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
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OP-> I	0.657	0.659	0.046	14.244	0.000
OP-> PDB	0.060	0.059	0.083	0.731	0.465
I-> PDB	0.721	0.725	0.059	12.125	0.000

Based on the research results in Table 7 t-Statistic results, the research hypothesis can be accepted or rejected explained as follows:

- a. Hypothesis 1: The Effect of Learning Organization on Innovation
 1. Hypothesis 1: There is a significant influence of the learning organization on innovation.
 H0: There is no effect of learning organization on innovation.
 H1: There is a significant influence of learning organization on innovation.
 2. Criteria: If t-statistic >1.96 then H0 is rejected and H1 is accepted.
 3. Results: Hypothesis testing shows a t-statistic value of 14.244.
 4. Conclusion: Based on the results of the above calculations, it can be concluded that hypothesis 1 is accepted and it is stated that there is a significant influence of learning organizations on innovation.
- b. Hypothesis 2: The Effect of Learning Organization on Sustainable Village Development
 1. Hypothesis 2: There is a significant influence of learning organization on sustainable village development.
 H0: There is no effect of learning organization on sustainable village development.
 H1: There is a significant influence of learning organization on sustainable village development.
 2. Criteria: If t-statistic >1.96 then H0 is rejected and H1 is accepted.
 3. Results: Hypothesis testing shows a t-statistic value of 0.731.
 4. Conclusion: Based on the results of the above calculations, it can be concluded that hypothesis 2 is rejected and it is stated that there is no significant effect of learning organization.
- c. Hypothesis 3: The Effect of Innovation on Sustainable Village Development
 1. Hypothesis 3: There is a significant effect of innovation on sustainable village development
 H0: There is no effect of innovation on sustainable village development.
 H1: There is a significant influence of innovation on sustainable village development.
 2. Criteria: If t-statistic >1.96 then H0 is rejected and H1 is accepted.
 3. Results: Hypothesis testing shows a t-statistic value of 12.125.
 4. Conclusion: Based on the results of the above calculations, it can be concluded that hypothesis 3 is accepted and it is stated that there is a significant effect of innovation on sustainable village development.

2.3 Mediation Test

Table 8. Mediation Significance Test Results

Hipotesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
OP >I-> PDB	0.501	0.505	0.046	10.777	0.000

Based on the data in Table 8, it shows that the t-statistic value of learning organization on sustainable village development through innovation is 10.777 greater than 1.96, which means significant. These results indicate that innovation mediates a significant influence relationship between learning organizations and sustainable village development.

2.4 Recapitulation of Hypothesis Test Results

Table 9. Hypothesis Test Results

Hypothesis	Description
H1: There is a significant influence of learning organization on innovation.	Accepted
H2: There is a significant influence of learning organization on sustainable village development	Rejected
H3: There is a significant influence of innovation on sustainable village development.	Accepted
H4: Innovation mediates the effect of learning organization on sustainable village development.	Accepted

DISCUSSION

H1: There is a significant influence of learning organizations on innovation.

The learning organization construct has a significant influence on innovation, as indicated by a t-statistic value of 14.244, which is greater than 1.96, and a p-value of 0.000, which is less than 0.05. Therefore, the first hypothesis, which states that learning organizations have a significant influence on innovation, is proven to be true. From these results, it can be concluded that the implementation of learning organizations in village governments will create new innovations in policies, programs, and services that are adaptive to various changes and challenges.

The results of this study are consistent with the research by Ziemiańczyk and Krakowiak (2017), which states that learning organizations are key to building competitiveness and innovation in rural areas through knowledge acquisition and sharing. The findings of Widodo's (2018) research indicate that teacher innovation is essential in the learning process, so schools need to optimize teacher innovation through the revitalization of learning organizations. Jafarzadeh et al. (2018) also reinforce these findings through a descriptive study with a research population of all faculty members at Islamic Azad University in Shabestar in 2016 (n= 271), where 170 members were randomly selected using stratified sampling based on Kerjeki and Morgan's table. Data obtained using SPSS and LISREL software and descriptive and inferential statistical calculations (Confirmatory Factor Analysis, structural equation modeling) were analyzed. The research results indicate that learning organization components have a positive and significant impact on organizational innovation. Prasetyo and Salabi (2022) reinforce that sustainability is complex and interrelated with educational aspects and requires a design process that supports innovation and learning. A learning organization is one of the innovations in educational institution governance as a reflection of its adaptive role in responding to challenges of change. Mansoor and Ratna (2014) in their research findings show that there is a

significant relationship between organizational learning and innovation. Regression analysis results also show that two elements—knowledge sharing and openness, as well as organizational learning experimentation—explain changes in organizational innovation.

This research concludes that the practice of organizational learning in village government organizations will drive innovation through various breakthroughs in activities, technology application, policies, and public services that align with community needs and the changing times. The organizational learning implemented by village governments through socialization, training, and technical guidance—whether conducted by the central and local governments, universities, or non-governmental and private institutions—can open the mindset of village officials to continue learning and striving to improve their abilities and skills through their experiences while performing their duties, ultimately enabling them to create innovations in the implementation of work programs and public services for the community.

H2: There is no significant influence of learning organizations on sustainable village development

The learning organization construct has no significant influence on sustainable village development based on a t-statistic value of 0.731, which is less than 1.96, and a p-value of 0.465, which is greater than 0.05. Therefore, the second hypothesis stating that organizational learning has no significant influence on sustainable village development is proven to be true. In this case, the organizational learning conducted by the village government has no significant influence on sustainable village development.

The results of this study are supported by Abdullahi et al. (2025), who found that organizational resilience (ORES) is a strong mediator in the relationship between organizational learning (OL) and organizational sustainability (OSUS). The influence of organizational learning (OL) does not directly impact organizational sustainability (OSUS) but requires the mediator of organizational resilience. Learning organizations are not sufficient to directly and concretely produce sustainable village development. Learning organizations will be more effective and influential in sustainable village development if mediated by other variables to create tangible results in sustainable village development. Learning organizations implemented by village governments still require significant support from local governments in the form of training programs, socialization, and technical guidance, which require trainers and mentors, as well as collaboration with universities or other institutions such as NGOs/CSOs that provide insights, share knowledge, and foster a learning culture in the village. Village governments also face financial constraints and prioritize physical and social development over the development of village human resources. In addition, many villages still face constraints in terms of internet access, technological devices, and minimal information technology infrastructure.

H3: Innovation has a significant effect on sustainable village development.

The innovation construct has a significant effect on sustainable village development according to the research data, with a t-statistic value of 12.125 greater than 1.96 and a p-value of 0.000 less than 0.05. Therefore, the third

hypothesis stating that innovation has a significant impact on sustainable village development is proven to be true. This indicates that innovations implemented by village governments, whether through policies, programs, or public services to residents, will contribute to sustainable village development.

The results of this study are supported by a study conducted by Yiğit (2020) on 35 OECD member countries using statistical data from those countries between 2007 and 2019. The global innovation scores of those countries were used for innovation. The Human Development Index was used for the social dimension, CO₂ emissions were used for the environmental dimension, and GDP per capita was used for the economic dimension. The analysis results indicate that innovation has a positive impact on sustainable development.

Lejbert and Kovyazin (2022) also state that innovation has a positive impact on achieving sustainable development through social, environmental, and economic innovation. Within the rural context, Stojanova et al. (2022) state that one possible solution for rural development is the Rural Digital Innovation Center, an efficient way to enhance the local environment sustainably, thereby influencing local businesses, communities, and local governments. Village innovation will provide technological solutions and skilled labor that lead to optimal business processes, cost reduction, and employment opportunities, while contributing to social sustainability by promoting digital inclusion and fairer distribution of social opportunities.

From the results of this study, innovations carried out by village governments through policies, programs, and public services will directly influence sustainable village development. Village governments innovate by improving programs and public services while maintaining the values and culture of the village community, and the community feels the ease, comfort, and satisfaction of the innovations carried out by the village government, thereby impacting the improvement of the village's economy, society, and environment.

H4: Innovation mediates the influence of learning organizations on sustainable village development

The learning organization construct has an influence on sustainable village development through innovation. The t-statistic value of learning organizations on sustainable village development through innovation is significant, with a value of 10.777 greater than 1.96 and a p-value of 0.000 less than 0.05. Therefore, the fourth hypothesis stating that learning organizations can achieve sustainable village development through innovation is accepted. This means that learning organizations contribute to sustainable village development only if they succeed in creating innovation at the policy, service, and village governance levels.

The results of this study are consistent with Parkinson (2010), who conducted research in rural Uganda with findings showing that learning organizations can facilitate more democratic rural development institutions where beneficiaries have a stronger voice. Learning organizations are an important prerequisite for development to be participatory, adaptive, and inclusive. However, the concept of learning organizations acts as a seed that grows and has specific characteristics in the context of rural development. Learning organizations are a flexible framework that can adapt to the specific

characteristics of the rural development context. In this study, the learning organization practiced by the village government creates innovation from the adaptation of village characteristics and culture that will lead the village to sustainable development.

The application of learning organizations in village administration cannot directly influence sustainable village development. This is because there are innovation variables that connect the two. Village governments that engage in learning while carrying out their duties in a disciplined and continuous manner will enhance the capacity of village officials, enabling them to generate innovations in policies, programs, and public services for the community. Ultimately, this will create sustainable village development that is resilient and capable of adapting to changes and challenges of the times.

The results of this study further reinforce the influence of learning organizations on sustainable village development with village innovation as a mediator. Village governments that apply learning organizations in the governance of village administrations will generate innovations that ultimately impact sustainable village development.

CONCLUSIONS

Based on the results of the study, the following conclusions can be drawn:

1. Learning organizations have a significant influence on innovation. The learning organizations implemented by the village government open the mindset of village officials to continue learning and improving their skills through their experiences while carrying out their duties, thereby creating innovation in the implementation of programs and public services for the community.
2. Learning organizations have no significant influence on sustainable village development. Learning organizations in villages require support from the central and local governments, as well as external parties, in terms of funding and human resource development programs, learning collaborations, access to networks and technological devices, and information technology infrastructure to directly impact sustainable village development.
3. Innovation has a significant influence on sustainable village development. Village governments need to be given autonomy and support from the central and local governments in the form of funding, training, and regulations that support village innovation.
4. Learning organizations influence sustainable village development through village innovation as a mediator. Village governments that implement learning organizations in the governance of village administrations will generate innovations that ultimately impact sustainable village development.

ADVANCED RESEARCH

This study only conducted research on independent village IDMs with two variables, namely learning organizations and innovation. In developing further research, the researcher suggests (1) conducting research with different variables or adding a third variable (2) Conducting research with village samples selected

based on different criteria and indicators of sustainable development (3) Conducting research in other provinces or on a larger scale, and (4) Conducting research by expanding the respondents to include not only village officials but also local government officials and village communities.

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