

Linking of Transformational Leadership, Learning Culture , Organizational Structure and School Innovation Capacity : CB SEM AMOS Analysis

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Abstract - This study aims to measure the influence of transformational leadership, learning culture and organizational structure on the innovation capacity of schools. Data collection was carried out using simple random sampling via electronics on a population of elementary school teachers. The population in this study are private school teachers whose number is not known with certainty. Questionnaires were distributed electronically using simple random sampling technique. This research method is a quantitative survey. The data collection technique in this study used an online questionnaire technique which was designed using a Likert scale of 1 to 7 and distributed to 650 teachers selected by the simple random sampling method. This data processing tool uses Structural Equation Modeling (SEM) using AMOS (Analysis of Moment Structure) version 26. Before conducting data analysis, the validity and reliability of the questionnaire used was tested first. To measure its validity, the score of each question item is used which is correlated with the total item score in one variable. After testing the validity and reliability, then performed data analysis. Analysis and interpretation of data is carried out to answer the problems that have been formulated and answer the hypotheses. In this study, data analysis used Structural Equation Modeling (SEM) with AMOS software. The results of this study are that transformational leadership has a significant effect on learning culture, transformational leadership has a significant effect on organizational structure. Learning culture has a significant effect on innovation capacity. Organizational structure has a significant effect on innovation capacity. The learning culture has a significant effect on the capacity for innovation.

Keywords: transformational leadership, learning culture, organizational structure, innovation capacity, CB-SEM, AMOS, education

Introduction

In this digital era, learning within organizations, culture has been linked in the context of organizational learning. According to Cahyono et al. (2020);Desky et al. (2020) the compatibility between culture and learning within the organization, the term learning organizational culture or learning culture or learning culture emerges. . According to Waruwu et al. (2020);Yunarsih et al. (2020) an organization produces a culture that encourages the development of conditions that necessary to promote learning. a learning culture is the synergistic effect produced through the establishment and inculcation of a set of interrelated conditions, which promote and encourage learning as a way of professional life. In addition, cultural development has been linked to leadership. More specifically, if we refer to transformational leadership, leaders promote cultural development that promotes better performance in organizations. With respect to educational context, leadership contributes to learning through the development of structural processes that define abilities. schools to improve academic performance For example, the ability to make decisions and act on teachers and students is a characteristic of leadership. Thus, school leadership creates conditions that support the development of organizational learning and capacity change. According to Purwanto et al. (2021);Putra et al. (2020) There is a significant relationship between transformational leadership behavior and school learning culture. In addition, the school's leadership and learning culture influence innovation tendencies (in the sense that supported teachers feel compelled to participate in innovative teaching and try and improve their professional practice). School leaders can build and

maintain a learning culture According to [Kadiyono et al. \(2020\)](#); [Lusiani et al. \(2020\)](#) that leaders can work proactively to provide positive influence and impact in promoting reform, transformation of the culture and professional work practices in schools. Based on the above, the following hypotheses are proposed:

H1. Transformational leadership has a significant effect on the learning culture.

. According to [Waruwu et al. \(2020\)](#); [Yunarsih et al. \(2020\)](#) Leadership exercised in a context is influenced by and influences the relationships that emerge in that context. This could mean that organizational structure influences leadership style and in turn, leadership influences certain configurations of organizational structures. Leadership, then, determines the organizational structure. In fact, leadership influences organizational behavior and the way organizational members think. Organizational structure is the result of many possibilities, such as strategy, culture, technology, leadership and organizational size. According to [Purwanto et al. \(2020\)](#); [Purwanto et al. \(2021\)](#); [Putra et al. \(2020\)](#) certain factors directly influence organizational structure (environment, strategy, technology and size) and other aspects influence it. in the form of moderation (culture and leadership).

H2. Transformational leadership has a significant effect on organizational structure.

According to [Lusiani et al. \(2020\)](#); [Novitasari et al. \(2021\)](#) If culture is referred to in the school context, empirical findings have shown a relationship between the cultural characteristics of schools and schools, the capacity for innovation in teaching and learning. Culture can inhibit and support school improvement and its capacity for change, as well as teacher innovation . It is said that a culture that supports innovation is characterized by a culture of respecting teachers' opinions facilitating interaction and dialogue between teachers, and not hiding mistakes. Therefore, the writer proposes the following hypothesis:

H3. The learning culture has a significant effect on the capacity for innovation.

The same approach can be proposed for learning development. According to [Nugroho et al. \(2020\)](#); [Purwanto et al. \(2020\)](#); [Purwanto et al. \(2021\)](#); [Putra et al. \(2020\)](#) point out, they state that although it is often seen as an outcome of learning, organizational structure plays an important role in determining this process. Researchers such as According to [Cahyono et al. \(2020\)](#); [Desky et al. \(2020\)](#) have demonstrated the importance of flexible, decentralized and organic structures for promoting learning in organizations. According to [Nugroho et al. \(2020\)](#); [Purwanto et al. \(2020\)](#); [Purwanto et al. \(2021\)](#); [Putra et al. \(2020\)](#) conclude a negative relationship between centralized structure and organizational learning mechanisms. Based on the above, the following hypothesis is proposed:

H4. Organizational structure has a significant effect on innovation capacity.

H5. The learning culture has a significant effect on the capacity for innovation.

Method

This research method is a quantitative survey. The data collection technique in this study used an online questionnaire technique which was designed using a Likert scale of 1 to 7 and distributed to 650 teachers selected by the simple random sampling method. This data processing tool uses Structural Equation Modeling (SEM) using AMOS (Analysis of Moment Structure) version 26. Before conducting data analysis, the validity and reliability of the questionnaire used is tested first. To measure its validity, the score of each question item is used which is correlated with the total item score in one variable. After testing the validity and reliability, then performed data analysis. Analysis and interpretation of data is carried out to answer the problems that have been formulated and answer the hypotheses. In this study, data analysis used Structural Equation Modeling (SEM) with AMOS software.

Based on the formulation of the problem, theoretical analysis, and the conceptual framework of the research hypothesis as follows:

H1. Transformational leadership (A) has a significant effect on learning culture (Y).

H2. Transformational leadership (A) has a significant effect on organizational structure (B).

H3. Learning culture (Y) has a significant effect on innovation capacity (Z).

H4. Organizational structure (B) has a significant effect on innovation capacity (Z).

H5. Learning culture (Y) has a significant effect on innovation capacity (Z)

H6. Transformational leadership (A) has a significant effect on innovation capacity (Z)

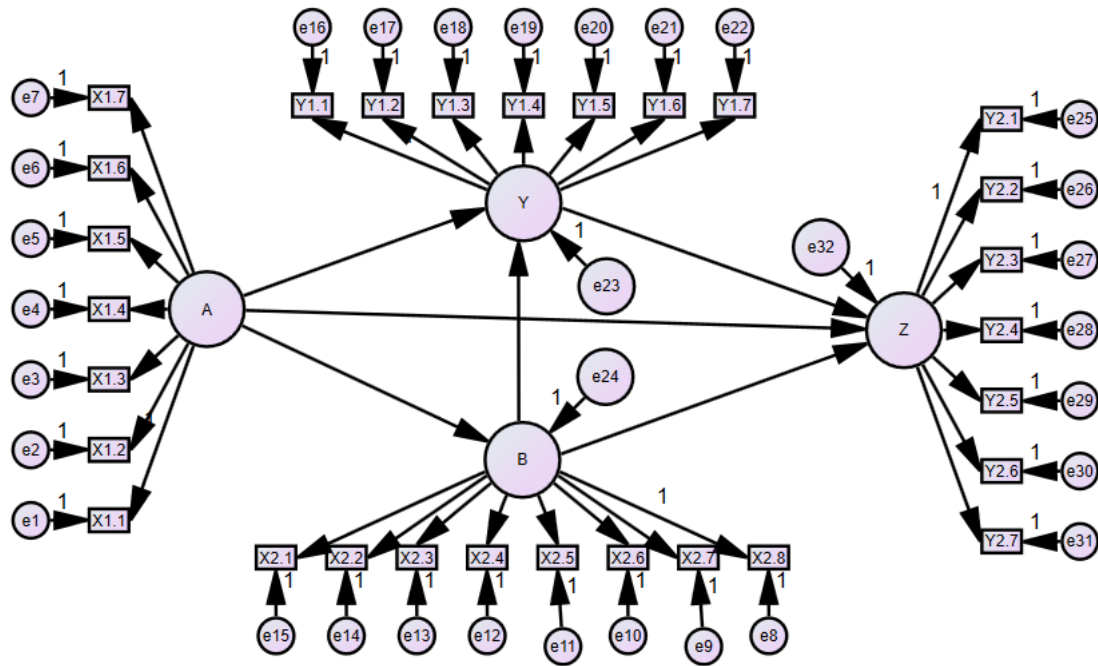


Fig 1. Research Model

Result and Discussion

The research data from the questionnaires were run in the SEM-AMOS 26.0 program, the following are the results of the analysis:

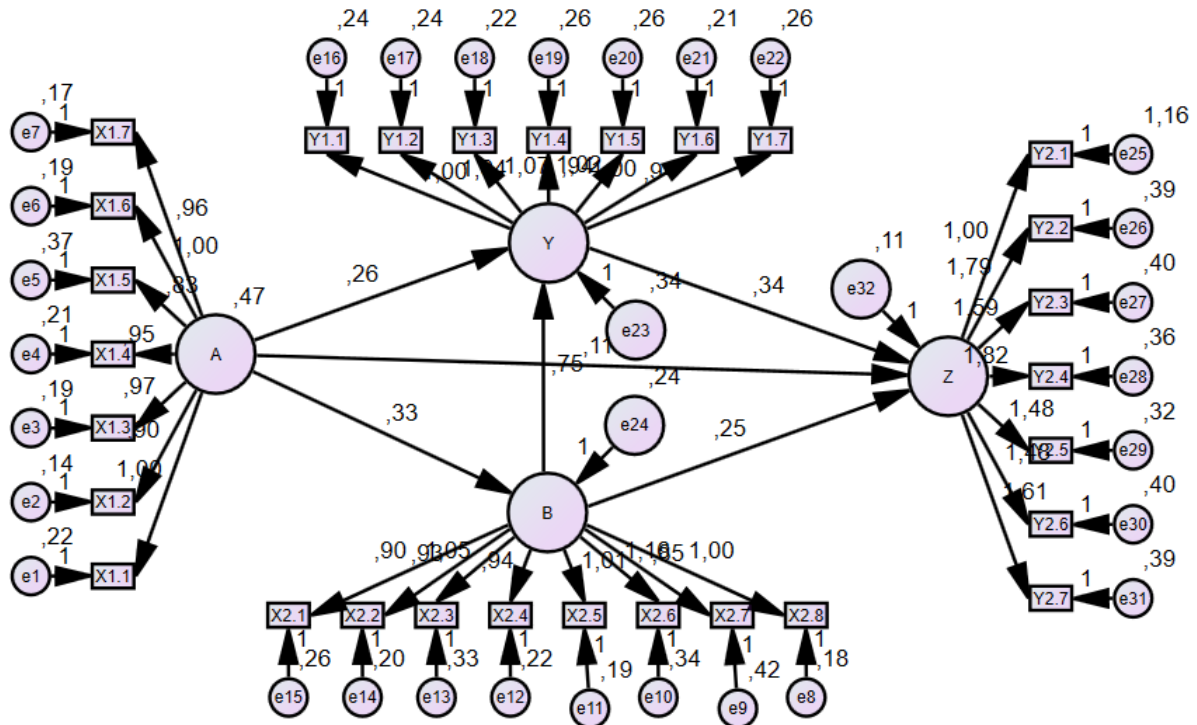


Fig 2. AMOS Result Analysis

The results of running data show the positive influence of each indicator on each endogenous variable. It is an obvious concern to support this research. This model is acceptable stating that the model is mutually acceptable, this can be agreed from the residuals and because prediction errors are allowed to enter the variable, the model is acceptable.

Table 1. Regression Weights: (Group number 1 - Default model)

	Estimate	S.E.	C.R.	P	Label
B <--- A	,326	,088	3,712	***	
Y <--- A	,262	,110	2,377	,017	
Y <--- B	,745	,157	4,761	***	
Z <--- Y	,336	,103	3,268	,001	
Z <--- B	,252	,114	2,207	,027	
Z <--- A	,106	,070	1,525	,027	
X1.1 <--- A	1,000				
X1.2 <--- A	,903	,087	10,355	***	
X1.3 <--- A	,973	,098	9,941	***	
X1.4 <--- A	,945	,099	9,587	***	
X1.5 <--- A	,829	,111	7,445	***	
X1.6 <--- A	,997	,099	10,094	***	
X1.7 <--- A	,963	,095	10,186	***	
X2.8 <--- B	1,000				
X2.7 <--- B	,849	,146	5,813	***	

	Estimate	S.E.	C.R.	P	Label
X2.6 <--- B	1,155	,152	7,614	***	
X2.5 <--- B	1,005	,122	8,262	***	
X2.4 <--- B	,941	,123	7,647	***	
X2.3 <--- B	1,045	,143	7,287	***	
X2.2 <--- B	,925	,119	7,788	***	
X2.1 <--- B	,901	,127	7,092	***	
Y1.1 <--- Y	1,000				
Y1.2 <--- Y	1,035	,096	10,804	***	
Y1.3 <--- Y	1,072	,096	11,119	***	
Y1.4 <--- Y	1,016	,098	10,407	***	
Y1.5 <--- Y	,942	,094	10,021	***	
Y1.6 <--- Y	,998	,091	10,965	***	
Y1.7 <--- Y	,937	,094	10,004	***	
Y2.1 <--- Z	1,000				
Y2.2 <--- Z	1,791	,417	4,299	***	
Y2.3 <--- Z	1,592	,375	4,241	***	
Y2.4 <--- Z	1,823	,422	4,323	***	
Y2.5 <--- Z	1,484	,348	4,261	***	
Y2.6 <--- Z	1,476	,351	4,201	***	
Y2.7 <--- Z	1,609	,378	4,255	***	

Table 2 presents details of different measures for evaluating the goodness of the fit of the proposed study.

Goodness of fit index	Cut off Value	Model Result	Information result
2- Chi square	Expected to be small	698.231	deficient
Significance Probability	≥ 0.05	.321	ok
CMINDF	≤ 2.00	2.054	ok
GFI	$\geq 0.90 < 1$	.913	ok
AGFI	$\geq 0.90 < 1$	.984	ok
PGFI	$\geq 0.05 < 1$	.644	deficient
NFI	$\geq 0.95 < 1$	.9132	ok
RFI	$\geq 0.95 < 1$	.943	ok
IFI	approaching 1	.932	ok
TLI	$\geq 0.95 < 1$	.934	ok
CFI	$\geq 0.95 < 1$	.914	ok
PNFI	$\geq 0.05 < 1$	.034	ok
PCFI	$\geq 0.05 < 1$	.031	ok
NCP	χ^2 2- Chi square	363.113	ok
RMSEA	between 0.03-0.08	.098	ok
AIC. BCC. BIC.	\leq model independent =28.578	4.634	ok
CAIC.ECVI.MECVI			
Hoelter Critical N (1% and 5%)	≥ 200	209	ok

The results show the research model is acceptable because only two categories come out of desirable level

Transformational leadership (A) and learning culture (Y).

Based on the results of AMOS calculations, it shows that **Transformational leadership (A)** has a significant positive effect on learning culture (Y). This can be seen from the coefficients the path with a positive sign of

0.262 with a CR value of 2.377 and a significance probability (p) of 0.017 is obtained which is smaller than the specified significance level of 0.05.

Transformational leadership (A) and organizational structure (B).

Based on the results of AMOS calculations, it shows that **Transformational leadership (A)** has a significant positive effect on organizational structure (B). This can be seen from the coefficients the path with a positive sign of 0.326 with a CR value of 3.712 and a significance probability (p) of 0.000 is obtained which is smaller than the specified significance level of 0.05.

Learning culture (Y) has a significant and innovation capacity (Z).

Based on the results of AMOS calculations, it shows that Learning culture (Y) has a significant positive effect on innovation capacity (Z). This can be seen from the coefficients the path with a positive sign of 0.336 with a CR value of 3.268 and a significance probability (p) of 0.000 is obtained which is smaller than the specified significance level of 0.05.

Organizational structure (B) and innovation capacity (Z).

Based on the results of AMOS calculations, it shows that Organizational structure (B) has a significant positive effect on innovation capacity (Z). This can be seen from the coefficients the path with a positive sign of 0.252 with a CR value of 2.207 and a significance probability (p) of 0.027 is obtained which is smaller than the specified significance level of 0.05.

Transformational leadership (A) and innovation capacity (Z)

Based on the results of AMOS calculations, it shows that **Transformational leadership (A)** has a significant positive effect on innovation capacity (Z). This can be seen from the coefficients the path with a positive sign of 0.106 with a CR value of 1.525 and a significance probability (p) of 0.027 is obtained which is smaller than the specified significance level of 0.05.

School leadership work is critical to developing an attitude of change and innovation, as demonstrated by According to Cahyono et al. (2020); Purwanto et al. (2021); Putra et al. (2020) that school leaders use various activities and various management strategies to facilitate innovation among teachers. Innovative schools must be able to create a learning environment that stimulates teacher innovation. In this regard, school leaders play an important role in creating a suitable and adequate learning environment. It is important that school leaders know how to generate positive changes in teacher innovation. School leaders must not only create policies and strategies aimed at technological innovation, but must also enhance the learning culture in the organization and involve teachers in the innovation process. In the long term, it is important that schools develop a culture of change and promote leadership that facilitates collaboration and enhances the school environment for the purpose of driving educational innovation. Initiatives should be proposed based on a leadership model designed to encourage all school members to participate in innovation and change processes. According to Supriyadi et al. (2020); Yunarsi et al. (2020) namely that the capacity for innovation applies not only to a teacher-student strategy, it is a characteristic of the learning community as a whole, in which, along with school leaders, all teachers are also students involved in the change process.

Conclusion

The results of this study are that transformational leadership has a significant effect on learning culture, transformational leadership has a significant effect on organizational structure. Learning culture has a significant effect on innovation capacity. Organizational structure has a significant effect on innovation capacity. The learning culture has a significant effect on the capacity for innovation. This research has shown that indirectly, transformational leadership influences the capacity for school innovation and similarly, this type of transformational leadership influences learning culture and organizational structure, whereas learning culture and organizational structure influences innovation capacity. This study has the main objective to analyze the impact of leadership on the generation of learning environments, because these two constructs are considered

fundamental for the development of innovation in schools. Meanwhile, the role of the learning environment in organizations is so broad that it can be summarized by saying that, through a learning environment, conditions are created for members of the organization to promote their maximum learning potential, which, in turn, can promote personal and organizational development. The creation of a positive learning environment is critical to innovation because it has been emphasized that learning is a precedent for innovation. A leader can influence the development of values and structures that influence people's attitudes toward learning and innovation. As much literature shows that leadership has been shown to have a significant impact on both learning culture and organizational structure. In this study, leadership has been shown to positively and significantly influence learning culture and organizational structure. Transformational leaders facilitate communication and the ability to take risks in a psychologically safe environment. Therefore, leaders are one of the key elements to encourage a school climate that supports innovation. In addition, this research proves that learning culture and organizational structure affect the innovation capacity of schools. Culture is a strategic element that determines innovation. School change and innovation require a framework of enduring values. Therefore, schools need a learning culture that supports an effective change process. With respect to organizational structure, it has been shown that, through continuous, frequent, active and reciprocal communication, organizations can achieve positive results from organizational change.

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