



# Innovation and performance in the training public institutions, Indonesia

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**Abstract.** Many key performance indicators drops in many Indonesian training public institutions and inconclusive study results concerning the innovation's impact on performance motivate us to investigate the effect of innovation on performance in the training public institutions in Indonesia. Complete survey results were collected from 153 managers and staff of 19 training public institutions in Indonesia. PLS structural equation modeling (PLS-SEM) was employed in this study. By conducting measurement, structural, and goodness of fit model evaluation, empirical statistics data supported the hypothesis that innovation improved performance in training public institutions. It's needed to understand the importance of improving innovation to further foster performance. This research first investigates the innovation's effect on performance in the Indonesian training public institutions. Innovation was paramount not only in the private sector but also in the public sector in order to improve performance. According to the descriptive study, innovation in terms of organizational processes or techniques, such as a new or improved payment system or supplies/utilities, might be enhanced.

**Keywords:** innovation, performance, training public institution.

## 1. Introduction

As an important problem in organizations in the public sector, performance demonstrates that the institution can carry out its responsibilities. Organizational performance reflects how an organization uses tangible and intangible resources to fulfill anticipated organizational goals (Elena-Iuliana & Maria, 2016). Several training public institutions are responsible for organizing education, training, and competency certification in finance. On average, 6 of the 18 key performance metrics were dropping from 2020 to 2021. There are several strategies to improve performance. To improve performance, all public sectors should consider innovation. However, the influence of innovation on performance continues to yield inconclusive research findings. Van De Ven (1986) stated that large resources are required for innovation. Innovation also contributes to increasing uncertainty and risk. Several studies also show that innovation has no effect on performance (Birley & Westhead, 1990; Heunks, 1998), while others show that it has a negative impact on performance (McGee et al., 1995; Vermeulen et al., 2005). On the other side, research by (Hoai et al., 2022), (Gomes et al., 2022), (Wang et al., 2022), (Singh et al., 2021), (Groza et al.,

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2021), (Salim & Sulaiman, 2011), and (Chaithanapat et al., 2022) have demonstrated the beneficial impact of innovation on performance.

Dynamic organizations provide systems, including infrastructure, resources, and information, that enable workers to produce knowledge and innovative ideas to foster the production of new knowledge. They should participate in activities that encourage the development of high-quality products using little resources, which helps both the environment and the firm (Wang et al., 2022). Innovative thinking and the inclusion of updated problem-solving capabilities, knowledge, and new market prospects assist organizations that engage in innovation activities (Singh et al., 2021). Customers are unwilling to forgo the time and effort required to acquire the new product and adjust to the new procedure since very minor changes to product features and purchasing processes are perceived to bring little value to customers (Groza et al., 2021). As a result, sales performance does not improve. According to (Salim & Sulaiman, 2011), innovation enables businesses to provide a broader range of products, which can boost financial performance. High levels of innovation will provide a favorable signal to public sector organizations, encouraging them to decrease stagnation, enhance performance, and lay a solid basis for long-term development (Hoai et al., 2022).

Innovation in government institutions is currently a big issue. The Ministry of Communication and Information (2019) reported in a news item titled "Dynamic Public Services Follow Community Needs" that the Ministry of Administrative and Bureaucratic Reform had evaluated public services. Above all, this assessment process is essentially a mechanism for directing government resources toward world-class public services. Officials in government may become more motivated to compete favorably to improve the quality of their public services. Following that, under the Ministry of Administrative and Bureaucratic Reform's Regulation Number 7 of 2021, a public service innovation competition was organized across ministries/agencies, regional governments, state-owned businesses, and regionally-owned firms. The goal of this competition is to use the requisite 1 (one) agency 1 (one) innovation movement to improve the quality of public services while also producing public service innovations. The Ministry of Finance, as a public agency, is expected to participate in this competition by developing innovations that are projected to increase organizational performance.

Many key performance indicators drops in many Indonesian training public institutions and inconclusive study results concerning the innovation's impact on performance motivate us to fill the gap. This research aimed to examine the innovation and performance in the public sector. The related research explaining this model in the public sector was still limited. This research first investigate the relationship in the Indonesian training public institutions. In measuring the variables, we synthesize the appropriate measurements for the public sectors from many theories and previous researchers. This research will give the contribution to the body of knowledge about the innovation's effect on performance in the training public institutions. Then, practically, according to the study, many particular kind of innovation may be identified to be enhanced in order to improve performance.

## 2. Literature Review and Hypothesis

**Innovation.** Innovation is a process that entails more than just developing new ideas or thoughts. The notion must be adopted through an adoption process, which involves determining that utilizing the innovation in its entirety is the best course of action. Creativity is the invention of fresh and beneficial ideas, whereas innovation is the successful implementation of creative ideas in an organization; hence, creativity occurs at the person level, while innovation occurs at the organizational level (Gumusluoglu & Ilsev, 2009). Thus, innovation actually has been applied in the organization. Not only the private sectors, but also in the public sectors need to innovate more in many many ways.

Product innovation, which is a change in the organization's product or service, is one type of innovation. Process innovation refers to a change in the way things are generated and disseminated. Positioning innovation refers to a shift in the context of launching a company's product or service. Paradigm innovation is defined as a shift in patterns or processes inside an organization's framework (Lowe & Marriott, 2012). **Performance.** The amount of work that an employee can do in both quality and quantity while carrying out duties in line with the responsibilities allocated to him impacts the organization's performance. The performance takes into account both financial and non-financial performance. Non-financial success is defined by customer satisfaction, growth, and other intangible benefits, whereas financial performance is defined by return on investment, income, and profit margins (Muthuveloo et al., 2017). According to research (Singh et al., 2021), organizational success is connected to financial performance, market performance, and shareholder return.

Innovation has a beneficial effect on performance. The capacity of an organization to innovate across a wide range of strategic domains and functional areas influences its competitiveness. Several studies have found that creating and utilizing information to boost firms' capacity for innovation leads to enhanced performance (Chierici et al., 2019). Thus, we propose:

*Ha: Innovation positively influences performance.*

## 3. Method

### 3.1 Measurement Items Development

The measuring instruments utilized to assess the variables in this study were initially obtained from previous research. Innovation metrics were obtained from (Arundel et al., 2015) and (Hoai et al., 2022), and performance was obtained from (Van De Ven, 1986), (Hoai et al., 2022), (Speklé & Verbeeten, 2014), (Dunk & Lysons, 1997), (Verbeeten, 2008), and (Williams et al., 1990). The instruments have been evaluated through validity and reliability tests. To obtain information for testing the research hypothesis, a survey was performed in 19 training public institutions in Indonesia. The surveys were distributed via email to 950 managers and staff. After three weeks, 153 responses were collected.

For complete and relevant responses, the response rate was 16.11% (153 of 950). This quantity also coincided with (Hair et al., 2011) who said that a minimum sample size for PLS-SEM should be equivalent to ten times the largest number of structural pathways in the structural model that are directed at a certain latent construct, or  $10 \times 1 = 10$  samples. This study's 153 full sample was scientifically sufficient to reflect the population.

### 3.2 Partial Least Square Sequential Equation Modeling

The measuring SEM PLS is a multivariate statistical approach for examining a sequence of interactions between variables that are assessed concurrently with the goal of prediction studies, exploration, or constructing structural models, according to (Hair et al., 2019). SEM PLS is used for a variety of reasons, including the fact that it does not require certain distribution assumptions (normal distribution), that it can work with complex models, and that the goal of the study is to test model theory, which focuses on prediction studies, exploration, or development of structural model theory.

## 4. Result

### 4.1 Descriptive Analysis

According to the descriptive statistics, 13,73% of the 153 respondents were managers, and 86.27% were staff. They worked in all 19 training public institutions in Indonesia. The descriptive result of the questionnaire was supplied before performing the PLS-SEM analysis to provide a picture of the variables in this study location.

**Table 1.** Descriptive Statistics

Items	Mean	Remark
INNO1	4.974	very good
INNO2	4.869	good
INNO3	4.732	good
INNO4	4.804	good
INNO5	4.706	good
INNO6	4.732	good
INNO7	4.758	good
INNO8	4.765	good
<b>Mean of INNO</b>	<b>4.793</b>	<b>good</b>
PERF1	5.098	very good
PERF2	4.974	good
PERF3	5.144	very good
PERF4	5.092	very good
PERF5	5.124	very good

PERF6	4.889	good
PERF7	5.124	very good
PERF8	4.712	good
<b>Mean of PERF</b>	<b>5.020</b>	<b>very good</b>

According to the statistics in Table 1, innovation is good and performance is very good. If the model was proven, we may recommend increasing the components of innovations.

#### 4.2 Measurement Model Evaluation

PLS SEM assessment consists of three steps: measurement model evaluation, structural model evaluation, and goodness of fit evaluation. The outer model establishes validity and dependability, whereas the inner model evaluates the predictive efficacy of the suggested structural model. The study's research model is first-order INNO and PERF. The investigation was carried out utilizing partial least squares structural not require certain distribution assumptions (normal distribution), that it can work with complex models, and that the goal of the study is to test model theory, which focuses on prediction studies, exploration, or development of structural model theory. equation modeling (PLS-SEM). The measuring model's convergent and discriminant validity were assessed. Composite reliability and average variance extracted (AVE) are used to test convergent validity (Hair et al., 2019). Items having outer loadings of less than 0.6 were excluded (Chin et al., 1998). The conceptions' qualities were then tested by examining their psychometric features and comparing them to accepted norms. All constructs' AVEs above the needed threshold of 0.5, and composite reliability values were high, comfortably exceeding the indicated 0.7 (Hair et al., 2019).

**Table 2.** Convergent Validity

Variable	Indicators	Outer loading	CR	AVE
INNO (Innovation)	INNO1	0.856	0.973	0.816
	INNO2	0.889		
	INNO3	0.915		
	INNO4	0.915		
	INNO5	0.879		
	INNO6	0.917		
	INNO7	0.920		
	INNO8	0.932		
PERF (Performance)	PERF1	0.850	0.957	0.735
	PERF2	0.918		
	PERF3	0.839		
	PERF4	0.823		
	PERF5	0.914		

PERF6	0.873
PERF7	0.798
PERF8	0.836

The Fornell-Larcker criterion was used to examine whether there was enough discriminant validity. The discriminant validity of a measure is assessed by how well it correlates with assessments of variables other than the one it was supposed to measure. To assess discriminant validity, compare the AVE for each component to the squared correlation of each construct, with the former needing to be larger than the latter (Hair et al., 2019).

In Table 3, squared AVEs are indicated by the bold diagonal values, and the correlation between the constructs is indicated by the off-diagonal numbers. In every segment, the bold diagonal values exceed the off-diagonal values, suggesting sufficient discriminant validity.

**Table 3.** Fornell-Larcker Criterion Test

	INNO	PERF
INNO	<b>0.903</b>	
PERF	0.776	<b>0.857</b>

### 4.3 Structural Model Evaluation

The structural model was evaluated once the measurement model's correctness was established. The bootstrapping procedure (5000 samples) may be used to generate standardized route coefficients and p-values that can be utilized to reflect the magnitude, direction, and significance of the proposed causal relationships. The R2 values of the endogenous variables were initially assessed to assess in-sample explanatory power. R2 values are generally 0.19 (low effect), 0.33 (moderate effect), and 0.66 (great effect), according to (Chin et al., 1998).

The constructs' coefficients of determination (R2) as 0.602, indicating moderate degrees of determination. A Q2 score greater than 0 implies that the model is predictively relevant. The Q square has a qualitative interpretation of 0 (low effect), 0.25 (moderate effect), and 0.5 (strong influence). When the model's predictive relevance was examined, a Q2 value of 0.426 was found, supporting the model's predictive relevance (Hair et al., 2019). Meanwhile, based on the model fit results SRMR = 0.051 (saturated model) and 0.051 (estimated model), we may infer that this model is fit. A fit model is indicated by an SRMR score of less than 0.08.

This study used bootstrapping with 5000 subsamples to get more precise results. Bootstrapping generates a list of all the relationships in the model, as well as their relevance and strength. The results of Table 4's tests verified the direct relationships shown in Hypotheses *Ha*.

**Table 4.** Hypothesis Evaluation

Hypothesis	path coefficient	95% confidence interval path coefficient	t statistic	p-value	f square	Decision
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			Lower bound	Upper bound				
Ha	INNO-> PERF	0.776	0.686	0.854	17.935	0.000	1.511	Supported

Hypothesis *Ha*, that innovation has a direct, positive, and significant influence on organizational performance, was supported. The path coefficient (0.776), *t* statistics (17.935 > 1.96), and *p*-value (0.000 < 0.05) supported this hypothesis. Every beneficial shift in organizational innovation improves overall performance. The extent of the effect of organizational innovation on enhancing organizational performance was between 0.686 and 0.854 in the 95% confidence interval. The presence of organizational innovation has a high structural effect (f square = 1.511 > 0.35). Improvements in innovation could boost performance by up to 0.776 points.

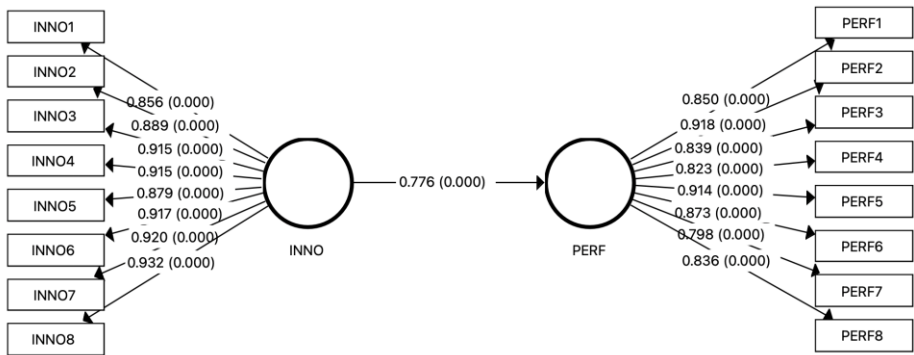


Fig. 1. Hypothesis Evaluation

### 5. Discussion

According to Chierici et al. (2019), innovation has a beneficial impact on performance. Competitiveness was built by innovation. The findings of this study could demonstrate statistically that INNO (innovation) has a long-term positive and significant impact on PERF (performance). The success of a company in generating creative ideas is known as organizational innovation. Creativity is a new and useful idea. As a result, innovation occurs at the organizational level, whereas creativity occurs at the individual level (Gumusluoglu & Ilsev, 2009). Innovation that is either a step shift or incremental improvement has the potential to increase performance (Lowe & Marriott, 2012). This theory provides evidence that any type of innovation may contribute to the improvement of performance.

The positive impact of innovation on performance was by research by (Hoai et al., 2022), (Gomes et al., 2022), (Wang et al., 2022), (Singh et al., 2021), (Groza et al., 2021), (Salim & Sulaiman, 2011), and (Chaithanapat et al., 2022). High innovation will help public institutions improve performance, reduce stagnation, and build a strong foundation for sustainable development (Hoai et al., 2022). The

employees of a dynamic organization could new knowledge and should participate in activities that encourage producing high-quality products with minimal resources, which benefits both the organization and the environment (Wang et al., 2022). Additionally, organizations that engage in innovation practices benefit from creative approaches and the incorporation of updated problem-solving capabilities and new opportunities in society (Singh et al., 2021). According to (Salim & Sulaiman, 2011), innovation allows organizations to provide more product choices, which can improve financial performance.

Otherwise, though innovation needs resources (Van De Ven, 1986), increased uncertainty and risk (Eisenhardt & Martin, 2000; Knight, 1921) could be maintained using risk management that was already applied in all of the institutions. Therefore, our study is not in accordance with Birley & Westhead (1990), Heunks (1998), McGee et al. (1995), and Vermeulen et al. (2005).

The innovation variable in this study was composed of six indicators. INNO8 (Innovation in organizational procedures or strategies, such as new or enhanced methods of assigning job duties or making decisions) was the indicator that dominated the most since it had the greatest loading factor (0.932) in the measurement model evaluation. INNO1 (service innovation), on the other hand, had the lowest loading factor (0.856) and so it represented the lowest innovation variable. To better reflect organizational innovation, public product/service innovation must be optimized by expanding innovation in the form of new services.

The study's findings aided the organization in understanding the importance of improving innovation to further foster performance. Improving them through a variety of HRD initiatives might be a viable option.

## **6. Conclusion and Recommendation**

After evaluating the hypothesis, using PLS-SEM based on 153 samples from 19 training public institutions in Indonesia, we could conclude that innovation improves performance. The proposed paradigm has been evaluated and proven in training public institutions. Empirical statistics data support the hypothesis that innovation improved performance in training public institutions. Based on the descriptive analysis, innovation could be improved in terms of organizational processes or methods, such as a new or improved payment system or supplies/utilities. This information could be attention for the training public institutions.

This empirical results give the contribution to the body of knowledge about the innovation's effect on performance in the training public institutions. Then, practically, many particular kind of innovation may be identified to be enhanced in order to improve performance.

## **7. Limitation**

Our study was limited to the 19 training public institutions in Indonesia. The broader samples will give more generalizable results. Our study also didn't consider



the controlling variables, such as gender and education. The comprehensive variables included into the model can give more new insight to the body of knowledge. This will be the room of improvements in the future researchers.

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