

The Contribution of Information Technology in Enhancing Employee Performance: A Story from Indonesia Laboratory Service Company

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Keywords: Information Technology, Employee Performance, Job Satisfaction, Organizational Culture.

Abstract: The purpose of this study was to determine the effect of organizational culture and information technology on employees' performance through job satisfaction at LABORATORY SERVICE COMPANY. The data collection method used a questionnaire. The data analysis methods used in this study were path analysis and Sobel test. The novelty of this research is that the research is done in different objects and locations compared to previous studies. The results of this study indicate that organizational culture has a positive and significant effect on job satisfaction, information technology has a positive and significant effect on job satisfaction, organizational culture has a positive and significant effect on employee performance, information technology has a positive and significant effect on employee performance, job satisfaction has a positive and no significant effect on employee performance through job satisfaction, and information technology has a positive and significant effect on employee performance through job satisfaction.

1 INTRODUCTION

Industry 5.0 is a trend that leads to automation and data exchange in manufacturing technology, which includes Cyber physical systems, IoT (Internet of Things), and Cloud computing (Sugiarto, 2018). The industrial revolution 4.0 has become a big leap for the industrial sector, which fully utilizes information and communication technology. Not only in the production process, but also throughout the industrial value chain, thus creating a new digital-based business model that is useful for achieving high efficiency and better product quality. The implementation of industry 5.0 is able to change various aspects of human life and has tremendous potential in changing industrial aspects. One of the priority programs carried out in the industry 4.0 roadmap is improving the quality of human resources because talent is a key or important factor for the successful implementation of industry 5.0 (Indonesia, 2018).

One of the leading companies in the laboratory service field in Indonesia utilizing information technology as a determinant of its business processes. The use of information technology in the company is

the Laboratory Management Information System (SIMLAB) based on websites and mobile apps. This system consists of 10 processes starting from receiving the order until the test result certificate is complete. SIMLAB aims to increase efficiency and effectiveness by digitizing the entire work process. This system is integrated into all company laboratory units in Indonesia online.

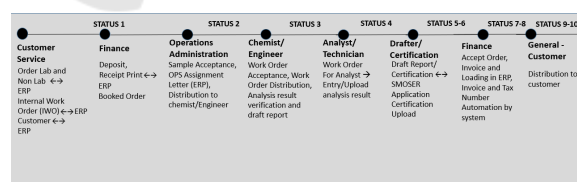


Figure 1: Process of SIMLAB.

The role of the use of information technology can improve employee performance. Information technology is the application of various techniques in computers to handle a lot of data related to aspects of managing and processing information in companies (Ratna and Kaur, 2016). Meanwhile, Pasaman et al. (Pasaman et al., 2015) stated that with the existence of information technology in increasing productivity,

it will create satisfaction for employees with a workflow that is concise, flexible and up to date.

In addition to the use of information technology, job satisfaction plays a role in improving employee performance. According to Robbins Judge (2015) Job satisfaction is a positive feeling from someone about their job. Job satisfaction is a person’s attitude towards their job, and job satisfaction is important for the organization because it relates to the perceptions of each individual employee which can affect employee attitudes and behavior while working (Hendri, 2019). With employees’ satisfaction in their work, it makes employees continue to improve their abilities and skills to be more professional in doing their jobs happily in the tasks given by the company so that there is an increase in employee performance and company performance (Soomro and Shah, 2019).

Employees can be said to have good performance if employees are able to have work results that match company standards or exceed predetermined standards (Himawan et al., 2019). According to Dessler (2017) Organizational culture is the characteristic values, traditions, and behaviors that employees have in the company. In addition, Robbins Judge (2017) organizational culture is a system that has meaning that is implemented by members to differentiate an organization from other organizations. Organizational culture has an important role in government and private companies in shaping employee behavior which has an impact on improving employee performance (Kuswati, 2020).

Employee performance appraisal is seen through a Key Performance Indicator (KPI) called Individual Performance Value (NKI) and this assessment is seen from 5 perspectives. The results of the performance value of each individual employee will be sorted based on predicates, namely P1, P2, P3. P1 means exceeding the target, P2 means that it is in accordance with the target, and P3 means being below the target. The company has "expectation" that in the first predicate (P1) it can continue to increase from year to year, but the results are not in accordance with reality, so this is a special concern for the company.

Table 1: Employee Performance Level of Laboratory Service.

	2016	2017	2018	2019
P1	45	45	31	30
P2	256	249	229	316
P3	3	7	9	10

Based on the description above, the researcher is interested in researching the effect of Organizational Culture and Information Technology on Employees’ Performance through Job Satisfaction at Laboratory service. In this study, job satisfaction is used as an intervening variable because from some of the literature, such as journal articles, on average, they examine the effect directly on employee performance. This study aims to explore the effects of job satisfaction as an intervening variable in mediating organizational culture and information technology on employee performance. Hopefully the results of this study will provide several solutions in overcoming the decline in employee performance by improving organizational culture, increasing the use of information technology, and increasing job satisfaction in the company’s laboratory services sector.

2 LITERATURE REVIEW

This study uses a quantitative research approach with a causal associative research type. The variables linked in this study are Organizational Culture (X1), Information Technology (X2), Job Satisfaction (Z), and Employee Performance (Y). The method used in this research is a survey. The unit of analysis in this study were individual employees at Laboratory Service Company. The questionnaire data was collected once in a certain period of time, so that the time horizon used was cross-sectional. The research was conducted on employees of Laboratory Service Company with a total population of 330. The number of samples in this study were 181 employees obtained using the Slovin’s formula.

$$n = \frac{N}{1+N(e)^2} \tag{1}$$

where:

n = sample

N = population

e = percentage error is 5

$$n = \frac{330}{1+330(0,02)^2} = 180.82 - 181 \tag{2}$$

While the sampling method used is simple random sampling technique. The data collection method used a questionnaire. The data analysis methods used in this study were path analysis and Sobel test. Data analysis using IBM SPSS version 25 software and data analysis methods using validity test, reliability test, normality test, multicollinearity test, heteroscedasticity test.

2.1 Conceptual Model of the Study

For this study, a conceptual model is presented in Figure 1 below.

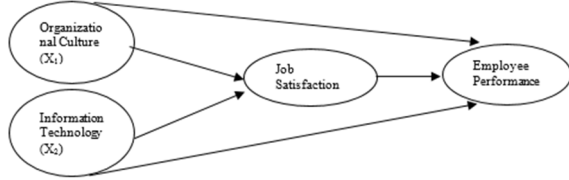


Figure 2: Conceptual model.

Based on the conceptual model depicted in the figure 1, the hypotheses of this study can be written as follows:

- H1: there is an effect of organizational culture on job satisfaction at Laboratory service
- H2: there is an effect of Information Technology on job satisfaction at Laboratory service
- H3: there is an effect of organizational culture on employee performance at Laboratory service
- H4: there is an effect of information technology on employee performance at Laboratory service
- H5: there is an effect of job satisfaction on employee performance at Laboratory service
- H6: there is an effect of organizational culture on employee performance through job satisfaction at Laboratory service
- H7: there is an effect of information technology on employee performance through job satisfaction at Laboratory service

2.2 Operationalization of Variables

Table 2: Operationalization of Variable.

Variable	Indicators	Scale
Organizational Culture (X1) [16]	Innovative	Likert: (1-5)
	Ready to take risks	
	Attention to detail in work	
	High work orientation	
	Prioritizing employees	
	Teamwork	
	Aggressive	
	Condition of the company	

Information Technology (X2) [10]	Job factor	Likert: (1-5)
	Improve job performance	
	Increase productivity	
	Make work more effective	
	The overall technology that you feel is useful	
Job Satisfaction (Z) [16]	Make work easier	Likert: (1-5)
	Current job	
	Salary	
	Promotional opportunities	
	Direction: from leaders to employees	
Employee Performance (Y) Ruzel and Bernardin in [13]	Relationship: with coworkers	Likert: (1-5)
	Work well	
	Able to work on target	
	Timeliness in completing work	
	Reducing errors in work	
	The ability to work without supervision	Likert: (1-5)
	Able to maintain cooperation	

2.3 Path Analysis

As an extension of multiple regression analysis, path analysis also does not only test the effect of independent variables on the dependent variable directly, but also indirectly. This path analysis is divided into two sub-structures, namely sub-structure 1 and substructure 2.

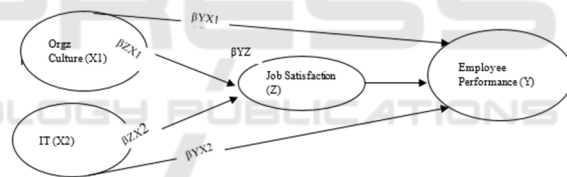


Figure 3: Path analysis diagram.

The structural equation is as follows:

$$Z = ZX1 + ZX2 + e1 \quad (3)$$

$$Y = Y X1 + Y X2 + Y Z + e2 \quad (4)$$

2.3.1 Sub-Structure - 1

Sub Structure 1 connects the variables of Organizational Culture (X1), Information Technology (X2), and Job Satisfaction (Z). Following is sub structure 1 and its structural equation

2.3.2 Sub-Structure - 2

Sub Structure 2, connecting the variables of Organizational Culture (X1), Information Technology (X2), Job Satisfaction (Z), and Employee

Performance (Y). Following is sub structure 2 and its structural equation.

2.3.3 Sobel Test

To test the mediation hypothesis, it can be done through the Sobel test. The Sobel test aims to see the strength of the influence of the mediating variable being able to significantly act as a mediator between the independent variable and the dependent variable.

3 RESULT AND DISCUSSION

3.1 Demography

Based on the results of the questionnaire, it was found that the number of respondents based on gender, consisted of 66.9% male (121 respondents) and 33.1% female (60 respondents) with a total of 181 respondents. Meanwhile, the number of respondents based on age, respondents consisted of age <30 years with a percentage of 63.5% (115 respondents), 30-40 years with a percentage of 16% (29 respondents), and 40 years with a percentage of 20.4% (37 respondents). It can be concluded that the age of the respondents in this study was dominated by the age of under 30 years. Respondents based on the latest education consisted of SMA / SMK with a percentage of 6.6%, (12 respondents), diploma (D1/ D2/ D3) with a percentage of 19.9% (36 respondents), S1 with a percentage of 69.6% (126 respondents), and S2 with a percentage of 3.9% (7 respondents). It can be concluded that this study was dominated by respondents with the latest education by S1 graduates. Respondents based on work tenure consisted of 1-5 years with a percentage of 54% (99 respondents), 6-10 years with a percentage of 15.5% (28 respondents), 11-15 years with a percentage of 10.5% (19 respondents), and >15 years with a percentage of 19.3% percent (35 respondents), It can be concluded that the respondents of this study were dominated by those with tenure of 1-5 years of work.

3.2 Hypotheses Result

The analysis is using SPSS software, the data analysis methods used in this study were path analysis and Sobel test.

3.2.1 Sub-Structure 1 Result

Table 3: Sub-Structure 1 Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.693 ^a	.480	.474	2.445

This means that organizational culture and information technology had an effect of 0.480 or 48% on job satisfaction. The remaining score of the effect of organizational culture and information technology on job satisfaction was 52% caused by external factors not included in the research object. The amount of the path coefficient in other variables outside this study:

$$e1 = \sqrt{p \cdot 1 - R\text{Square}} \tag{5}$$

$$e1 = \sqrt{\sqrt{0.52}} \tag{6}$$

$$e1 = 0.72 \tag{7}$$

Based on the data processing and analysis above, the effect of organizational culture (X1) and Information Technology (X2) on employee performance (Y) had to be tested statistically using the following statistical hypotheses:

- HO: There is no significant effect of organizational culture on job satisfaction at Laboratory service.
- Ha: There is a significant effect of organizational culture on job satisfaction at Laboratory service.
- HO: There is no significant effect of information technology on job satisfaction at Laboratory service.
- Ha: There is a significant effect of information technology on job satisfaction at Laboratory service.

Table 4: Testing Organizational Culture (X1) and Information Technology (X2) on Job Satisfaction (Z).

Hypotheses	Standardized Coefficients	t-value	t-table	Sig	Conclusion
H1	0.552	8.034	1.97	0.000	H1 was accepted
H2	0.199	2.893	1.97	0.004	H2 was accepted

Based on the table above, the correlation coefficient of organizational culture on job satisfaction was 0.552 and the correlation coefficient

of information technology on job satisfaction was 0.199. It is known that t value is greater than t table, namely $8.034 > 1.97$ and the Sig value is smaller than 0.05, namely $0,000 < 0.05$. So, there is a positive and significant effect of Organizational Culture on Job Satisfaction. This study has proved empirically that organizational culture is an important factor because a good organizational culture will create job satisfaction for employees. This finding was supported by a previous study (Cronley and Kim, 2017), (Pawirosumarto et al., 2017) which states that organizational culture has a positive and significant effect on job satisfaction. Based on the table above, it is known that t value is greater than t table, namely $2.893 > 1.97$ and the Sig value is smaller than 0.05, namely $0,004 < 0.05$. So, there is a positive and significant effect of Information Technology on Job Satisfaction. This study has proved empirically that use of information technology will create job satisfaction for employees. This finding was supported by a previous study (Pawirosumarto et al., 2017), with the existence of information technology in increasing productivity, it will create satisfaction for employees with a workflow that is concise, flexible and up to date.

3.2.2 Sub-structure 2 Result

Table 5: Model Summary Sub-Structure 2.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.657 ^a	.432	.422	2.234

a. Predictors: (Constant), Job Satisfaction (Z), Information Technology (X2), Job Satisfaction (X1)

The table above showed that organizational culture, information technology, and job satisfaction had an effect of 0.422 or 42.2% on employee performance. The remaining score of the influence of organizational culture, information technology, and job satisfaction was 57.8% caused by external factors not included in the research object. The amount of the path coefficient in other variables outside this study:

$$e2 = \sqrt{p 1 - R\text{Square}} \quad (6)$$

$$e2 = \sqrt{\sqrt{0.578}} \quad (7)$$

$$e2 = 0.76 \quad (8)$$

Based on the data processing and analysis above, the effect of organizational culture (X1), Information Technology (X2) and Job Satisfaction (Z) on

employee performance (Y) had to be tested statistically using the following statistical hypotheses:

- HO: There is no significant effect of organizational culture on employee performance at Laboratory service.
- Ha: There is a significant effect of organizational culture on employee performance at Laboratory service.
- HO: There is no significant effect of information technology on employee performance at Laboratory service.
- Ha: There is a significant effect of information technology on employee performance at Laboratory service.
- HO: There is no significant effect of job satisfaction on employee performance at Laboratory service.
- Ha: There is a significant effect of job satisfaction on employee performance at Laboratory service.

Based on the table above, the correlation coefficient of organizational culture on employee performance was 0.537, the correlation coefficient of information technology on employee performance was 0.166 and the correlation coefficient of job satisfaction was 0.005. It is known that t value is greater than t table, namely $6.392 > 1.97$ and the Sig value is smaller than 0.05, namely $0,000 < 0.05$. So, there is a positive and significant effect of Organizational Culture on employee performance. This study has proved empirically that organizational culture is an important factor because a good organizational culture can improve employee performance. Organizational culture has an important role in government and private companies in shaping employee behavior which has an impact on improving employee performance (Himawan et al., 2019). This finding was supported by a previous study (Kuswati, 2020; Robert and David, 2019) which states that organizational culture has a positive and significant effect on employee performance.

Moreover, it is known that t value is greater than t table, $2.259 > 1.97$ and the Sig value is smaller than 0.05, $0,025 < 0.05$. So, there is a positive and significant effect of information technology on employee performance. This study has proved empirically that information technology can improve employee performance. This finding was supported by a previous study conducted by (Nuskiya, 2018; Sung, 2020) which stated that information technology has a positive and significant effect on employee performance. Robert and David (2019) also found

that technology information, which is the use of smartphones, can improve employee performance. It is also known that t value is smaller than t table, $0.005 > 1.97$ and the Sig value is greater than 0.05, for which $0.946 < 0.05$. So, there is a positive and no significant effect of job satisfaction on employee performance. This finding was supported by previous study which was conducted by who have researched in the service sector, and education institution. One reason for this result is that being an employee of a state-owned enterprise already gave employee satisfaction, thus job satisfaction does not have any impact on employee performance.

Table 6: Testing Organizational Culture (X1) and Information Technology (X2) on Job Satisfaction (Z).

Hypotheses	Standardized Coefficients	t-value	t-table
H ₃	0.537	6.392	1.97
H ₄	0.166	2.259	1.97
H ₅	0.005	0.005	1.97

Hypotheses	Standardized Coefficients	t-value	t-table
H ₃	0.537	6.392	1.97

3.3 Sobel Test

H₀: there is no effect of organizational culture on employee performance through job satisfaction at Laboratory service.

H_a: there is an effect of organizational culture on employee performance through job satisfaction at Laboratory service.

$$\sqrt{(b^2Sa^2) + (a^2Sb^2) + (Sa^2Sb^2)} \tag{11}$$

$$\sqrt{q(0.037)^2(0.048)^2 + (0.593)^2(0.068)^2 + (0.048)^2(0.068)^2} \tag{12}$$

$$Sob = 0.04 \tag{13}$$

$$t = t = \frac{ab}{Sab} \tag{14}$$

$$t = \frac{(0.593)(0.037)}{0,04} \tag{15}$$

$$t = 0.58 \tag{16}$$

Based on the results of the Sobel test, t count is 0.548, where the value is smaller than t table (1.97) with a significance level of 0.05. Thus, it can be concluded that there is a positive and no significant effect of Organizational Culture on Employee

Performance through Job Satisfaction at Laboratory service. So, H₆ was rejected. H₀: there is no effect of information technology on employee performance through job satisfaction at Laboratory service. H_a: there is an effect of information technology on employee performance through job satisfaction at Laboratory service.

$$Sob = \sqrt{(b^2Sa^2) + (a^2Sb^2) + (Sa^2Sb^2)} \tag{17}$$

$$\sqrt{(0.230)^2(0.050)^2 + (0.429)^2(0.065)^2 + (0.050)^2(0.065)^2} \tag{18}$$

$$Sob = 0.03 \tag{19}$$

$$t = t = \frac{ab}{Sab} \tag{20}$$

$$t = \frac{(0,429)(0,230)}{0,03} \tag{21}$$

$$t = 3.29 \tag{22}$$

Based on the results of the Sobel test, t calculate is 3.29, where the value is greater than t table (1.97) with a significance level of 0.05. Therefore, it can be concluded that there is a positive and significant effect of Information Technology on Employee Performance through Job Satisfaction at Laboratory service. So, H₇ was accepted.

4 CONCLUSION AND SUGGESTIONS

4.1 Conclusion

The results of this study indicate that organizational culture has a positive and significant effect on job satisfaction. This study has proved empirically that organizational culture is an important factor because a good organizational culture will create job satisfaction for employees. Information Technology has a positive and significant effect on Job Satisfaction, this study has proved empirically that use of information technology will create job satisfaction for employees. There is a positive and significant effect of Organizational Culture on employee performance. This study has proved empirically that organizational culture is an important factor because a good organizational culture can improve employee performance. There is a positive and significant effect of information technology on employee performance, this study has proved empirically that information technology can improve employee performance. There is a positive and no

significant effect of job satisfaction on employee performance. Based on the results of the Sobel test, there is a positive and no significant effect of Organizational Culture on Employee Performance through Job Satisfaction at Laboratory service. The findings in this study, there is a positive and significant effect of Information Technology on Employee Performance through Job Satisfaction at Laboratory service. This means that using information technology makes employees feel satisfied at work because it can accelerate their work, make their work easier and more effective, improve work performance and productivity, and be useful in supporting their creativity at work so that it has an impact on improving employee performance.

4.2 Suggestions

Companies should pay attention to organizational culture because in the results of this study it was found that the role of organizational culture can improve employee performance. Companies need to create a comfortable atmosphere in the company so that employees feel comfortable working by establishing good communication. In addition, the company can provide all forms of support that can support employee creativity in the use of information technology such as upgrading information technology, communicating with employees about the company's goals and plans for digital transformation, providing outreach, especially regarding the advantages of information technology for employees, providing training or a kind of workshop for employees about the use and utilization of information technology at work.

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