

The Effect of Job Satisfaction on Employee Performance Through Organizational Commitment at PT. Pertamina

Siti Zuliani, Mariatul Huda, and Agus Iqbal Hawabi^(⊠)

Maulana Malik Ibrahim Islamic State University Malang, Malang, Indonesia iqbalhawabi@uin-malanq.ac.id

Abstract. PT. Pertamina is the company with the largest revenue in Indonesia in 2021 and is one of the companies included in the Fortune 500 list and has 5,400 gas stations throughout Indonesia. Therefore, this study needs to be studied to determine the effect of job satisfaction on the performance of PT Pertamina EP Surabaya employees. This study uses a quantitative approach by distributing questionnaires to 30 PT Pertamina EP Surabaya employees. The research data were analyzed by multiple linear regression and path analysis. The results showed that job satisfaction did not have a direct effect on employee performance but had an indirect effect on employee performance through organizational commitment. This is indicated by the total value of t statistic 6.8517 1.96. In this study, it can be concluded that individuals with high job satisfaction will affect organizational commitment. In contrast, individuals with a high organizational commitment level will affect employee performance. It can be seen that there is an indirect relationship between job satisfaction and employee performance through organizational commitment.

Keywords: Job Satisfaction · Organizational Commitment · And Employee Performance

1 Introduction

Employee performance is one of the main factors that affect the condition of the company or agency. Rosita & Yuniati (2016) mention that performance cannot be separated from the company. Fulfilling employee rights by providing facilities, implementing rules and regulations, and creating comfortable situations and conditions can affect employee performance. Therefore, the fulfillment of human resource satisfaction in a company becomes a benchmark for the company's progress. This statement is reinforced by the opinion expressed by Rosita & Yuniati (2016), namely that the success in achieving the company's vision and mission is indicated by the quality of human resources in the company. Therefore, efforts to improve employee performance are both a task and a challenge for company management. Increased employee performance can be influenced by one factor in human resource management, job satisfaction.

Job satisfaction and organizational commitment are indicators that can improve employee performance in the company. The success of an organization is seen by how much employees do their jobs well and follow organizational goals. Therefore, before the company has good employee performance, the company can increase employee job satisfaction. Job satisfaction is according to the emotional state of the individual that supports or does not support where employees assess their work so far (Handoko, 2009). This opinion is in line with Drs. Tjihno Windryanto, M.Si (2004: 80) states that job satisfaction is an emotional condition of a person, either negative or positive, in assessing the side of the work they are living. This is reinforced by a brief opinion from Robbins (1996), which states that job satisfaction is an individual's positive emotional expression and is indicated by a general attitude toward his work. Meanwhile, Miner (1998) states that job satisfaction is often seen as an employee's attitude toward their work.

Individuals who have low job satisfaction will have an impact aspect of decreased morale. Triwahyuni (2017) mentions that employees who do not have a high level of job satisfaction can make workers lazy, which impacts performance. In addition, low job satisfaction can lead to work strikes, sluggish performance, and even employee turnover. Hidayat (2011) in (Triwahyuni, 2017) strengthens by stating that the company will benefit if it can improve employee performance because individuals who have good performance can complete the responsibilities given, minimize damage, and reduce the number of employee turnover. According to Mangkunegara (2005: 118), job satisfaction is related to turnover, age of workers, position, size of the company organization, and even the level of employee absenteeism. Thus, Rivai (2004: 479) states that job satisfaction has many indicators influencing employee performance, such as organizational management, working environment conditions, wages or salaries, opportunities for advancement, supervision, and job content. In addition, Luthans mentions that job satisfaction indicators consist of employee satisfaction with the salary system, promotions, work undertaken, co-workers, and facilities.

In addition, another factor that can affect the performance of employees in the company is organizational commitment. Employees with high organizational commitment have different attitudes than those with low commitment. According to Streets and Porter (2001), organizational commitment is the involvement of individuals in an organization. A strong belief indicates the organization's goals and the willingness to make certain efforts for its benefit. Another opinion on organizational commitment as a trait that connects with individuals and work organizations. Individuals have confidence in the values of an organization, its goals, and the willingness to contribute to an organization. (Wardhani et al. 2015). Triwahyuni (2017) states that organizational commitment significantly influences employee turnover because individuals with a high level of commitment tend to seek the company's development. In addition, organizational commitment can also reduce the number of absenteeism in a company. In line with the opinion conveyed by Beckhoff (1977) that organizational commitment has a positive significance in influencing individual performance. If organizational commitment decreases or worsens among employees, it will cause losses for the organization.

According to Meyer and Allen (1991), the types of organizational commitment have three dimensions: normative, sustainable, and effective. Normative commitment (normative commitment) is related to employee morale, so employee behavior is based on

accurate indicators according to each individual. This is in line with what was conveyed by Wiener in the overall interpretation of individual norms as the basis for behavior to achieve the goals of the organization. It can be concluded that normative commitment is a feeling of obligation to survive working in the organization. Second, continuance commitment is a type of commitment that will determine whether individuals stay for the organization or leave the organization. Individuals who need values tend to stay in the organization because individuals have needs by taking into account profits and losses. Third, affective commitment is related to employee emotions, affecting employee involvement in the organization. The emotional factor can be a strong commitment of employees to keep working in the organization. Therefore, it can be seen that a person's psychological condition can show the relationship between employees and the organization with the form of behavior to survive or choose to leave the organization.

Not only that, Luthans (2006) mentions that aspects of organizational commitment can also affect individual performance. Aspects of organizational commitment consist of, first, the desire to remain a member of the organization in earnest. Second is the willingness to contribute to the interests of the organization. Third, firm beliefs and attitudes to accept the goals and values of the organization. Allen and Meyer (1991) also mention that organizational commitment consists of work loyalty, self-contribution, and self-satisfaction or happiness at work. Individuals with an organizational commitment to themselves tend to have a strong organizational commitment. Factors that can affect an individual's organizational commitment consist of internal factors related to the individual's personality, tenure, age, gender, and even the need for achievement.

In comparison, the external factors are the first, related to individual work, such as interactions between employees, individual roles, and even communication in the organization. Second, related to organizational structure, working environment conditions, and work facilities in the organization. Third, work experience is related to individual recognition by the organization, for example, dependability, importance, and peer perceptions of individuals (Triwahyuni, 2017).

Both job satisfaction and organizational commitment variables can indicate individual performance in the organization. This is in line with the reference of this research conducted (Triwahyuni, 2017), showing that these two variables influence employees' performance at PT Pindad Turen Kab. Poor. This is in line with the research researched by (Diana Sulianti KL Tobing, 2009), which states that the results of his research are that there is a correlation between organizational commitment and job satisfaction on employee performance at PT Perkebunan Nusantara III in North Sumatra. Reinforced by (Rosita & Yuniati, 2016), who obtained research results that there is a correlation between variables and employee performance. Another study examined by (Suwardi & Utomo, 2011) used three variables by adding a work motivation variable to measure the relationship with employee performance. The research shows a sign of the three variables on employee performance. Some of these studies focus on the object of research in one organization. Therefore, this research is important to examine to determine employees' performance in companies shaded by SOEs, one of which is PT. Pertamina. This company is managed by a State-Owned Enterprise and was established in 1957 until now. PT. Pertamina continues expanding branches throughout Indonesia and has reached 14 zones to Papua. This study focuses on zone 11, which coincides with the Surabaya area.

This study aims to determine employees' potential performance in state-owned companies by assessing the level of job satisfaction and organizational commitment to the company.

2 Methods

There are three variables in this study, namely the independent variable (X_1) , which is a variable that affects the Y variable, and in this study is job satisfaction. The intervening variable is organizational commitment. Moreover, The dependent variable (Y) is a variable that is influenced by the independent variable and, in this study, employee performance.

2.1 Research Subject

This research uses quantitative research. Sugiyono (2017) states that quantitative research is a type of research that uses statistical analysis and is in the form of numbers. Sugiono (2011) also states that quantitative research has a scientific basis, namely the philosophy of positivism as the basis for researching certain populations and samples. The location of this research was conducted in one of the state-owned companies in Indonesia, namely PT. Pertamina has its address at Jl. Veteran No. 6–8 Krembangan Selatan Surabaya. The population and sample of the study were as many as 30 employees willing to become respondents. The sampling technique used was the Quota sampling technique. This technique provides an opportunity for the population to be sampled according to superiors' permission and employees' wishes. The data collection technique of this research used the distribution of questionnaires to the research sample. Therefore, this research's data sources consist of primary and secondary data. Primary data was obtained from respondents' answers to questions distributed through questionnaires. In comparison, secondary data is obtained from company documents, article references, and other information to assist research studies (Triwahyuni, 2017).

The research instrument consists of a scale of job satisfaction as an independent variable, organizational commitment as an intervening variable, and employee performance as the dependent variable. So, the data analysis technique used is the correlation data analysis technique between variables using the SPSS (*Statistics Program for Social Science*) application.

3 Results

Characteristics of Respondents Based on Gender. Based on the data that has been obtained, the characteristics of respondents based on gender can be seen in Table 1.

Based on the characteristics of the respondents by gender, it was found that from 30 respondents, there were 20 male workers (66.7%) and ten female workers (33.3%).

Characteristics of Respondents Based on Age. Based on the data that has been obtained, the characteristics of respondents based on age can be seen in Table 2.

Gender	Total	Percentage
Male	20 persons	66.7%
Female	Ten persons	33.3%
Total	30 people	100%

Table 1. Characteristics of Respondents Based on Gender

Table 2. Characteristics of Respondents Based on Age

Age	Total	Percentage
25-30 Years	Seven people	23.3%
31–35 Years	Eight people	26.7%
36–40 Years	Eight people	26.7%
41–45 Years	Four people	13.3%
46–50 Years	Two people	6.7%
>50 Years	One person	3.3%
Total	30 people	100%

Table 3. Characteristics of Respondents Based on Years of Service

Period of Service	Total	Percentage
1–5 Years	11 people	36.7%
6–10 Years	Six people	20%
11–15 Years	12 people	40%
16-20 Years	0 people	0%
>20 Years	One person	3.3%
Total	30 people	100%

Based on the characteristics of the respondents according to the age of the workers, the data showed that from 30 respondents, there were seven workers aged 25–30 years, 31–35 years, as many as eight people, 36–40 years as many as eight people, 41–45 years as many as four people, 46–50 years as many as two people, and those who are more than 50 years old there is one person.

Characteristics of Respondents Based on Working Period. Based on the data that has been obtained, the characteristics of respondents based on years of service can be seen in Table 3.

Based on the data that has been obtained, the characteristics of the respondents according to the period of service of the workers can be seen that of the 30 respondents,

Variable	t	Hypothesis
Job Satisfaction Dependent Variable: Employee Performance	0.514	Rejected
Organizational Commitment Dependent Variable: Employee Performance	3.310	Accepted
Job Satisfaction Dependent Variable: Employee Commitment	2,070	Received

Table 4. Multiple Linear Regression Test Results

11 people had a working period of 1–5 years, six people for 6–10 years, 12 people for 11–15 years, during the working period. 16–20 years does not exist, and as many as one people over 20 years. Therefore, it can be concluded that most respondents are in the working period for 11–15 years.

Research Analysis. The analysis in this study uses multiple linear analyses and path analysis. Before multiple linear analyses, validity, reliability, and classical assumption tests were conducted. From the data validity test results, it is evident that all data are valid where the significance value is less than 0.05. Likewise, with the reliability test results, it is proven that the data is reliable where the significance value is more than 0.06.

Several steps are taken in this classical assumption test, namely the normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test. The data in this study were normally distributed and had no problems with multicollinearity, heteroscedasticity, and autocorrelation. And then, multiple linear tests can be performed.

3.1 Multiple Linear Regression Test

The results of the multiple linear regression test, are shown in Table 4.

Based on the results of the multiple linear regression test in the Table 4, the t-table value of the level of job satisfaction on employee performance is 0.514. In contrast, the t-table level is less than 1.96. This means that job satisfaction does not significantly affect employee performance. However, based on the test, organizational commitment positively impacts employee performance with a t-table value of 3.310. Likewise, job satisfaction is significantly positive for employee commitment, with a t-table value of 2.070.

Path Analysis. Path analysis determines the relationship and influence between variables directly or indirectly on firm value. Based on the path analysis, test results obtained are shown in Table 5.

Based on the Table 5, it can be seen that the data shows the effect of job satisfaction and organizational commitment have a different significant effect on employee performance at PT Pertamina. Where job satisfaction has a negative significance, and organizational commitment positively impacts employee performance (Fig. 1).

Variable	Т	Hypothesis
Job Satisfaction - Employee Performance	0.514	Rejected
Organizational Commitment - Employee Performance	3.310	Accepted
Job Satisfaction - Employee Commitment	2,070	Accepted

Table 5. Path Analysis Test Results



Fig. 1. Track Analyst

X > Y	0.514	<1.96	Rejected
X > Z	3.310	>1.96	Accepted
Z > Y	2.070	>1.96	Accepted
$X \gg Z > Y$	3.310 X 2.070 =6.8517	>1.96	Accepted

Table 6. Analysis Results Track

In path analysis, what is seen are direct and indirect effects. Based on the path analysis test above, the direct effect has a t-table value of 0.514, meaning job satisfaction has no direct effect on employee performance. At the same time, the direct effect is the result of the multiplication of job satisfaction on organizational commitment with an organizational commitment to employee performance which, if in statistical form, is $3.310 \times 2.070 = 6.8517$. Based on these results, it is known that the direct value is smaller than the indirect value, which means that indirect job satisfaction through organizational commitment significantly affects employee performance (Table 6).

Descriptive Analysis Test. After performing a multiple linear regression test, a descriptive analysis test was conducted to find more specific results from the characteristics of respondents based on gender and years of service in the research variables. Therefore, the results of the descriptive analysis test are shown in Table 7.

Based on the results of the descriptive analysis of data based on gender, it can be seen in the Table 7 that male employees have high job satisfaction, with several respondents being 15 employees at PT Pertamina Surabaya. On the other hand, male employees occupy the highest rank on organizational commitment and employee performance, whereas for organizational commitment, there are 14 employees and employee performance for 19 employees.

Variables	Gender						
	Male	Male			Female		
	Low	Medium	High	Low	Medium	High	
Job Satisfaction	0	5	15	0	2	8	
Organizational Commitment	0	6	14	0	5	5	
Employee Performance	0	1	19	0	1	9	

Table 7. Descriptive Analysis Test Results Based on Gender

Table 8. Descriptive Analysis Test Results Based on Service

Period (Years)	Variable								
	Job Satisfaction		Organizational Commitment		Employee Performance				
	Low	Medium	High	Low	Medium	High	Low	Medium	High
1–5	0	4	7	0	7	4	0	1	10
6–10	0	0	6	0	4	2	0	1	5
11–15	0	3	9	0	0	12	0	0	12
>20	0	0	1	0	0	1	0	0	1

Based on the results of descriptive analysis of data based on employee tenure, it can be seen in the Table 8 that employees with job satisfaction, organizational commitment, and high performance are owned by employees with 11 to 15 years of service.

4 Discussion

The results of this study indicate that there is no effect of job satisfaction on employee performance, so it can be concluded that job satisfaction has no direct effect on employee performance at PT Pertamina Surabaya. This means that higher or lower job satisfaction does not fully affect employee performance. This study's results contradict Rosita and Yuniati's (2016) research, where there is a positive and significant influence on employee performance. Likewise with Diana Sulianti's research (2009) where there is a correlation between organizational commitment and job satisfaction on employee performance.

This study failed to prove the effect of job satisfaction on employee performance at PT Pertamina Surabaya. This is a natural thing that is still experienced by several companies or organizations, and which are also still being debated that the influence of job satisfaction on performance by Robbins and Judge (2016) has been successful. However, many studies have proved that the higher the employee or worker satisfaction level, the higher the employee's performance. It is also increasing.

4.1 The Effect of Job Satisfaction on Organizational Commitment

Commitment in every employee to the company or organization is certainly an important factor in a company or organization. Luthans (2005) defines organizational commitment as the individual's strong desire to survive in a company, having the desire to work hard according to the company's or organization's goals, certain beliefs, and acceptance of organizational values and goals. An organizational commitment can be achieved because of job satisfaction by employees because of the feeling of pleasure and comfort for what individuals get from the company where they work, which includes leadership factors, good communication between employees and leaders as well as between employees as well as good cooperation within the company.

In this study, employee job satisfaction at PT Pertamina EP Cepu Surabaya positively and significantly influences organizational commitment. This is in line with what is said by Monday (1982), who defines work commitment as the strength and involvement of individuals with work organizations. The study by Mowdey shows that work commitment is an important and quite reliable influence, where employees with a high level of work commitment will be more persistent and productive and oriented towards achieving the goals of the organization or company concerned.

Regarding the positive relationship between job satisfaction and organizational commitment, a study by Wu and Norman (2005) indicates that nurses who are more satisfied with their work are also more committed to health services. In line with the study conducted by Wu and Norman (2005), employees at PT Pertamina Surabaya get job satisfaction while working at PT Pertamina Surabaya. Male workers feel the highest job satisfaction. On the other hand, the work commitment of employees at PT Pertamina Surabaya is in the high and medium categories, meaning that employees at PT Pertamina Surabaya have good organizational commitment. The highest organizational commitment is in male employees. Therefore, male employees at PT Pertamina Surabaya tend to have a high level of job satisfaction, and male employees have a high organizational commitment at PT Pertamina Surabaya.

Meanwhile, based on years of service, the highest level of job satisfaction at PT Pertamina Surabaya is felt by employees who have worked for approximately 11 to 15 years. In line with Lestari's research (2007), there is a difference in job satisfaction between employees with five years of service and those with ten years of service. Where employees with five years of service tend to have lower levels of satisfaction, while employees with ten years of service have high job satisfaction, Robbins and Judge (2012) also state that the longer the employee works at his job, the less likely the employee will resign from his job.

4.2 The Effect of Job Satisfaction on Employee Performance Through Organizational Commitment

Several factors influence the high and low organizational commitment of an employee. Stum states this in Sopiah (2008: 164): a culture of openness, satisfaction, personal opportunities for development, discipline, and work rewards. Based on the results of this study indicate that job satisfaction does not have a direct influence on employee performance. However, indirectly, where the organizational commitment variable is the

connecting variable, it has been proven that job satisfaction indirectly affects employee performance at PT Pertamina Surabaya.

This study's results align with research by Rosita and Yuniati (2016) that job satisfaction is indirectly significantly positive for employee performance, where organizational commitment is an intervening variable at PT Pharos Indonesia Surabaya. Judging by the descriptive test data results, the job satisfaction and organizational commitment of employees at PT Pertamina Surabaya are the highest owned by male employees and employees with 11 to 15 years of service. Mangkunegara (2013) said that two factors influence job satisfaction: work factors and personal factors. Personal factors include IQ, special skills, age, gender, physical condition, education, work experience, personality, emotions, ways of thinking, work attitudes, and perceptions. Both of these factors will have an impact on employee performance.

The longer the employee is in an organization or company, the more experience, and higher wages and other benefits costs will be attracted to stay. In addition, the opportunity to get a promotion will also increase. Based on the results obtained, it can be concluded that employees at PT Pertamina Surabaya have job satisfaction while working at Pertamina, which indirectly, through proven organizational commitment, affects increasing employee performance at PT Pertamina Surabaya. This is reinforced by employee answers, including most employees answering about work relations with colleagues and helping each other. In addition, as many as 20 out of 30 employees answered that they enjoyed working with their co-workers. Then more respondents answered I agree and strongly agree with directions, criticisms, and suggestions from superiors to individuals, with 15 people answering agree, and 12 answerings strongly agree. In another statement, their *happiness* affects the performance of employees at PT. Pertamina. The answer indicates this to the statement that the individual is happy to work in the company, answered agreeably by 23 respondents.

5 Conclusions and Recommendations

In this study, it can be concluded that individuals with high job satisfaction will affect organizational commitment. In contrast, individuals with a high organizational commitment level will affect employee performance. It can be seen that there is an indirect relationship between job satisfaction to employee performance through organizational commitment. Employee performance can be measured through the work of employees, their behavior, and the nature of employees. Employee performance with organizational commitment can be improved by increasing job satisfaction. So, factors that can encourage or affect employee job satisfaction are salary provision, supportive co-workers, and work suitability with the abilities and *skills* of employees of PT. Pertamina has a significant value on job satisfaction on organizational commitment, and organizational commitment has a significant value on employee performance. This can be influenced by the direct contract factor between employees and the company. In addition, PT. Pertamina is one of the companies shaded by BUMN. Therefore, PT. Pertamina becomes a work target for individuals. This phenomenon can be one of two other factors influencing job satisfaction on employee performance through organizational commitment.

On the other hand, the sampling of research with 30 employees using the *quota* sampling technique directly cannot represent or describe the overall performance of

employees at PT. Pertamina. Therefore, further research can examine research with different samples. This can develop results from different zones or regions and be a company benchmark.

References

- Adiyasa, N. I. W., & Windayanti, W. (2019). Pengaruh motivasi, kepuasan kerja, dan kepemimpinan terhadap kinerja karyawan pada PT. XYZ. Jurnal Manajemen Strategi Dan Aplikasi Bisnis, 2(1), 23–30. https://doi.org/10.36407/jmsab.v2i1.44
- Diana Sulianti K. L. Tobing. (2009). Pengaruh Komitmen Organisasional dan Kepuasan Kerja Terhadap Kinerja Karyawan PT. Perkebunan Nusantara III di Sumatera Utara. Jurnal Manajemen Dan Kewirausahaan, 11, pp. 31–37. http://puslit2.petra.ac.id/ejournal/index.php/man/art icle/view/17742
- Hamid, D. (2016). Pengaruh Kompensasi Terhadap Komitmen Organisasional DAN Kinerja Pegawai (Studi pada Pegawai Tetap PG Kebon Agung Malang). Jurnal Administrasi Bisnis, 38(2), 79–88. https://www.academia.edu/download/56005967/1512-6151-1-PB_jurnal_ matrik_persamaan_job_satisfaction.pdf
- Lestari, I. (2007). Perbedaan kepuasan kerja ditinjau dari masa kerja. Skripsi. Program Sarjana Fakultas Psikologi dan Ilmu Sosial Budaya Universitas Islam Indonesia Yogyakarta.
- Luthans, Fred, 2006, Perilaku Organisasi. Edisi 10, Yogyakarta: ANDI
- Luthans, Fred. 2005. Perilaku Organisasi. Edisi 10. Dialihbahasakan Oleh Vivin Andhika Yuwono, Shekar Purwanti, Th Arie P & Winong Rosari. Yogyakarta: Andi.
- Mangkunegara, A. P. (2013). Manajemen sumber daya manusia perusahaan. Bandung: PT. Remaja Rosdakarya.
- Monday, R.T., Porter, L.W., & Steers, R.M. (1982). Employee-organization linkages: The psychology of commitment, absenteeism, and turnover. New York: Academic Press.
- McNeese-Smith, D., (1996). "Increasing Employee Productivity, Job Satisfaction, and Organizational Commitment" Hospital & Health Services Administration, Vol. 41:2, pp. 160–175.
- Meyer, J.P., & Allen, N.J. (1991). A three-component conceptualization of organizational commitment. Human Resource Management Review 1, 61–89.
- Robbins, S. P., & Judge, T. (2016). Organizational behavior. NJ: Pearson Education
- Robbins, S. P., & Judge, T. A. (2012). Perilaku organisasi, ed. ke-12. Jakarta: Salemba Empat.
- Rosita, T., & Yuniati, T. (2016). Pengaruh Kepuasan Kerja Terhadap Kinerja Karyawan Dengan Komitmen Organisasional Sebagai Variabel Intervening. Jurnal Ilmu Dan Riset Manajemen, 5(ISSN: 2461-0593), 1.
- Sopiah. 2008. Perilaku Organisasional. Yogyakarta: ANDI
- Sugiyono. 2005. Metode Penelitian Bisnis. Bandung: Penerbit PT. Alfabeta.
- Suwardi, S., & Utomo, J. (2011). Pengaruh Motivasi Kerja, Kepuasan Kerja dan Komitmen Organisasional Terhadap Kinerja Pegawai. Jurnal Analisis Manajemen, 5(1), 75–86.
- Triwahyuni, R. (2017). Analisis pengaruh kepuasan kerja terhadap kinerja karyawan melalui komitmen Organisasional: Studi pada PT Pindad (Persero) Turen Kab. Malang. http://etheses.uin-malang.ac.id/id/eprint/11518
- Wu, L., & Norman, I., (2005). An investigation of job satisfaction, organizational commitment, and role conflict and ambiguity in a sample of Chinese undergraduate nursing students. Nurse Education Today, Article in Press

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