

Implementation of Path Analysis for Modeling the Influence of Organizational Culture on Work Productivity

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Abstract: This research aims to determine the significant factors of organizational culture that influence employee performance productivity using a path analysis model by looking at the total direct and indirect influence of sub-variables. Path analysis can describe the magnitude of the influence and significant variables using direct and indirect influences. By adapting to this case, direct and indirect modeling is needed to see the magnitude of the influence of these sub-indicators. Research related to organizational culture has been carried out to see how much influence organizational culture and motivation have on employee performance. The result is that the greater the organizational culture and achievement motivation, the higher the influence on employee performance. This type of research uses a qualitative and quantitative approach. This research uses a questionnaire to collect data, which has been tested for validity and reliability. This research was conducted at the Gorontalo District Health Service in 2022. Respondents used in this research were 57 Gorontalo District Health Service employees. Data analysis using software R. Results of the research show that organizational culture variables and sub-variables, namely artifacts (X1), values (X2), and basic assumptions (X3), significantly influence employee performance productivity (Y). The total effect is calculated using the path coefficient calculation of the significant variables. The total influence of organizational culture in the form of artifacts (X1) on employee work productivity (Y) is 72%, and the total influence of organizational culture in the form of values (X2) on employee work productivity (Y) is 65%. The total influence of organizational culture is in the form of basic assumptions (X3) on employee work productivity (Y) of 78%. This shows that the organizational culture variable influences the most significant influence, namely basic assumptions (X3). The Gorontalo district health office can consider the results of this analysis to make further policies regarding which organizational culture priorities will be implemented to increase employee productivity to the maximum.

Keywords: Employee Work Productivity; Modeling; Organizational Culture; Path Analysis.

Introduction

Organizational culture is a very varied concept, as evidenced by the many different definitions in the literature [1]. This is caused by various views, approaches, and interests of each interested person from various academic and practitioner circles [2]. Organizational culture can be found at three levels: a) Artifacts where at this level culture is visible but often cannot be interpreted, for example, the organization's physical environment, technology, and way of dressing. Analysis at this level is quite complicated because it is easy to obtain; b) Value has a higher level of awareness than artifacts. Value can be determined by interviewing organizational members in key positions or by analyzing the content of artifacts such as documents; c) Basic assumptions are an essential part of organizational culture. At this level, culture is taken for granted, invisible and unconscious. This assumption is a reaction that originates from the values that are supported. If assumptions are accepted, then consciousness will be marginalized. In other words, the difference between assumptions and values lies in whether these values are still debated and accepted as they are or not [3]. The organizational culture phenomenon that can be

found is that some employees lack an understanding of the company's four values, especially regarding teamwork. Employees prefer to work individually rather than in groups. Phenomena related to the work environment in this branch office include several work areas that have temperatures that are not conducive, such as semi-open 2nd-floor office space and poor lighting in the 3rd-floor office. Factors that can affect employees in carrying out their work [4].

Productivity does not stand alone but is related to various variables, and discussions about productivity are often related to work ethic, organizational culture, prosperity, motivation, and so on. Increasing productivity can impact multiple fields, for example, organizational profits, employee income, and state income (tax). Employee work productivity is a benchmark for every company regarding product quality and quantity. As well as in today's trade competition, companies must strive for quality and prosperity employees who become a competitive advantage for other companies [5].

If we want to improve productivity, the first thing needed is to make fundamental changes to the organizational culture. The challenge is to create and implement a culture that combines productivity with human growth. An

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organization must be proactive for this purpose and for its activities' success. Every organization always wants its members to increase their productivity. Human resource productivity is influenced by several factors, one of which was discussed previously is organizational culture. Several previous studies stated theoretically that there is a relationship between organizational culture and work productivity. Research on organizational culture is vital because organizational culture can influence employee motivation, productivity, and job satisfaction. According to a study by Harvard Business Review, companies with a strong culture have employees who are up to 20% more productive compared to companies that do not have a strong culture.

This research will examine how much organizational culture influences work productivity and what organizational culture factors are significant. To see the significance of the factors that affect a problem in the health sector, statistical analysis is needed, namely regression analysis. Linear regression analysis is a statistical technique that can be used to explain the influence of variables independent (independent variable) on the dependent variable (dependent variable) [6]. Regression analysis is divided into linear and nonlinear regression. Linear regression is divided into two parts: simple linear regression and multiple linear regression. Regression analysis is among the most popular and widely used analyses [7]. Regression analysis will test which factors are significant using independent variables. However, in qualitative research, several indicators must be measured in sub-indicators.

The development of regression analysis is path analysis. Path Analysis is close to multiple regression; in other words, multiple regression is a special form of path analysis [8]. Path analysis is a form of multiple-analysis regression. Path diagrams guide this analysis to form conceptualization problems or test complex hypotheses. This way, a direct relationship between independent and dependent variables can be calculated. This relationship is reflected in the actual path coefficient, the standardized regression coefficient [9].

Path analysis can describe the magnitude of the influence and significant variables using direct and indirect influences. In this case, direct and indirect modeling is needed to determine the magnitude of the influence of these sub-indicators. Path analysis is a way to examine interactions because of the impact that occurs in multiple regression if the independent variable influences the dependent variable directly and indirectly [10].

Path analysis is a direct development of a form of multiple regression to place estimates of the level of importance (magnitude) and significance (significance) of hypothetical cause-and-effect relationships in a set of variables [11]. Research on organizational culture has been conducted to see how much organizational culture and motivation influence employee performance. The result is that the greater the organizational culture and achievement motivation, the higher the influence on employee performance [12].

This proves that if employee performance increases, employee productivity will also increase. The next thing is also demonstrated by research [13], which stated in his research that the better the culture implemented by the organization, the better the employee performance. The difference between this research and previous research is in the dependent variable used and the theory of the indicators and sub-variable used. This research aims to determine the significant factors of organizational culture that influence employee performance productivity using a path analysis model by looking at the total direct and indirect influence of sub-variables.

Research Methods

This research was conducted at the Gorontalo District Health Service in 2023. This type of research is descriptive analysis with qualitative and quantitative approaches using path analysis. Characteristics of Qualitative Research Before conducting a research process, a researcher must know and understand the characteristics of qualitative research to make the research process more accessible. It can reveal qualitative information carefully in the process of description analysis and is full of meaning [14].

This research uses a questionnaire to collect data, which has been tested for validity and reliability. A test can have high validity if it performs a function to measure it or provides accurate measurement results and corrects them according to the test's purpose. A test that produces data irrelevant to the measurement's purpose is said to be a test with low validity. The other side of the definition of validity is aspect measurement accuracy. A valid measuring tool can precisely carry out its measuring function to have high accuracy [15]. The reliability test is used to determine the consistency of the measuring tool and whether the tool the gauge used is reliable, fixed, and consistent if the measurements are repeated [16].

Table 1. Operational Variables

Variable	Sub Variable	Indicator
Organizational Culture (X)	Artifacts (X1)	-An employee's physical appearance plays an essential role in carrying out their duties -Technological developments support employee activities to carry out everything quickly and precisely -Speech and language, as well as polite behavior patterns, are the principal capital for employees to form the desired personalities -Employees always work according to the system set by the government.
	Values (X2)	-Morals and ethics: employees must have good relationships with others -Honesty: employees must instill honesty in carrying out the mandate given by their superiors

		-Openness and integrity: in carrying out daily activities, have a high level of openness and integrity towards others
	Basic Assumptions (X3)	-Relationship with the environment -The nature of human activity -The nature of reality and truth -The nature of time
Employee work productivity (Y)	Measuring work productivity	-Ability -Increase the results achieved -Work enthusiasm -Self-development -Quality -Efficiency

There are two variables in this research, namely the independent and dependent variables, with quantitative analysis. Quantitative research is an inquiry into the social problem based on testing a theory of variables measured with numbers and analyzed with statistical procedures to determine whether generalization is correct. The theory is predictive [17]. The independent variable in this research is organizational culture, which has three sub-variables: artifacts, values, and basic assumptions. The dependent variable in this research is employee work productivity. The operational variables used in the research can be seen in the following table.

Respondents used in this research were 57 Gorontalo District Health Service employees. Data analysis using software R, commercial statistical packages based on R software are free and provide analysis results that are no less powerful and an attractive graphic system [18].

The stages of the analysis procedure carried out in this research as follows following [19]:

- a. Perform model specifications based on theoretical concepts.
- b. Obtain the suitability of the model using simultaneous tests

The statistical hypothesis for the research to be tested is formulated as follows:

$$H_0 : \rho_{yx1} = 0, \rho_{yx2} = 0, \rho_{yx3} = 0$$

$$H_1 : \rho_{yx1} = 0, \rho_{yx2} = 0, \rho_{yx3} \neq 0$$

Test the simultaneous using the following formula:

$$F = \frac{(n - k - 1)(R_{Y_i(X_1, X_2, \dots, X_k)}^2)}{k((1 - R_{Y_i(X_1, X_2, \dots, X_k)}^2))}$$

Where:

$$i = 1, 2, \dots, k$$

k = The number of exogenous variables in the substructure being measured

Decision criteria: H_0 is rejected if $F_{hitung} > F_{tabel(\alpha, k, n-k-1)}$ or significance value $< \alpha$

- c. Obtain significant variables using partial tests. The statistical hypothesis for the research to be tested is formulated as follows:
 $H_0 : \rho_{yx1} = 0$
 $H_1 : \rho_{yx1} \neq 0$
 Partially, the statistical test used is the T-test

$$t = \frac{\rho_{Y_i X_i}}{\sqrt{\frac{(1 - R_{Y_i(X_1, X_2, \dots, X_k)}^2)}{n - k - 1}} C_{ii}}$$

Where:

$$i = 1, 2, \dots, k$$

k = The number of exogenous variables in the substructure being measured

Decision criteria: H_0 is rejected if $t_{hitung} > t_{tabel(\frac{\alpha}{2}, n-k-1)}$ or significance value $< \alpha$

- d. Getting path coefficients
- e. Calculate the overall direct and indirect influence.
- f. Interpretation of analysis results

Results and Discussion

Path analysis is part of regression analysis used to analyze causal relationships between variables where the variables are independent. Path analysis can describe our observations' direct and indirect effects [20].

Simultaneous Test

With the hypothesis $H_0 : \rho_{yx1} = 0, \rho_{yx2} = 0, \rho_{yx3} = 0$ or there is a significant influence between organizational culture and employee work productivity (feasible model), getting a p-value (sig) of $0.000 < \alpha (0.05)$, then H_0 is rejected. So, it can be concluded that organizational culture in the form of artifacts, organizational culture in the form of values, and organizational culture in the form of basic assumptions influence employee work productivity.

Table 2. Model Summary

R	R Square
0.875	0.766

Based on Table 2, the influence of organizational culture variables consisting of organizational culture in the form of artifacts (X1), organizational culture in the form of values (X2), and organizational culture in the form of basic assumptions simultaneously has a positive and significant effect of 0.766 or 76.6%. Organizational culture is one element that can affect work productivity. Every organization needs culture to grow and change in the current corporate environment. A positive workplace culture can inspire employees to work hard and be productive to achieve company goals. Culture is a benchmark for increasing productivity and competitive advantage in high-quality work [21]. From R^2 value, we get that value indicates how

important predictor variables are to determining the response variable [22].

Partial Test

With the hypothesis for X1 $H_0 : \rho_{yx1} = 0$, for X2 $H_0 : \rho_{yx2} = 0$, and for X3 $H_0 : \rho_{yx3} = 0$ or organizational culture artifacts, organizational culture values, and organizational culture basic assumptions do not significantly influence employee work productivity, getting p-value (sig) of X1 is $0,013 < \alpha (0,5)$, p-value (sig) of X2 is $0,020 < \alpha (0,5)$, p-value (sig) of X3 is $0,001 < \alpha (0,5)$ then H_0 is rejected. So, it can be concluded that the organizational culture variables, both B = organizational culture, artifacts,

organizational culture, values, and organizational culture, basic assumptions, significantly influence employee work productivity. The success of achieving an entity's targets depends on the entity's effectiveness in combining owned resources and implementing strategies. If a combination occurs well and harmoniously, employee work productivity will increase to achieve the entity's objectives optimally [23].

Path Analysis Equations

Determining the influence of the research variables as a whole is obtained from the path coefficient value of the sum of all exogenous variables on significant endogenous variables, as follows. The test below uses an alpha of 5%.

Table 3. Correlation between variables

Variables	Coefficient	P-Value	Conclusion
Employee Work Productivity (Y) with the Organizational Culture in the form of Artifacts	0.813	0.000	Significant
Employee Work Productivity (Y) with the Organizational Culture in the form of Values	0.770	0.000	Significant
Employee Work Productivity (Y) with the Organizational Culture in the form of Basic Assumptions	0.845	0.000	Significant
Organizational culture in the form of Artifacts (X1) with Organizational Culture in the form of values	0.772	0.000	Significant
Organizational culture in the form of Artifacts (X1) with Organizational Culture in the form of basic assumptions	0.817	0.000	Significant
Organizational culture is in the form of values (X2), with Organizational Culture in the form of basic assumptions	0.804	0.000	Significant

The path coefficients obtained based on significant analysis results are as follows.

$$\begin{matrix} \rho_{yx1} = 0,813 & \rho_{yx2} = 0,770 & \rho_{yx3} = 0.845 \\ \rho_{x1x2} = 0.772 & \rho_{x1x3} = 0.817 & \rho_{x2x3} = 0.804 \end{matrix}$$

By using the path coefficient, the direct and indirect influence of significant variables can be calculated so that the total impact of organizational culture variables in the form of artifacts (X1) on employee work productivity is 0.72 or 72%, total influence of organizational culture variables in the form of values (X2) on work productivity employees is 0.65 or 65%, total influence of organizational culture variables in the form of basic assumptions (X3) on employee work productivity is 0.78 or 78%. The basic assumptions in organizational culture relate to a better understanding of how organizational culture and the work environment affect productivity, and decision-makers can identify areas that need to be improved or improved to increase the productivity of the organization's overall performance [24].

Conclusion

By calculating the influence of direct and indirect using the path coefficient, it is concluded that the most significant total influence is the organizational culture variable for the basic assumption sub-indicator with an influence size of 78% and, at the same time, proves that path analysis succeeded to modeling how much influence organizational culture has on work productivity. The basic assumption in organizational culture relates that decision-

makers can identify areas to be improved and can increase the value of work productivity.

References

- [1] Riani, A., L. (2018). *Budaya organisasi* (1 ed.). Graha Ilmu. Yogyakarta
- [2] Sutrisno, E. (2018). *Budaya organisasi* (Pertama). Prenadamedia Group. Jakarta
- [3] Sopiah. (2008). *Perilaku organisasional* (1 ed.). CV Andi Offset. Yogyakarta
- [4] Surya, J. E. (2022). Pengaruh Budaya Organisasi dan Lingkungan Kerja Terhadap Kinerja Karyawan. *Jurnal Ekonomika dan Bisnis Universitas Negeri Surabaya*, 10(03), 759–768.
- [5] Baiti, K. N., & Kustiyah, E. (2020). Produktivitas Kerja Karyawan Ditinjau Dari Motivasi, Disiplin Kerja dan Lingkungan Kerja Pada PT. Iskandar Indah Printing Textile Surakarta. *Edunomika*, 04(01), 69–87.
- [6] Marcus, G. L., Wattimanela, H. J., & Lesnussa, Y. A. (2012). Analisis Regresi Komponen Utama Untuk Mengatasi Masalah Multikolinieritas Dalam Analisis Regresi Linier Berganda (Studi Kasus: Curah Hujan di Kota Ambon Tahun 2010). *Jurnal Ilmu Matematika dan Terapan*, 6(1), 31–40.
- [7] Yusuf, M. A. (2024). Analisis Regresi Linier Sederhana dan Berganda Beserta Penerapannya. *Journal on Education*, 06(02), 13331–13344.
- [8] Putri, A. G., & Budayawan, K. (2022). Analisis Jalur (Path Analysis) Terhadap Faktor-Faktor yang Mempengaruhi Motivasi Belajar Siswa TKJ SMK

- Negeri 5 Padang. *Voteteknika (Vocational Teknik Elektronika dan Informatika)*, 10(4), 1–9.
- [9] Suparmanto, S., & Hudatullah, R. (2021). Penerapan Analisis Jalur (Path Analisis) Dalam Pembelajaran Bahasa Arab: Hubungan Antara Motivasi Belajar, Kreatifitas, Gaya Belajar dan Profesionalisme Guru Terhadap Prestasi Belajar Bahasa Arab. *El-Tsaqafah : Jurnal Jurusan PBA*, 20(1), 82–100.
- [10] Putra, A. D., Martha, G. S., Fikram, M., & Yuhan, R. J. (2021). Faktor-Faktor yang Memengaruhi Tingkat Kriminalitas di Indonesia Tahun 2018. *Indonesian Journal of Applied Statistics*, 3(2), 123–131. <https://doi.org/10.13057/ijas.v3i2.41917>
- [11] Latifah, N., Rotinsulu, D. C. H., & Tumilaar, R. L. H. (2017). Pengaruh Pertumbuhan Ekonomi Dan Indeks Pembangunan Manusia Terhadap Tingkat Pengangguran Terbuka dan Dampaknya Pada Jumlah Penduduk Miskin Di Kota Manado. *Jurnal Berkala Ilmiah Efisiensi*, 17(02), 106–117.
- [12] Mawardi, M. M. (2020). Path Analysis Pengaruh Budaya Organisasi Dan Motivasi Berprestasi Terhadap Kinerja Karyawan Pada PT. MARINAL INDOPRIMA. *Jurnal Dakwah Islam*, 4(1), 1–10.
- [13] Asrul, A., & Mustari, N. (2021). Pengaruh Budaya Organisasi Terhadap Kinerja Pegawai Pada Kantor Badan Perencanaan Pembangunan Daerah Kabupaten Kolaka Utara. *Journal Unismuh*, 2, 2(6).
- [14] Fadli, M. R. (2021). Memahami desain metode penelitian kualitatif. *Humanika*, 21(1), 33–54.
- [15] Sanaky, M. M., Saleh, L. M., & Titaley, H. D. (2021). Analisis Faktor-Faktor Penyebab Keterlambatan Pada Proyek Pembangunan Gedung Asrama Man 1 Tulehu Maluku Tengah. *Jurnal SIMETRIK*, 11(1), 432–439.
- [16] Slamet, Rokhmad & Wahyuningsih, Sri. (2022). Validitas dan Reliabilitas terhadap Instrumen Kepuasan Kerja. *Aliansi Jurnal Manajemen dan Bisnis*, 17(2), 51–58.
- [17] Ali, M. M., Hariyati, T., Pratiwi, M. Y., & Afifah, S. (2022). Metodologi Penelitian Kuantitatif Dan Penerapan Nya Dalam Penelitian. *Education Journal.*, 2(2).
- [18] Wahyuni, C., Sumargo, B., & Meidianingsih, Q. (2023). *Penerapan Analisis Jalur (Path Analysis) dalam Menentukan Faktor-faktor yang Memengaruhi Angka Harapan Hidup di Wilayah Indonesia Bagian Tengah*. *Jurnal Statistika dan Aplikasinya*, 7(1), 74–83.
- [19] Setyorini, D., & Syahlani, A. (2019). Analisis Jalur (Path Analysis) Pengaruh Kondisi Sosial Ekonomi dan Motivasi Belajar terhadap Prestasi Belajar Mahasiswa. *Jurnal Akuntansi dan Manajemen*, 16(02), 177–193.
- [20] Sindy, Sukri, & Latif, Dirham. (2022). Pengaruh Budaya Organisasi Terhadap Produktivitas Kerja Karyawan. *Journal of Management & Business*, 5(2), 451–455.
- [21] Abdussamad, S. N., Adityaningrum, A., & Payu, M. R. F. (2024). Panel Data Regression Analysis For Modeling The Human Development Index In North Sulawesi Province. *Parameter: Journal of Statistics*, 4(1), 46–53.
- [22] [22]Indrawati, L., & Sembiring, E. E. (2021). Pengaruh Budaya Organisasi terhadap Produktivitas Kerja Pegawai di Pemerintah Daerah. *Indonesian Accounting Research Journal*, 2(1), 7–13.
- [23] [23]Yolanda, A. (2024). Pengaruh Budaya Organisasi Dan Lingkungan Kerja Terhadap Produktivitas Kerja Pada Universitas Tjut Nyak Dhien Medan. *JURNAL MANAJEMEN DAN BISNIS*, 2(3), 97–111.