ISBN 978-623-92199-2-5

EFFECT OF WORK COMPETENCY AND MOTIVATION ON EMPLOYEE PERFORMANCE USING THE APPROACH PARTIAL LEAST SQUARES-SEM ANALYSIS (CASE STUDY AT THE ARIYANTI EDUCATION FOUNDATION)

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ABSTRACT

High company performance can be achieved if all elements in the company are well integrated, and are able to carry out their roles according to the needs of employees. The purpose of this study is to analyze and determine (1) competence, (2) work motivation, (3) employee performance, and (4) the effect of competence and work motivation on employee performance. This type of research is descriptive and verification using explanatory survey research methods, and to test the hypotheses of this research will be analyzed using a structural equation model (Structural Equation Model, SEM) with the Partial Least Square (PLS) alternative method using SmartPLS 3.0 software.

The results of testing the first hypothesis show that there is a significant correlation between competence and work motivation at the Ariyanti Education Foundation. The results of the second hypothesis show that competence has a positive and significant effect on employee performance at the Ariyanti Education Foundation. The third hypothesis shows that work motivation has a positive and significant effect on employee performance at the Ariyanti Education Foundation. The fourth hypothesis shows that competence and work motivation together have a positive and significant effect on employee performance at the Ariyanti Education Foundation. So it is clear that competence, work motivation and employee performance are interrelated. This must be considered because there is a mutually influencing relationship between the three. So that the development of competence and good work motivation will be able to improve the performance of these employees.

Keywords: Competence, Motivation and Employee Performance.

INTRODUCTION

In today's increasingly competitive era of globalization, sustainable companies depend on the company's ability to respond to changes effectively, namely by making global adjustments. That there are a number of unique characteristics that characterize a company that other companies do not have [1]. This can then create factors that can improve a company's performance. Ariyanti Education Foundation is a private institution engaged in education. Research on the factors that affect employee performance at the Ariyanti Education Foundation involves several variables. The variables used are latent variables that cannot be measured directly. This process allows the simultaneous testing of a series of relatively complex relationships, so an analytical technique is needed that is able to accommodate all variables properly, namely structural equation modeling or Structural Equation Modeling. The structural equation model that can be applied to this research is Component Based Structural Equation Modeling or known as Partial Least Square (PLS). Partial Least Square is an analytical method that is not based on many assumptions such as not having a multivariate normal distribution and the sample size does not have to be large.

LITERATURE REVIEW

Employee Competence

Compensation is the character of attitudes and behavior or abilities of workers that are relatively stable when facing situations at work which are formed from the synergy between character, self-concept, internal motivation, and contextual knowledge capacity. [1]

Classification of individual competence dimensions into 3 (three), namely: (1) intellectual competence, (2) emotional competence, and (3) social competence. [1]

Employee Work Motivation

The two-factor theory consists of two factors, namely motivator factors and hygiene factors. This theory assumes that everyone has two kinds of needs, namely hygiene and motivators. Hygiene needs consist of extrinsic factors that exist in the work environment in the form of working conditions, supervision, and salary. Motivator needs consist of intrinsic factors in the form of self-actualization, recognition, and work activities.

Employee performance

Performance (work achievement) is the result of work in quality and quantity achieved by an employee in carrying out his duties in accordance with the responsibilities given to him.

There are 8 (eight) dimensions of performance appraisal, namely: (1) Quantity of work, (2) Quality of work, (3) Job knowledge, (4) Creativeness, (5) Cooperation, (6) Dependability, (7) Initiative , and (8) Personal quality.

Structural Equation Modeling (SEM)

SEM is one of the studies in the field of statistics that can be used to solve research problems, where both the independent variable and the response variable are unmeasured variables. There are two structural equation models, namely SEM based on covariance (CBSEM) and SEM based on component (PLS). [5]

Partial Least Square (PLS)

As an alternative to CBSEM, the component based approach with Partial Least Square (PLS) analysis orientation shifts from testing causality/theory models to component based predictive models. PLS can analyze as well as latent variables formed by reflective indicators and formative indicators. The sample size in PLS is determined by one of the following rules. [6]

1. Ten times the number of formative indicators (ignoring reflective indicators)
2. Ten times the number of structural paths in the inner model

PLS Model Specifications (PLS)

PLS consists of external relationships (outer models or measurement models) and internal relationships (inner models or structural models)..

Inner Model

This model focuses on the latent variable structure model, where the latent variables are

assumed to have a linear relationship and have a cause-and-effect relationship.

The equation of the inner model is:

$$n_j = \beta_{0j} + \gamma_{0j} + \sum_{i=1}^{n} \beta_{ji}\xi_i + \sum_{i=1}^{n} \gamma_{ji}\eta_i + \zeta_j \quad \ldots\ldots\ldots (1)$$

With assumption:

$$E(\zeta_j) = 0, E(\xi_i\zeta_j) = 0, E(\eta_i\zeta_j) = 0 \quad \ldots\ldots\ldots (2)$$

Outer Model

Establish a relationship between a set of indicators and their latent variables. The outer model refers to the measurement model. There are three ways to build between indicators and latent variables, namely reflective relationships, formative relationships, and MIMIC (Multi Effect Indicators for Multiple Causes).

Reflective Relationship

In the reflective relationship, the indicator is X_{jk} a reflection or manifestation of the latent variable, the indicator is assumed to be a linear function of the latent variable ζ_j.

$$X_{jk} = \lambda_{0jk} + \lambda_{jk}\xi_j + \delta_{jk} \quad \ldots\ldots\ldots\ldots\ldots (3)$$

With λ_{jk} is the loading coefficient and δ_{jk} residual.

Formative Relationship

In the form of a formative relationship, the change in the latent variable ξ_j caused by changes in indicators. The latent variable is assumed to be a linear function of the indicator X_{jk}.

$$\xi_j = \pi_{0j} + \sum \pi_{jk} + X_{jk} + \delta_j \quad \ldots\ldots\ldots\ldots (4)$$

MIMIC (Multiple Effect Indicators for Multiple Cases)

MIMIC is a combination of reflective and formative models.

$$X_{jh} = \lambda_{0jh} + \lambda_{jh}\xi_j + \varepsilon_{jh} \text{ dan } \xi_j = \pi_{0j} + \sum \pi_{j1}X_{j1}\delta_j \quad ..(5)$$

Index h is used for indicator of reflective relationship while l is used for indicator of formative relationship and h+l=k.

Weight Relation

The weight relation is used to estimate the value of the latent variable with the following formula:

$$Y_j = \sum_k \widetilde{W}_{jk}X_{jk} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (6)$$

Where $\widetilde{W}_{jk}$ is weight. By using the weight relation of factor indeterminacy problems that are present in covariance-based structural models can be avoided in PLS.

PLS Algorithm

Stage 1:

$Y_j = \sum_k w_{jk}X_{jk}$, with wjk is outer weight

Stage 1.1: outside approximation

At this stage the iteration begins with an initial approximation for each latent variable as a linear combination of each manifest variable.

$$Y_j = \sum_k \widetilde{w}_{jk}X_{jk}$$

With wjk is outer weight

Stage 1.2: inside approximation

This stage pays attention to the relationship between latent variables in the inner model to get a new approach from each latent variable as a weighted aggregate of other latent variables that are close to each other.

$$Z_j = \sum_{i \leftrightarrow j} e_{ij} Y_i \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (7)$$

With eij is inner weight.

a. Centroid scheme

This scheme only takes into account the sign of the direction of the correlation between adjacent latent variables. This scheme does not consider path strength. The inner weight of the eij model is the sign correlation between Yj and Yi, written as follows:

$$e_{ij} = \begin{cases} \text{sign}\left[\text{cor}(Y_j Y_i), \text{untuk } Y_j \text{ dan } Y_i \text{ berdekatan}\right] \\ 0, \text{untuk yang lainnya} \end{cases}$$

b. Factor scheme

This scheme not only considers directional signs, but also considers the strength of the path in the structural model. The inner weight of the eij model is the correlation between Yj and Yi, written as follows:

$$e_{ij} = \begin{cases} \text{cor}\,(Y_j Y_i), \text{untuk } Y_j \text{ dan } Y_i \text{ berdekatan} \\ 0, \text{untuk yang lainnya} \end{cases}$$

c. Path scheme

A latent variable can be a predictor or predictant depending on the cause and effect relationship. A latent variable can be a predictant if it is influenced by other latent variables or as a predictor if it affects other latent variables. If the latent variable Yi predicts the latent variable Yj then the inner weight is the same as the correlation value between Yi and Yj. On the other hand, for the Yi predictors of the latent variable Yj, the inner weight is the regression coefficient Yi from the multiple regression to Yj.

$$e_{ij} = \begin{cases} \text{cor}(Y_i Y_j), \text{untuk } Y_j \text{ dan } Y_i \text{ berdekatan} \\ Y_j = \sum_i e_{ij} Y_i, \text{untuk } e_{ij} \text{ dalam regresi } Y_j \text{ pada } Y_i \\ 0, \text{untuk yang lainnya} \end{cases}$$

Stage 1.3: Updating Outer Weight

In the inside approximation stage, the information contained in the inner relation is entered into the latent variable estimation process. Where Xj is a matrix containing the manifest variable Xjk and wj is the weight factor wjk.

1. Model A: $\tilde{W}_{jk} = \left(Y_j' Y_i\right)^{-1} Y_j' X_{jk}$
2. Model B: $\tilde{W}_j = \left(X_j' X_i\right)^{-1} X_j' Y_j$

Stage 1.4: Convergence Check

$\left|\tilde{W}_{jk}^{s-1} - \tilde{W}_{jk}^{s}\right| <$ 10^{-5} boundary as the convergence limit. If it has converged, then the final estimated value of the latent variable is obtained [7].

Stage 2:

The second stage estimates the path coefficient estimates for each inner model. For the structural model, the path coefficients are estimated using ordinary least squares on the corresponding Yj and Yi multiple regressions.

$$Y_j = \sum_{i \leftrightarrow j} \tilde{\beta}_{ji} Y_i \text{ sehingga } \hat{\beta}_{j1} = \left(Y_i' Y_i\right)^{-1} Y_i' Y_j$$

Stage 3:

In the third stage this algorithm consists of calculating the loading coefficient. The loading coefficient is obtained by calculating

the correlation between latent variables and each indicator [4].

$$\hat{\lambda}_{jk} = cor(X_{jk}Y_j)$$

PLS Model Evaluation

1. Measurement Model Evaluation

1) Composite Reliability (ρc)

Score Composite Reliability (ρc) used to measure the consistency of the indicator block. Recommended Composite Reliability (ρc) value is greater than 0,6 [5]. Composite Reliability (ρc) can be calculated by the following formula.

$$\rho c = \frac{(\sum_k \bar{\lambda}_{jk})^2}{(\sum_k \lambda_{jk})^2 + \sum_k var(\varepsilon_{jk})}$$

2) Convergen Validity

Convergent validity is seen based on the correlation between item/indicator scores and latent variable scores. Individual reflective measure is said to be high if it has a correlation of more than 0.7 with the latent variable to be measured.

3) Discriminant Validity

The discriminant validity of the indicator can be seen in the cross-loading between the indicator and its latent variable. If the correlation of latent variables with indicators is greater than the size of other latent variables, then it shows that the latent construct predicts the size of their block better than other block sizes [5].

2. Structural Model Evaluation

The quality of the structural model is evaluated through testing the measurement index, namely R2 [4].

3. Hypothesis test

PLS does not assume data is normally distributed, instead PLS relies on nonparametric bootstrap procedures to test the significance of the coefficients [7].

Statistical hypothesis for outer model:

$H_0 : \lambda_{jk} \leq 0$
$H_1 : \lambda_{jk} > 0$

Statistical hypothesis for inner model:

$H_0 : \beta_i \leq 0$
$H_1 : \beta_i > 0$

The test statistic used is the t test, with the following formula:

$$t = \frac{\lambda_{jk}}{SE(\lambda_{jk})} \quad t = \frac{\beta_i}{SE(\beta_i)}$$

Where t is t-count and SE (βg) is the standard error obtained from bootstrapping. When the measure of the resulting empirical t value > 1.64 it was assumed that the path coefficients differed significantly from the 5% significance level (α = 0.05 1-way test).

METHOD

This study uses primary data. Primary data obtained from the distribution of questionnaires. This research was conducted at the Ariyanti Education Foundation in November 2017. The sample size used was 63. The sampling technique used was Stratified Proportional Random Sampling.

RESULTS AND DISCUSSION

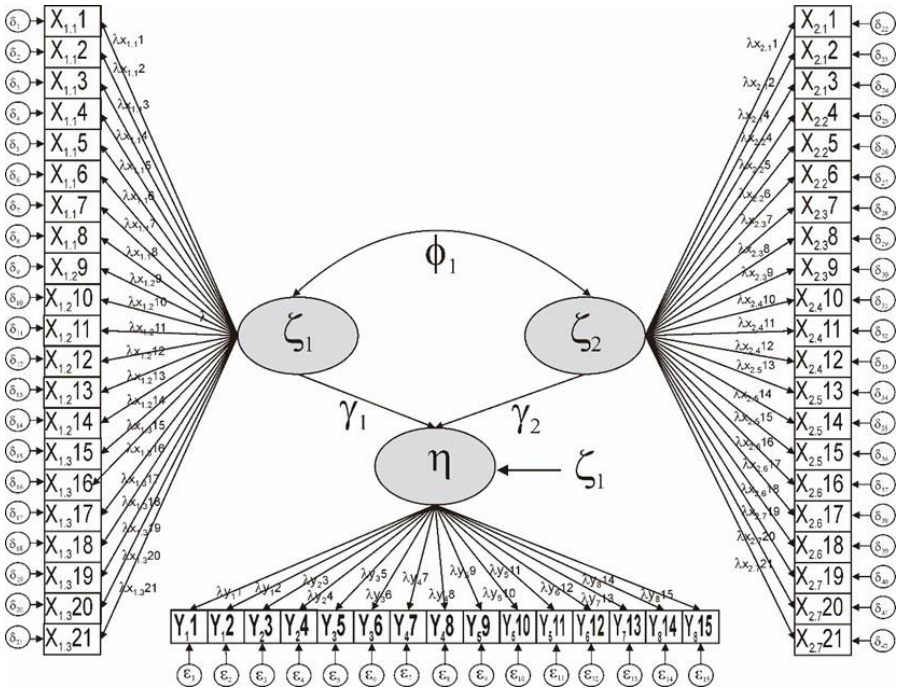

Figure 1: Structure of Research Variable Analysis

Where:

ξ_1 = Exogenous latent variable Competency variable concept (ksi)

X1.11 – X1.18 = Intellectual competence indicators

X1.29 – X1.214 = Emotional competence indicators

X1.315 – X1.321 = Social competence indicators

λX1.11 – λX1.321= The coefficient of direct influence of the exogenous competence indicator variable

δ1 – δ21 = The measurement error of each exogenous indicator of competence

ξ_2 = Exogenous latent variable concept of work motivation variable (ksi)

X2.11 – X2.13 = Indicators of self-development motivation

X2.24 – X2.26 Indicators of responsibility motivation

X2.37 – X2.39 = Indicators of pride in work motivation

X2.410 – X2.412 = Indicators of motivation for task achievement

X2.513 – X2.515 = Recognition motivation indicator

X2.616 – X2.618 = Indicators of career development motivation

X2.719 – X2.721 = Job challenge motivation indicator

λX2.11 – λX2.721= The coefficient of direct influence of the exogenous variable indicator of motivation

δ22 – δ42 = The measurement error of each exogenous indicator of Motivation

η = Endogenous latent variable concept of employee performance variable

Y11 – Y12 = Indicators of endogenous latent variables Quantity of work

Y23 – Y24 = Indicators of endogenous latent variables Job quality

Y35 – Y36 = Indicators of endogenous latent variables Position Knowledge

Y47 – Y48 = Indicators of endogenous latent variables Creativity

Y59 – Y511 = Indicators of endogenous latent variables Cooperation

Y612 = Indicators of endogenous latent variables Dependability

Y713 = Endogenous latent variable indicator Initiative (Initiative)

Y814 – Y815 = Endogenous latent variable indicator Personal Qualities

λY11 – λY815 = The coefficient of direct influence of endogenous latent variable indicators

Ɛ1 – Ɛ15 = The fallacy of each performance endogenous indicator variable

ς1 = Mistakes in measuring employee performance variables

ϕ_1 = Correlation between latent variable exogenous concept of competence variable and exogenous variable concept of work motivation variable

γ_1 = The coefficient of direct influence of the exogenous latent variable of competence on the endogenous latent variable of employee performance

γ_2 = The coefficient of direct influence of the exogenous latent variable of work motivation on the endogenous latent variable of employee performance

Validity and Reliability Test

n this study, the validity test was carried out with (invalid statement items) and (valid statement items) and the test results obtained with all values of r > rtable (with df = 30-2 = 28 and 5% significance, namely 0.374) so that it can be concluded that all statement items are valid. Furthermore, the reliability test by looking at the Cronbach Alpha value. A latent variable is said to be reliable if the Cronbach Alpha value > 0.6. Information obtained that all variables have Cronbach's Alpha value > 0.6 which means that all variables are very reliable.

Parameter Estimation on PLS

As the first stage of parameter estimation, the latent variable scores are obtained as follows:

Table 1: Latent Variable Score Index

LV Index Values	Score
Employee performance (η)	9.624
Competence (ξ_1)	9.710
Work motivation (ξ_2)	8.311

In table 1, information is obtained that the competence latent variable has the highest index value, which is 9,710 among all variables in the study. This means that the latent variable of competence has the best assessment among all variables by the

respondent. While the scores of other latent variables are not much different. The second and third stages of parameter estimation involve non-iterative estimation which results in the output of structural model coefficients and measurement model coefficients.

Model Evaluation

1. Evaluation of Measurement Model

   a. Composite Reliability (ρc)

Tabel 2: *Composite Reliability*

Construct	Composite Reliability
Employee performance	0.958
Competence	0.972
Work motivation	0.969

Based on Table 2, information is obtained that the Composite Reliability values in all indicator blocks have met the Composite Reliability assumption, which is greater than 0.6, meaning that the indicator blocks in each latent variable have high consistency.

b. Convergent Validity

At the output outer loadings all indicators meet the assumption of convergent validity. This shows that all indicators in the latent variable block can be explained well by the latent variable.

c. Discriminant Validity

The discriminant validity of the indicator can be seen in the cross-loading between the indicator and its latent variable.

Tabel 3: Cross-Loading Variable Competence, Work Motivation and Employee Performance

Indicator	Employee performance	Competence	Work motivation
X01	0.501	**0.746**	0.577
X02	0.624	**0.821**	0.623
X03	0.584	**0.750**	0.516
X04	0.660	**0.781**	0.589
X05	0.562	**0.794**	0.535
X06	0.477	**0.775**	0.503
X07	0.683	**0.839**	0.624
X08	0.519	**0.815**	0.441
X09	0.557	**0.755**	0.492
X10	0.696	**0.769**	0.612
X11	0.569	**0.848**	0.541
X12	0.670	**0.799**	0.583
X13	0.662	**0.775**	0.565
X14	0.565	**0.759**	0.489
X15	0.488	**0.763**	0.515
X16	0.579	**0.772**	0.550
X17	0.597	**0.801**	0.591
X18	0.588	**0.771**	0.461
X19	0.661	**0.840**	0.535
X20	0.514	**0.756**	0.526
X21	0.596	**0.813**	0.591
X22	0.567	0.538	**0.814**
X23	0.534	0.595	**0.753**
X24	0.511	0.521	**0.750**
X25	0.488	0.500	**0.756**
X26	0.519	0.544	**0.776**

Indicator	Employee performance	Competence	Work motivation
X27	0.511	0.495	**0.750**
X28	0.436	0.494	**0.752**
X29	0.533	0.564	**0.770**
X30	0.538	0.574	**0.798**
X31	0.546	0.497	**0.720**
X32	0.529	0.530	**0.745**
X33	0.546	0.550	**0.703**
X34	0.563	0.505	**0.728**
X35	0.645	0.542	**0.779**
X36	0.642	0.588	**0.847**
X37	0.572	0.610	**0.789**
X38	0.651	0.539	**0.764**
X39	0.595	0.507	**0.784**
X40	0.475	0.488	**0.749**
X41	0.623	0.555	**0.814**
X42	0.625	0.545	**0.866**
Y01	**0.819**	0.618	0.552
Y02	**0.819**	0.619	0.557
Y03	**0.777**	0.490	0.594
Y04	**0.731**	0.524	0.575
Y05	**0.807**	0.648	0.635
Y06	**0.841**	0.643	0.665
Y07	**0.758**	0.508	0.557
Y08	**0.715**	0.595	0.522
Y09	**0.811**	0.622	0.508
Y10	**0.800**	0.552	0.521
Y11	**0.751**	0.522	0.583
Y12	**0.734**	0.558	0.556
Y13	**0.754**	0.604	0.538
Y14	**0.789**	0.733	0.555
Y15	**0.753**	0.544	0.540

From Table 3 it can be seen that the correlation of the latent variable ξ_1 with the indicator is higher than the other latent variables with the indicator of the latent variable. This also applies to all latent variablesn ξ_2 and η with their respective indicators. This shows that latent variables can predict indicators in their block better than other latent variables.

Structural Model Evaluation

Based on the results of the analysis obtained R2 = 0.6461 for the Employee Performance construct. This means that the latent variable of employee performance can be explained well by competence and work motivation of 64.61%.

Hypothesis test

Before testing the hypothesis, a bootstrapping procedure was carried out on the sample data. Bootstrapping is done 1000 times where every time the data bootstrapping is done, the resampling obtained is 100 valid data.

The results of bootstrapping with a bootstrap sample of 1000 times are assumed to have a normal distribution of data so that the parameter testing in the model can be done by using the t test. The coefficient value of the structural model is said to be significant if the t-count > t-table is 1.67022 (1.67022 is the t-table value with 95% confidence level, 5% significance level, df = n–2, 1-way test).

Statistical hypothesis for outer model:

$H_0 : \lambda i \leq 0$

$H_1 : \lambda i > 0$

Statistical hypothesis for inner model:

$H_0 : \gamma_1 \leq 0$

$H_1 : \gamma_1 > 0$

Level of significance: $\alpha = 5\%$

Test statistics: $t = \frac{\lambda_{jk}}{SE(\lambda_{jk})}$ $t = \frac{\beta_i}{SE(\beta_i)}$

The results of the hypothesis test for the outer model are concluded that all indicators are significant so that they can be used to build the model, while the results of the inner model hypothesis test can be seen in table 4 with the results of all significant path coefficients.

Table 4: T test for Path Coefficient

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)
Competence -> Employee performance	0.486	0.494	0.086	5.634
Work motivation -> Employee performance	0.386	0.392	0.091	4.232

Direct Influence, Indirect Influence, and Total Influence

Table 5: Effects Between Latent Variables

Variable	Path Coefficient Structural	Influence Direct	Influence indirect	Total
Competence -> Employee performance	0.486	23.62%	13.05%	36.67%
Work motivation -> Employee performance	0.386	14.89%	13.05%	27.94%
TOTAL EFFECT (R^2)		38.51%	26.10%	64.61%

The results of the influence of competence and work motivation on employee performance indicate that the influence of competence on employee performance is greater than work motivation on employee performance.

Together, competence and work motivation are able to explain changes that occur in employee performance by 64.61% and the remaining 35.39% is explained by other factors not examined.

CONCLUSION

From the explanation that has been explained in the analysis and discussion chapter, it can be concluded several things as follows:

a. Based on the results of the evaluation of the measurement model that 57 valid indicators in the measurement of each latent variable can be used in forming a model of factors that affect employee performance with 2 structural models and 57 measurement models.
b. Based on the results of hypothesis testing, the competence and work motivation variables have a positive and significant influence on the latent variables of employee performance.

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