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The Employee's Performance: A Study of Construct Validity and Reliability

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Abstract

This study aims to test the validity and reliability of the employee performance scale and test aspects and indicators that can form an employee performance variable. Employee performance is measured by three aspects, namely work result, discipline, and responsibility. This study's population were all employees who served in the operating room of Hospital "X" in Yogyakarta, and the number of samples in this study was 61 operating room employees at this Hospital. The sampling technique is done with simple random sampling. Data collection methods use an employee performance scale. The research data were analyzed with Structural Equation Modelling (SEM) through the SmartPLS 3.2.8 program. Based on the data analysis results, the aspects and indicators that make up the employee's performance variables are declared valid and reliable. The most dominant aspect that reflects employee performance variables is discipline with loading factor 0.860, and the weakest aspect that reflects employee performance variables is the work result with a loading factor of 0.780. This shows that all aspects and indicators are able to reflect and shape employee performance variables. Thus, the measurement model can be accepted because the theory that describes employee performance variables fit with empirical data obtained from the subject.

Keywords: Discipline; employee's performance; responsibility; work result.

1. Introduction

Health is a very important thing for every individual. One of the things needed to create a healthy life for the community is by managing competent and professional human resources in the health sector so that they can provide health services effectively and efficiently. The majority of human resources in the health sector are in hospitals.

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The hospital has many human resources in charge of providing health services in various forms, through services in the operating room. The operating room team is tasked with providing medical services in the form of surgical procedures. Considering the important role of the operating room team, each individual who is assigned to this team needs to show a variety of positive attitudes at work. A positive attitude on employees can be seen from the performance of these employees in completing their work. Employee performance is very important in managing human resources [1-3]. High employee performance can increase employee achievement, commitment, and job satisfaction [4-7]. Other studies show that employee performance influences employee work attitudes [8], employee engagement [9, 10], and employee productivity [11]. According to [12] good performance can also increase organizational effectiveness and success. In the health sector, good operating room employee performance will result in effectiveness and work efficiency, so that it will have an impact on patient safety and recovery. Employee performance can be influenced by various factors, including the human resource management system at work [13], leadership style, working environment conditions [14], salary and promotion opportunities [15], communication styles between employees [16], and work motivation [17]. Services to patients, especially in the operating room certainly require high precision and accuracy. This function serves to avoid accidents in patients caused by medical errors, so it requires professionalism, reliability, and high discipline. Employees who work in the operating room must have the knowledge, skills, discipline, and confidence in the tasks given. The operating room team must also have good interpersonal communication skills and altruistic attitudes so that they have empathy for the patient. To determine employees' level of success in doing their jobs, it is necessary to do a periodic evaluation. One of the work variables that need to be evaluated is employee performance. The definition of employee performance has been developed by many experts. Reference [18] initially assumed that performance is something that is difficult to measure because performance is a subjective and diverse phenomenon. Bourguignon [19] defines performance as a reflection of the achievement of organizational goals that can be seen through analysis and comparison between organizations' results with existing resources. According to [20], performance is the output produced by profession within a certain time. Performance plays a role in how many employees contribute to their work and willingness to always improve the results of their work [21]. Performance on health employees is related to the output in the form of service to patients [22]. Empirical studies on the importance of employee performance contributions continue to develop. The research results by [23,24] show that employee performance can influence leadership. Other studies have shown the effect of employee performance on job satisfaction and employee socializing styles [25, 26], employee self-efficacy [27], and employee organizational commitment [28]. According to [29], there are three aspects of employee performance; 1) Work result, which is the quality and quantity of work results achieved by an employee in carrying out their duties, and how employees perform their duties. 2) Discipline, namely the accuracy in carrying out the task. This aspect relates to how employees complete their work in accordance with the demands of the time given. 3) Responsibility is the ability of employees to be able to work well in a variety of circumstances, both when there is supervision or without supervision.

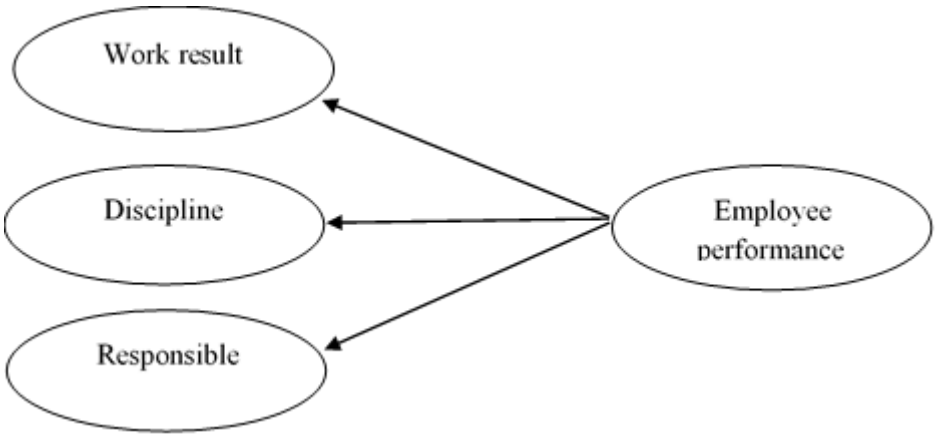

Figure 1: Conceptual framework of employee's performance

Based on Figure 1 above, this study hypothesizes that the aspect of work results, discipline, and responsibility are capable of forming employee performance variables. In this study, data analysis uses Partial Least Square (PLS) based on components or variants. Partial Least Square (PLS) is a strong analytical method because it does not assume the data must be with a certain scale measurement, and it only requires a small sample size [30]. The advantage of using PLS is that it can estimate the model's size on validity and reliability. One approach that can be used in testing the construction of a measuring instrument is Confirmatory Factor Analysis (CFA). Confirmatory Factor Analysis (CFA) is one of the main approaches in factor analysis. Confirmatory Factor Analysis (CFA) can be used to test aspects of a construct. This test is used to measure the model so that it can illustrate aspects in reflecting latent variables, namely employee performance by looking at the loading factors of each aspect that forms a construct. Confirmatory Factor Analysis (CFA) is also used to test the construct validity and construct reliability of latent construct indicators [31]. Confirmatory Factor Analysis (CFA) used in this study is the second Order Confirmatory Factor Analysis (2^{nd} Order CFA), a measurement model that consists of two levels. The first analysis level is carried out from aspects to its indicators, and the second analysis is carried out from latent variables to its aspects [31]. Based on the description above, the formulation of the problem in this study are: 1) Is the employee performance scale valid and reliable? 2) Are the aspects of work result, discipline, and responsibility capable of forming employee performance variables? This study aims to: 1) Test the validity and reliability of employee performance scales and 2) Test the aspects and indicators that can form employee performance variables.

2. Research Method

2.1. Population, Sample and Sampling Technique

This study's population were all employees who served in the operating room Hospital "X" Yogyakarta. The number of samples in this study was 61 operating room employees at this hospital. The sampling technique used is simple random sampling, where each member of the population has the same opportunity to become a research sample.

2.2. Data Collection Method

Employee performance is measured using a performance scale with a Likert scaling model. The performance scale in this study was compiled by researchers with reference to the performance aspects, according to [29], namely the results of work, discipline, and responsibility. Examples of items in the aspects of work are "I work earnestly to get the best results". The sample question in the disciplinary aspect is "I work according to the specified working hours" and an example of items in the aspect of responsibility is "I am happy to do work that becomes my job". Blueprints that are used as a reference in the preparation of performance scale can be seen in Table 1.

Table 1: Blueprint of work performance scale

No.	Aspect	Indicator	Item number		Total
			Favourable	Unfavourable	
1	Work result	1. Quantity of work 2. The quality of the work 3. Timeliness of completing work	1, 2, 3,4	5, 6,7,8	8
2	Discipline	1. Timeliness of coming to work 2. Punctuality in work 3. Compliance with the rules	9,10,11,12	13,14,15,16	8
3	Responsible	1. Responsibility for work 2. Responsibility towards superiors 3. Responsibility for laws / regulations	17,18,19,20	21,22,23,24	8
Total			12	12	24

2.3. Construct Validity and Reliability

In the Partial Least Square (PLS) Structural Equation Model (SEM), the relationship between indicators and latent variables uses the reflective model. The reflective model reflects that each indicator is a measurement error that is imposed on latent variables. The direction of cause and effect is from latent variables to indicators; thus, indicators are a reflection of variations from latent variables [32]. The changes in latent variables are expected to cause changes in all indicators. Validity test in the outer model with the reflective model is evaluated through convergent validity and discriminant validity of the indicators forming latent constructs [33]. The construct validity test consists of convergent and discriminant validity tests. Convergent validity can be seen from the loading factor value > 0.5 and Average Variance Extracted (AVE) value > 0.5 [34]. According to Hair and his colleagues the higher the loading factor score, the more important the loading role will be in interpreting the factor matrix. With a loading and AVE value of > 0.5, variables are considered significant [34]. While discriminant validity can be seen from comparing the roots of Average Variance Extracted (AVE)

between aspects in which it must be higher than the correlation with other aspects [34]. Reliability in measurement identifies the stability and consistency of an instrument in measuring certain concepts and helps assess a measurement instrument's quality. The reliability test in the PLS calculation uses two approaches, namely composite reliability, and Cronbach alpha. Cronbach alpha measures the lower limit of a construct's reliability value while composite reliability measures the actual value of a construct's reliability [34]. The construct reliability test is performed to show the internal consistency of the measuring instrument by looking at the composite reliability value and Cronbach alpha with a higher value, it will show the value consistency of each item in measuring latent variables. According to Hair and his colleagues the expected composite reliability and Cronbach's alpha value are > 0.7, and the value 0.6 is acceptable [34].

2.4. Data Analysis

This study's data were analyzed using the outer model with the CFA 2nd Order approach through the SmartPLS 3.2.8 program. According to Abdillah and Hartono [35], Partial Least Square (PLS) is a variant-based Structural Equation Model (SEM) that can simultaneously test measurement models to test validity and reliability.

3. Result

The analysis result of the outer model test on the scale of employee performance conducted using the SmartPLS 3.2.8 program can be seen, as shown in Figure 2 below.

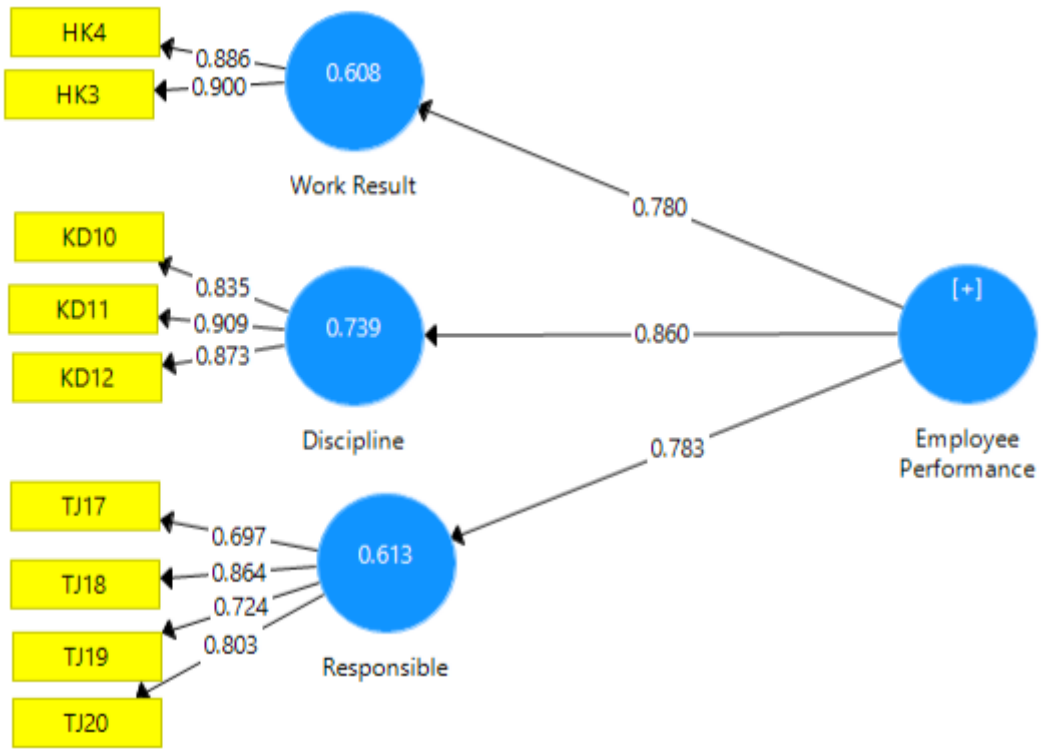

Figure 2: Outer model of employee's performance

3.1. Construct Validity Test

3.1.1. Convergent Validity

Based on the convergent validity test, it was found that the value of the loading factor from variables to aspects is > 0.5, which means the results of the construct validity test of job satisfaction can be said to be valid because it meets the criteria of loading factor value > 0.5. Convergent validity test results can be seen in Table 2.

Table 2: Loading factor value (variable- aspect)

Aspect	Loading factor	Explanation
Work result	0.780	Valid
Discipline	0.860	Valid
Responsible	0.783	Valid

Based on the convergent validity test, it was found that the value of the loading factor from aspects to indicators (items) is > 0.5, which is shown in Table 3.

Table 3: Loading factor value (aspect-item)

Items	Loading factor	Explanation
HK3	0.900	Valid
HK4	0.886	Valid
KD10	0.835	Valid
KD11	0.909	Valid
KD12	0.873	Valid
TJ17	0.697	Valid
TJ18	0.864	Valid
TJ19	0.724	Valid
TJ20	0.803	Valid

Furthermore, the results of the convergent validity test show the Average Variance Extracted (AVE) value > 0.5. The Average Variance Extracted (AVE) value of the employee performance variable is 0.527. The AVE value in each aspect can be seen in Table 4.

Table 4: Average Variance Extracted (AVE) value of employee's performance

Aspect	AVE value	Explanation
Work result	0.797	Valid
Discipline	0.762	Valid
Responsible	0.601	Valid

3.1.2. Discriminant Validity

The value of the discriminant validity test shows that the results of the roots of the Average Variance Extracted (AVE) in each aspect is higher than the roots of the Average Variance Extracted (AVE) in other aspects, so that the discriminant validity criteria are met. The root value of the Average Variance Extracted (AVE) employee performance variable can be seen in Table 5.

Table 5: AVE root value of employee's performance construct

Aspect	Work result	Discipline	Responsibility
Work result	0.893	0.460	0.512
Discipline	0.460	0.873	0.532
Responsible	0.512	0.532	0.775

3.2. Construct Reliability Test

The results of the construct reliability test that has been done and the composite reliability and Cronbach alpha value of > 0.7 are obtained so that it can be stated that the scale in this study is reliable. The composite reliability and Cronbach alpha values can be seen in Table 6.

Table 6: Composite reliability and Cronbach alpha value

Variable	Composite reliability	Cronbach alpha	Explanation
Work performance	0.886	0.849	Reliable

The results of construct reliability testing with the 2nd Order Confirmatory Factor Analysis (CFA) show that the scale of employee performance has good reliability. It means that aspects that measure employee performance variables meet unidimensional criteria [36]. This is indicated by the composite reliability value of 0.886 and Cronbach alpha of 0.849. The data analysis (outer model) using the 2nd Order Confirmatory Factor Analysis (CFA) shows that the measurement model on the performance contract is acceptable, because all aspects are able to reflect performance variables and are supported by valid items.

4. Discussion

Based on the results of the analysis of construct validity and construct reliability, the aspects and indicators that make up the scale of employee performance are declared valid and reliable. This shows that all aspects and indicators are able to reflect and shape employee performance variables. The most dominant aspect that is able to reflect employee performance variables is discipline with a loading factor of 0.860. Discipline is shown by the punctuality of work, punctuality in work, and adherence to order. This is supported by observation and interview data at the study site, which shows that the accuracy of work time greatly affects the operating room's

performance. Operating room service is the team's performance consisting of surgeons, anesthetists, anesthetist nurses, surgical assistants, surgical instruments, and cyclical nurses. Delay in one team member will result in suboptimal service, delay in the operating schedule, and even risk the patient's safety. The weakest aspect of reflecting employee performance is the work result, with a loading factor of 0.780. Work results are indicated by the quantity of work, the quality of work, and the timeliness of completing work. Compared with other aspects, discipline and responsibility have a more important role that employees must own in the hospital operating room because if the employee is undisciplined and irresponsible, it will have fatal consequences for patient safety in the operating room. Thus, the results of work become the weakest thing in employee performance because employees assess that if employees can be disciplined and responsible for working, then the appropriate work will be followed. This is supported by observation and interview data at the study site, which shows that a large number of operations requires employees to be able to work quickly, with quality by prioritizing patient safety and timeliness in completing work. Operations that are longer than the estimated time will affect the next schedule of actions and also disrupt the management of the division of the next operation team. The findings of previous studies conducted by [37] showed that the measurement of employee performance met the reliability requirements with Cronbach alpha of 0.811. In addition, other studies related to employee performance were conducted by [38], which proved that performance meets the reliability requirements with Cronbach alpha 0.790. The research results of [39] fulfill the reliability requirements with Cronbach alpha 0.816, and the results of [40] fulfill the reliability requirements with Cronbach alpha 0.734. The results of this study shows that the performance scale has a better Cronbach alpha value of 0.849. This shows that the scale of employee performance from the results of this study is appropriate to be used or applied in revealing employee performance, especially employees who work in hospital operating rooms because it is supported by the results of good construct validity and reliability. The results of this study are expected to provide an overview of the validity and reliability of employee performance scales in the context of operating room employees at the "X" Hospital in Yogyakarta so that it can be used as a reference in further research related to employee performance. This study has several limitations, including the number of research subjects is small and the research is only conducted in one research location. This has an impact on research results that are not optimal. It is hoped that the next researcher can develop this measuring instrument with more subjects and with a wider location so that the results are maximized.

5. Conclusion

Based on the analysis and discussion results, it can be concluded that 1) the Employee performance scale meets validity and reliability. 2) All aspects or indicators can form employee performance variables. The aspect that has the most dominant influence on employee performance is discipline, and the weakest aspect describing employee performance variables is the work result. This study formed a model of measuring employee performance scale in accordance with empirical data obtained from subjects at the study site.

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