The Moderating Role of Work Discipline in the Training–Performance Relationship

I Made Aryata[1*], I Gede Marenrda[2]
[1,2]Lecturer, Economics and Business, Management, Pamulang University, Indonesia
dosen01210@ulnpam.ac.id[1], dosen01211@ulnpam.ac.id[2]*

Abstract
This study aims to analyze the effect of training on employee performance and examine the role of work discipline as a moderating variable. This study uses a quantitative approach with the Structural Equation Modeling (SEM) method, which allows for simultaneous testing of structural relationships between latent variables and provides more accurate estimates by testing measurement and structural models. In this study, the training variable was tested on Employee Performance with training as a moderating variable using the SEM method. The research sample consisted of 185 respondents selected to represent the study population. The results showed that training had no significant effect on employee performance, with β=0.167 and p = 0.235, indicating that training could not been able to directly improve performance. Conversely, work discipline has a positive and significant effect on employee performance, with a p-value of 0.000, indicating that the level of compliance with work rules and standards plays an important role in increasing productivity and performance quality. Furthermore, the results of the moderation test showed that work discipline strengthened the effect of training on employee performance, with β=-0.019 and a p-value of 0.004. This finding indicates that the effectiveness of training is highly dependent on employees work discipline. One of the main limitations lies in the scope of the variables used, as other factors can influence employee performance. Therefore, further research is recommended to develop a research model by adding other relevant variables.

Keywords: *Dicipline, Performance, Structural Equation Modeling (SEM), Training*

1. INTRODUCTION

Human Resources (HR) are a key factor in determining the success of an organization. HR not only plays a role in implementing operational activities but also serves as a strategic asset that significantly contributes to achieving organizational goals effectively and efficiently. Good HR quality impacts performance, productivity, dedication, loyalty, and individual commitment to the organization. In the context of increasingly dynamic and complex competition, organizations are required to have competent, adaptive, and able to face changes in the business environment. Therefore, optimal human resource management is essential for every organization to increase competitiveness and organizational sustainability.

In an era of increasing competition, organizations are required to improve employee performance to maintain sustainability and competitiveness. High employee performance is inseparable from various influencing factors, both internal and external (Yartati, 2022). PT Techpolitan Indonesia is a company engaged in the coding boot camp and digital training industry. The company provides coding, programming, and digital skills development training programs aimed at preparing high school/vocational school graduates and the general public to enter the workforce, particularly in the information technology sector (Ichdan, 2024; Khasanah & Amillahaq, 2025). In addition, PT Techpolitan Indonesia develops talent recruitment, headhunting, and technology-based human resource solutions. The characteristics of the coding bootcamp industry require companies to have competent and adaptive human resources capable of providing effective training services (Adil, Marhani, & Rosa, 2025; Shalahuddin, Aswan, Abdullah, Jimainal, & Yusof, 2025). Therefore, employee performance is a critical factor in supporting training quality and company's success.

According Adhinugroho (2016), employee performance, which is the result of employee work, is related to the success of the agency, the agency's achievement will be achieved if employee performance reaches the specified target. Performance is the work achievement produced by a person, that is, comparing work results with expected standards. According to Aniel (2021) performance is the achievement of a person or group of people in terms of quality and volume in

carrying out each basic obligation and demonstrating their role and function according to benchmarks based on certain categories and parameters that have been determined by management.

Training is one of the factors that can affect employee performance. According Azmy, Risza, and Adhykusuma (2022), training represents a form of investment in human resources aimed at enhancing employees' abilities and skills, which, in turn, contributes to improved performance. Meanwhile, Gomes defines training as any effort undertaken to improve employee performance in a particular job that they are responsible for or in roles that support the achievement of their desired career path. Research conducted by indicates that training and work discipline, both individually and simultaneously, significantly impact employee performance. Similarly, the findings reveal that training, work discipline, and motivation exert a positive and significant influence on employee performance at PT. Sabas Indonesia (Ahmad & Ahmad Razimi, 2018). Furthermore, research demonstrates that training and work discipline collectively affect employee performance.

A moderating variable influences the strength or direction of the relationship between the independent and dependent variables. According Widarmanti (2022), this variable does not directly influence the dependent variable, but it can strengthen or weaken the influence of the independent variable. Previous research has generally only examined the direct effects of training and work discipline on employee performance. Therefore, this study also examines indirect effects through moderating variables. In this study, work discipline acts as a moderating variable, strengthening or weakening the influence of training on employee performance.

Based on the problems described, this study aims to analyze the effect of training on employee performance, with work discipline as a moderating variable. According Widtayakornbundit and Phinaitrup (2021), this study uses a quantitative approach with the Structural Equation Modeling (SEM) analysis method. SEM is a multivariate analysis technique used to simultaneously examine the structural relationships between latent and measured variables. This method integrates factor and regression analyses, allowing researchers to test complex conceptual models within a comprehensive and systematic analytical framework.

The choice of SEM in this study is based on the latent and multidimensional nature of human resource variables, such as training, work discipline, and employee performance, which cannot be measured directly but rather through several indicators. Furthermore, SEM allows for the simultaneous testing of causal relationships, including testing for moderating effects, within a single integrated model. SEM also offers the advantage of testing construct validity and reliability through measurement models, thereby increasing the accuracy of the research results. Therefore, the use of SEM is considered appropriate for explaining the complex relationships between variables in the context of human resource management. The expected results of this study are to determine the effect of training on employee performance, the effect of work discipline on employee performance, and to determine the role of work discipline as a moderating variable in strengthening or weakening the effect of training on employee performance.Therefore, the research title chosen in this study is "The Moderating Role of Work Discipline in the Training–Performance Relationship."

2. LITERATURE REVIEW

2.1 Training

According Sumadi and Santoso (2022), training is a short-term educational method using systematic and organized procedures, where non-managerial workers deepen their technical knowledge and skills for specific purposes. According Chavanovanich (2025), training is a series of individual activities that systematically improve skills and knowledge so that they can achieve professional results in their field. Training is a learning process that enables employees to perform their current jobs according to the required standards. According to Damayanti, Nuzula, Sulasmiyati, and Maharani (2021), job training serves several key objectives. It aims to increase work productivity, enhance the quality of work, and improve accuracy in human resource planning. Additionally, job training is intended to boost employee morale, maintain health and safety in the workplace, and support the personal growth of employees, ensuring that they are better equipped to meet both organizational and individual development goals. According to Hidayati, Budiardjo, and Purwandari (2021), there are five indicators in training which are training objectives, materials, methods used, participant qualifications, and trainer qualifications.

2.2 Work Discipline

According to Komara, Hartoyo, and Andati (2016), it is stated that work discipline is a means used by managers to communicate with employees, encouraging them to be prepared to change their behavior and to enhance their awareness and willingness to comply with all company regulations. According to Korda and Rachmawati (2022), discipline can be interpreted as an attitude of respect, obedience, and compliance with existing regulations, both written and unwritten, and being able to obey them and not receiving sanctions if they violate the duties and authority given to them. According to Nurbaeti, Saluy, and Bari (2023), good forms of discipline include employee commitment to achieving company goals, high levels of enthusiasm and work ethic, employee self-initiative in carrying out their work, employee responsibility to carry out their duties to the best of their ability, developing a strong sense of camaraderie and solidarity among employees, and increasing employee work efficiency and productivity is another benefit. According to Noval, Raharjanti, and Ali (2020), the indicators of off-work discipline are attendance level, work procedures, obedience to leadership, work awareness, and responsibility.

2.3 Performance

According to Cahyani, Rahmawati, and Milwan (2021), performance is the totality of work results, both in terms of quantity and quality, achieved by a worker/employee in carrying out their duties in accordance with the responsibilities that have been given. According to Ajabar, performance is the work results or work achievements of a person or group of people in achieving organizational goals. According to Pisitkasem (2022), employee performance can be measured using quantity of work, quality of work, independence, initiative, adaptability, and cooperation.

2.4 Conseptual Framework

Based on the conceptual framework outlined above, the hypotheses of this study are formulated as follows:

H_1 : Training influences employee performance
H_2: Discipline influences employee performance
H_3: Discipline moderates the effect of training on employee performance.

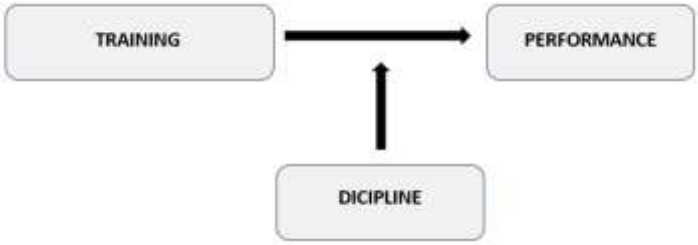

Figure 1. Conceptual framework

Figure 1 presents a conceptual framework illustrating the relationship between Training, Discipline, and Performance. Training is depicted as directly influencing employee performance, while discipline serves as a moderating or supporting factor that strengthens the effect of training on performance. This model highlights the role of structured training programs and adherence to workplace discipline in enhancing overall employee effectiveness.

3. METHODOLOGY

This study used a quantitative approach. According to Syahreza, Bahri, Akhyar, Bachri, and Muhamad (2025) a quantitative approach is a research approach that is heavily demanded to use numbers, starting from data collection, interpretation of the data, and the presentation of the results. Quantitative data are data in the form of numbers or qualitative data that are quantified. The data sources for this research are primary and secondary data. Primary data were obtained directly from the selected respondents at the research location. According to Tahiri, Kovaci, Dimoska, and Meha (2022), primary data are obtained directly from the object being studied. The primary data in this

study were obtained directly from consumers through questionnaires. Secondary data are data sources that do not directly provide data to collectors. This secondary data were obtained from other sources related to the research object, such as journals, books, and examples of previous research related to this research.

According to Thepvong, Kitirattarkarn, and Lertpreechapakdee (2024), the population is a generalization area consisting of objects or subjects that have certain qualities and characteristics that are applied by researchers to be studied and then conclusions are drawn. According to Prasetyaningtyas, Aishah, Hansen, and Kuspriandani (2021), simple random sampling is the taking of sample members from a population that is done randomly without paying attention to the strata in the population. According to Prayogi, Asmuni, and Nasution (2023), saturated sampling is a sampling technique in which all members of the population are used as the sample. This technique is commonly applied when the population size is relatively small or when the researcher intends to make generalizations with a very small error margin. Therefore, in this study, the total population of 185 respondents was used entirely as the sample, resulting in 185 respondents.

The data analysis technique employed in this study was Structural Equation Modeling (SEM). According to Riwayati, Winarti, Cahaya, and Khairunnisa (2025), SEM integrates factor analysis and path analysis into a comprehensive statistical framework. The application of SEM involves several stages, including validity testing, where factor loadings of 0.50 or higher indicate sufficient validity for latent constructs, and reliability testing, where Construct Reliability (CR) values of ≥ 0.70 and Average Variance Extracted (AVE) values of ≥ 0.50 demonstrate consistent measurement. Moderation testing examines the influence of latent variables on the relationship between independent and dependent variables, with complex SEM allowing the estimation of moderating effects by multiplying indicators of the exogenous latent variable with the moderator variable (Wahjoedi, 2023). Hypothesis testing is conducted by assessing the significance of relationships, with a p-value < 0.05 considered statistically significant.

Additionally, Goodness of Fit (GoF) criteria are applied to evaluate the overall suitability of the research model. After SEM assumptions are met, various statistical tests assess how well the proposed model fits the data, ensuring that the model accurately represents the relationships among variables. These GoF tests provide essential metrics for validating the model before interpreting the structural relationships, as outlined by Wolor (2021). This systematic approach ensures that the SEM analysis produces reliable, valid, and interpretable results that can support robust conclusions about the hypothesized relationships

Table 1. Goodness of fit

Criteria	Value
Chi-Square	0: Perfect FIT, the bigger the less fit
Probability	≥α: FIT, the value of α that can be used is 5%, 1% and 10%
GFI	0: Unwell; 1: Perfect FIT; ≥0.9: FIT
AGFI	0: Unwell; 1: Perfect FIT; ≥0.9: FIT
RMSEA	≤0,05: FIT; >0,1: No FIT
TLI	0: Not FIT; 1: Perfect FIT; ≥0.9: FIT
NFI	0: Not FIT; 1: Perfect FIT; ≥0.9: FIT
PCFI	0: Not FIT; the bigger the fit
PNFI	0: Not FIT; the bigger the fit

4. RESULTS AND DISCUSSIONS

4.1 Research Framework

In this study, training was considered an independent variable suspected of influencing employee performance, which was the dependent variable. Training is a human resource development process aimed at improving employees' knowledge, skills, and abilities in carrying out their duties and responsibilities. Employees who receive effective training tend to have a better understanding of their work and adequate technical skills, thereby increasing their productivity and

performance quality. Therefore, implementing a planned and sustainable training program can positively contribute to improving employee performance within an organization.

Furthermore, this study includes work discipline as a moderating variable that serves to strengthen or weaken the relationship between training and employee performance. Work discipline reflects the level of employee compliance with the rules, standards, and procedures established by an organization. High work discipline can increase the effectiveness of training, as employees are better able to implement the knowledge and skills acquired in their daily work activities, thereby strengthening the effect of training on employee performance. Conversely, low work discipline can hinder the implementation of training outcomes, resulting in a less-than-optimal relationship between training and employee performance. Thus, the existence of work discipline as a moderating variable in this study is expected to provide a more comprehensive understanding of how training affects employee performance, as well as the important role of work discipline in strengthening or weakening this relationship in the context of human resource management.

4.2 Descriptive Analysis

Table 2. Respondent characteristics based on gender

Gender	Total
Male	60
Female	125
Total	**185**

Table 2 shows the gender distribution of the respondents. Out of a total of 185 participants, 60 (32.4%) were male and 125 (67.6%) were female, indicating that the majority of respondents were female.

Table 3. Respondent characteristics based on aage

Age	Total
19-25 Ages	138
26-30 Ages	29
> 30 Ages	18
Total	**185**

Table 3 presents the age distribution of the respondents. Out of a total of 185 participants, 138 (74.6%) were aged 19–25, 29 (15.7%) were aged 26–30, and 18 (9.7%) were older than 30, indicating that the majority of respondents were in the younger age group of 19–25 years.

Table 4. Respondent characteristics based on education level

Education	Total
SMA/K	147
S1	38
S2	0
S3	0
Total	**185**

Table 4 shows the educational background of the respondents. Out of a total of 185 participants, 147 (79.5%) had completed senior high school (SMA/K), 38 (20.5%) held a bachelor's degree (S1), and no respondents had attained a master's (S2) or doctoral (S3) degree. This indicates that the majority of participants had a high school level education.

Table 5. Respondent characteristics based on length of service

Length of Service	Total
0-5 Years	135
6-10 Years	29
>10 Years	21
Total	**185**

Table 5 presents the length of service of the respondents. Out of 185 participants, 135 (73.0%) had 0–5 years of service, 29 (15.7%) had 6–10 years, and 21 (11.3%) had more than 10 years, indicating that the majority of respondents were relatively new employees with less than five years of experience.

4.3 Initial Model

There are five indicators in the training variable, five indicators in the discipline variable, and six indicators in the employee performance variable, as presented in table below.

Table 6. Research indicators

Variable	Indicator
Training	Training Objectives
	Materials
	Methods Used
	Participant Qualifications
	Trainer Qualifications
Dicipline	Attendance Level
	Work Procedures
	Obedience to Leadership
	Work Awareness
	Responsibility
Performance	Quantity of work
	Quality of work
	Independence
	Initiative
	Adaptability
	Collaboration

Table 6 shows outlines the variables and their corresponding indicators used in the study. The Training variable includes indicators such as training objectives, materials, methods used, participant qualifications, and trainer qualifications. The Discipline variable is measured through attendance level, adherence to work procedures, obedience to leadership, work awareness, and responsibility. The Performance variable encompasses quantity of work, quality of work, independence, initiative, adaptability, and collaboration. Together, these indicators provide a structured framework to assess how training and discipline influence employee performance.

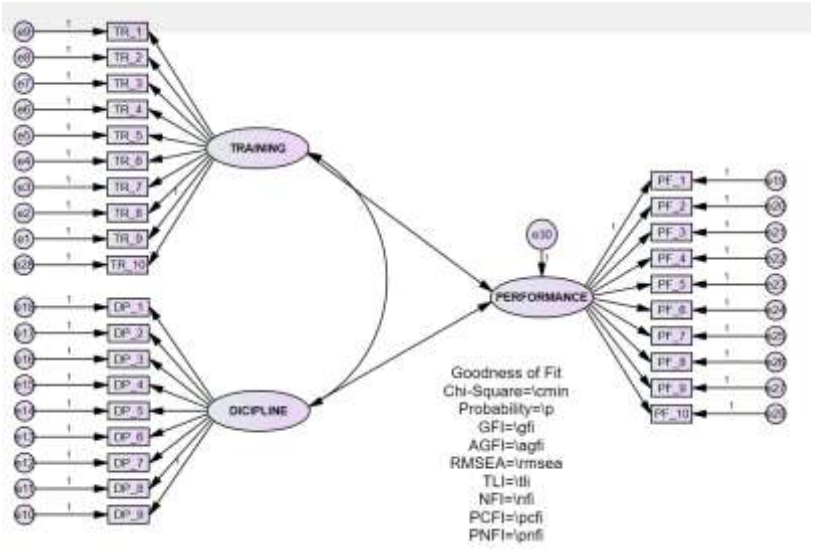

Figure 2. Initial research model

Figure 2 presents a Structural Equation Modeling (SEM) path diagram illustrating the relationships between Training, Discipline, and Performance. Each latent variable is represented by an oval, with their respective indicators displayed in rectangles (e.g., TR_1 to TR_10 for Training, DP_1 to DP_9 for Discipline, and PF_1 to PF_10 for Performance). Arrows from Training and Discipline point to Performance, indicating hypothesized direct effects on employee performance. Each indicator also has an associated error term (e1–e30) reflecting measurement error. The diagram includes model fit indices such as Chi-Square, Probability, GFI, AGFI, RMSEA, TLI, NFI, PCFI, and PNFI, which are used to evaluate the goodness-of-fit of the SEM model. This visualization provides a comprehensive overview of how training and discipline are operationalized and their impact on employee performance.

4.4 Normality Test

Based on the results of data normality testing using the Structural Equation Modeling (SEM) method with the help of AMOS software, a multivariate critical ratio (CR) value of 13.761 was obtained. This value indicates that the data are not multivariate normally distributed because it exceeds the recommended limit of ±2.58. This condition indicates a violation of the multivariate normality assumption, which is a prerequisite for covariance-based SEM analysis. Therefore, to overcome this problem, the Bollen-Stine bootstrap test was conducted to evaluate the feasibility of the model under non-normal data conditions.

Table 7. Normality test

Variables	Kurtosis	c.r.
PF_10	0.449	0.794
TR_10	0.938	1.658
PF_9	-0.729	-1.289
PF_8	-0.131	-0.231
PF_7	-0.463	-0.819
PF_6	-0.671	-1.186
PF_5	0.026	0.046
PF_4	-0.511	-0.903
PF_3	-0.511	-0.904
PF_2	0.318	0.562
PF_1	0.771	1.363

DP_1	0.227	0.401
DP_2	1.228	2.170
DP_3	0.863	1.525
DP_4	4.971	8.788
DP_5	-0.643	-1.136
DP_6	0.132	0.234
DP_7	0.054	0.095
DP_8	2.476	4.378
DP_9	-0.711	-1.256
TR_1	-1.011	-1.787
TR_2	-0.689	-1.217
TR_3	-0.059	-0.104
TR_4	-0.571	-1.010
TR_5	-0.851	-1.505
TR_6	2.172	3.839
TR_7	1.171	2.069
TR_8	4.361	7.709
TR_9	1.482	2.620
Multivariate	134.758	13.761

Table 7 shows the Bollen-Stine Bootstrap test results showed a p-value of 0.274, which is greater than 0.05. This indicates that the research model has an adequate level of fit (model fit) and remains suitable for further analysis. Thus, even though the data do not meet the assumption of multivariate normality, the developed model can still provide valid parameter estimates through the bootstrap approach, allowing the analysis process to proceed to the structural model testing and hypothesis testing stages.

4.5 Validity Test

At this stage, a validity test was conducted to assess the extent to which the research instrument, specifically the questionnaire items, accurately and precisely measured the constructs being studied. Validity testing is a crucial step in quantitative research because it determines the appropriateness of the indicators in representing latent variables used in the research model. In this study, a validity test was conducted using the Confirmatory Factor Analysis (CFA) approach with the AMOS application.

Based on the analysis results, it was found that several statement items in the indicator had factor loading values below the recommended minimum limit of 0.50. Low factor loading values indicate that these items are not able to adequately reflect the latent construct, thus their contribution in explaining the measured variable is less significant. This can affect the quality of the measurement model, particularly in terms of construct validity.

Table 8. Validity test stage 1

			Estimate				**Estimate**
PERFORMANCE	<---	TRAINING	0.071	DP_4	<---	DICIPLINE	0.719
PERFORMANCE	<---	DICIPLINE	0.997	DP_3	<---	DICIPLINE	0.773
TR_9	<---	TRAINING	0.558	DP_2	<---	DICIPLINE	0.652
TR_8	<---	TRAINING	0.533	DP_1	<---	DICIPLINE	0.699
TR_7	<---	TRAINING	0.482	PF_1	<---	PERFORMANCE	0.532
TR_6	<---	TRAINING	0.554	PF_2	<---	PERFORMANCE	0.713
TR_5	<---	TRAINING	0.767	PF_3	<---	PERFORMANCE	0.741
TR_4	<---	TRAINING	0.731	PF_4	<---	PERFORMANCE	0.663

TR_3	<---	TRAINING	0.787	PF_5	<---	PERFORMANCE	0.562
TR_2	<---	TRAINING	0.636	PF_6	<---	PERFORMANCE	0.711
TR_1	<---	TRAINING	0.588	PF_7	<---	PERFORMANCE	0.6
DP_9	<---	DICIPLINE	0.692	PF_8	<---	PERFORMANCE	0.553
DP_8	<---	DICIPLINE	0.731	PF_9	<---	PERFORMANCE	0.493
DP_7	<---	DICIPLINE	0.739	TR_10	<---	TRAINING	0.65
DP_6	<---	DICIPLINE	0.743	PF_10	<---	PERFORMANCE	0.633
DP_5	<---	DICIPLINE	0.752				

Table 8 shows the statement items that do not meet the validity criteria must be eliminated from the research model. This elimination process was carried out gradually while still considering the theoretical basis to avoid reducing the conceptual meaning of the construct being measured. After the elimination process, retesting of construct validity was necessary to ensure that the remaining indicators had adequate ability to represent the latent variables accurately and consistently. Thus, the resulting measurement model is expected to have a better level of validity and can be used for further analysis of the structural model.

Table 9. Validity test stage 2

			Estimate				**Estimate**
Performance	<---	Training	0.057	DP_4	<---	Dicipline	0.711
Performance	<---	Dicipline	1.008	DP_3	<---	Dicipline	0.767
TR_9	<---	Training	0.568	DP_2	<---	Dicipline	0.651
TR_8	<---	Training	0.533	DP_1	<---	Dicipline	0.697
TR_6	<---	Training	0.544	PF_1	<---	Performance	0.53
TR_5	<---	Training	0.761	PF_2	<---	Performance	0.713
TR_4	<---	Training	0.732	PF_3	<---	Performance	0.742
TR_3	<---	Training	0.798	PF_4	<---	Performance	0.664
TR_2	<---	Training	0.632	PF_5	<---	Performance	0.562
TR_1	<---	Training	0.596	PF_6	<---	Performance	0.711
DP_9	<---	Dicipline	0.692	PF_7	<---	Performance	0.603
DP_8	<---	Dicipline	0.738	PF_8	<---	Performance	0.556
DP_7	<---	Dicipline	0.745	TR_10	<---	Training	0.649
DP_6	<---	Dicipline	0.751	PF_10	<---	Performance	0.63
DP_5	<---	Dicipline	0.749				

After eliminating invalid items, it was found that all indicators had factor loading values greater than the minimum required limit, which is 0.50. Factor loading values that meet this criterion indicate that each indicator has a sufficiently strong correlation with the construct being measured, thus being declared valid. Thus, all statement items in the questionnaire were suitable for use as measuring instruments in this study and could proceed to the next testing stage, such as reliability testing and structural model testing.

4.6 Relliability Test

In the next stage, a reliability test was conducted to measure the consistency and reliability of the research instrument in producing stable and reliable data. The purpose of the reliability test was to ensure that the indicators used in the research could produce consistent results when measurements were taken at different times, places, and under different conditions. Therefore, reliability is a crucial requirement for ensuring the quality of the data produced in quantitative research.

In this study, reliability testing was conducted using the Composite Reliability (CR) and Average Variance Extracted (AVE) approaches through the AMOS application. The Composite Reliability value is used to measure the internal consistency between indicators within a construct, while the AVE value is used to measure the extent to which the latent variables can explain the variance of their indicators. Based on the test results obtained, it is known that all constructs have CR values greater than 0.70 and AVE values greater than 0.50. This indicates that each construct in this study had a good level of reliability and met the required criteria.

Table 10. Relliability test

Component	Training	Work Dicipline	Performance
CR	0.859	0.907	0.824
AVE	0.510	0.523	0.539

4.7 Moderation Test

At this stage, interaction testing was conducted to analyze the role of moderating variables in the research model. This test aims to determine whether work discipline can strengthen or weaken the relationship between training as an independent variable and employee performance as a dependent variable. In Structural Equation Modeling (SEM) analysis, moderating variables are tested by forming interaction variables between the independent variable and the moderating variable, thus enabling researchers to identify changes in the strength of the relationship between variables more comprehensively. Based on the conceptual framework developed, the first hypothesis (H_1) proposes that training affects employee performance.

Furthermore, work discipline in this study is positioned not only as a moderating variable but also has the potential to directly influence employee performance. High work discipline reflects the level of employee compliance with organizational rules, procedures, and work standards, which can ultimately increase work effectiveness and productivity. Therefore, the second hypothesis (H_2) proposes that work discipline influences employee performance.

Furthermore, conceptually, work discipline plays a role in strengthens the relationship between training and employee performance. Good work discipline enables employees to optimally implement the knowledge and skills acquired from training in their daily work. Conversely, low work discipline can hinder the application of training outcomes, thereby reducing the effectiveness of training in improving performance. Therefore, the third hypothesis (H_3) proposes that work discipline moderates the relationship between training and employee performance. Testing these three hypotheses is expected to provide a more comprehensive understanding of the dynamics of the relationship between variables in the context of human resource management.

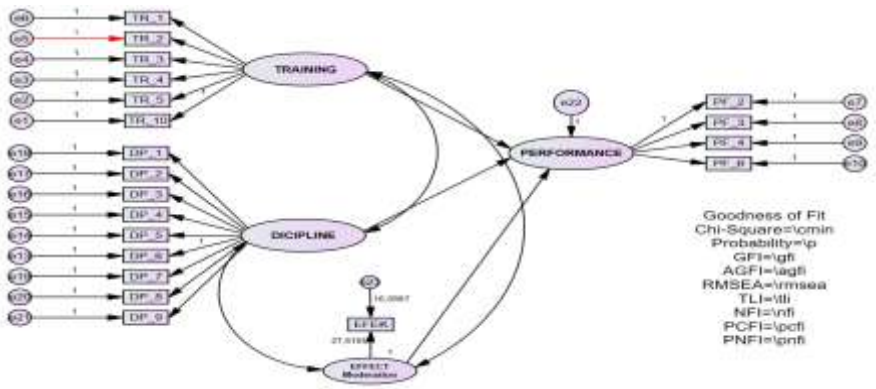

Figure 3. Moderation test

Figure 3 illustrates a Structural Equation Modeling (SEM) path diagram that includes Training, Discipline, and Performance, with an additional Moderation Effect variable. Each latent variable is represented by an oval, with associated indicators displayed as rectangles, such as TR_1–TR_10 for Training, DP_1–DP_9 for Discipline, and PF_2–PF_6 for Performance. Arrows from Training and

Discipline point to Performance, indicating direct effects, while an additional path represents the moderating effect, showing how the interaction between variables influences Performance. Each indicator has an associated error term, reflecting measurement error. The diagram also provides goodness-of-fit metrics, including Chi-Square, Probability, GFI, AGFI, RMSEA, TLI, NFI, PCFI, and PNFI, which are used to assess the overall model fit. This model visually captures the direct, indirect, and moderated relationships among the constructs to evaluate their impact on employee performance.

4.8 Correlation and Coefficient of Determination

Based on the results of the calculations, training has a correlation value of 0.695, which shows that training has a strong influence on employee performance, with a determination coefficient value of 48.2% or 51.8% influenced by other factors. Based on the results of the calculations, discipline has a correlation value of 0.933, which shows that discipline has a very strong influence on employee performance, with a determination coefficient value of 87.1% or 12.9% influenced by other factors. Simultaneously, training and discipline have a correlation value of 0.941 with a determination coefficient value of 88.6%, where 11.4% is influenced by other factors

4.9 Hypothesis Testing

Based on the results of hypothesis testing, a variable was declared to have a significant influence on another variable if the p-value obtained was less than 0.05 ($p < 0.05$). Conversely, if the p-value is greater than 0.05 ($p > 0.05$), the influence between the variables is declared insignificant. Based on the test results, it was found that training did not affect employee performance, as indicated by a p-value of 0.235. This is in accordance with the research conducted by Rachmawati (2017), where training had no effect on the performance of EMC Alam Sutera Hospital employees. This finding indicates that the training program provided was not fully capable of directly improving the employee performance. This could be caused by several factors, such as the inconsistency of training materials with job requirements, the ineffectiveness of training methods, or the low level of implementation of training outcomes in daily work. In line with the theory developed by Saparina (2021), training does not necessarily improve performance. Training outcomes will only have an impact if the knowledge, skills, and attitudes acquired during training can be applied to daily work. This application process is known as the transfer of training.

Furthermore, work discipline has a positive and significant effect on employee performance, with a p-value of 0.000. This is in accordance with the research conducted by Setyowati, Tamam, Tobing, and Qomariah (2021), which showed that training has an impact on employee performance. These results indicate that employee compliance with organizational rules, procedures, and work standards plays a significant role in increasing productivity and performance. Employees with high work discipline tend to be more consistent in carrying out their duties and responsibilities, thus achieving optimal performance.

Furthermore, the results of the moderation test indicate that work discipline plays a significant role in moderating the relationship between training and employee performance, as indicated by a p-value of 0.004. However, the interaction coefficient is negative, with an estimated value of -0.019. This result indicates that the higher the level of work discipline, the lesser the effect of training on employee performance tends to decrease. This finding suggests that implementing overly strict work discipline reduces the effectiveness of training programs. Under conditions of high and rigid discipline, employees tend to have limited space to develop, adapt, and implement the knowledge and skills acquired from training into their daily work activities. Consequently, the benefits of training cannot be fully translated into improved performance. Therefore, companies need to implement work discipline proportionally and flexibly to ensure employee well-being. The discipline applied should not only be oriented towards compliance with regulations but also provide opportunities for employees to innovate and optimally apply training results in carrying out their work.

Table 11. Hypothesis testing

			Estimate	S.E.	C.R.	P
Performance	<---	Training	0.167	0.14	1.188	0.235
Performance	<---	Dicipline	1.204	0.191	6.318	***
Performance	<---	Effect_Moderation	-0.019	0.006	-2.874	0.004

Table 11 shows the regression results indicate that Discipline has a strong and significant positive effect on Performance (Estimate = 1.204, C.R. = 6.318, $p < 0.001$), making it the most influential predictor among the variables studied. In contrast, Training shows a positive but non-significant effect on Performance (Estimate = 0.167, C.R. = 1.188, $p = 0.235$), suggesting that its direct impact is limited. Additionally, the Moderation Effect demonstrates a small but significant negative influence on Performance (Estimate = -0.019, C.R. = -2.874, $p = 0.004$), indicating that the moderating variable slightly reduces the overall effect on employee performance. Overall, these findings highlight the critical role of discipline in enhancing performance, while training alone may not be sufficient, and moderation can slightly attenuate the relationships.

4.10 Goodness of Fit

Based on the results of the Goodness of Fit test, it can be concluded that the research model underwent a modification process to meet the model feasibility criteria in Structural Equation Modeling (SEM) analysis. These modifications were conducted both theoretically and empirically to improve the alignment between the conceptual model and empirical data so that the resulting model could represent the relationships between variables more accurately and reliably. This modification process is generally carried out by considering modification indices while maintaining the underlying theoretical foundations of the relationships between constructs.

The test results show that most of the goodness-of-fit indicators met the recommended cut-off value, as shown in the figure below. SEM model does not have to perfectly meet all goodness-of-fit criteria to be declared feasible; rather, it is sufficient to meet several key indicators that represent the overall model suitability. These indicators include the Chi-Square, Root Mean Square Error of Approximation (RMSEA), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), and Tucker-Lewis index (TLI).

According to Titisari, Susanto, and Permatasari (2021), using to 4-5 goodness of fit criteria is sufficient to assess the suitability of a model. The conclusion is that this research model is acceptable because it meets the Goodness of Fit criteria. With the fulfillment of most of these indicators, it can be concluded that this research model has a good level of suitability (model fit) and is suitable for further analysis. This indicates that the developed model can adequately explain the structural relationships between variables so that the results of subsequent hypothesis testing can be interpreted with a high degree of confidence.

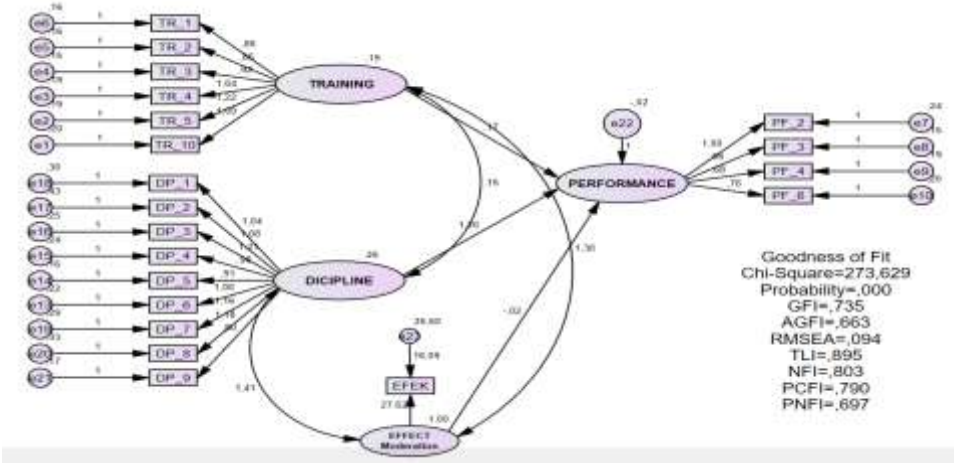

Figure 4. Goodness of fit

The figure presents a Structural Equation Modeling (SEM) path diagram illustrating the relationships among Training, Discipline, Performance, and the Moderation Effect. Each latent variable is represented by an oval, with corresponding indicators displayed as rectangles TR_1–TR_10 for Training, DP_1–DP_9 for Discipline, PF_2–PF_6 for Performance, each associated with an error term. Arrows from Training and Discipline point to Performance, indicating direct effects, while an additional path represents the moderating effect, showing how the interaction between variables influences Performance. The diagram also provides goodness-of-fit indices including Chi-Square, Probability, GFI, AGFI, RMSEA, TLI, NFI, PCFI, and PNFI used to evaluate the overall model fit. This SEM visualization captures the direct, indirect, and moderated relationships among the constructs to assess their impact on employee performance comprehensively.

Table 12. Goodness of fit Indices and their evaluation

Criterion	Value	Description
Chi-Square	273.629	FIT
Probability	0.000	NOT FIT
GFI	0.735	NOT FIT
AGFI	0.663	NOT FIT
RMSEA	0.094	NOT FIT
TLI	0.895	FIT
NFI	0.803	FIT
PCFI	0,.90	FIT
PNFI	0.697	FIT

Table 12 shows the goodness-of-fit indices for the SEM model. The results show that Chi-Square (273.629), Probability (0.000), GFI (0.735), AGFI (0.663), and RMSEA (0.094) indicate that the model does not fully fit the data. However, other indices such as TLI (0.895), NFI (0.803), PCFI (0.90), and PNFI (0.697) suggest an acceptable model fit. Overall, while some absolute fit indices indicate lack of fit, incremental and parsimony-adjusted indices provide evidence that the model is reasonably acceptable for further analysis.

5. CONCLUSIONS

5.1 Conclusion

Although the model met several key indicators of goodness of fit, several indices still fell short of the recommended cutoff value. This indicates that the research model still has limitations in optimally explaining the relationship between variables. Based on the research results, training did not have a significant effect on employee performance (p= 0.235), indicating that training did not been able to directly improve performance. In contrast, work discipline has a positive and significant effect on employee performance (p-value= 0.000), making it an important factor in increasing productivity. In addition, work discipline acts as a moderating variable that strengthens the influence of training on employee performance (p-value= 0.004). This indicates that the effectiveness of training in improving performance is highly dependent on employees work discipline. Therefore, organizations are advised to not only focus on improving the quality of training, but also strengthen the implementation of work discipline so that training results can be optimally implemented in daily work.

5.2 Research Limitations

This study had several limitations that should be considered when interpreting the results. One major limitation lies in the scope of the variables used, as this study only analyzed the effect of training and work discipline on employee performance. Meanwhile, employee performance is fundamentally influenced by various other factors not analyzed in this study, such as work motivation, leadership, the work environment, organizational culture, and job satisfaction. Therefore,

the results of this study cannot fully explain all the determinants that comprehensively influence employee performance. Furthermore, the research was conducted at PT Techpolitan Indonesia, which operates in the coding bootcamp industry; therefore, the results have limitations in terms of generalizability to other industries. Statistically, the data were not multivariate normally distributed, although this was addressed using the Bollen-Stine Bootstrap. Therefore, the results should be interpreted cautiously.

5.3 Suggestions and Directions for Future Research

These limitations indicate that the results of this study are not yet fully able to explain all the factors that comprehensively influence employee performance. Therefore, further research is recommended to develop the research model by adding other relevant variables, such as work motivation, leadership, work environment, organizational culture, and job satisfaction, to provide a broader and deeper understanding of the determinants of employee performance. Furthermore, future research can consider the use of different methods or approaches, such as a combination of quantitative and qualitative methods, as well as expanding the objects and number of research samples to increase the external validity and generalizability of the research results.

AUTHOR CONTRIBUTIONS

IMA contributed to the conceptualization, methodology, data collection, and manuscript drafting, providing substantial contributions to the research design and analysis. IGM contributed to the validation, supervision, writing, and editing of the manuscript, ensuring the rigor and completeness of the study. Both authors have read and approved the final manuscript.

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