

The Mediation Role of Job Satisfaction in the Relationship Between Physical And Psychosocial Work Environment on Employee Retention

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ABSTRACT

Human resources are those who provide the strength, expertise, creativity, and enthusiasm to manage an organization's shared assets. This is certainly a significant asset and is crucial for company management. Employees are a vital element in a company because of their significant contribution to achieving targets and business development. To achieve optimal growth, companies need employees with high skills and strong commitment. Retaining quality employees is a crucial factor in achieving organizational goals, especially amidst increasing global competition. This study aims to analyze the influence of the physical and psychological work environment on employee retention, with job satisfaction as a mediating variable. The method used is a Structural Equation Modeling (SEM) approach based on Partial Least Squares (SmartPLS 4.0). The sample consisted of 120 permanent employees at a private university in Medan. Data were collected using a Likert-scale questionnaire. The results showed that the physical and psychological work environment significantly influenced job satisfaction, and job satisfaction mediated the relationship between the work environment and employee retention. Based on the SmartPLS results, it can be concluded that the research model has high validity and reliability, the relationship between variables is significant and strong, with an R^2 value indicating a feasible and stable model, and job satisfaction acts as a significant mediator, strengthening the influence of the work environment on employee retention. These results emphasize the importance of creating a physically comfortable and psychologically conducive work environment to increase employee loyalty.

Keywords: Physical Work Environment, Psychological Work Environment, Job Satisfaction, Employee Retention.

I. Introduction

In an era of global competition, human resources are a strategic asset that determines organizational success. The primary challenge facing organizations today is not only recruiting a competent workforce, but also retaining them so they remain loyal and productive. The phenomenon of high turnover rates indicates that employee retention remains a critical issue in human resource management. Good human resource quality not only reflects individual competence but also reflects the extent to which an organization is able to create a conducive work environment (Tarigan & Lataruva, 2024). Basically, the work environment is divided



into two types: the physical work environment and the non-physical work environment. The physical work environment is the physical conditions consisting of elements in the work area, such as lighting, temperature, humidity, color, cleanliness, noise, and vibration. These elements must create a sense of security and peace to play a role in improving employee performance (Suwandana & Made, 2025). Meanwhile, the non-physical work environment is a work environment created by social forces such as communication, a family atmosphere in the work environment, and self-control. Both work environments collaborate to create a conducive work environment, a work atmosphere that workers need to be able to optimize their abilities to achieve company goals (Dumitriu et al., 2025).

LinkedIn Global Talent Trends report 2022 in (Mercer, 2023), 45% of employees in Southeast Asia leave their jobs within the first three years due to dissatisfaction with the work environment and lack of psychological support. This suggests that, in addition to compensation, job satisfaction and psychological well-being significantly influence an individual's decision to remain with an organization. In the context of higher education organizations, such as universities, retention of lecturers and educational staff is crucial for maintaining the continuity of academic services. Loyal lecturers and staff contribute to the stability of the education system and improve the quality of higher education institutions. (Shetty et al., 2025). Factors that often influence retention (Gelencsér et al., 2023) are the physical work environment (workspace comfort, ventilation, security, cleanliness, layout) and the psychological work environment (inter-employee relationships, leadership support, organizational justice, and work pressure). Both of these factors are closely related to job satisfaction, which is theoretically a key factor in fostering commitment and loyalty. Several previous studies (Prastya & Fu'ad, 2022) found that a positive work environment increases job satisfaction and ultimately strengthens employee retention. However, empirical studies on the mediating role of job satisfaction in the relationship between work environment and retention are still limited, particularly in the higher education sector in Indonesia. Therefore, this study attempts to analyze the relationship between the physical work environment and the psychological work environment on employee retention, with job satisfaction as a mediating variable.

II. Theoretical and Hypothesis Study

2.1. Employee Retention

Human resources are those who provide the strength, expertise, creativity, and enthusiasm to manage an organization's shared assets. This is certainly a significant asset and is crucial for company management. Employees are a vital element in a company because of their significant contribution to achieving targets and business development. To achieve optimal growth, companies need employees with high skills and strong commitment. Retaining quality employees is a crucial factor in achieving organizational goals, especially amidst increasing global competition. (Elshaer et al., 2025). Employee retention is a strategy implemented by companies to ensure the retention of potential workers. This is done by considering various factors that can increase employee satisfaction and loyalty to the company. (Almashyakhi, 2024). Employee retention is considered a crucial aspect of an organization's success because it can overcome challenges in HR management and ensure the continuity of company operations. (Menezes et al., 2025). Employee retention is an organization's ability to retain high-performing and potential employees for the long term. (Trisna Wijayanthi et al., 2024). Retention reflects an organization's success in creating job satisfaction, security, and loyalty. Employees who remain generally feel valued, receive career development opportunities, and feel comfortable with the organization's culture. Employee retention indicators (Gustiani, 2019) include:

- a. The desire to remain employed in the organization.
- b. Commitment to organizational values.
- c. Satisfaction with company policies.
- d. Loyalty to leaders and coworkers.

Based on the opinion of (Igbino et al., 2022) Employee retention refers to an organization's actions in maintaining and improving the physical, mental, and emotional condition of its employees so that they remain loyal and contribute efficiently to organizational goals. The indicators in the work environment, which can be explained by (Opere Darko et al., 2024) As follows.

- a. Organizational components. Aspects within the organization, such as leadership and work safety, will impact employee decisions to stay working or leave the company.
- b. Career development opportunities within the organization. The results of a survey of employees from various fields of work revealed that individual career development has a major impact on their performance and motivation.
- c. Employee awards and recognition Competitive awards can include various elements such as salary, bonuses, performance awards, benefits, and recognition for contributions.
- d. Task and job design: The characteristics of the job and the tasks performed are fundamental in determining employee retention. High employee turnover rates are often associated with inadequate recruitment efforts. Effective job design must address employee responsibility and freedom, a positive work environment, flexibility, and a balance between work and personal life.
- e. Employee Relations: One aspect that influences employee retention within a company is the quality of the relationships they build in the workplace. When employees are treated fairly, receive support from their superiors, and interact harmoniously with their coworkers, this can increase employee retention rates.

2.2. Physical Work Environment

The physical work environment includes everything around workers that can directly affect their performance, such as layout, ventilation, temperature, lighting, cleanliness, and safety. (Mura et al., 2023). A good work environment provides a sense of comfort and supports productivity. Several studies have shown a positive relationship between the physical work environment and job satisfaction. (Zhang et al., 2025). Employees who feel safe and comfortable in the workplace are more likely to stay and demonstrate high loyalty to the organization. According to (Duque et al., 2020) The physical work environment is all the physical conditions surrounding the workplace that can directly or indirectly influence employee performance. Consistent with Duque, (Dumitriu et al., 2025) States that the physical work environment is one factor that can influence employee performance. Based on these two opinions, it can be concluded that the work environment has an influence on an employee's performance in carrying out their duties and responsibilities in the company.

(Rasool et al., 2025) Stated that a safe and healthy work environment will have a positive impact on the people in it; therefore, the work environment should be an important part that needs to be improved by the company so that workers are able to optimize their work. The best effect of a good work environment is the achievement of company goals, such as high productivity, so that the company is able to compete healthily in the business world. There are indicators of the work environment according to (Shetty et al., 2024), namely: 1. Lighting is the intensity of light emitted from the light source and spread throughout the room. Lighting has a lux measurement and is measured using a luxmeter. For production spaces in the industry, the standard lighting is 200 Lux 2. Air Temperature in a place can affect a person in carrying out their activities, including employees in carrying out their work. So it is necessary to regulate the room temperature so that all employees feel comfortable while working. The permissible temperature for industrial spaces is between 18 - 30 °C. 3. Noise Level; In industrial areas, some machines produce noise and cannot be eliminated. Therefore, the permissible noise tolerance value in the production area is less than 85 dB. 4. Workspace Size 5. Workspace Layout 6. Workspace Privacy 7. Use of Color 8. Cleanliness 9. Air Circulation 10. Work Equipment 11. Work Safety.

2.3. Psychosocial Work Environment

The psychological work environment refers to the emotional and social atmosphere in the workplace, reflecting interpersonal relationships, organizational justice, social support, and a sense of mental safety. A positive psychological work environment can reduce work stress and increase engagement. According to, a positive psychological climate creates a sense of belonging, thus motivating employees to contribute and

stay. Psychosocial is defined by Kristensen et al. (Lordache et al., 2025) as a description of the physical, mental, and social health conditions present in the workplace. The psychosocial work environment plays a significant role in determining employee performance. There is a relationship between psychosocial environmental factors in the workplace and decreased employee productivity (Andersen et al., 2025). This indicates a positive relationship between the psychosocial work environment and employee performance in an agency. This is reinforced by the statement that a healthy work environment, such as a psychosocial work environment, has a positive influence on employee performance (Düdiņa & Martinsone, 2025).

The psychosocial work environment is all the conditions that affect workers psychologically and socially. (Vuelvas-Robles et al., 2025). In this study, the focus of the research is the psychosocial environment. According to (Savanevičienė et al., 2025) Companies should be able to reflect conditions that support cooperation between superiors, subordinates, and those with the same job status in the company. The psychosocial work environment, as a general term, defines several variables into three categories, namely, factors related to the work environment, factors related to factors outside the work environment, and factors originating from the characteristics of the individual worker. Psychosocial occupational hazards can be defined as aspects of work design, work environment, and work management, as well as all aspects related to the social work environment that have the potential to cause psychological and physical-physiological disorders in workers. The dangers of a psychosocial work environment occur when workers lack skills and experience, are often assigned to perform repetitive tasks, and tasks that many people consider unimportant. This can be boring and often leads to stress, and if workers lack authority, they are easily ignored, or even treated harshly, by those in power. They are also vulnerable to harassment. The psychosocial work environment can be seen from several aspects, namely work structure, work responsibilities, work pressure, freedom to make decisions, leadership support, and togetherness.

2.4. Job Satisfaction

Every worker expects satisfaction from their workplace. Job satisfaction is fundamentally individual, as each individual will have varying levels of satisfaction based on their values. The more aspects of a job align with an individual's desires, the higher the perceived level of satisfaction. Job satisfaction is a person's positive feelings toward their job as a result of evaluating their work experience. (Djuli et al., 2023). Factors influencing job satisfaction include compensation, relationships with superiors, working conditions, and opportunities for personal development. According to (Cynthia Mahalaksmi & Made Suwandana, 2024) Job satisfaction is "an affective or emotional response to various aspects of work." Davis and Newstrom in (Pasaribu, 2024) Describe "job satisfaction as a set of employee feelings about whether their work is pleasant or unpleasant." According to (Angga Kurniawan, 2023) Job satisfaction is "a general attitude toward one's job that indicates the difference between the amount of rewards workers receive and the amount they believe they should receive." Job satisfaction is an affective or emotional response to various aspects or aspects of one's work, so job satisfaction is not a single concept. A person can be relatively satisfied with one aspect of the job and dissatisfied with one or more other aspects. Job satisfaction is a (positive) attitude of the workforce toward their work, which arises from an assessment of the work situation. This assessment can be made for one of their jobs; the assessment is done as a sense of appreciation for achieving one of the important values in the job. Satisfied employees prefer their work situation to dislike it.

Job satisfaction often serves as a bridge between working conditions and behavioral outcomes, such as productivity, loyalty, and retention. Overall job satisfaction for an individual is the sum of job satisfaction (from each aspect of the job) multiplied by the degree of importance of that aspect of the job for the individual. An individual will feel satisfied or dissatisfied with his or her job is something personal, namely, depending on how he or she perceives the suitability or conflict between his or her desires and the output (that he or she gets) (Mac Thi Hai & Tran Thi, 2025). Therefore, it can be concluded that the definition of job satisfaction is a positive attitude of the workforce, including feelings and behavior towards his or her work through the assessment of one's work as a sense of appreciation in achieving one of the important values of the job.

2.5. Research Hypothesis

Based on the theoretical description, the hypothesis proposed is:

- H1: The physical work environment has a positive effect on job satisfaction.*
- H2: Psychological work environment has a positive effect on job satisfaction.*
- H3: Job satisfaction has a positive effect on employee retention.*
- H4: The physical work environment has a positive effect on employee retention through job satisfaction.*
- H5: Psychological work environment has a positive effect on employee retention through job satisfaction.*

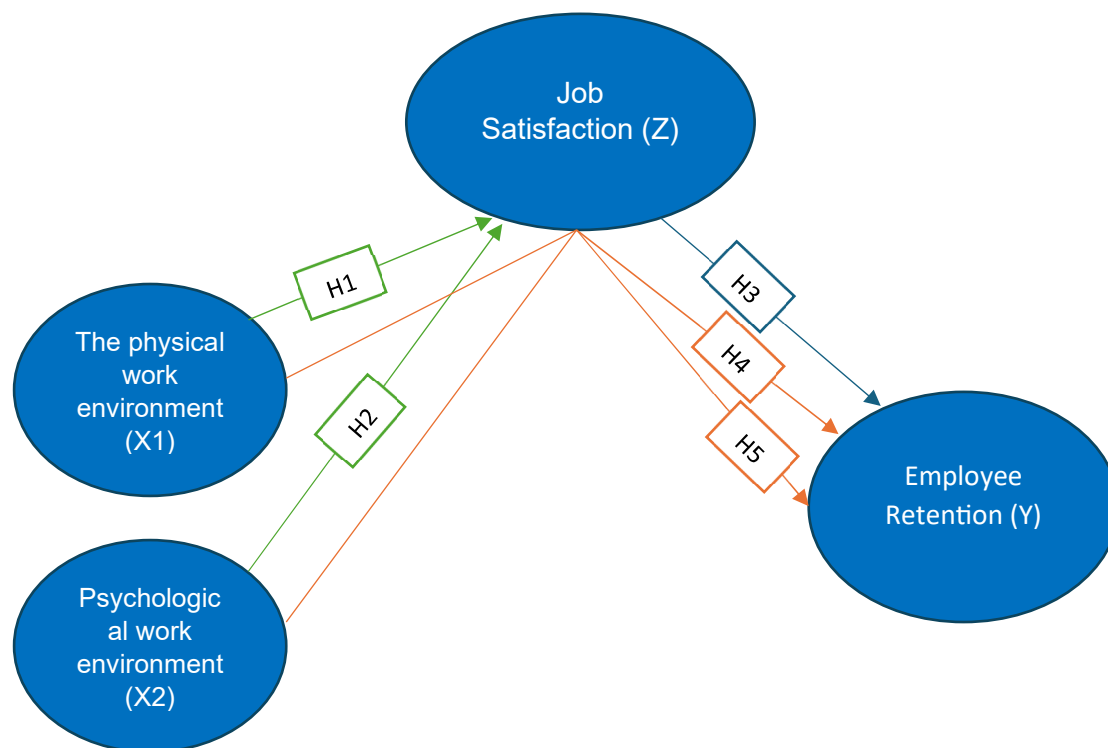


Figure 1. Research Hypothesis Model

III. Research Method

3.1. Type of Research

A quantitative approach with the SEM-PLS method was used because it is suitable for testing latent relationship models with a moderate sample size. (Nallaluthan et al., 2024). Quantitative methods are called traditional methods because they have been used for a long time and have become a tradition for research. This method is also called a positivist method because it is based on the philosophy of positivism. This method is considered a scientific method because it meets the scientific principles of being concrete/empirical, objective, measurable, rational, and systematic. Structural Equation Modeling (SEM) is a confirmatory method that provides a comprehensive means for assessing and modifying measurement and structural models. (Hair & Alamer, 2022). This method has the ability to assess the unidimensionality, validity, and reliability of a measurement model. Partial Least Squares Structural Equation Modeling (PLS-SEM) is an alternative method to covariance-based SEM (CB-SEM) used when analyzing data using structural equation modeling (SEM). The PLS-SEM model allows researchers to analyze relationships simultaneously in complex models consisting of multiple constructs, indicator variables, and structural paths. The PLS-SEM model has become a popular method for estimating path models with latent variables and their relationships. (Mardhotillah et al., 2025).

3.2. Population and Sample

The study population consisted of permanent employees at PT. Asia Raya Foundry in North Sumatra. A purposive sampling technique was used to select 120 respondents, including employees with a minimum of two years of service.

3.3. Research Instrument

Data were collected through a closed-ended questionnaire with a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). The questionnaire used a Likert scale of 1–5. Indicators were adapted from previous research:

- a. Physical work environment: lighting, cleanliness, layout, facilities.
- b. Psychological work environment: leadership support, co-worker relationships, sense of psychological safety.
- c. Job satisfaction: comfort, appreciation, work relationships, motivation.
- d. Employee retention: intent to stay, loyalty, pride in the organization.

Likert scale questionnaire 1–5 (1 = strongly disagree, 5 = strongly agree).

Table 1. Questionnaire with a Likert scale

Variables	Indicator	Source
Physical work environment (X1)	lighting, temperature, cleanliness, facilities	(Hamed et al., 2023)
Psychological work environment (X2)	leadership support, co-worker relationships, sense of psychological safety	(Chompukum & Vanichbuncha, 2025)
Job satisfaction (Z)	appreciation, comfort, motivation, pride in work	(Gazi et al., 2024)
Employee retention (Y)	intention to persist, loyalty, pride in the organization	(Ghani et al., 2022)

3.4. Research Instrument

Analysis using SmartPLS 4.0 with the following stages:

- a. Validity & reliability test (Outer Model)
- b. Testing the relationship between constructs (Inner Model)
- c. Significance & mediation test (Bootstrapping)

IV. Result and Discussion

4.1. Result

- a. Validity and Reliability Test (Outer Model)

Structural Equation Modeling (SEM) analysis based on Partial Least Squares (PLS) is used to test the outer model, namely the relationship between the indicators and the construct being measured. The purpose of testing the outer model is to ensure that the research instrument is valid and reliable in measuring the latent variables.

- 1) Convergent Validity Test

Convergent validity is seen from the outer loading and Average Variance Extracted (AVE) values. Based on the results of data processing using SmartPLS 4.0, it was obtained that all indicators had a loading factor value > 0.70 and an AVE value > 0.50, which indicates that each indicator has been able to represent its construct well.

Table 2. Questionnaire with a Likert scale

Variables	Indicator	Loading Factor	AVE	Information
Physical work environment	X1.1	0.812	0.654	Valid
	X1.2	0.794		
	X1.3	0.829		
Psychological work environment	X2.1	0.876	0.671	Valid
	X2.2	0.844		
	X2.3	0.812		
Job satisfaction	Z1	0.855	0.689	Valid
	Z2	0.832		
	Z3	0.843		
Employee retention	Y1	0.861	0.702	Valid
	Y2	0.834		
	Y3	0.849		

All indicators meet loading factor > 0.70 and AVE > 0.50, which indicates good convergent validity.

2) Discriminant Validity Test

Discriminant validity tests the extent to which a construct differs from other constructs. The test is conducted using the Fornell-Larcker criterion, which states that the square root of the AVE must be greater than the correlation between the other constructs. The calculation results show that all variables meet this criterion, meaning each construct is unique and there is no overlap between variables.

3) Construct Reliability Test

Reliability testing was conducted using Composite Reliability (CR) and Cronbach's Alpha. A construct is considered reliable if it has a CR value > 0.70 and an Alpha > 0.70.

Table 3. Reliability Test

Variables	Composite Reliability	Cronbach's Alpha	Information
Physical work environment	0.875	0.812	Reliable
Psychological work environment	0.881	0.826	Reliable
Job satisfaction	0.888	0.841	Reliable
Employee retention	0.893	0.846	Reliable

Thus, it can be concluded that all constructs in this study have very good internal consistency and can be trusted for use in structural model analysis.

b. Testing the Relationship between Constructs (Inner Model)

The second stage is testing the inner model, which is the relationship between latent variables (constructs) whose validity and reliability have been verified. This test is conducted to determine the strength of the relationships between variables and the model's ability to explain the phenomena being studied.

1) R-Square (R²) Value

The R² value shows the extent to which exogenous variables can explain endogenous variables.

Table 4. R-Square (R²)

Endogenous Variables	R-Square	Information
Job satisfaction	0.63	Strong model
Employee retention	0.71	Very strong model

An R² value of 0.63 indicates that 63% of the variation in job satisfaction can be explained by the physical and psychological work environment. Meanwhile, an R² value of 0.71 indicates that 71% of the variation in employee retention is explained by job satisfaction and two work environment factors. Thus, this research model has strong explanatory power and is acceptable for describing the relationship between constructs.

c. Path Coefficient Test

The *path coefficient* test aims to see the direction and strength of the influence between latent variables.

Table 5. Path Coefficient Test

Hypothesis Path	β coefficient	t-statistic	p-value	Information
X1 → Z (Physical work environment → Job satisfaction)	0.421	5,211	0.000	Significant
X2 → Z (Psychological work environment → Job satisfaction)	0.512	7,324	0.000	Significant
Z → Y (Job satisfaction → Employee retention)	0.563	8,112	0.000	Significant
X1 → Y (Physical work environment → Employee retention)	0.217	2,312	0.021	Significant
X2 → Y (Psychological work environment → Employee retention)	0.243	2,754	0.006	Significant

From the results above, it can be concluded that:

- The physical and psychological work environment has a direct influence on job satisfaction.
- Job satisfaction has a positive and significant influence on employee retention.
- Both aspects of the work environment also have a direct effect on retention, although to a lesser extent than their indirect effects.

This shows that job satisfaction plays an important role in strengthening the relationship between the work environment and retention.

1) Significance and Mediation Test (Bootstrapping)

Mediation testing was conducted using the bootstrapping method in SmartPLS with a *subsample of* 5,000. This test aimed to determine whether the indirect effect through the job satisfaction variable was significant or not.

Table 6. Mediation Test Results (Bootstrapping Indirect Effect)

Mediation Path	Indirect β	t-statistic	p-value	Information
X1 → Z → Y	0.237	4,586	0.000	Significant mediation
X2 → Z → Y	0.288	5,312	0.000	Significant mediation

The test results show that the t-statistic value > 1.96 and p-value < 0.05 , so it can be concluded that job satisfaction significantly mediates the influence of the physical and psychological work environment on employee retention. Thus, the mediation model in this study can be classified as partial mediation, where work environment variables still have a direct influence on retention, but this influence becomes stronger through job satisfaction.

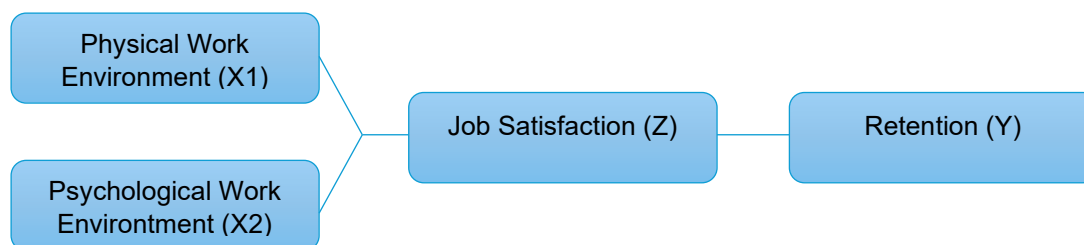


Figure 2. Structural Model Diagram (SmartPLS Path Diagram)

Path coefficient (β):

- $X1 \rightarrow Z = 0.42$
- $X2 \rightarrow Z = 0.51$
- $Z \rightarrow Y = 0.56$
- $X1 \rightarrow Y = 0.21$
- $X2 \rightarrow Y = 0.24$

This diagram in SmartPLS will show direct and indirect effect arrows with β and t-statistic values in each path.

4.2. Discussion

a. Physical work environment \rightarrow Job satisfaction

The results show that good physical conditions (lighting, ventilation, and workspace comfort) increase job satisfaction. This finding aligns with Sedarmayanti (2017), who stated that a physically comfortable work environment can improve performance and positive feelings about work.

b. Psychological work environment \rightarrow Job satisfaction

An emotionally supportive work environment, such as good relationships between colleagues and support from leaders, has been shown to significantly impact satisfaction. This supports the *Psychological Safety theory* (Kahn, 1990), which emphasizes that a sense of psychological safety drives job engagement and satisfaction.

c. Job satisfaction \rightarrow Employee retention

Employees who are satisfied with their jobs tend to demonstrate loyalty and intention to stay. These results support the theory of affective commitment (Meyer & Allen, 1991), which explains that satisfaction triggers an emotional attachment to the organization.

d. Physical and psychological work environment \rightarrow Employee retention (direct and indirect)

The work environment plays a crucial role in creating a work atmosphere that fosters loyalty. However, the greatest impact occurs indirectly through increased job satisfaction. This means improving physical facilities and psychological well-being. It will be more effective if accompanied by increased job satisfaction as a bridge to long-term retention. The results show that the physical and psychological work

environment plays a significant role in increasing job satisfaction, which in turn influences employee retention. A clean, comfortable work environment, along with social and emotional support from coworkers and leaders, creates a strong sense of belonging to the organization.

V. Conclusion

The physical work environment has a positive and significant effect on employee job satisfaction: Supportive physical conditions such as good lighting, adequate ventilation, ergonomic work facilities, and environmental cleanliness have been shown to increase employee comfort and satisfaction. A physically comfortable work environment creates a conducive work atmosphere, fosters enthusiasm, and reduces work stress. The psychological work environment has a positive and significant effect on job satisfaction: Relationships between coworkers, a supportive leadership style, a sense of security in expressing opinions, and open communication have been shown to significantly contribute to job satisfaction. Employees who feel valued and accepted psychologically are more motivated and demonstrate loyalty to the organization. Job satisfaction has a positive and significant effect on employee retention: High levels of job satisfaction have been shown to increase employees' desire to stay with the organization. Satisfaction plays a key role in retaining a quality workforce, reducing turnover, and strengthening employees' affective commitment to the company. The physical and psychological work environment has a direct influence on employee retention, but the indirect influence through job satisfaction is stronger: This indicates that job satisfaction significantly mediates the relationship between the work environment and retention.

The research model has a high level of goodness-of-fit ($R^2 = 0.71$), indicating that 71% of the variation in employee retention can be explained by the physical, psychological, and job satisfaction work environment variables. This demonstrates that the conceptual model developed is robust and able to adequately explain the phenomenon of employee retention. Overall, this study confirms that job satisfaction is a key factor in strengthening the influence of the work environment on employee retention. Therefore, organizations need to pay attention to the balance between the physical and psychological aspects of the work environment to maintain a loyal and productive workforce. The results of this study have the following theoretical and practical implications: This study strengthens theories of organizational behavior and human resource management, particularly in the context of the relationship between the work environment and retention. The discovery of the mediating role of job satisfaction enriches the conceptual model of employee loyalty and broadens the understanding of the psychological mechanisms underlying workforce retention. Practical Implications such as: a. Management needs to improve the physical conditions of the workplace, including lighting, layout, cleanliness, and comfort, b. Policies that address employee psychological well-being are needed, such as open communication, recognition for achievement, and a positive work climate, c. Programs designed to improve job satisfaction should focus on motivational factors, rewards, and career development opportunities to increase loyalty and reduce turnover rates.

Based on the research results and limitations, the following recommendations are offered, for Organizational Management: Focus employee retention strategies on increasing job satisfaction through improving physical facilities and creating a work climate that supports psychological well-being, implement an employee engagement approach by emphasizing two-way communication between management and employees. For Future Researchers: It is recommended to add moderating variables such as employee engagement, organizational commitment, or leadership style to make the research model more comprehensive, use a longitudinal approach to monitor changes in retention over time, involve respondents from various industry sectors and regions to broaden the generalizability of the findings. For Academics and HR Policymakers: the results of this study can serve as a basis for formulating retention policies based on job satisfaction and employee well-being. Strengthening the psychological aspects of the work environment is a top priority so that organizations can retain competent and competitive human resources.

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