Quality of Work Environment Towards Job Satisfaction with Employee Collaboration as a Mediation Variable

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Abstract. *This study aims to examine the influence of work environment quality, employee collaboration, and job satisfaction. The type of research used is explanatory research with an associative approach. The population in this study was all human resources (HR) at KPP Madya Dua Surabaya, totaling 100 people. The sampling technique used a census method, so that the entire population was sampled. Data collection was carried out through a closed questionnaire with a Likert scale of 1–5 and using personality questionnaires. Data analysis was carried out using the Partial Least Square (PLS) approach, which is a component-based Structural Equation Modeling (SEM) model. The results of the study indicate that work environment quality has a positive and significant effect on job satisfaction and employee collaboration. Furthermore, employee collaboration also has a positive and significant effect on job satisfaction and mediates the relationship between work environment quality and job satisfaction. These findings underscore the importance of creating a conducive work environment and encouraging strong collaboration as key factors in improving employee job satisfaction.*

Keywords: Employee Collaboration; Job Satisfaction; Quality of Work Environment.

1. Introduction

The Medium Tax Office (MTO), also known as the Medium Tax Office (KPP Madya), is a vertical work unit under the Directorate General of Taxes (DGT) of the Ministry of Finance responsible for tax administration for large-scale taxpayers at the regional level. The role of the Medium Tax Office (KPP Madya) has become increasingly strategic along with the change in the tax organization structure from initially based on tax types to a more structured system based on functions. This transformation aims to improve the efficiency of tax management, strengthen oversight of large taxpayers, and optimize tax services that are more focused and professional. With a function-based approach, the Medium Tax Office can be more focused on providing services, supervision, and enforcing tax compliance, thus

expected to increase state revenue and support a more transparent and accountable tax system.

In an increasingly dynamic workplace, work environment quality is a crucial factor in determining employee job satisfaction. A comfortable, safe, and supportive work environment not only increases productivity but also contributes to employee psychological well-being. Various aspects such as the physical condition of the workplace, organizational policies, employee relationships, and management support play a significant role in shaping individuals' perceptions of their work environment.

Previous research on the role of the work environment and job satisfaction remains controversial and warrants further investigation. The results indicate that when HR perceives a deteriorating external work environment and perceives their workload as heavy, they also report low job satisfaction.(Zeytinoglu et al., 2007) This result is contrary toresults Akinwale & George (2020)This indicates that not all dimensions of the work environment can increase job satisfaction. Therefore, to bridge the gap in previous research, collaboration is proposed as a mediating variable, expected to provide an answer to this gap.

The Directorate General of Taxes at the Ministry of Finance continues to innovate to improve bureaucratic efficiency, one of which is by implementing Collaboration Tools in its services. This technology enables real-time communication, coordination, and information exchange between employees, work units, and taxpayers. Collaboration Tools enhances administrative processes through document digitization, online conferencing systems, and workflow automation, reducing reliance on manual procedures. Furthermore, this system integration enhances transparency, enables real-time monitoring, and minimizes administrative errors.

Flexibility in collaboration has also increased, allowing Directorate General of Taxes employees to collaborate effectively without having to meet in person, especially in remote working environments. Consequently, tax services have become faster and more responsive, as taxpayers can access information and assistance more easily through online systems. With the implementation of Collaboration Tools, the Directorate General of Taxes at the Ministry of Finance is not only improving bureaucratic effectiveness but also realizing modern, transparent, and taxpayer-oriented tax services, in line with the government's vision of bureaucratic reform that is more adaptive to technological developments.

The word collaboration comes from the Latin word 'collaborate,' which means to work together for a common goal. Collaboration is defined as "a process relationship between colleagues who share common values, philosophies, socializations, and professional experiences."(Liao et al., 2015a). Collaboration is a common decision-making and communication process among professionals.(Ylitörmänen et al., 2019)This process requires advanced skills related to trust, respect, self-awareness, and conflict resolution, as well as building non-hierarchical relationships based on knowledge and expertise and sharing power.(Karadaş et al., 2022).

Collaboration and job satisfaction in service are very important to maximize the potential of human resources.(Karadaş et al., 2022)Coworker solidarity influences service quality, a healthy work environment, patient safety, intention to resign, and job satisfaction. Job satisfaction is a broad, multidimensional concept that encompasses employees' perceptions of their jobs in different aspects, including the degree to which they enjoy their jobs, job characteristics, and the work environment. Job satisfaction is defined as the alignment between an individual's needs and expectations and their work experiences.(Ylitörmänen et al., 2019).

Collaboration is seen as important in increasing job satisfaction, which contributes to a positive and healthy work environment, which in turn supports the well-being of human resources.(Ylitörmänen et al., 2019). Research findings suggest that improving the work environment can be a potential strategy to encourage interprofessional collaboration and increase job satisfaction.(Zeytinoglu et al., 2007). In addition, a healthy work environment reduces the quality of interaction, coordination, and communication between team members.(Shahnazi et al., 2021). Positive organizational culture and processes, effective communication, and adequate team management and supervision were also identified as fostering interprofessional collaboration.(Budi Santoso et al., 2021).

2. Research Methods

The type of research thatusedThis research is an associative type of explanatory research, namely aiming to find out the relationship between two or more variables.(Sugiyono, 2018)This research aims to explain hypothesis testing with the aim of confirming or strengthening the hypothesis, which in turn can strengthen the theory it serves as a foundation. In this case, it examines the influence of work environment quality, employee collaboration, and job satisfaction.

3. Results and Discussion

3.1. Respondent Description

This study used 100 employees of the Madya Dua Tax Office in Surabaya as respondents. The characteristics of the respondents are presented using statistical data obtained through questionnaire distribution. The study was conducted by distributing questionnaires to all employees from March 21-25, 2025. In the field, all respondents were willing to fill out the questionnaires, resulting in 100 completed questionnaires that could be used in the data analysis of this study. Respondent descriptions will be presented based on the following predetermined characteristics:

Gender

The profile of respondents who participated in this study can be explained based on gender factors as follows.

Respondent Characteristics Data by Gender

Gender	Frequency	Percentage

Man	67	67.0
Woman	33	33.0
Total	100	100.0

Source: Data processing results, 2025.

The data presented in Table shows that the majority of respondents were male, with 67 respondents (67.0%), while 33 respondents were female (33.0%). This indicates that the employee composition is still dominated by men. This difference is due to past recruitment policies that prioritized jobs requiring high mobility.

Age

The profile of respondents who participated in this study can be explained based on age level factors as follows:

Respondent Characteristics Data by Age

Age	Frequency	Percentage
20 - 30 years	18	18.0
31 - 40 years old	39	39.0
41 - 50 years old	30	30.0
51 - 60 years	13	13.0
Total	100	100.0

Source: Data processing results, 2025.

Based on the information in, it can be seen that the majority of respondents came from the 31-40 age group, with a total of 39 respondents (39.3%). This age group is generally at the peak of their work productivity. Employees in this age range already have sufficient work experience, but are still very active and flexible in responding to changes and developments in technology and work systems. For the 20-30 age group, there were 18 respondents (18.0%), 30 respondents (30.0%) aged 41-50 years, and 13 respondents (13.0%) aged 51-60 years.

Last education

The profile of respondents who participated in this study can be explained based on the last educational factor as follows.

Respondent Characteristics Data According to Last Education

Education	Frequency	Percentage
Diploma	16	16.0
Bachelor degree	59	59.0
Postgraduate Masters	25	25.0
Total	100	100.0

Source: Results of data processing, 2025.

Table shows that 59 respondents (59.0%) had a bachelor's degree (S1). 16 respondents (16.0%) had a diploma, and 25 respondents (25.0%) had a postgraduate degree. This information indicates that, overall, many employees have a higher educational background. This indicates that many employees possess the skills and knowledge necessary to carry out their duties according to their expertise.

Years of service

The profile of respondents who participated in this study can be explained based on the length of service factor as follows.

Respondent Characteristics Data According to Length of Service

Years of service	Frequency	Percentage
< 5 years	2	2.0
6 - 10 years	15	15.0
11 - 15 years	25	25.0
> 15 years	58	58.0
Total	100	100.0

Source: Primary Data Processing Results, 2025.

Table shows that the majority of respondents who have worked for more than 15 years amounted to 58 people (58.0%). Respondents with less than 5 years of service were 2 people (2.0%), with a service period of 6-10 years were 15 people (15.0%), while those with a service period of 11-15 years were 25 people (25.0%). The large number of employees with a service period of more than 15 years indicates that the majority of employees are at the peak stage of their careers. With a sufficient level of experience to understand work systems and internal policies, and contribute significantly to the achievement of organizational performance.

3.1.1. Descriptive Analysis of Research Data

Descriptive analysis, in this case, aims to provide an overview of respondents' assessments of the variables being studied. Using descriptive analysis, we can obtain information about respondents' tendencies in responding to the indicators used to measure the research variables. The data explanation process is carried out by assigning weights to each statement in the questionnaire.

Respondent response criteria follow the following assessment scale: Strongly Agree (SS) with a score of 5, Agree (S) with a score of 4, Quite Agree (CS) with a score of 3, Disagree (TS) with a score of 2, and Strongly Disagree (STS) with a score of 1. Next, from this scale, the data will be grouped into three categories. To determine the score criteria for each group, it can be calculated as follows.(Sugiyono, 2017):

Highest score = 5

Lowest score   = 1

Range   = Highest score – lowest score = 5 - 1 = 4

Class interval = Range / number of categories = 4/3 = 1.33

Based on the size of the class interval, the criteria for the three categories are: low category, score = 1.00 – 2.33, medium category, score = 2.34 – 3.66 and high/good category, with a score of 3.67 – 5.00. The complete calculation results for each indicator are presented below

The overall mean value for the Employee Collaboration variable was 3.72, which falls within the high/good category (3.67–5.00). This means that employees have good Employee

Collaboration. The data description for the Employee Collaboration variable showed that the highest mean value was for the Communication Patterns indicator (3.86) and the lowest for the Caring and Respect for Coworkers indicator (3.58).

The overall Job Satisfaction variable obtained a mean value of 3.88, which is within the good category (3.66 – 5.00). This means that the respondents have good performance. The results of the data description on the Job Satisfaction variable obtained with the highest mean value being the Satisfaction with Supervision indicator (4.00) and the lowest being the Satisfaction with Coworkers indicator (3.80).

3.1.2. Evaluation of Measurement Model (Outer Model)

Data analysis in this study was conducted using PLS (Partial Least Square) and the data was processed using the Smart PLS 4.1.0 program. According to Ghozali and Latan (2015:7) the PLS measurement model consists of a measurement model (outer model), Goodness of fit (GoF) criteria and a structural model (inner model). PLS aims to test predictive relationships between constructs by seeing whether there is an influence or relationship between the constructs.

Measurement model testing (outer model) shows how the manifest or observed variables represent the latent variables to be measured. Measurement model evaluation is conducted to test the model's validity and reliability.The validity criteria are measured by convergent and discriminant validity, while the construct reliability criteria are measured by composite reliability, Average Variance Extracted (AVE), and Cronbach alpha.

3.1.3. Convergent Validity

*Convergent validity*The measurement model with reflective indicators is assessed based on the correlation between item scores and component scores calculated using PLS. The individual reflective measure is declared high if the loading factor value is more than 0.7 with the measured construct for confirmatory research and the loading factor value between 0.6 - 0.7 for exploratory research is still acceptable and the Average Variance Extracted (AVE) value must be greater than 0.5..

The convergent validity evaluation for each latent variable can be presented in the outer loading section, which describes the indicator's strength in explaining the latent variable. The results of the convergent validity test can be presented as follows:

3.1.4. Convergent Validity Evaluation Quality of the work environment(X1)

The measurement of the work environment quality variable in this study is a reflection of four indicators. The factor loading values for each work environment quality variable indicator indicate the evaluation of the outer model measurement model. The following shows the outer loading values for the work environment quality construct.

Estimation Results of Loading Values of Indicator Factors for Work Environment Quality Variables (X1)

Code	Indicator	Outer loadings	Information
X1_1	Quality of leadership support,	0.760	Valid

Code	Indicator		
X1_2	Quality of coworker support,	0.886	Valid
X1_3	Quality of work facilities and infrastructure	0.904	Valid
X1_4	Pleasant working atmosphere	0.906	Valid

The data presentation above shows that all indicators of the work environment quality variable (X1) have a factor loading value in the range of 0.760 – 0.906. Because the loading value is above 0.700, it can be stated that the work environment quality variable (X1) can be explained well or can be said to be valid convergently by the quality of leadership support, the quality of co-worker support, the quality of work infrastructure and a pleasant work atmosphere.

3.1.5. Evaluation of Convergent Validity of Employee Collaboration Variable

The measurement of the Employee Collaboration variable in this study reflects six indicators. The factor loading values for each Employee Collaboration variable indicator indicate an evaluation of the outer model measurement model. The data presented show that all indicators of the Employee Collaboration variable (Y1) have factor loading values in the range of 0.861–0.953.

The following shows the outer loading magnitude for the Employee Collaboration construct.

Estimation Results of Loading Values of Indicator Factors for Employee Collaboration Variable (Y1)

Code	Indicator	Outer loadings	Information
Y1_1	Communication patterns,	0.861	Valid
Y1_2	Coordination pattern,	0.953	Valid
Y1_3	Professionalism,	0.934	Valid
Y1_4	Conflict management	0.941	Valid
Y1_5	Caring and respect for coworkers;	0.919	Valid
Y1_6	Commitment from all parties involved	0.935	Valid

Because the loading value is above 0.700, it can be stated that the Employee Collaboration variable (Y1) can be explained well or can be said to be valid convergently by the indicators of Communication Patterns, Coordination Patterns, Professionalism, Conflict Management, Concern and Respect for Coworkers; and Commitment from all parties involved.

3.1.6. Evaluation of Convergent Validity of Job Satisfaction Variables

The Job Satisfaction variable in this study was measured based on the reflection of five indicators. The evaluation of the measurement model (outer model) was identified from the factor loading values of each indicator of the Job Satisfaction variable. The following figure shows the magnitude of the loading values for the Job Satisfaction variable.

Estimation Results of Loading Values of Indicator Factors for Job Satisfaction Variables (Y2)

Code	Indicator	Outer loadings	Information
Y21	Job satisfaction,	0.752	Valid
Y22	Enthusiasm for work,	0.897	Valid

Y23	Satisfaction with promotion/career,	0.895	Valid
Y24	Satisfaction with coworkers,	0.833	Valid
Y25	Satisfaction with supervision.	0.801	Valid

The table above shows the magnitude of the loading factor for each indicator for the Job Satisfaction variable (Y2) obtained in the range of 0.752 – 0.897. Because the loading value is above 0.700, it can be stated that the Job Satisfaction variable (Y2) can be explained well or can be said to be valid convergently by the indicators of Job Satisfaction, Job Enthusiasm, Promotion/Career Satisfaction, Co-worker Satisfaction, and Supervision Satisfaction.

Based on the results of convergent validity testing on each variable, it can be said that all indicators used in this research model are declared valid, so they can be used as a measure for the variables used in this research.

3.2. The influence of the environment on job satisfaction

This study proves that work environment quality has a positive and significant impact on job satisfaction. This means that the better the quality of the work environment perceived by employees (e.g., comfort, cleanliness, security, and facilities), the higher their level of job satisfaction. A conducive work environment encourages employees to feel comfortable, valued, and more satisfied in carrying out their duties. These results support previous research that found that the work environment significantly influences job satisfaction.(AbuAlRub et al., 2016; Labrague et al., 2022; Pakpour et al., 2019).

The quality of the work environment in this study is measured from the reflection of four indicators. namely indicators Quality of leadership support, Quality of co-worker support, Quality of work infrastructure and a pleasant work atmosphere. Four indicators has a significant contribution in improving Job satisfaction in this study was measured from the reflection of five indicators. namely indicators Job satisfaction, Enthusiasm for work, Satisfaction with promotion/career, Satisfaction with coworkers, and Satisfaction with supervision.

The work environment quality variable has the strongest contribution through the indicator of a pleasant working atmosphere. On the other hand, the job satisfaction variable is most influenced by enthusiasm for work, which also has the highest outer loading value among other indicators. This finding indicates that when the work environment is perceived as more comfortable, harmonious, and pleasant by human resources, it will encourage an increase in their enthusiasm, passion, and enthusiasm in carrying out their duties and responsibilities. This means that a positive work atmosphere not only creates comfort, but also plays an important role in shaping job satisfaction through the growth of intrinsic motivation and a sense of belonging to the job.

The work environment quality variable has the lowest outer loading value on the quality of leadership support indicator, while the job satisfaction variable shows the lowest outer loading value on the job satisfaction indicator. These findings indicate that the quality of leadership support plays a crucial role in shaping positive work environment perceptions.

The higher the quality of support provided by leadership, the greater the level of employee satisfaction with their work. In other words, leadership support contributes significantly to creating a conducive work environment, increasing work morale, and strengthening loyalty and a sense of belonging to the organization.

3.2.1. The Influence of Environmental Quality on Employee Collaboration

This study proves that work environment quality has a positive and significant impact on employee collaboration. This means that a good work environment also encourages increased collaboration between employees. An environment that supports interaction, open communication, and teamwork will strengthen the spirit of cooperation among employees. These results confirm previous research showing that non-physical work environments such as positive organizational culture and processes, effective communication, and adequate team management and supervision are also identified as encouraging interprofessional collaboration.(Al-Hamdan et al., 2018; Falguera et al., 2021; Kim et al., 2018; Lake et al., 2019; Setiadi et al., 2017).

The quality of the work environment in this study is measured from the reflection of four indicators. namely indicators Quality of leadership support, Quality of co-worker support, Quality of work infrastructure and a pleasant work atmosphere. Four indicators has a significant contribution in improving Employee Collaboration in this study was measured using six indicators namely indicators Communication patterns, Coordination patterns, Professionalism, Conflict management, Concern and respect for coworkers; and Commitment from all parties involved.

The work environment quality variable shows that the indicator with the highest outer loading value is a pleasant working atmosphere. Meanwhile, for the employee collaboration variable, the indicator with the highest outer loading value is coordination patterns. These findings indicate that when the work atmosphere in an organization feels more pleasant and comfortable, coordination patterns between employees tend to be more focused, efficient, and productive. In other words, a conducive work environment can foster better collaboration in terms of coordinating tasks and responsibilities between individuals and teams.

Conversely, the indicator with the lowest outer loading value for the work environment quality variable is the quality of support from leadership, while for the employee collaboration variable, the lowest indicator is communication patterns. This suggests that support provided by leadership, while important, is still not fully optimal in fostering effective communication among employees. However, the better the quality of support provided by leadership, the better the communication patterns within the team. This means that supportive leadership plays a crucial role in fostering open and constructive communication in the workplace.

3.2.2. The Influence of Employee Collaboration on Job Satisfaction

This study proves that employee collaboration has a positive and significant impact on job satisfaction. This means that good collaboration between employees contributes to

increased job satisfaction. When employees feel involved in a team, support each other, and work in a harmonious, collaborative environment, they tend to be more satisfied with their jobs. These results confirm previous research showing that collaborative work relationships can influence job satisfaction.(Labrague, 2021; Labrague et al., 2022).

Employee Collaboration in this study it was measured from six indicators namely indicators Communication patterns, coordination patterns, professionalism, conflict management, concern and respect for coworkers, and commitment from all parties involved. Six indicators has a significant contribution in improving Job satisfaction in this study was measured from the reflection of five indicators. namely indicators Job satisfaction, Enthusiasm for work, Satisfaction with promotion/career, Satisfaction with coworkers, and Satisfaction with supervision.

 The indicator with the highest outer loading value for the Employee Collaboration variable is coordination patterns. Meanwhile, the indicator with the highest outer loading value for the Job Satisfaction variable is enthusiasm for work. These findings indicate that the more optimal the coordination pattern between employees, the higher the individual's enthusiasm or passion in carrying out their work tasks. This means that effective coordination patterns play a crucial role in building employee enthusiasm and motivation in carrying out their responsibilities.

On the other hand, the indicator with the lowest outer loading value for the Employee Collaboration variable is communication patterns. The indicator with the lowest outer loading value for the Job Satisfaction variable is satisfaction with the job itself. These results suggest that improving the quality of communication between employees still influences job satisfaction levels, albeit to a lesser extent. In other words, the smoother and more open communication within the work environment, the higher employee job satisfaction, although it is not a dominant factor.

3.2.3. The Influence of Employee Collaboration Mediation on the Influence of the Environment on Job Satisfaction

The results of the indirect effect test demonstrate that employee collaboration mediates the influence of work environment quality on job satisfaction. This study's findings suggest that collaboration between employees acts as a bridge or intermediary that strengthens the relationship between the work environment and job satisfaction. In other words, a positive work environment fosters strong collaboration, which ultimately improves overall employee job satisfaction.

The indicator with the highest outer loading value in the Employee Collaboration variable is the coordination pattern. Meanwhile, the highest indicator in the Work Environment Quality variable is a pleasant working atmosphere, and in the Job Satisfaction variable is enthusiasm for work. These findings indicate that effective coordination patterns among employees act as a mediator in strengthening the relationship between a pleasant working atmosphere and increased enthusiasm among human resources in carrying out their duties. This means that when employees experience a comfortable, positive, and supportive work

environment, it will create more structured and efficient work coordination. This good coordination will ultimately encourage the growth of employee enthusiasm and enthusiasm in their work, because they feel they have direction, support, and a strong connection within the work team.

Conversely, the indicator with the lowest outer loading value for the Employee Collaboration variable is communication patterns. For the Work Environment Quality variable, the lowest indicator is the quality of leadership support, and for the Job Satisfaction variable, the lowest indicator is job satisfaction. These results indicate that improving the quality of leadership support can strengthen good communication patterns among employees, which in turn will increase individual satisfaction with their jobs. This means that although leadership support is not the most dominant work environment factor, the role of leadership remains crucial in establishing open, clear, and supportive communication. When healthy communication is created due to encouragement and support from superiors, employees will feel more appreciated, heard, and understood, thus tending to increase their job satisfaction.

The results of the indirect effect test yielded weaker results than the direct relationship between Environmental Quality and job satisfaction. According to Baron and Kenny (1986), partial mediation occurs when the mediator only partially explains the influence of the independent variable on the dependent variable. This can be caused, among other things, by an incomplete distribution of indicators. Partial mediation occurs when both the direct and indirect effects from the independent variable to the dependent variable are significant (Hayes, 2013).

4. Conclusion

This study demonstrates that the quality of the work environment has a positive and significant impact on job satisfaction and collaboration between employees. A comfortable and enjoyable work environment, supported by a harmonious work atmosphere, can increase employee satisfaction levels and foster good cooperation among them. Collaboration between employees has also been shown to significantly contribute to job satisfaction. Effective coordination between individuals within an organization plays a crucial role in driving increased job satisfaction. Furthermore, the analysis shows that employee collaboration mediates the relationship between work environment quality and job satisfaction. In other words, when the non-physical work environment is well-managed, it fosters strong collaboration, ultimately increasing employee job satisfaction. These findings confirm that creating a conducive work environment and building strong teamwork are strategic steps in sustainably improving job satisfaction. Based on the results of the proof of the hypothesis in this study, it is as follows: 1) The quality of the work environment has a positive and significant influence on job satisfaction. 2) The quality of the work environment has a positive and significant influence on Employee Collaboration. 3) Employee Collaborationhas a positive and significant influence on job satisfaction. 4) Employee collaborationmediate the influence of work environment quality on job satisfaction.

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