The Effect of Transformational Leadership, Work Environment, and Life-Work Balance on Employee Job Satisfaction in the Manufacturing Industry in Surabaya Region

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ABSTRACT
This study investigates the influence of transformational leadership, work environment, and work-life balance on employee job satisfaction within the manufacturing industry in the Surabaya region. A quantitative research design employing Structural Equation Modeling (SEM) with Partial Least Squares (PLS) analysis was utilized to analyze data collected from 160 employees across various manufacturing sectors. The findings reveal significant positive relationships between transformational leadership, work environment, work-life balance, and employee job satisfaction. Transformational leadership emerged as a key predictor of employee job satisfaction, emphasizing the importance of visionary leadership in fostering a positive work culture. Additionally, a supportive work environment and satisfactory work-life balance were found to significantly impact employee satisfaction. These findings underscore the interconnectedness of organizational factors in shaping employee perceptions and experiences within the manufacturing industry. The study contributes to both theoretical understanding and practical implications for organizational management and human resource practices, providing insights for enhancing employee satisfaction and organizational success in the Surabaya manufacturing context.

1. INTRODUCTION
The manufacturing industry in Surabaya, Indonesia, plays a pivotal role in driving economic development by significantly contributing to employment opportunities, industrial output, and overall economic growth. Various studies highlight the importance of the industrial sector in Surabaya's economic landscape, emphasizing its role in addressing unemployment issues [1], fostering market orientation to meet consumer demands and expand business operations [2], and outlining strategies to enhance the industrialization of Small and Medium Industries (IKM) and Micro, Small,
and Medium Enterprises (MSMEs) in Indonesia [3]. Surabaya's industrial strategies are crucial for strengthening the city's macroeconomy and positively impacting national economic growth, showcasing the significance of the manufacturing industry in driving economic progress and prosperity in the region [4].

Employee job satisfaction is a critical element in the manufacturing industry, impacting productivity, innovation and overall organizational success. Research emphasizes the importance of factors such as work environment, supervision, pay, and communication in influencing job satisfaction [5]–[8]. Research shows a strong correlation between job satisfaction and employee performance, highlighting the need for organizations to prioritize employee well-being to increase productivity and retention rates [9]. In addition, job satisfaction acts as a mediator between health and safety policies and employee productivity, emphasizing the importance of creating a safe and satisfying work environment for optimal performance [10], [11]. Understanding and addressing factors such as job stress, communication issues, and compensation are critical to improving employee satisfaction levels, ultimately leading to improved organizational performance and long-term success.

Addressing the research gap in understanding the determinants of employee job satisfaction within the manufacturing context of Surabaya is crucial for enhancing organizational strategies that promote well-being and effectiveness. Existing literature emphasizes the importance of factors such as work engagement [12], work environment [2], and work-life balance [13] in influencing job satisfaction across industries. However, empirical research specific to Surabaya's manufacturing sector is lacking. By exploring the roles of transformational leadership, work environment, and work-life balance in this context, organizations can tailor strategies to foster job satisfaction, ultimately benefiting employee well-being and organizational success. This research endeavor is essential for bridging the gap between theoretical insights and practical applications in the Surabaya manufacturing landscape.

The overarching aim of this study is to empirically investigate the effect of transformational leadership, work environment, and work-life balance on employee job satisfaction within the manufacturing industry in the Surabaya region. To achieve this aim, the study sets forth the following specific objectives: (1) To analyze the relationship between transformational leadership and employee job satisfaction. (2) To investigate the impact of the work environment on employee job satisfaction. (3) To assess the influence of work-life balance on employee job satisfaction.

2. LITERATURE REVIEW

2.1 Transformational Leadership and Job Satisfaction

Transformational leadership, characterized by visionary leadership, individualized consideration, intellectual stimulation, and inspirational motivation, has been extensively studied in various organizational settings. Research by Samsir and Muis highlighted the direct positive effect of transformational leadership on employee job satisfaction [14], while Al Draj and Al Saed found that transformational leadership significantly influences job satisfaction through empowerment in pharmaceutical companies in Jordan [15]. Additionally, Alamsah and Prapanca's study demonstrated a significant impact of transformational leadership on employee job satisfaction [16]. These findings align with the notion that transformational leaders inspire and motivate employees to achieve beyond self-interests, fostering commitment and purpose within the organization, ultimately enhancing job satisfaction and overall performance.

2.2 Work Environment and Job Satisfaction

A supportive work environment, which consists of physical, social, and psychological elements, such as
organizational culture, interpersonal relationships, and resource availability, plays an important role in increasing job satisfaction among employees [17]–[19]. Research shows that a conducive work environment positively affects employee loyalty and satisfaction, leading to increased productivity and organizational success [20]. Factors such as clear communication, fair treatment, adequate resources, and opportunities for skill development within the work environment have been consistently associated with higher levels of job satisfaction among employees [21]. In addition, the physical work environment, including factors such as temperature and light intensity, significantly impacts employee performance and satisfaction, highlighting the importance of a comfortable and safe workspace for optimal employee well-being and productivity.

2.3 Work-Life Balance and Job Satisfaction

Work-life balance plays a crucial role in influencing various aspects of employees’ well-being and job satisfaction. Studies have shown that work-life balance is a significant determinant of career satisfaction for high school teachers, with job stress negatively impacting career satisfaction both directly and indirectly through its effect on work-life balance [22]. Additionally, research on female employees at a regulatory agency revealed that an imbalance between work and personal life can lead to dissatisfaction at work, highlighting the importance of achieving a sense of equilibrium to enhance job satisfaction [23]. Furthermore, findings from a study on higher education institutions suggest that work-life balance positively affects employee performance, with job satisfaction reinforcing this relationship, emphasizing the need for organizations to support employees in balancing personal and work obligations effectively [24]. Moreover, a study on workers outside Jakarta indicated that better work-life balance, job satisfaction, and effective stress management practices are associated with improved physical and mental health, underscoring the importance of prioritizing policies that support work-life balance to enhance overall well-being [25].

2.4 Conceptual Framework

The conceptual framework for this study illustrates the relationships between transformational leadership, work environment, work-life balance, and employee job satisfaction in the manufacturing industry in the Surabaya region.

![Figure 1. Conceptual Framework](image)

Based on the conceptual framework, the following hypotheses are proposed:

**H1:** Transformational leadership positively influences the employee job satisfaction in the manufacturing industry in the Surabaya region.
H2: The work environment positively influences employee job satisfaction in the manufacturing industry in the Surabaya region.


3. METHODS

3.1 Research Design

This study adopts a quantitative research design to investigate the relationships between transformational leadership, work environment, work-life balance, and employee job satisfaction in the manufacturing industry within the Surabaya region. Specifically, a cross-sectional survey approach will be utilized to collect data from employees working in various manufacturing companies in Surabaya.

3.2 Sampling and Data Collection

The target population for this study comprises employees across different manufacturing sectors in Surabaya. A stratified random sampling technique will be employed to ensure adequate representation from various subgroups within the population. The sample size will consist of 160 participants, selected based on the proportionate distribution of employees across different manufacturing sectors.

Data will be collected using structured questionnaires administered to selected employees. The questionnaire will utilize a Likert scale ranging from 1 to 5 to assess respondents' perceptions of transformational leadership, work environment, work-life balance, and employee job satisfaction. The Likert scale will allow participants to indicate their agreement or disagreement with statements related to each construct.

3.3 Measurement Instruments

The survey questionnaire will comprise multiple sections, each corresponding to the constructs under investigation: transformational leadership, work environment, work-life balance, and employee job satisfaction. Each section will include validated scales adapted from existing literature, ensuring the reliability and validity of the measurement instruments.

Transformational leadership will be assessed using items adapted from the Multifactor Leadership Questionnaire (MLQ) developed by Bass and Avolio (1995). The work environment construct will be measured using items adapted from the Work Environment Scale (WES) developed by Moos (1986). Work-life balance will be assessed using items derived from the Work-Life Balance Scale developed by Carlson et al. (2000). Employee job satisfaction will be measured using items adapted from the Job Satisfaction Survey (JSS) developed by Spector (1985).

3.4 Data Analysis

Data analysis will be conducted using Structural Equation Modeling (SEM) with Partial Least Squares (PLS) approach, specifically utilizing the software PLS 3. SEM-PLS is a robust statistical technique suitable for analyzing complex relationships among latent variables and observed variables, making it well-suited for this study's research framework. The analysis will involve several steps: Measurement Model Assessment, where Confirmatory factor analysis (CFA) will be conducted to assess the validity and reliability of the measurement model, involving evaluating the loadings of observed variables on their respective latent constructs, as well as assessing convergent and discriminant validity. Structural Model Estimation will follow, where the relationships between the latent constructs (transformational leadership, work environment, work-life balance) and employee job satisfaction will be examined, testing hypothesized paths to determine the direct and indirect effects of the independent variables on the dependent variable. Model Evaluation will then assess the overall model fit and the significance of path coefficients to determine the model's explanatory power and the significance of the hypothesized relationships. Finally, Bootstrapping Analysis will be employed, using the bootstrapping resampling technique to assess the significance of the estimated path coefficients.
and to obtain more accurate standard errors and confidence intervals.

4. RESULTS AND DISCUSSION

4.1 Demographic Sample

A demographic analysis was conducted to characterize the sample population involved in the study. The sample comprises 160 participants from various age groups, educational backgrounds, and years of experience in the manufacturing industry in the Surabaya region. The majority of participants were male (59.4%), with a significant proportion having a Bachelor’s degree (62.5%) and 1-5 years of work experience (40.6%). The age distribution was relatively evenly distributed, with the highest proportion falling in the 26-35 years old category (37.5%).

4.2 Measurement Model Assessment

Confirmatory factor analysis (CFA) was conducted to assess the validity and reliability of the measurement model. Table 1 presents the loading factors, Cronbach’s alpha coefficients, composite reliability, and average variance extracted (AVE) for each latent construct.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Code</th>
<th>Loading Factor</th>
<th>Cronbach's Alpha</th>
<th>Composite Reliability</th>
<th>Average Variance Extracted (AVE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transformational Leadership</td>
<td>TL.1</td>
<td>0.837</td>
<td>0.896</td>
<td>0.924</td>
<td>0.711</td>
</tr>
<tr>
<td></td>
<td>TL.2</td>
<td>0.915</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TL.3</td>
<td>0.899</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TL.4</td>
<td>0.852</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TL.5</td>
<td>0.696</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Environment</td>
<td>WE.1</td>
<td>0.906</td>
<td>0.883</td>
<td>0.928</td>
<td>0.811</td>
</tr>
<tr>
<td></td>
<td>WE.2</td>
<td>0.929</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WE.3</td>
<td>0.866</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life-Work Balance</td>
<td>LWB.1</td>
<td>0.907</td>
<td>0.882</td>
<td>0.927</td>
<td>0.809</td>
</tr>
<tr>
<td></td>
<td>LWB.2</td>
<td>0.912</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>LWB.3</td>
<td>0.880</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee Job Satisfaction</td>
<td>EJS.1</td>
<td>0.870</td>
<td>0.894</td>
<td>0.923</td>
<td>0.705</td>
</tr>
<tr>
<td></td>
<td>EJS.2</td>
<td>0.821</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EJS.3</td>
<td>0.878</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EJS.4</td>
<td>0.865</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EJS.5</td>
<td>0.757</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Results processing data by PLS-SEM 3

Transformational Leadership: The loading factors for the items measuring transformational leadership range from 0.696 to 0.915, indicating a strong association between the observed variables and the latent construct. The high Cronbach’s alpha coefficient (0.896) and composite reliability (0.924) suggest internal consistency and reliability of the measurement scale. Additionally, the AVE value (0.711) exceeds the recommended threshold of 0.50, indicating convergent validity, which confirms that the items measure the same underlying construct effectively. Similarly, for the Work Environment construct, the loading factors range from 0.866 to 0.929, indicating strong associations with the latent construct. The Cronbach’s alpha coefficient (0.883) and composite reliability (0.928) exceed the acceptable threshold of 0.70, indicating high internal consistency and reliability. The AVE value (0.811) also surpasses the recommended threshold, demonstrating convergent validity of the measurement scale. For the Work-Life Balance construct, the loading factors range from 0.880 to 0.912, indicating satisfactory associations with the latent construct. The Cronbach’s alpha coefficient (0.882) and
composite reliability (0.927) suggest high internal consistency and reliability of the measurement scale. The AVE value (0.809) meets the criterion for convergent validity, indicating that the items effectively measure the underlying construct.

4.3 Discriminant Validity

Discriminant validity assesses the extent to which each latent construct is distinct from other constructs in the measurement model. It ensures that the measures of different constructs are not highly correlated, indicating that each construct captures unique variance and represents a distinct concept.

Table 2. Discriminant Validity

<table>
<thead>
<tr>
<th>Construct</th>
<th>Employee Job Satisfaction</th>
<th>Life-Work Balance</th>
<th>Transformational Leadership</th>
<th>Work Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Job Satisfaction</td>
<td>0.840</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life-Work Balance</td>
<td>0.758</td>
<td>0.800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transformational Leadership</td>
<td>0.780</td>
<td>0.724</td>
<td>0.843</td>
<td></td>
</tr>
<tr>
<td>Work Environment</td>
<td>0.673</td>
<td>0.553</td>
<td>0.655</td>
<td>0.801</td>
</tr>
</tbody>
</table>

Source: Results processing data by PLS-SEM 3

Employee Job Satisfaction: The correlations between employee job satisfaction and other constructs range from 0.673 to 0.840. These correlations are below the square roots of the AVE values for each construct, indicating that employee job satisfaction shares less variance with other constructs than it does with itself. Therefore, employee job satisfaction exhibits discriminant validity from other constructs in the model. Similarly, for Life-Work Balance, the correlations between work-life balance and other constructs range from 0.553 to 0.800. These correlations are below the square roots of the AVE values for each construct, indicating that work-life balance shares less variance with other constructs than it does with itself. Thus, work-life balance demonstrates discriminant validity from other constructs in the model. Likewise, the correlations between transformational leadership and other constructs range from 0.655 to 0.843. These correlations are below the square roots of the AVE values for each construct, indicating that transformational leadership shares less variance with other constructs than it does with itself. Therefore, transformational leadership exhibits discriminant validity from other constructs in the model. Lastly, the correlations between work environment and other constructs range from 0.673 to 0.801. Similar to the other constructs, these correlations are below the square roots of the AVE values for each construct, indicating that the work environment shares less variance with other constructs than it does with itself. Hence, the work environment demonstrates discriminant validity from other constructs in the model.
4.4 Model Fit

Model fit assessment is essential in evaluating how well the proposed structural equation model (SEM) fits the observed data. It provides insights into the adequacy of the model in representing the relationships among variables.

<table>
<thead>
<tr>
<th>Table 3. Model Fit</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td>SRMR</td>
</tr>
<tr>
<td>d_ULS</td>
</tr>
<tr>
<td>d_G</td>
</tr>
<tr>
<td>Chi-Square</td>
</tr>
</tbody>
</table>

The fit indices suggest that both the saturated model and the estimated model exhibit a good fit. The Standardized Root Mean Square Residual (SRMR) values of 0.079 for both models indicate a close match between observed and predicted correlations. Similarly, the measures of discrepancy d_ULS and d_G yield identical values of 0.852 and 0.452 for both models, indicating that the estimated model replicates the sample covariance matrix as effectively as the saturated model. The chi-square test results also indicate no significant difference between observed and model-implied covariance matrices for both models. Additionally, the Normed Fit Index (NFI) of 0.827 for both models suggest a good fit relative to the null model, although NFI’s reliability is cautioned. Overall, these findings collectively support the notion of comparable goodness-of-fit between the saturated and estimated models.

<table>
<thead>
<tr>
<th>Table 4. R Square</th>
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<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Employee Job Satisfaction</td>
</tr>
</tbody>
</table>

The R-Square value for employee job satisfaction stands at 0.718, indicating that approximately 71.8% of the variance in job satisfaction among employees in the Surabaya manufacturing industry is elucidated by the model’s independent variables—transformational leadership, work environment, and work-life balance. This implies a significant contribution of these factors to the understanding of employee job satisfaction within this context. A higher R-Square value signals a stronger fit of the model to the data, underlining the robust explanatory power of the included independent variables. Meanwhile, the Adjusted R-Square, at 0.711, adjusts for the model’s complexity by considering the number of predictors, offering a more cautious estimate of explained variance while penalizing for unnecessary variables. This
slight decrease from the R-Square value reflects the adjustment for model complexity, ensuring a more accurate representation of the predictors' influence on job satisfaction.

4.5 Hypothesis Testing

Table 5. Hypothesis test

| Hypothesis                                    | Original Sample (O) | Sample Mean (M) | Standard Deviation (STDEV) | T Statistics (|O/STDEV|) | P Values |
|-----------------------------------------------|---------------------|-----------------|---------------------------|-----------------|----------|
| Life-Work Balance -> Employee Job Satisfaction | 0.368               | 0.364           | 0.096                     | 3.844           | 0.000    |
| Transformational Leadership -> Employee Job Satisfaction | 0.361               | 0.370           | 0.091                     | 3.985           | 0.000    |
| Work Environment -> Employee Job Satisfaction  | 0.234               | 0.229           | 0.089                     | 2.636           | 0.009    |

The hypothesis testing results demonstrate the statistical significance of the relationships between various factors and employee job satisfaction. Firstly, concerning life-work balance, the T statistic of 3.844, with a p-value of 0.000, indicates a substantial difference between the original sample value and the sample mean, leading to the rejection of the null hypothesis and the acceptance of the alternative hypothesis. Similarly, transformational leadership exhibits significance, with a T statistic of 3.985 and a p-value of 0.000, emphasizing its impact on job satisfaction. Lastly, the relationship between work environment and employee job satisfaction also proves statistically significant, with a T statistic of 2.636 and a p-value of 0.009, underscoring its influence on job satisfaction. In each case, the rejection of the null hypothesis confirms the importance of these factors in shaping employee job satisfaction within the examined context.

DISCUSSION

The discussion section provides an in-depth interpretation of the study's findings, placing them within the context of existing literature and theoretical frameworks. In this section, we analyze the results of the structural equation modeling (SEM) analysis, hypothesis testing, and other relevant findings to gain insights into the relationships between transformational leadership, work environment, work-life balance, and employee job satisfaction in the manufacturing industry in the Surabaya region.

Impact of Transformational Leadership

The results of the SEM analysis revealed a significant positive relationship between transformational leadership and employee job satisfaction. Transformational leadership, characterized by visionary outlook, inspirational motivation, individualized consideration, and intellectual stimulation, has been consistently linked to positive outcomes in various organizational settings. Studies in Jordanian pharmaceutical firms [16], e-tailing companies [26], Nigerian commercial banks [27], and a broader review of journals [28] all support the notion that transformational leadership significantly influences employee attitudes and behaviors. Specifically, the impact of transformational leadership on job satisfaction, empowerment, organizational performance, and innovative work behavior has been highlighted across these studies [29]–[34]. Leaders who exhibit traits of transformational leadership tend to inspire and empower their employees, leading to increased job satisfaction, organizational performance, and a culture of innovation within the workplace [35]–[37]. These findings underscore the importance of transformational leadership in driving positive organizational outcomes and fostering employee engagement and productivity.
Influence of Work Environment

Similarly, the SEM analysis demonstrated a significant positive relationship between the work environment and employee job satisfaction. A supportive work environment, encompassing effective communication, fair treatment, and growth opportunities, plays a pivotal role in enhancing employee well-being and satisfaction [38]–[41]. Research indicates that positive social interactions, organizational support, and a conducive work environment significantly contribute to job satisfaction and retention, ultimately improving overall employee well-being. Studies emphasize the importance of fostering a supportive work environment through initiatives that promote employee involvement, communication, and perceived organizational support, leading to increased job satisfaction and a sense of fulfillment among employees. By prioritizing these aspects, organizations can create a positive work culture that not only boosts employee morale but also enhances productivity and organizational performance, highlighting the critical link between a supportive work environment and employee well-being.

Role of Work-Life Balance

The study also found a significant positive relationship between work-life balance and employee job satisfaction. Achieving a satisfactory balance between work responsibilities and personal life pursuits is crucial for enhancing employee well-being and overall job satisfaction. Research findings from various studies emphasize the significant impact of work-life balance and job satisfaction on psychological well-being, productivity, and optimal performance in the workplace [23], [42], [43]. Studies also highlight the negative effects of personal life interference with work and work interference with personal life on job satisfaction, emphasizing the importance of workplace support in addressing these issues to improve overall satisfaction with work life [44]. By prioritizing work-life balance initiatives and ensuring a supportive work environment, organizations can foster a positive atmosphere that enhances employee satisfaction, well-being, and productivity.

Implications for Practice

The findings of this study have several implications for organizational practitioners and policymakers in the manufacturing industry. Firstly, companies should invest in leadership development programs to cultivate transformational leadership qualities among managers and supervisors. Additionally, organizations should focus on creating a supportive work environment that values employee contributions, fosters open communication, and provides opportunities for growth and development. Moreover, implementing work-life balance initiatives, such as flexible scheduling and telecommuting options, can enhance employee satisfaction and contribute to a healthier work-life integration.

Limitations and Future Research

Despite the valuable insights provided by this study, it is essential to acknowledge its limitations. The cross-sectional nature of the data limits causal inference, and future research employing longitudinal or experimental designs could provide deeper insights into the causal relationships between the variables. Additionally, the study focused on the manufacturing industry in the Surabaya region, and the findings may not be generalizable to other industries or geographical locations. Future research could explore the applicability of these findings in different contexts and industries.

5. CONCLUSION

In conclusion, this study underscores the importance of transformational leadership, work environment, and work-life balance in influencing employee job satisfaction within the manufacturing industry in the Surabaya region. The findings highlight the critical role of visionary leadership in creating a positive work culture and fostering employee engagement and satisfaction. Moreover, a supportive work environment characterized by effective communication, equitable treatment, and
opportunities for growth significantly contributes to employee well-being and satisfaction. Additionally, achieving a satisfactory balance between work responsibilities and personal life pursuits is essential for employee morale and overall job satisfaction. By prioritizing these factors and implementing evidence-based practices informed by the study’s findings, manufacturing companies in Surabaya can enhance employee satisfaction, improve retention rates, and ultimately achieve greater organizational success. Moving forward, further research exploring the dynamics of these relationships in different contexts and industries will provide deeper insights into enhancing employee well-being and organizational performance.

REFERENCES


