The Effect of Work Environment on Employee Productivity in the Banking Industry in Indonesia: A Case Study on Ergonomics, Mental Health, and Operational Efficiency

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ABSTRACT

The present research endeavors to examine the complex interactions among ergonomics, mental health, operational efficiency, and employee productivity in the ever-changing Indonesian banking sector. 200 participants in a sample from a range of roles contributed insightful information about the complex interactions between these important factors. Confirmatory factor analysis ensured the robustness of later structural equation modeling by confirming the measurement model's validity and dependability. The findings highlighted the beneficial effects of ergonomics, mental health, and operational efficiency on employee productivity, as well as considerable direct and indirect consequences. The structural model was further validated using the model fit indices and discriminant validity analysis. The model explains a significant amount of the variance in the Work Environment, according to the R-Square values. The research provides insightful information for managers of organizations, indicating that ergonomic enhancements, mental health, and operational effectiveness interventions can all work together to create a favorable work environment and, as a result, increase worker productivity in Indonesian banks.

Keywords: Ergonomics Mental Health Operational Efficiency Work Environment Employee Productivity Banking Industry Indonesia

1. INTRODUCTION

Efforts to achieve sustainable growth and competitiveness in the banking sector depend on the efficiency and productivity of its workforce. The industry operates in a dynamic and competitive environment, facing challenges such as economic recession and depleted employee confidence [1]. To improve work engagement, new methods are being explored, including embracing self-leadership strategies and creating a positive psychological environment [2]. Additionally, the banking sector needs to evaluate its performance on a continuous basis and focus on sustainable development [3]. Understanding the factors that affect employee performance is crucial for
formulating effective strategies and enhancing efficiency in the banking sector [4].

The elements that contribute to or hinder employee productivity in Indonesia’s banking sector are crucial to explore in the dynamic environment of the industry. The role of human resources is increasingly important as the global economy changes and technological advances. Studies have shown that bank competition is positively related to the stability of banks, indicating that increased competition can lead to greater stability [5]. Additionally, Enterprise Risk Management and Digital Transformation have been found to significantly and positively influence banking sustainability in Indonesia [6]. Furthermore, variables such as bank capitalization, bank performance, loan growth, and bank diversification have been found to affect the level of credit risk in the banking sector [7]. These findings highlight the importance of soundness, customer loyalty, and risk management in enhancing employee productivity and overall performance in the banking sector.

The evolving work environment is now being viewed from a broader perspective that includes considerations for employee well-being, ergonomics, and operational efficiency. Research is needed to understand the interconnected impacts of these dimensions. The physical work environment, such as natural light, greenery, and ergonomic furniture, has been shown to positively impact employee well-being and productivity [8]. Additionally, the social and organizational work environment factors play a role in preventing work-related illness and promoting employee influence and productivity [9]. Work engagement has been found to have a positive impact on employee performance and well-being [10]. Furthermore, physical activity and fitness in the workplace have been shown to improve employee health, well-being, and productivity [11]. Future research can explore the optimal balance between energy consumption and workers’ productivity to ensure both environmental comfort and productivity [12].

The understanding that the banking sector is a complex social ecology in addition to a financial hub serves as the justification for this study. The success of this industry depends heavily on employee productivity, which is influenced by a wide range of elements, each with a distinct function [13]–[16]. The daily experiences of banking professionals are shaped by a combination of factors such as ergonomics, which deals with the design of physical workstations, mental health, which includes psychological well-being, and operational efficiency, which emphasizes simplified operations.

For banking organizations trying to maximize their human capital, it is essential to comprehend how these variables interact and affect productivity. By offering empirical insights into the relationship between ergonomics, mental health, operational efficiency, and staff productivity in the particular context of Indonesia’s banking industry, this research seeks to close the current knowledge gap.

Because of the distinctive sociocultural and economic environment of Indonesia, targeted research is necessary to generate conclusions that are both globally applicable and specifically suited to the opportunities and problems faced by the country’s banking sector. This research attempts to provide useful suggestions that can guide practices and policies that can enhance employee well-being and, eventually, organizational success by dissecting the intricacies of the work environment.

2. LITERATURE REVIEW

2.1 Ergonomics in the Workplace

Ergonomics, also known as human factors engineering, is crucial in designing workspaces that promote physical and psychological well-being. It is particularly important in the banking industry where employees perform tasks requiring precision and focus. Research shows that ergonomic considerations not only reduce musculoskeletal disorders but also impact cognitive performance and overall job
satisfaction [17]–[19]. Studies in a broader organizational context highlight the positive correlation between ergonomic interventions and increased productivity. A well-designed workspace not only minimizes physical strain but also fosters an environment conducive to concentration and creativity. However, the application of ergonomic principles in the banking industry, especially in the Indonesian context, remains a relatively under-explored area. This study seeks to contribute to filling this gap by examining the specific implications of ergonomic factors on employee productivity in Indonesian banks.

H1: Ergonomics significantly influences the Work Environment in the banking industry in Indonesia, implying that improvements in ergonomic factors contribute to a more favorable work environment.

2.2 Mental Health and Productivity

Positive mental health is associated with higher job satisfaction, lower absenteeism, and increased productivity [20]–[22]. In the banking sector, where high-pressure environments and tight deadlines are common, employee mental health is a major concern [23]. Research has shown that authentic leadership, absence of organizational politics, and positive employee health are significant predictors of positive employee health [24]. Furthermore, job autonomy and psychological well-being have been found to influence job performance through improvements in employee engagement. It is important for employers to prioritize the physical, emotional, and mental health of their employees, as this can lead to a productive workplace, increased job satisfaction, and better financial results. By nurturing and sustaining employees’ emotional and physical well-being, organizations can maintain competitiveness in the market.

Conversely, mental health challenges, such as stress and burnout, have been linked to decreased cognitive function and reduced performance. The banking industry in Indonesia, like banking industries around the world, faces the challenge of addressing mental health issues among its workforce. Understanding the interplay between mental health and productivity is critical to implementing targeted interventions that not only improve employee well-being, but also contribute to organizational success.

H2: Mental Health significantly influences the Work Environment, suggesting that positive mental health contributes to a better work environment within the banking sector.

2.3 Operational Efficiency in Banking

Operational efficiency is a crucial factor for organizational success, as it involves optimizing processes to maximize outputs while minimizing inputs. Studies have shown that operational efficiency has a positive impact on organizational performance and profitability. In the banking industry, operational efficiency is often measured through metrics such as transaction speed, error reduction, and customer satisfaction. These metrics help assess the effectiveness of operational processes and identify areas for improvement. For example, research by [25] and [26] discuss the importance of managing efficiency in enterprises and propose methods for evaluating and improving efficiency. Similarly, [27] examine different approaches and methods for assessing the effectiveness of business organizations, including the use of key performance indicators. Overall, operational efficiency plays a critical role in enhancing organizational performance and ensuring long-term success [28]–[30].

In the Indonesian banking sector, efforts to achieve operational efficiency are ongoing. However, the relationship between operational efficiency and employee productivity is complex. While efficient processes can contribute to smoother workflows, how these efficiencies affect employee engagement and job satisfaction needs further investigation. This research aims to investigate this complexity, explaining how operational efficiency, when aligned with ergonomic and mental health dimensions, collectively contribute to or hinder employee productivity.

H3: Operational Efficiency significantly influences the Work Environment, indicating that
streamlined operational processes have a positive impact on the overall work environment.

3. METHODS

This study uses a quantitative research design using a cross-sectional survey approach to collect data on ergonomics, mental health, operational efficiency, and employee productivity in the banking industry in Indonesia. The cross-sectional design allows data collection at a single point in time, thus providing an overview of the relationship between variables. The sample for this study consisted of 200 participants from various roles and hierarchical levels in various banking institutions in Indonesia. Selection was stratified to ensure representation from front-line staff, managerial positions, and support roles, reflecting the diversity of the workforce within the industry.

3.1 Data Collection

A structured questionnaire was designed to obtain quantitative responses related to ergonomics, mental health, operational efficiency, and employee productivity. The questionnaire included validated scales for each construct, tailored to the specific context of the Indonesian banking industry. Participants rated their perceptions and experiences on a 1-5 Likert scale, providing quantitative data for analysis.

To improve the reliability and validity of the instrument, a pilot study was conducted with a smaller sample to identify and address any ambiguities or issues in the survey questions. The completed questionnaire was then distributed electronically to the targeted participants, accompanied by consent and assurance of anonymity.

3.2 Data Analysis

The collected data underwent rigorous analysis using Structural Equation Modeling (SEM) with Partial Least Squares (PLS) 3.0. SEM-PLS is particularly suitable for this study as it allows for examining complex relationships between multiple variables simultaneously. A theoretical model was developed based on the literature review, specifying the relationships between ergonomics, mental health, operational efficiency, and employee productivity. The model will include direct and indirect effects, taking into account potential mediating factors. The reliability and validity of the measurement instruments for each construct were assessed using confirmatory factor analysis (CFA). This step ensures that the selected indicators accurately measure the respective constructs. The structural relationships between the constructs will be examined through SEM-PLS. This analysis will provide insight into the direct and indirect effects of ergonomics, mental health, and operational efficiency on employee productivity. To assess the identified significance and robustness, bootstrapping with a sufficient sample size (5,000) will be used. Various fit indices, including measures of fit and predictive validity, will be assessed to evaluate the overall fit of the model. This step ensures that the proposed model accurately represents the observed data [31].

4. RESULTS AND DISCUSSION

4.1 Demographic Sample

The survey encompassed a diverse sample of 200 participants within the Indonesian banking industry, providing valuable insights into the demographic characteristics of the respondents. The average age of participants was 32 years, with a range from 22 to 55 years, suggesting a relatively young and dynamic workforce in the banking sector. Participants reported an average tenure of 7 years in the banking sector, indicating a moderately experienced sample with a range from 1 to 20 years. The sample covered various job roles, including frontline staff, managers, and support roles, with approximately 40% in frontline positions, 30% in managerial roles, and 30% in support functions. This distribution reflects the hierarchical diversity within the banking industry.

4.2 Measurement Model

The results of confirmatory factor analysis (CFA) shown to assess the measurement instruments used for each
construct showed satisfactory reliability and validity. Factor loadings, Cronbach’s alpha, and composite reliability values were all within acceptable ranges. The analysis confirmed discriminant validity, showing that each construct is distinct from the other constructs in the model.

Table 1. Validity and Reliability

<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>Ergonomics</td>
<td>Erg.1</td>
<td>0.837</td>
<td>0.798</td>
<td>0.878</td>
<td>0.706</td>
</tr>
<tr>
<td></td>
<td>Erg.2</td>
<td>0.842</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Erg.3</td>
<td>0.842</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental Health</td>
<td>MH.1</td>
<td>0.853</td>
<td>0.775</td>
<td>0.865</td>
<td>0.681</td>
</tr>
<tr>
<td></td>
<td>MH.2</td>
<td>0.794</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MH.3</td>
<td>0.826</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational</td>
<td>OE.1</td>
<td>0.889</td>
<td>0.840</td>
<td>0.903</td>
<td>0.757</td>
</tr>
<tr>
<td>Efficiency</td>
<td>OE.2</td>
<td>0.870</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OE.3</td>
<td>0.852</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work Environment</td>
<td>WE.1</td>
<td>0.882</td>
<td>0.905</td>
<td>0.940</td>
<td>0.840</td>
</tr>
<tr>
<td></td>
<td>WE.2</td>
<td>0.937</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>WE.3</td>
<td>0.930</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Ergonomics is a reliable construct with a loading factor of 0.837, Cronbach’s Alpha of 0.798, composite reliability of 0.878, and an average variance extracted (AVE) of 0.706. The variables Erg.2 and Erg.3 also have strong relationships with the Ergonomics construct, with loading factors of 0.842 for both. Mental Health (MH.1) is robustly related to the latent construct, with a loading factor of 0.853, Cronbach’s Alpha of 0.775, composite reliability of 0.865, and an AVE of 0.681. MH.2 and MH.3 also show strong associations with the Mental Health construct, with loading factors of 0.794 and 0.826, respectively. Operational Efficiency (OE.1) has a high correlation with the latent construct, with a loading factor of 0.889, Cronbach’s Alpha of 0.840, composite reliability of 0.903, and an AVE of 0.757. OE.2 and OE.3 contribute substantially to the Operational Efficiency construct, with loading factors of 0.870 and 0.852. Work Environment (WE.1) also has a robust relationship with the latent construct, with a loading factor of 0.882, Cronbach’s Alpha of 0.905, composite reliability of 0.940, and an AVE of 0.840. WE.2 and WE.3 are strongly connected to the Work Environment construct, with loading factors of 0.937 and 0.930.

Table 2. The Acceptability of Discrimination

<table>
<thead>
<tr>
<th></th>
<th>Ergonomics</th>
<th>Mental Health</th>
<th>Operational Efficiency</th>
<th>Work Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ergonomics</td>
<td>0.841</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental Health</td>
<td>0.814</td>
<td>0.825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational Efficiency</td>
<td>0.647</td>
<td>0.752</td>
<td>0.870</td>
<td></td>
</tr>
<tr>
<td>Work Environment</td>
<td>0.756</td>
<td>0.710</td>
<td>0.655</td>
<td>0.917</td>
</tr>
</tbody>
</table>

The correlation matrix supports the discriminant validity of the latent constructs in the model. The values are below the generally accepted threshold of 1.000, indicating that each construct contributes unique and non-redundant variance to each
other. This suggests that the selected measurement items effectively capture different aspects of Ergonomics, Mental Health, Operational Efficiency, and Work Environment. The strong discriminant validity ensures that the model can accurately distinguish between these key constructs, thus enhancing the credibility and reliability of the research findings.

4.3 Model Fit Evaluations

Evaluating the model fit is essential to ensure that the proposed structural equation model effectively represents the observed data. The comparison between the Saturated Model and the Estimated Model is assessed using various fit indices.

Table 3. Model Fit

<table>
<thead>
<tr>
<th></th>
<th>Saturated Model</th>
<th>Estimated Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRMR</td>
<td>0.103</td>
<td>0.103</td>
</tr>
<tr>
<td>d_ULS</td>
<td>0.830</td>
<td>0.830</td>
</tr>
<tr>
<td>d_G</td>
<td>0.437</td>
<td>0.437</td>
</tr>
<tr>
<td>Chi-Square</td>
<td>312.153</td>
<td>312.153</td>
</tr>
<tr>
<td>NFI</td>
<td>0.724</td>
<td>0.724</td>
</tr>
</tbody>
</table>

The standardized root means square residual (SRMR) value of 0.103 suggests a reasonable fit for both the Saturated and Estimated Models. The d_ULS and d_G indices have a value of 0.830 in both models, indicating a comparable fit between the Estimated Model and the Saturated Model. The Chi-Square statistic shows that the Estimated Model does not significantly differ from the Saturated Model, with an identical value of 312.153. The normed fit index (NFI) value of 0.724 for both models suggests that the estimated model explains a substantial amount of variance compared to a null model.

4.4 Structural Model

The structural model results, involving the relationships between Ergonomics, Mental Health, Operational Efficiency, and the Work Environment, are crucial for understanding the impact of these factors on the Work Environment within the banking industry in Indonesia.

Table 4. Hypothesis Test Results

<table>
<thead>
<tr>
<th></th>
<th>Original Sample (O)</th>
<th>Sample Mean (M)</th>
<th>Standard Deviation (STDEV)</th>
<th>T Statistics (O/STDEV1)</th>
<th>P Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ergonomics -&gt; Work Environment</td>
<td>0.502</td>
<td>0.494</td>
<td>0.097</td>
<td>5.148</td>
<td>0.000</td>
</tr>
<tr>
<td>Mental Health -&gt; Work Environment</td>
<td>0.321</td>
<td>0.334</td>
<td>0.101</td>
<td>3.204</td>
<td>0.000</td>
</tr>
</tbody>
</table>
The statistical significance, as indicated by the low p-values, adds robustness to these findings. These results imply that interventions targeting improvements in Ergonomics, Mental Health, and Operational Efficiency can be effective strategies for enhancing the overall Work Environment within the unique context of the Indonesian banking industry.

The path coefficient of 0.502 indicates a positive and significant relationship between Ergonomics and the Work Environment. The T-statistic of 5.148, with a p-value of 0.000, affirms the statistical significance of this relationship. This suggests that improvements in ergonomic factors positively influence the overall Work Environment in the banking industry in Indonesia.

The path coefficient of 0.321 signifies a positive and significant relationship between Mental Health and the Work Environment. The T-statistic of 3.204, with a p-value of 0.000, confirms the statistical significance. This implies that positive mental health contributes to a better Work Environment within the banking sector.

The path coefficient of 0.439 demonstrates a positive and significant relationship between Operational Efficiency and the Work Environment. The T-statistic of 2.718, with a p-value of 0.003, indicates the statistical significance of this relationship. This suggests that streamlined operational processes have a positive impact on the overall Work Environment in the banking industry.

Table 5. R Square

<table>
<thead>
<tr>
<th>R Square</th>
<th>R Square Adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Environment</td>
<td>0.622</td>
</tr>
</tbody>
</table>

The R-Square value of 0.622 indicates that approximately 62.2% of the variance in the Work Environment construct is explained by the predictors included in the model. This suggests that the proposed structural equation model accounts for a substantial portion of the variability in the Work Environment. The Adjusted R-Square, which considers the number of predictors and adjusts for model complexity, is 0.612. This adjusted value reinforces the explanatory power of the model while penalizing for unnecessary complexity. The R-Square values for the Work Environment construct signify a relatively strong fit of the model in explaining the observed variation in this latent variable. However, it is essential to acknowledge that there is still unexplained variance (approximately 37.8%) in the Work Environment construct. This unexplained variance may be influenced by factors not considered in the model or inherent complexities within the banking industry that are challenging to capture fully.

**DISCUSSION**

The implementation of Ergonomics, Mental Health, and Operational Efficiency in the Indonesian banking sector has a positive immediate impact on shaping the Work Environment. This highlights the importance of holistic interventions that consider both physical and psychological well-being, as well as efficient operational processes [32], [33]. The research findings emphasize the need for banks to prioritize environmental management and protection in their operational activities, leading to the implementation of the green banking concept in Indonesia [34]. Additionally, the study on the banking industry in Indonesia reveals that market structure has a direct or indirect effect on sustainable economic performance, mediated by conduct [35]. Furthermore, the research on application development in the banking sector highlights the significance of collaboration tools, such as Atlassian products, in supporting strategic projects and improving system usability and quality [36]. Overall, these studies provide insights into various factors that contribute to the shaping of the Work Environment in the Indonesian banking industry.
banking sector, including Ergonomics, Mental Health, Operational Efficiency, and environmental management.

Improvements in ergonomics, fostering positive mental health, and streamlining operational efficiency can collectively contribute to a more conducive work environment, ultimately increasing employee productivity [2], [37], [38]. By investing in employee engagement and utilizing effective leadership strategies, leaders in the banking industry can improve employee productivity and performance [39]. Additionally, nurturing positive organizational behaviors and emotions, enhancing psychological resources, and utilizing self-leadership strategies can positively influence job embeddedness and work engagement [40]. Furthermore, creating a positive psychological environment and encouraging the utilization of self-leadership strategies can boost work engagement and enhance the energy levels and quality of work among banking sector employees. Overall, these findings provide actionable insights for organizational leaders and policymakers in the banking industry to create a work environment that promotes employee productivity and well-being.

5. CONCLUSION
In summary, this study clarifies the complex factors influencing worker productivity in Indonesia’s banking sector. The integrated model offers a thorough grasp of the levers influencing the work environment since it takes into account ergonomic considerations, mental health factors, and operational efficiency. The results highlight the need of a comprehensive strategy for workplace well-being and the necessity for businesses to make investments in both psychological and physical aspects. The positive associations that have been observed provide policymakers and organizational leaders with practical insights that support strategic initiatives aimed at maximizing employee productivity. Although the study adds to the body of knowledge, acknowledging its shortcomings—such as its cross-sectional design—creates opportunities for further investigation into the longitudinal dynamics of these variables in the future. Essentially, this study adds to the current conversation on how to create a happy and successful workforce within the particular environment of Indonesian banking.

REFERENCES


