



Open Plan Impact on Employees Performance

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Abstract

The shift from traditional office layouts to open-plan workspaces has become a global trend, including in public institutions. However, the effectiveness of this transition in bureaucratic environments remains debatable. This research aims to evaluate the impact of the open plan layout on employee performance at the PPBMN office under the Ministry of Energy and Mineral Resources. Using a quantitative approach, data were collected through observations, questionnaires, and interviews, then analyzed using SPSS version 29 with regression analysis. The results show that the open plan design improves movement efficiency, work comfort, and collaboration, with a statistically significant influence of 15.2% on employee performance. These findings highlight that open workspace models, when supported by adaptive organizational culture, can enhance productivity in government institutions. The research contributes to workspace design theory in the public sector and offers practical implications for policymakers considering workspace renovations aligned with employee well-being and performance.

Keywords: Office, Audio Comfort, Open Plan Layout.

INTRODUCTION

In recent decades, the concept of workspace design has undergone significant changes along with the dynamics of organizational needs, efficient use of space, and efforts to create a collaborative work environment (Lisbet et al., 2024). One of the popularly adopted concepts is the open plan office, which is an open office layout without permanent barriers between employees (Lai et al., 2021). This concept was first developed in Germany in the early 20th century and is increasingly used in various countries because it is considered to be able to improve communication, collaboration, and efficient use of space. In a global context, major companies such as Google, Facebook, and Microsoft have implemented open plan offices as part of their strategy to encourage innovation, open communication, and productivity (De Paoli et al., 2013).

However, while the concept promises various benefits, the reality of its implementation shows mixed results. Some studies show that open plan offices can reduce work quality due to increased distractions, decreased privacy, and high levels of stress due to noise exposure and loss of control over the work environment (Kim & De Dear, 2013). In fact, research from (Nguyen et al., 2022) shows that face-to-face communication actually decreases in an open work environment as employees prefer to communicate through digital media to avoid distractions. This shows the

paradox of open plan implementation: although it aims to create a collaborative environment, it can lead to social isolation and decreased work comfort (Bennis et al., 2022); (Bogers, 2011).

This problem becomes more complex when applied in the work environment of the public sector or government which generally has a different work character from the private sector. Government as a bureaucratic organization has communication patterns that tend to be formal and hierarchical. Therefore, radical changes in workspace towards open plan require in-depth studies related to their impact on employee performance, especially in institutions that have a national strategic role.

One of the relevant work units to be studied is PPBM (State Property Management), which is under the auspices of the Ministry of Energy and Mineral Resources (ESDM). PPBM is an organizational unit responsible for the management of state property in the energy and mineral resources sector. In an effort to improve efficiency and modernize governance, PPBM carried out office renovations by adopting an open plan concept, where most of the spatial layout was changed in such a way that there were no barriers between sections, and allowed employees to see each other. This was done in the hope of creating a more open, collaborative, and efficient work culture (Muzaffar et al., 2020).

However, it cannot be denied that physical changes to the workspace have psychological and social implications for employees. Previous research has revealed that the implementation of open plan offices can have both positive and negative impacts depending on the work unit and organizational culture. On the one hand, open plan offices can improve accessibility and collaboration between employees. However, on the other hand, this concept often causes acoustic disturbances, decreased privacy, and thermal comfort that affect employee work performance.

Other research explains that open plan offices can cause various distractions such as radio noise, telephone conversations, and overheard interactions between coworkers (Roper & Juneja, 2008). These distractions indirectly affect work productivity, stress levels, and even employees' blood pressure. Research from (Oommen et al., 2008) also shows that open work environments that are too crowded can lead to overstimulation, which in turn leads to decreased focus and increased work conflict. These findings reinforce the argument that workspace design that does not consider psychological and social factors can be counterproductive (Ngara et al., 2024).

This research is important and urgent because of the gap between theory and practice in the implementation of open plan offices, especially in the government sector. Unlike the private sector, which is more flexible and adaptive, the public sector has a distinctive bureaucracy and work culture. Therefore, not all management concepts or work designs from the private sector can be simply adopted by government institutions. PPBM as a strategic unit in the Ministry of Energy and Mineral Resources is an interesting case to analyze, because the change in workspace design is expected to support the performance of employees involved in managing high-value state assets.

The novelty of this research lies in the institutional context and the analytical approach used. Most previous studies have focused on private sector organizations or multinational companies, while this research focuses on public sector organizations in Indonesia that have complex and rigid work structures. In addition, this research uses a quantitative approach with a survey instrument to employees and guests in the PPBM office environment to obtain objective perceptions regarding the influence of workspace design on performance. This provides an empirical contribution to the development of an ideal workspace design model for the Indonesian public sector.

The main objective of this research is to assess the quality of workspace and its impact on employee performance after an open-design office renovation in the PPBM office of the Ministry of Energy and Mineral Resources. In general, this research is expected to provide theoretical and practical benefits. Theoretically, this research can enrich the literature on the relationship between workspace design and employee performance, especially in the context of public sector organizations. Practically, the results of this research can be an important input for policy makers in the government in designing and evaluating the ideal workspace. This research can also be used as a reference for other institutions that want to adopt the open plan concept to consider various technical and psychological aspects before making workspace renovation decisions.

METHOD

This research was conducted by applying quantitative methods, with the first step identifying the spaces formed in the layout arrangement, followed by observation techniques of employee movements carried out by observation, mapping, and drawing circulation patterns that occur. The movement of each employee will be marked with an arrow line indicating the direction of movement. The purpose of this initial observation is to simulate the variables that are factors in assessing the performance of space by the indicators of previous research results, namely comfort and circulation access.

The next step is to conduct a questionnaire for employees who work in the PPBMN area of the Ministry of Finance, with categories of age range, position, and gender. The questionnaire is presented with questions whose answers have a closed scale to make it easier for respondents to fill in the answers. After obtaining the results of the questionnaire that has been determined from the research variables obtained from the initial research, then the research is continued with Linear Regression Analysis, or ascertaining the extent to which the arrangement of the open plan layout of the Ministry of Energy and Mineral Resources PPBMN work area affects employee performance.

The sequence of the research process to be carried out is as follows.

1. Conduct a grand tour and observe the research locusfocusing, focusing on the variables of comfort and accessibility.
2. Distributed research questionnaires based on preliminary observations to respondents of PPBMN office employees.

- 3. Exploring data to support the research process through an interview with selected resource persons with more than 5 years of work experience who experienced the period before and after the renovation of the PPBMN office.
- 4. Present the research results in the form of data diagrams or tabulations with the help of SPSS 29 software so that the data is easier for readers to understand.

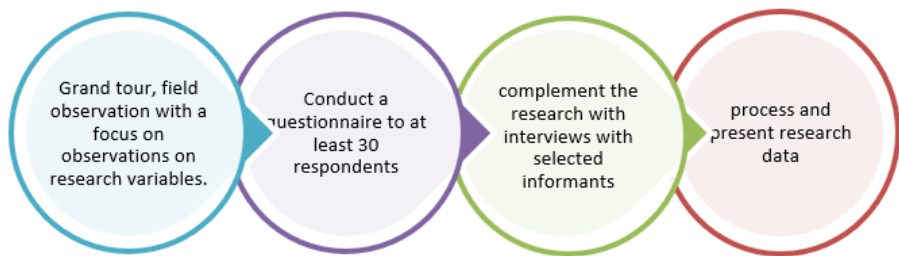


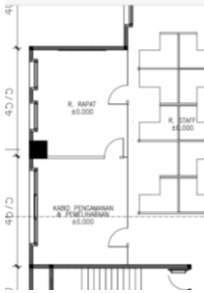
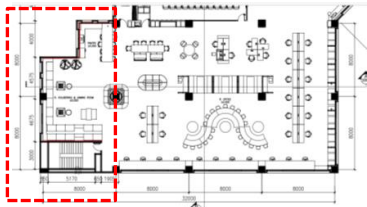
Figure 1. Process Flow of Research Methods

Source: personal documents, 2024

RESULTS AND DISCUSSION

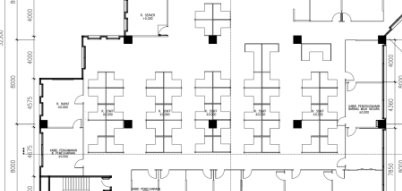
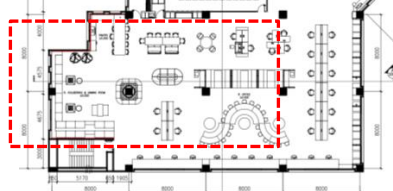
From the results of the grand tour, it was found that the existing condition of the PPBMN office of the Ministry of Energy and Mineral Resources is as a ministry office in general, with rooms that are blocked to certain groups and positions and staff workspaces in the middle with cubicle formations according to their respective division areas. The results of the PPBMN office renovation planning adopt an open plan layout design theme by creating a fresher and more conducive work atmosphere where there are no longer special rooms for certain positions and classes, by the ABW (Activity-based working) concept and replacing them with chairs and tables that can be occupied by anyone regardless of status and Tabata, except specifically for the head of the PPBMN Center and the finance department.

Table 1. Comparison of existing office layout and PPBMN office renovation results

No.	Room Name	Room Area	Existing Space Layout	Room Layout After Renovation
1	Head of security and maintenance room	36 m2		

seat, it is known from field observations that in the end, everyone will choose a seat close to their teammates or sub-coordinators, to facilitate communication and completion of work tasks.

Table 2. Comparison of the existing office and the renovated PPBMN office

No.	Room Name	Existing Space Layout	Room Layout After Renovation
3	Staff room		

Source: PPBMN, 2024

As in the results of the questionnaire at number 11, seen from Figure 4 below, related to the statement "Do respondents feel uncomfortable with moving seats?" most respondents answered disagree with a percentage of 47.8%, then followed by a strongly disagree answer with a percentage of 23.9% and 15.2% answered between agree and no, in other words, it can be concluded that most employees feel that Activity-based working (ABW) does not interfere with work comfort. This answer indicates that the comfort of working after office renovation with an open design concept and the application of the ABW system does not interfere with the comfort of PPBMN office employees.

11. Dengan penataan tempat duduk yang boleh berpindah-pindah membuat saya kurang nyaman
46 jawaban

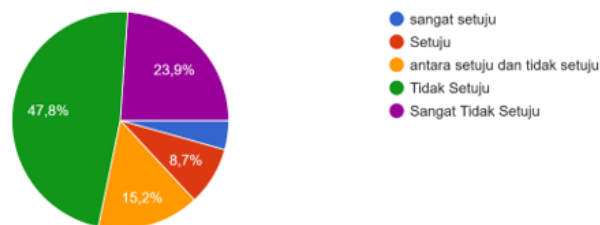


Figure 3. Questionnaire result number 11

Source: personal data, 2025

In addition to comparing office layouts from 2-dimensional images, researchers also compared actual conditions through field observations with previous photos when the office had not been renovated. Seen from the photo below is the result of a visual survey of conditions after the second renovation of the PPBM office renovation; when comparing conditions before and after the renovation, the new office looks more open, with a more modern feel organized, both from the layout and feel of the room formed.

PPBMN Office Before Renovation



PPBMN Office After Renovation



Figure 3. PPBMN office before and after renovation

When compared to the state of the office before, there was a very big change in terms of the layout of the work area; it is also illustrated that the room looks wider because of the dividing walls that previously separated the divisions or the head coordinator's room have been eliminated in the new office renovation. Another thing obtained after this office renovation is better lighting because the sides of the windows that were previously filled by the head coordinator or storage room were opened directly to the ABW work desk to optimize natural light into the room.



Figure 4. PPBMN staff work area

Source: personal documentation, 2025

The design of the workspace with cubicles, as in the picture above, is aimed at employees who need special privacy at work because it is known from the results of previous studies that the

application of open office design can hurt employees' feelings of security, especially in certain divisions that need peace in the work process. This can be confirmed again through the results of questionnaire number 8, seen in Figure 6, related to the statement "disturbance of privacy after the implementation of an open plan layout." 40% answered disagree, and 28.9% of respondents answered agree and disagree, followed by a strongly disagree answer of 22.2%, the remaining 6.4% answered agree and only 2.5% of respondents who answered strongly agree with the above statement. So, applying the open plan layout in the PPBMN office of the Ministry of Energy and Mineral Resources does not negatively impact the comfort of employee privacy.

The results of the questionnaires that have been carried out are also clarified by interviews with selected interviewees who also stated the same thing as Mr. AS (40 years old) "most employees are happier with the current conditions, including me, but not all of them feel the same way."

8. Dengan ruangan kerja yang terbuka membuat saya lebih terganggu karena menjadi kurang privasi.
45 jawaban

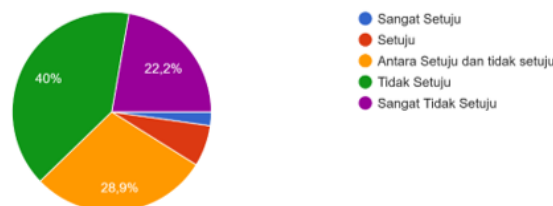


Figure 5. results of questionnaire number 8

Source: personal data, 2025

The relationship between questions in questionnaires number 8, 9, and 11 above are questions that are indicators in the assessment of the comfort and accessibility variables or are determined to be independent variables (X), and then regression analysis is carried out on question number 12 which is the dependent variable (Y). From the statement at number 12, it was concluded that most respondents answered that they agreed that the open plan layout could increase work productivity, with a percentage of 50%. The answer strongly agreed with a percentage of 37% and 13% of respondents answered between agreeing and not regarding this matter.

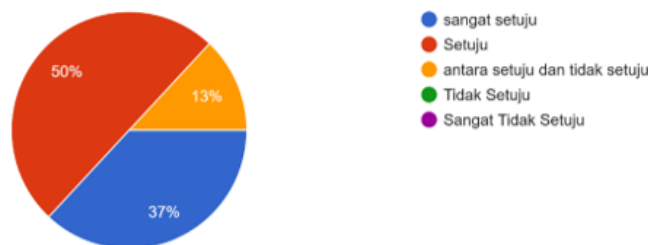


Figure 6. results of questionnaire number 12

Source: personal data, 2025

Table 3. SPSS Anova Model of Regression Analysis Research

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	9,273	1	9,273	7,895	,007 b
Residuals	51,683	44	1,175		
Total	60,957	45			

Source: SPSS version 29, 2025

The ANOVA table above explains whether the application of open plan layout has an influence on employee performance. It is known that F count = 7.895 with a significance level of 0.007 or <0.05, so the regression model can be used to predict employee performance results. In other words, the variables previously selected to be included in the regression analysis in this research are valid.

Table 4. Model Summary SPSS regression analysis research

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,390 ^a	0,152	0,133	1,084

a. Predictors: (constant), Open Plan

Source: SPSS version 29, year 2025

Through linear regression analysis with the help of SPSS software, in the summary model above, it is also known that the R Square is 0.152 or, in other words, the effect of the independent variable on the application of open plan layout, which in this case is represented by questions number 5, 7 and 9, on employee performance question no. 12 is 15.2%. So, the effect of layout changes from closed to open in the PPBMN office of the Ministry of Energy and Mineral Resources on employee performance is positive, with a value of 15.2%.

The results showed that the implementation of an open plan layout in the PPBMN office of the Ministry of Energy and Mineral Resources has a positive impact on the efficiency of movement, work comfort, and collaboration between employees. The majority of respondents feel undisturbed by the flexible seating system (ABW), and the open layout is considered to facilitate communication and increase natural lighting. This is in line with previous studies such as (Sari, 2015) and (Kamaruddin et al., 2024), which state that open workspace design can increase interaction and efficiency if designed appropriately.

Statistically, the regression results show that spatial changes have a 15.2% effect on improving employee performance, with a valid significance level ($p < 0.05$). Although not the only factor, open plan design acts as an effective supporter of work productivity when supported by an adaptive organizational culture (Driyantini et al., 2020); (Susanto & Bangun, 2023). Thus, open plan layout is proven to be a relevant and contextual space design solution in public sector work environments such as PPBMN.

CONCLUSION

Based on the research results, it can be concluded that the implementation of open plan layout in the PPBMN office of the Ministry of Energy and Mineral Resources has a positive impact on the efficiency of movement, work comfort, and collaboration between employees. Although the level of influence on improving employee performance is statistically at 15.2%, this result shows that open space design can be an effective strategy in supporting productivity, especially in a public sector environment that has a bureaucratic work structure. This research answers the main problem regarding the effectiveness of open plan implementation in the context of government and provides theoretical contributions in the development of public workspace design literature and practical contributions for policy makers in designing adaptive and productive workspaces. In the future, this research can be further developed with a longitudinal approach and additional variables such as organizational culture, workload, and employee mental health to produce a more holistic and sustainable workspace design model.

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