The Influence of Work Environment, Work Discipline, and Competitive Pressure on Business Laboratory Performance

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Abstract:
The implementation of learning in higher education is not limited to theoretical activities but also includes practical ones. The Economics Education Study Program has a business laboratory that serves as a platform for students to demonstrate their performance in managing business units. This study was conducted to examine the influence of the work environment, work discipline, and competitive pressure on the performance of the business laboratory, both partially and simultaneously. A quantitative research approach was chosen for this study. The research population consisted of active students in the Economics Education study program who were assigned as business laboratory practitioners. Proportional sampling was used to determine 142 students as respondents. The research variables were measured using a questionnaire instrument, which was then tested for validity and reliability. Data were analyzed using t-tests and F-tests. Regression analysis with its prerequisite tests was also carried out to predict the influence of the three independent variables on business laboratory performance. The findings reported that the work environment influences business laboratory performance, work discipline influences business laboratory performance, while competitive pressure does not influence business laboratory performance. Furthermore, the work environment, work discipline, and competitive pressure simultaneously influence business laboratory performance.

Keywords: work environment; work discipline; competitive pressure; business laboratory performance; economics education.

Introduction

Education is a fundamental driver in developing human resource quality, especially within higher education. Higher education institutions are responsible for organizing learning that is not limited to theoretical activities but also includes practical ones (Supangat & Delastri, 2023). The Economics Education Study Program at Universitas Sebelas Maret has a business laboratory that serves as a platform for students to demonstrate

their performance in managing business units. According to Hasibuan et al. (2023), the existence of a business laboratory can enhance students' knowledge, managerial skills, creativity, and entrepreneurial readiness.

Business laboratory performance is influenced by various factors, including ability and expertise, knowledge, work design, personality, work motivation, leadership, leadership style, organizational culture, job satisfaction, work environment, loyalty, commitment, and work discipline (Kasmir, 2019). Among these factors, previous studies have shown that the work environment positively influences organizational performance (Budiono & Fahrizal, 2023; Manihuruk, 2024; Piantara et al., 2021), although other findings suggest otherwise (Suharyanto, 2022). Work discipline also plays an important role in influencing organizational performance (Dewi et al., 2022; Hinuq et al., 2022), yet some studies reported different results (Sutaguna et al., 2023).

Beyond internal factors, business laboratory performance is also influenced by competitive pressure as an external factor (Khan et al., 2019). Competitive pressure has been proven to significantly influence organizational performance (Soewarno et al., 2020). However, other studies found that competitive pressure does not influence organizational performance (Ritonga et al., 2023). These inconsistent findings suggest that the relationship between competition and organizational performance may not always be linear; in some contexts, it might follow a curvilinear pattern (e.g., inverted-U) or be suppressed by stronger internal factors such as work environment or work discipline. This possibility highlights the need for further exploration, which will be addressed in the results and discussion sections of this study.

Based on a preliminary study conducted through questionnaire distribution, the work environment only obtained 27% and work discipline 41%, while other factors were above 80%. These findings were reinforced by interviews with the head of the business laboratory, who pointed to several challenges such as limited storage space, insufficient lighting and air circulation, technical barriers in operational systems, and less harmonious interpersonal relations. In addition, discipline within the laboratory was found to be low, as reflected in lateness during scheduled shifts and limited participation in laboratory activities. Another issue that emerged is the presence of competitive pressure, which has resulted in a decline in sales performance. Financial reports show that from July to December 2023, business laboratory sales were lower compared to 2022. Interviews revealed that this decline was influenced by the presence of nearby canteens offering alternative choices to customers, thereby creating competition. These initial findings highlight the importance of examining work environment, work discipline, and competitive

pressure more rigorously. To ensure robust analysis, this study employs validated measurement instruments adapted from prior studies, supported by reliability and validity testing.

Considering these phenomena and previous studies findings, this study aims to examine: (1) the influence of the work environment on business laboratory performance, (2) the influence of work discipline on business laboratory performance, (3) the influence of competitive pressure on business laboratory performance, and (4) the simultaneous influence of the work environment, work discipline, and competitive pressure on business laboratory performance. In addition, given the inconsistent evidence regarding competition, this study also acknowledges the possibility that its effect may not be linear and could be subject to suppression by other factors, which will be further explored in the results and discussion.

Literature Review

Business Laboratory Performance

Organizational performance indicates how effectively an organization achieves its goals and objectives (Alhumeisat, 2024). It is a fundamental aspect of management, as no organization can sustain itself without aligning its performance with set targets (Khalid et al., 2019; Yang et al., 2024). Measuring organizational performance is therefore essential, as it provides insights to improve decision-making and gain competitive advantage (Susanti, 2021). This study applies the Balanced Scorecard (BSC) framework to assess business laboratory performance due to its ability to offer a multidimensional evaluation (Zairbani et al., 2024). Introduced by Kaplan & Norton (1996), the BSC expands measurement beyond financial outcomes by incorporating customer satisfaction, internal processes, as well as learning and growth. Through this framework, business laboratory performance can be evaluated more comprehensively, offering a clearer understanding of organizational achievements.

Work Environment

Within an organization, the work environment encompasses the circumstances and atmosphere in which members conduct their routine activities (Piantara et al., 2021). A supportive work environment creates a sense of security, enabling individuals to perform at their best. Budiono & Fahrizal (2023) found that performance improves when employees are provided with facilities that ensure safety, comfort, health, and overall support. Likewise, Al Zeer & Fijuljanin (2024) emphasized that a positive work environment fosters motivation and constructive attitudes, which in turn enhance organizational performance. Thus,

the work environment becomes an important factor that should be analyzed in relation to the performance achievements of the business laboratory.

Work Discipline

Work discipline refers to an individual's awareness, comprehension, and consistent compliance with the rules and policies established by the organization (Uloli et al., 2019). Evaluating discipline is an organizational responsibility, as it helps maintain reputation and ensure smooth operations (Raman et al., 2020). In the context of organizational work, discipline is reflected in employees' compliance with rules and adherence to shared organizational values (Lestari et al., 2024). A high level of discipline supports timely task completion, meeting deadlines, and maintaining consistent work ethics. As a result, discipline not only improves individual performance but also strengthens overall organizational performance. Therefore, work discipline needs to be considered as a determinant of business laboratory performance.

Competitive Pressure

Beyond internal factors, organizational performance is influenced by external dynamics, including competitive pressure. Such pressure arises from competitors' actions, affecting concerns about market share (Xiao, 2023). The influence of competitive pressure on performance has become a significant issue (Soewarno et al., 2020). If not managed, it can threaten organizational sustainability due to challenges in retaining customers and maintaining market share, creating uncertainty about future performance (Boubaker et al., 2022). However, when addressed proactively, competitive pressure can drive organizational improvement and innovation (Tian et al., 2024). This emphasizes the importance of understanding its influence on business laboratory performance.

Based on the theoretical review and previous studies concerning the influence of work environment, work discipline, and competitive pressure on organizational performance, this study develops the research model presented in Figure 1. The model illustrates the relationships between the independent variables (X1, X2, X3) and the dependent variable (Y), which further serves as the foundation for the formulation of research hypotheses.

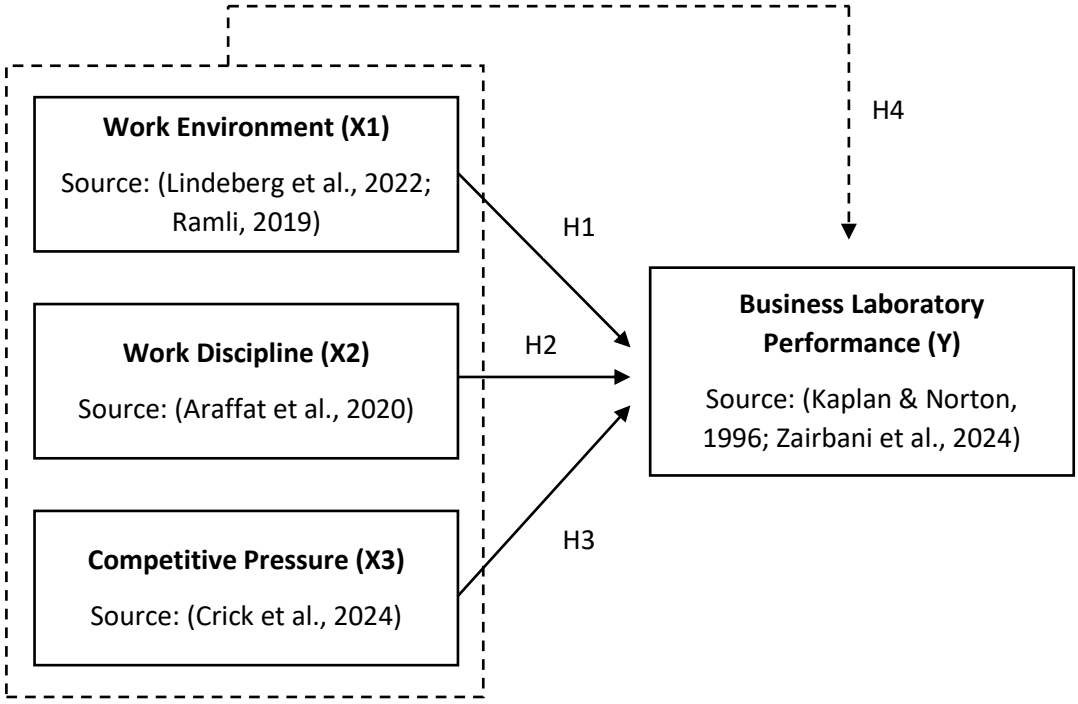

Figure 1. Research Model

Hypothesis Development

The work environment is a critical factor that shapes how individuals perform within an organization. A supportive work environment, characterized by adequate facilities, harmonious relationships, and minimal technical barriers, fosters comfort and productivity. Conversely, an inadequate environment may hinder performance and create obstacles for practitioners. Previous studies e.g. (Budiono & Fahrizal, 2023; Manihuruk, 2024; Piantara et al., 2021), confirm that the work environment significantly influences organizational performance. Based on this reasoning, the following hypothesis is proposed:

H1: Work environment has a significant influence on business laboratory performance.'

Work discipline reflects individual awareness, responsibility, and compliance with organizational rules. High discipline levels encourage punctuality, accountability, and adherence to institutional procedures, which contribute to performance improvement. Prior research has established that work discipline has a positive influence on organizational performance (Dewi et al., 2022; Hinuq et al., 2022). Thus, the hypothesis is formulated as follows:

H2: Work discipline has a significant influence on business laboratory performance.

Competitive pressure represents an external challenge that organizations face in maintaining their relevance in the market. In certain contexts, competition compels organizations to adapt and innovate, thereby enhancing performance. However, within the context of business laboratory, competitive pressure is assumed to result in declining sales outcomes, which in turn reduces the laboratory's effectiveness. Previous studies have reported mixed findings regarding the influence of competitive pressure on organizational performance (Ritonga et al., 2023; Soewarno et al., 2020). Considering these findings, competitive pressure is hypothesized to influence business laboratory performance. Although some studies suggest a direct effect may be weak or non-linear, examining this relationship is important to understand how external market pressures shape laboratory outcomes. Therefore, the following hypothesis is proposed:

H3: Competitive pressure has a significant influence on business laboratory performance.

Organizational performance is often shaped by the interaction of both internal and external factors. While internal factors tend to exert a stronger influence compared to external ones (Ritonga et al., 2023), challenges arising from outside the organization should not be overlooked. Competitive pressure, as an external factor, also warrants consideration alongside internal aspects such as work environment and work discipline. Integrating these factors may provide a more comprehensive understanding of business laboratory performance outcomes. Therefore, the following hypothesis is proposed:

H4: Work environment, work discipline, and competitive pressure have a significant influence on business laboratory performance.

Research Methodology

This study employed a quantitative approach with a cross-sectional survey design to examine the influence of work environment (X1), work discipline (X2), and competitive pressure (X3) on business laboratory performance (Y). Data were collected from students who have participated or are currently participating as business laboratory practitioners using structured questionnaires. The study was conducted after obtaining official research approval from the Faculty of Teacher Training and Education, Universitas Sebelas Maret Surakarta. All respondents were informed about the research objectives, participation was voluntary, and the data collected were kept confidential. Respondents also had the right to decline or withdraw from the study at any time without any consequences. The research was conducted in several stages, starting with preparation, which included problem identification through a preliminary study, instrument development and pilot testing, data collection via questionnaire distribution, data processing using SPSS for Windows, and finally, data analysis and report writing.

The study population consisted of active students of the Economic Education Study Program from the 2021–2022 cohorts who had participated or were currently participating in the business laboratory. Inclusion criteria included students actively involved in the laboratory for at least one semester, while exclusion criteria were students who were not actively involved or unavailable during data collection. A proportional sampling technique was used based on cohort distribution, and the sample size was determined using Slovin's formula with a 5% margin of error, resulting in 142 respondents. The questionnaires were distributed to the entire population, resulting in a response rate of 56%.

The research instrument was a questionnaire using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree) (Sugiyono, 2018), designed to measure respondents' perceptions regarding work environment (X1), work discipline (X2), competitive pressure (X3), and business laboratory performance (Y). The questionnaire items were adapted from previous studies and adjusted to fit the context of the Business Laboratory. Specifically, items for the work environment (X1) were adapted from Lindeberg et al. (2022) and Ramli (2019), for example, *"The laboratory workspace is multifunctional and comfortable"*. Items for work discipline (X2) were adapted from Araffat et al. (2020), e.g., *"I complete tasks according to the planned schedule"*. Items for competitive pressure (X3) were adapted from Crick et al. (2024), e.g., *"Competition between the laboratory and nearby canteens is very intense"*. Items for business laboratory performance (Y) were adapted from Zairbani et al. (2024), e.g., *"Laboratory sales have significantly increased compared to the previous period"*. The adaptation process included translation and back-translation to ensure semantic equivalence, followed by pilot testing in the target population.

Instrument validity was assessed using the Pearson Product-Moment correlation at a 5% significance level, where items with a calculated r-value greater than r-table (0.361) were considered valid. For the work environment variable (X1), 12 of 13 items were valid, with 1 item removed. All items for work discipline (X2, 8 items) and competitive pressure (X3, 6 items) were valid. For business laboratory performance (Y, 16 items), 12 items were valid and 4 items were removed. These results indicate that the remaining items were suitable for accurately measuring the intended constructs. Reliability testing was conducted using Cronbach's Alpha on a pilot sample of 30 respondents. All variables demonstrated acceptable reliability, with values ranging from 0.769 to 0.837, exceeding the threshold of 0.60. Specifically, work environment (X1) $\alpha = 0.819$, work discipline (X2) $\alpha = 0.769$, competitive pressure (X3) $\alpha = 0.837$, and business laboratory performance (Y) $\alpha = 0.803$. These results confirm that the research instrument was both valid and reliable for use in the main data collection.

Prior to hypothesis testing, prerequisite tests were conducted to ensure that the data met the assumptions of regression analysis. Normality was assessed using the Kolmogorov-Smirnov test, with

significance values greater than 0.05 indicating a normal distribution. Linearity between each independent variable and the dependent variable was tested using the Compare Means method, with linear relationships confirmed if the linearity significance < 0.05 and the deviation from linearity > 0.05. Multicollinearity among independent variables was evaluated using tolerance and variance inflation factor (VIF), with tolerance values > 0.1 and VIF < 10 indicating no multicollinearity. Heteroscedasticity was assessed to ensure constant variance of residuals, with significance > 0.05 indicating that the assumption was met. Hypotheses were tested using multiple linear regression to examine both partial and simultaneous effects of work environment, work discipline, and competitive pressure on business laboratory performance. The regression model was expressed as $Y = a + b_1X_1 + b_2X_2 + b_3X_3$, where "a" represents the constant and "b_1–b_3" represent the regression coefficients of the independent variables. Partial effects were assessed using t-tests, while simultaneous effects were assessed using F-tests at a significance level of 0.05. The coefficient of determination (Adjusted R^2) was calculated to measure the proportion of variance in business laboratory performance explained by the independent variables, with the remaining variance attributed to other factors not included in the model.

Results and Discussions

Results

Data Description

Data were collected using a Google Form-based questionnaire, which was distributed online to the respondents. The characteristics of the respondents are presented in Table 1.

Table 1. Frequency Distribution of Respondent Characteristics

Characteristic		Frequency	Percentage
Cohort	2021	72	50.7
	2022	70	49.3
Gender	Male	19	13.4
	Female	123	86.6
Position	Structural	19	13.4
	Staff	123	86.6

Based on Table 1, the study respondents consisted of 72 students from the 2021 cohort (50.7%) and 70 students from the 2022 cohort (49.3%). Female respondents dominated, with 123 students (86.6%), while male respondents numbered 19 (13.4%). Regarding positions held during their assignment

as business laboratory practitioners, 19 respondents (13.4%) occupied structural positions, and 123 respondents (86.6%) served as staff.

Table 2. Descriptive Statistics

	N	Min	Max	Mean	Std. Deviation
Work Environment	142	1.42	4.92	3.72	.604
Work Discipline	142	2.25	5.00	3.87	.588
Competitive Pressure	142	1.50	5.00	3.59	.734
Business Laboratory Performance	142	1.83	4.92	3.78	.568

Based on data from 142 respondents, the Work Environment (X1) variable has a minimum score of 1.42, a maximum of 4.92, a mean of 3.72, and a standard deviation of 0.604. Work Discipline (X2) has a minimum of 2.25, a maximum of 5.00, a mean of 3.87, and a standard deviation of 0.588. Competitive Pressure (X3) has a minimum of 1.50, a maximum of 5.00, a mean of 3.59, and a standard deviation of 0.734. Business Laboratory Performance (Y) has a minimum of 1.83, a maximum of 4.92, a mean of 3.78, and a standard deviation of 0.568. All variables show relatively even distributions, with standard deviations less than 30% of their respective means, indicating no substantial gaps between minimum and maximum scores.

Multiple Linear Regression Analysis

This study employed multiple linear regression analysis to examine the influence of work environment, work discipline, and competitive pressure on business laboratory performance. The results of the analysis are presented in Table 3.

Table 3. Multiple Linear Regression Analysis and t-test

	Unstandardized Coefficients		*Standardized Coefficients*		
Model	*B*	*Std. Error*	*Beta*	*t*	*Sig.*
(Constant)	.845	.242		3.486	.001
Work Environment	.288	.088	.307	3.258	.001
Work Discipline	.403	.089	.417	4.533	.000
Competitive Pressure	.086	.049	.111	1.761	.080

Table 3 presents the results from which the multiple linear regression equation can be formulated as follows:

$$Y = 0{,}845 + 0{,}288X_1 + 0{,}403X_2 + 0{,}086X_3$$

The constant value of 0.845 indicates the level of business laboratory performance when the work environment, work discipline, and competitive pressure are all zero. The regression coefficients for work environment (0.288), work discipline (0.403), and competitive pressure (0.086) are positive. This suggests that an increase in any of the independent variables tends to increase the business laboratory performance, assuming that the other variables remain constant. However, this positive direction does not necessarily imply a significant influence without considering the results of the t-test at a given level of significance.

t-Test (Partial)

Referring to Table 2, the t-test results indicate that the work environment variable has a t-value of 3.258 with a probability of 0.001 (< 0.05). This means that the work environment has a significant influence on business laboratory performance. Furthermore, the work discipline variable has a t-value of 4.533 with a probability of 0.000 (< 0.05), indicating that work discipline also has a significant influence on business laboratory performance. In contrast, competitive pressure shows a t-value of 1.761 with a significance level of 0.080 (> 0.05), suggesting that competitive pressure does not have a significant influence on business laboratory performance.

F-Test (Simultaneous)

The simultaneous influence of work environment, work discipline, and competitive pressure on business laboratory performance was tested using the F-test.

Table 4. F-Test Results

	Model	*Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
1	*Regression*	24.266	3	8.089	52.706	.000
	Residual	21.178	138	.153		
	Total	45.444	141			

The results presented in Table 4 show an F-value of 52.706 with a significance level of 0.000 (< 0.05). These findings indicate that work environment, work discipline, and competitive pressure simultaneously have a significant influence on business laboratory performance.

Coefficient of Determination (R^2) Analysis

The contribution of work environment, work discipline, and competitive pressure to organizational performance was analyzed using the coefficient of determination (R^2). The value used is the Adjusted R^2, as presented in the following table.

Table 5. Coefficient of Determination Analysisi

Model Summary

Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.731	.534	.524	.39175

Based on Table 5, the Adjusted R^2 value of 0.524 indicates that the three independent variables can explain 52.4% of the variation in business laboratory performance. The remaining 47.6% is influenced by other factors such as skills and expertise, knowledge, work design, personality, work motivation, leadership, leadership style, organizational culture, job satisfaction, loyalty, and commitment, as well as external factors beyond the organization.

Discussions

Influence of Work Environment on Business Laboratory Performance

The analysis indicates that the work environment has a significant influence on business laboratory performance. This aligns with preliminary study findings, which described actual conditions in the laboratory related to work environment issues. Problems experienced by laboratory practitioners included frequent technical errors due to system malfunctions, limited space for operational activities, and interpersonal relationships among practitioners that were not always harmonious. These conditions are crucial factors affecting laboratory performance.

An inadequate work environment that lacks comfort can negatively influence organizational performance. Alternatively, when the organizational setting is supported by proper facilities and constructive interpersonal interactions, it encourages individuals to fully dedicate themselves to the organization (Rijasawitri & Suana, 2020), thereby improving overall organizational performance. From the perspective of the Job Demands–Resources (JD–R) model, the work environment can be categorized as an essential resource. A supportive environment reduces strain and provides the necessary resources for practitioners to manage high demands, which in turn fosters engagement and improves performance.

Similarly, through the lens of experiential learning theory, a conducive environment ensures that students are exposed to authentic workplace conditions where learning occurs through active participation, reflection, and application. In this way, the laboratory setting serves not only as a place for operational tasks but also as an experiential platform for skill development and performance enhancement.

These findings are further supported by Piantara et al. (2021), who examined the influence of the work environment on the performance of Cooperatives and SMEs partners. Their results showed that a better and more adequate work environment has a positive and significant influence on organizational performance.

Overall, the results highlight that the work environment is a fundamental determinant of business laboratory performance. Improving facilities, ensuring smooth technical systems, and fostering positive interpersonal relationships are therefore expected to translate directly into better outcomes, both in day-to-day operations and in fulfilling the educational objectives of the business laboratory.

Influence of Work Discipline on Business Laboratory Performance

The statistical analysis indicates that work discipline has a significant influence on organizational performance in the business laboratory. This is consistent with preliminary study findings, which described actual conditions in the laboratory related to work discipline issues, such as practitioners arriving late and some practitioners neglecting their responsibilities. These conditions highlight how discipline functions as a key factor that can affect laboratory performance.

Poorly maintained discipline can lead to decreased organizational performance. Conversely, when work discipline is well-managed, it promotes individual compliance with institutional regulations, thereby contributing to performance improvement (Hinuq et al., 2022). Discipline is thus essential for the advancement of any organization, as it ensures the consistent implementation of rules, responsibilities, and standards that support operational efficiency. In the context of the business laboratory, discipline extends beyond punctuality and responsibility, encompassing the ability of practitioners to adhere to procedures, manage tasks effectively, and demonstrate accountability in both academic and managerial aspects of laboratory operations. From the perspective of the Job Demands–Resources (JD–R) model, discipline can be seen as a personal resource that helps practitioners cope with demands and minimize strain, which leads to better engagement and performance. Similarly, based on experiential learning theory, maintaining discipline ensures that students engage authentically with real workplace norms, internalizing professional standards through practice and reflection.

The study by Dewi et al. (2022) strengthens these findings, as their research on *Perum Percetakan Negara Republik Indonesia* highlights the influence of work discipline on organizational performance. Their results showed that well-established work discipline has a positive influence on organizational performance, indicating that effective discipline can enhance organizational performance. In line with this, maintaining discipline among practitioners in the business laboratory can be seen as a reflection of professional conduct, preparing students to meet the standards of the professional world. This suggests that discipline functions as both a managerial necessity and a pedagogical instrument, shaping not only organizational performance but also the personal development of students involved in the laboratory.

In sum, the evidence confirms that work discipline is a cornerstone of business laboratory performance. Efforts to reinforce punctuality, procedural compliance, and accountability not only ensure smoother day-to-day operations but also support the broader pedagogical goal of instilling professional readiness in students.

Influence of Competitive Pressure on Business Laboratory Performance

The statistical analysis indicates that competitive pressure does not have a significant influence on business laboratory performance. This finding contrasts with preliminary observations, which noted a decline in laboratory sales in 2023 that was initially assumed to be caused by the presence of nearby canteens. While these early observations suggested competitive effects, the empirical results do not support a statistically significant relationship.

One possible explanation is the uniqueness of the laboratory's product offerings. Unlike nearby canteens that mainly provide fast-food items, the business laboratory offers office supplies, packaged snacks, bottled water, ready-to-drink beverages, and ice cream. These differences indicate that the laboratory and its competitors target distinct market segments, thereby limiting the intensity of direct competition.

In addition, high customer satisfaction and loyalty may buffer against external threats. Loyal customers tend to remain consistent in their purchases regardless of alternative options, which stabilizes organizational outcomes despite competitive pressures (Minh Ha et al., 2024). Moreover, the non-commercial orientation of the laboratory, serving primarily as an educational facility for practical training rather than as a profit-driven enterprise, may further reduce its vulnerability to external competition. This result aligns with (Ritonga et al., 2023), who also found no significant effect of competitive pressure on organizational performance in a different business context. Taken together, the evidence suggests that

internal factors such as the work environment and work discipline are more decisive in shaping laboratory performance compared to external pressures.

Nevertheless, external competition should not be overlooked entirely. Its effects may be indirect, operating through interactions with internal factors or emerging in the long term. Furthermore, the non-significant result invites further exploration. It is possible that competitive pressure exerts a curvilinear effect (e.g., mild competition may stimulate performance, while excessive competition may suppress it) or that suppression effects are present due to correlations among predictors. Future studies could employ exploratory post-hoc analyses to test for such possibilities.

Overall, the findings indicate that competitive pressure is not a dominant factor in the present context. Instead, attention should be directed toward strengthening internal drivers of performance, while still monitoring external dynamics that may influence the laboratory's long-term development.

Influence of Work Environment, Work Discipline, and Competitive Pressure on Business Laboratory Performance

The statistical results indicate that work environment, work discipline, and competitive pressure simultaneously influence business laboratory performance. Although competitive pressure does not have a significant effect when examined individually, it still contributes to performance outcomes when considered alongside other variables, namely work environment and work discipline. This suggests that while competitive pressure has limited influence on its own, it nevertheless plays a role in shaping organizational performance when integrated with internal factors. In support of this, the descriptive results (mean, SD, correlations, and VIF values) confirmed that all predictors were normally distributed, exhibited no severe multicollinearity, and demonstrated moderate-to-strong correlations with performance, thereby reinforcing the robustness of the simultaneous model.

The simultaneous influence of work environment, work discipline, and competitive pressure on business laboratory performance has received little attention in the existing literature. Previous studies have generally emphasized either internal or external factors in isolation, with research objects primarily focusing on large-scale industries or small and medium-sized enterprises (SMEs). For instance, Piantara et al. (2021) investigated the influence of organizational culture, motivation, and work environment on the performance of Cooperatives and SMEs partners. Dewi et al. (2022) examined the relationship between leadership and work discipline with organizational performance at Perum Percetakan Negara Republik Indonesia. In another context, Soewarno et al. (2020) analyzed the effect of competitive pressure on organizational performance within the Batik industry in East Java.

Addressing this gap, the present study integrates both internal and external factors to examine their simultaneous influence on business laboratory performance. While competitive pressure was not individually significant, its role in the combined model suggests the possibility of *suppression effects* or even a *nonlinear relationship* that may not be captured in a simple linear model. Such possibilities highlight the need for exploratory post-hoc tests in future research. Moreover, the study contributes a distinct perspective by focusing not on large industries or SMEs, but on a business laboratory that operates with dual functions, educational and commercial. The objective is to provide a more comprehensive understanding of the determinants that shape laboratory performance. Consequently, the findings are expected to serve as an empirical foundation for managerial decision-making and the formulation of strategies aimed at enhancing organizational performance.

Practical Recommendations

Drawing on the empirical findings and theoretical insights, three practical recommendations can be made. First, regarding the work environment, the laboratory should invest in upgrading technical facilities (e.g., cashier system), optimize space utilization, and cultivate constructive interpersonal relations. Second, for work discipline, management should strengthen compliance mechanisms through digital attendance systems, reward–punishment structures, and integration of discipline indicators into practicum evaluations. Third, while competitive pressure was not statistically significant, it may be reframed through *gamification*. By introducing sales competitions between shifts or groups, displaying performance on a leaderboard, and rewarding top-performing teams, competition can be transformed into a challenge demand that enhances engagement rather than a stressor.

In sum, these recommendations align with the *JD–R model*, where the work environment and discipline act as vital job resources, while gamified competition functions as a manageable challenge demand. They also reflect the experiential learning perspective, whereby the laboratory provides authentic workplace scenarios that prepare students for professional roles.

Conclusion

This study demonstrates that both work environment and work discipline significantly enhance business laboratory performance, while competitive pressure shows no direct effect but still contributes in combination with internal factors. The findings emphasize that organizational performance in educational business laboratories is primarily driven by internal resources, with external dynamics playing a secondary role. However, the study has several limitations: its cross-sectional survey design restricts causal inference, reliance on self-reported data may introduce bias, and the single institution focus limits

generalizability. Ethical considerations were observed by ensuring informed consent, anonymity, and voluntary participation. Future research should adopt longitudinal or mixed methods designs, incorporate additional factors such as leadership or digital innovation, and compare across institutions to provide a more comprehensive understanding of performance determinants in business laboratories.

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