Improving Inpatient Unit Performance Through the Malcolm Baldrige Framework: A Study in a Hospital in Gresik, Indonesia

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Syahprevi R. Zeinsar[4], Shyamkumar Sriram[5], Abdullah Al Mamun[6]

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ABSTRACT

Numerous studies have explored various aspects of performance in healthcare services, including patient satisfaction, staff well-being, and resource capacity. However, research addressing these gaps using the Malcolm Baldrige Performance Criteria framework remains limited. This study aims to evaluate and enhance the inpatient service performance at Mabarrot Gresik Islamic Hospital using the Malcolm Baldrige Performance Criteria model. An analytical observational study with a cross-sectional approach was conducted to analyze the relationships and correlations among eight Malcolm Baldrige criteria: Organizational Profile, Leadership, Strategic Planning, Customer Focus, Measurement, Analysis, and Knowledge Management, Human Resources, Operational Activity Focus, and Results. Data were collected from 34 respondents, comprising medical and non-medical staff, using a validated (CVI = 0.77) and reliable (α = 0.986) questionnaire. The analysis revealed that Human Resources (r = 0.993), Results (r = 0.837), and Strategic Planning (r = 0.758) demonstrated very strong relationships with Customer Focus, indicating these areas significantly impact inpatient service performance. Furthermore, a strong correlation was found between Customer Focus and Results (r = 0.837), emphasizing the importance of prioritizing patient satisfaction to achieve better outcomes. However, the study identified a weak relationship between the Organizational Profile and Measurement, Analysis, and Knowledge Management criteria, indicating a misalignment that requires attention. The findings suggest that improving human resource performance and addressing customer needs are critical strategies for enhancing inpatient services.

ABSTRAK

Sejumlah penelitian telah mengeksplorasi berbagai aspek kinerja dalam layanan kesehatan, termasuk kepuasan pasien, kesejahteraan staf, dan kapasitas sumber daya. Namun, penelitian yang membahas kesenjangan ini dengan menggunakan kerangka kerja Kriteria Kinerja Malcolm Baldrige masih terbatas. Penelitian ini bertujuan untuk meningkatkan kinerja rawat inap di Rumah Sakit Islam Mabarrot Gresik dengan menggunakan model Malcolm Baldrige Performance Criteria. Penelitian ini dilakukan dengan pendekatan observasional analitik dan desain cross-sectional untuk menganalisis hubungan di antara delapan kriteria: profil organisasi, kepemimpinan, perencanaan strategis, fokus pelanggan, pengukuran dan analisis, sumber daya manusia, fokus aktivitas operasional, dan hasil. Data dikumpulkan melalui kuesioner yang telah teruji validitasnya (CVI = 0,77) dan reliabilitasnya (α = 0,986) dari 34 staf medis dan non-medis. Hasil analisis menunjukkan adanya hubungan yang sangat kuat antara sumber daya manusia (r = 0,993), perencanaan strategis (r = 0,758), dan hasil (r = 0,837) dengan fokus pelanggan, menekankan pentingnya area ini dalam meningkatkan kinerja rawat inap. Selain itu, ditemukan hubungan yang kuat antara fokus pelanggan dan hasil (r = 0,837), yang menggarisbawahi pentingnya memprioritaskan kepuasan pasien untuk mencapai hasil yang lebih baik. Namun, penelitian ini juga mengidentifikasi hubungan yang lemah antara profil organisasi dengan pengukuran, analisis, dan manajemen pengetahuan, menunjukkan adanya ketidaksesuaian yang perlu ditindaklanjuti. Temuan ini menyarankan perlunya optimalisasi kinerja sumber daya manusia dan pemenuhan kebutuhan pelanggan sebagai strategi utama dalam peningkatan kualitas layanan rawat inap.

GRAPHICAL ABSTRACT
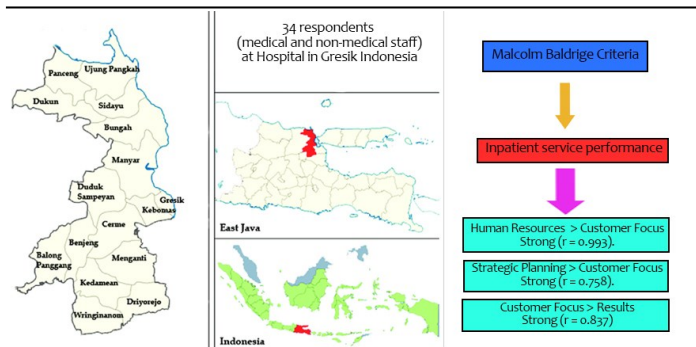
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INTRODUCTION

Health development is a vital component of national development, aiming to increase awareness, willingness, and ability to live a healthy life for every individual. This effort seeks to achieve the highest attainable level of health for the population (Hogan et al., 2018). The responsibility for this lies across all sectors of the Indonesian nation, including the community, government, and private sector (Dartanto et al., 2023).

Hospitals serve as key healthcare institutions, providing comprehensive outpatient, inpatient, and emergency services (Ordu et al., 2023). These institutions play a critical role in meeting patients' needs and expectations by delivering high-quality healthcare services (KhanMohammadi et al., 2023). In the competitive healthcare market, service quality is a significant factor in gaining market share and reflects the hospital's overall success (Suhail & Srinivasulu, 2021; Tushar et al., 2023). The performance of healthcare workers, in both quantity and quality, is crucial in determining service quality, particularly in patient care. The success of healthcare services is closely tied to organizational performance. Therefore, healthcare workers play a pivotal role in ensuring overall patient satisfaction (Manzoor et al., 2019).

RSI Mabarrot Gresik, a private hospital in Gresik, must consistently uphold the quality of its services. This requires maintaining the effectiveness and efficiency of its resources to ensure excellent service delivery. However, several performance indicators for the RSI Mabarrot Gresik inpatient unit from 2019 to 2021 have shown variations, with some falling below the ideal standard. The performance indicators for the inpatient unit at RSI Mabarrot Gresik from 2019 to 2021 demonstrate deviations from expected standards compared to the ideal limits. The Bed Occupancy Rate (BOR) ranged from 40.85% in 2020 to 51.47% in 2019, with an average of 46.08%, which is below the ideal range of 65%–85%, indicating underutilization of inpatient capacity. The Average Length of Stay (ALOS) remained consistent at approximately 3 days across the three years, aligning well with the ideal range of 3–12 days. The Turnover Interval (TOI) fluctuated, peaking at 4.5 days in 2020, with an average of 3.83 days, slightly exceeding the ideal range of 1–3 days, suggesting potential inefficiencies in patient turnover. Meanwhile, the Bed Turnover (BTO) rate showed a decline from 62 times in 2019 to 47.5 times in 2020, averaging 53.83 times over the three years, exceeding the ideal range of 40–50 times, which reflects a higher frequency of bed usage.

These indicators highlight areas where operational efficiency and patient flow management can be further optimized. According to Bosque-Mercader & Siciliani (2023), a low BOR is often associated with poor hospital management and performance, competition with other healthcare services, and the public's purchasing power. A hospital is considered well-utilized when the number of beds in use meets the ideal standard; thus, a low BOR suggests suboptimal hospital utilization.

The BOR value is also seen as an indicator of the productivity and quality of hospital services. The following data provides the satisfaction levels of inpatients at RSI Mabarrot Gresik in April 2022. This information is crucial for identifying areas that require improvement. The frequency distribution of inpatients' satisfaction at RSI Mabarrot Gresik in April 2022 reveals varying levels of satisfaction with nurse performance. Out of 22 respondents, only 9% (2 patients) reported being very satisfied, while 31% (8 patients) expressed being satisfied. However, the majority of patients, representing 55% (11 patients), indicated being less satisfied, and a small proportion, 5% (1 patient), reported being very dissatisfied. These findings highlight a significant need for improvements in nursing services to address the high percentage of dissatisfaction and ensure greater patient satisfaction in the future. Addressing this issue is essential for enhancing overall patient satisfaction at RSI Mabarrot Gresik.

To enhance service performance, the Malcolm Baldrige Criteria for Performance Excellence (MBCfPE) approach can be utilized. MBCfPE, a component of Total Quality Management (TQM), has proven effective in improving organizational performance across various sectors (El-Gazar & Zoromba, 2021; Purba et al., 2021). In Indonesia, the Malcolm Baldrige criteria have been widely applied in diverse organizations, including healthcare units like hospitals.

Several studies have highlighted the importance of management quality and organizational performance in healthcare services. Olayiwola et al. (2023) found that the implementation of Total Quality Management (TQM) improves organizational performance and customer satisfaction through employee and communication management, although resistance to change remains a challenge. Niazi et al. (2023) emphasized the importance of seismic resilience in healthcare facilities, where patient satisfaction is measured by waiting time as a key indicator during emergencies. Pishnamazzadeh et al. (2023) developed a model to assess hospital resilience by considering key performance indicators (KPIs), such as patient satisfaction, staff burnout, and bed capacity as critical factors. Meanwhile, Lee et al. (2023) identified the role of organizational culture profiles in improving patient safety, satisfaction, and Lean Six Sigma implementation in U.S. hospitals. These studies demonstrate the importance of a multidimensional approach to hospital quality performance.

Unlike previous studies, this research employs the Malcolm Baldrige Performance Criteria framework to examine the relationships among key factors influencing inpatient unit performance, such as Customer Focus, Human Resources, and Strategic Planning, at Mabarrot Gresik Islamic Hospital. By analyzing specific correlations among the eight Baldrige criteria, this study identifies strengths and areas for improvement, offering data-driven recommendations to enhance service performance. It emphasizes strengthening human resource quality and patient satisfaction as critical drivers of sustainable improvement in a community-based hospital setting in Indonesia. To support RSI Mabarrot Gresik in maintaining high service quality, this research analyzes the inpatient unit's organizational performance using the Malcolm Baldrige framework and provides actionable insights for improvement.

METHODS

This study is an analytical observational study with a cross-sectional design conducted at RSI Mabarrot Gresik from March to September 2022. The study targeted a population of 120 employees, focusing specifically on the nursing staff in the inpatient unit. A sample of 34 respondents was selected using convenience sampling to ensure the inclusion of participants who were readily available during the study period.

The primary research instrument was a structured questionnaire designed to assess eight criteria of the Malcolm Baldrige framework. To ensure the validity and reliability of the instrument, the content validity of the questionnaire was tested using Lawshe's CVR formula, yielding a CVI value of 0.77. Construct validity was assessed through Pearson correlation analysis, while reliability was confirmed with a Cronbach's Alpha coefficient of 0.986, indicating high internal consistency.

Data collection was carried out by administering the questionnaires directly to the respondents. The responses were scored on a scale of 1 to 10, with categories ranging from poor to very good, allowing for a nuanced analysis of the data. Descriptive analysis was conducted using frequency distribution and cross-tabulation, enabling the researchers to calculate percentages and compare the results with the Malcolm Baldrige point values.

To explore the relationships between variables, the Spearman correlation test was employed, which provided insights into the strength of the associations, categorized from

Table 1
Details of inpatient treatment room hospital

Bed Type	Number of Beds	Percentage
Class III	14	28
Class II	20	40
Class I	4	8
VIP	2	4

very weak to very strong. The results were used to identify the most dominant variables influencing organizational performance. Additionally, the study included a flowchart to depict the pattern of relationships among these variables, providing a visual representation of the key findings.

The primary aim of this research was to measure the organizational performance of RSI Mabarrot Gresik based on the Malcolm Baldrige criteria. Furthermore, the study sought to analyze the relationships between the various influential variables identified through the data analysis. The findings are expected to offer valuable insights into areas where RSI Mabarrot Gresik can improve its organizational performance and enhance service quality.

RESULTS

RSI Mabarrot Gresik, operating under the Nahdlatul Ulama (NU) organization, is a hospital whose name Mabarrot signifies community spirit. The term can be interpreted as "community giving," highlighting the hospital's origins, which were entirely funded by community donations, including soy sauce bottles, rice, money, and other contributions. The hospital's motto, "Serving Sincerely," reflects its commitment to providing high-quality healthcare services.

RSI Mabarrot Gresik offers a variety of medical services, including outpatient, inpatient, emergency, and medical support services. The hospital's inpatient facilities are divided into adult and pediatric treatment rooms, labor rooms, and neonate treatment rooms, each with varying bed capacities. As of 2022, RSI Mabarrot Gresik has a total of 50 beds distributed across these rooms, with 40% in Class II and only 4% in the VIP class, indicating a focus on accessibility for a broader patient base .The distribution of beds at RSI Mabarrot Gresik includes 14 class III beds, 20 class II beds, 4 class I beds, and 2 VIP beds. Additionally, the neonate treatment room is equipped with 10 beds, representing 20% of the hospital's total bed capacity. The highest concentration of beds is found in class II, while the VIP room has the fewest beds, emphasizing the hospital's commitment to serving a diverse patient population (See Table 1).

Table 2 shows the results of the Spearman correlation test conducted at RSI Mabarrot Gresik indicate significant relationships between several Malcolm Baldrige criteria. For instance, a strong positive correlation exists between the organizational profile and leadership criteria ($r = 0.658$, $P < 0.05$). Similarly, significant correlations were found between the organizational profile and strategic planning ($r = 0.432$, $P < 0.05$) as well as customer focus ($r = 0.448$, $P < 0.05$) . Interestingly, no significant relationship was observed between the organizational profile and the measurement, analysis, and knowledge management criteria ($r = 0.080$, $P > 0.05$). However, significant positive correlations were found between the organizational profile and both the human resources focus ($r = 0.289$, $P < 0.05$) and operational activity focus criteria ($r = 0.361$, $P < 0.05$). These findings underscore the importance of focusing on leadership, strategic planning, and customer orientation to improve organizational performance.

Figure 1 shows that the analysis of performance relationships between Malcolm Baldrige criteria at RSI Mabarrot Gresik re-

Table 2

Performance relationship between Malcolm Baldrige Criteria

Criteria	Correlated Factors	Correlation (r)	p-value
Organization Profile	Leadership	0.658	0.000*
	Strategic Planning	0.432	0.011*
	Customer Focus	0.448	0.008*
	Knowledge Measurement, Analysis and Management	0.080	0.655
	Human Resources Focus Criteria	0.289	0.097
	Operational Focus	0.361	0.036*
	Results	0.424	0.013*
Leadership	Strategic Planning	0.618	0.000*
	Customer Focus	0.579	0.000*
	Knowledge Measurement, Analysis and Management	0.457	0.007*
	Human Resources Focus Criteria	0.540	0.001*
	Operational Focus	0.579	0.000*
	Results	0.598	0.000*
Strategic Planning	Customer Focus	0.758	0.000*
	Knowledge Measurement, Analysis and Management	0.508	0.002*
	Human Resources Focus Criteria	0.604	0.000*
	Operational Focus	0.542	0.001*
	Results	0.615	0.000*
Customer Focus	Knowledge Measurement, Analysis and Management	0.636	0.000*
	Human Resources Focus Criteria	0.509	0.002*
	Operational Focus	0.571	0.000*
	Results	0.837	0.000*
Knowledge Measurement, Analysis and Management	Human Resources Focus Criteria	0.640	0.000*
	Operational Focus	0.571	0.000*
	Results	0.598	0.000*
Human Resources Focus Criteria	Operational Focus	0.933	0.000*
	Results	0.516	0.002*
Operational Focus	Results	0.566	0.000*

Note: * = significant (p < 0.05)

vealed significant variations. While some align with the established framework, others deviate or highlight unique interactions specific to this context. Notably, the organizational profile exhibited limited interactions, with a strong relationship to leadership but weak ties to measurement, analysis, and knowledge management. Thirteen strong relationships were identified overall, with customer focus, measurement, analysis, and results criteria showing the mo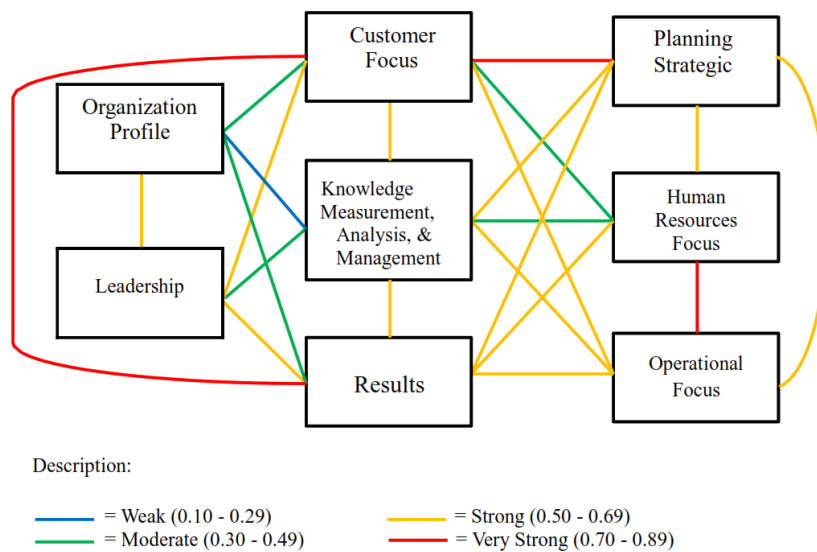st connections. The strongest link be-tween customer focus and results underscores the critical role of customer satisfaction in driving superior organizational outcomes, suggesting these areas as priorities for improvement.

DISCUSSION
Relationship between Performance and Malcolm Baldrige Criteria

The Malcolm Baldrige criteria provide a framework for assessing organizational performance, focusing on various aspects such as

Figure 1
Pattern of performance relationship between Malcolm Baldrige Criteria

Description:

___ = Weak (0.10 - 0.29)   ___ = Strong (0.50 - 0.69)
___ = Moderate (0.30 - 0.49)   ___ = Very Strong (0.70 - 0.89)

leadership, strategic planning, customer focus, and results (Wang et al., 2022). These criteria are designed to evaluate the success of organizational activities, which, in turn, reflect the quality of an organization's performance. The interaction between these criteria is crucial for achieving superior performance, as improvements in one area can positively influence others (Rochmatullah et al., 2023).

Similar to previous studies, these findings highlight significant relationships among various Malcolm Baldrige criteria, particularly emphasizing the strong positive correlations between the organizational profile and leadership, strategic planning, and customer focus (Wang et al., 2022). Interestingly, no significant correlation was observed between the organizational profile and the criteria of measurement, analysis, and knowledge management. However, positive correlations were noted between the organizational profile and both human resource focus and operational activity focus. This result is similar to the findings of other studies that highlight the significant role of leadership, strategic planning, and customer orientation in improving organizational performance (Baashar et al., 2020; Saeidi et al., 2020; Tushar et al., 2023).

The analysis revealed that leadership criteria have significant relationships with strategic planning, customer focus, and several other Malcolm Baldrige criteria at RSI Mabarrot Gresik. The strength of these relationships ranges from moderate to strong, with leadership positively influencing areas such as measurement, analysis, and knowledge management. This is consistent with the findings of Bhati et al. (2023) and Suriyankietkaew & Kungwanpongpun (2022), which indicate that effective leadership is a key driver in enhancing a hospital's strategic planning, customer focus, and operational outcomes. .

The study highlights the strong correlation between leadership and results criteria, reaffirming the crucial role of leadership in achieving superior organizational outcomes. However, its weaker link with measurement, analysis, and knowledge management suggests a need for targeted improvements in these areas. Leadership must focus on strategic direction to enhance overall performance. Similarly, strategic planning showed strong relationships with multiple criteria, especially results, emphasizing its critical role in aligning activities with organizational goals. The alignment of strategic planning with human resources further underscores

the need to integrate workforce strategies to ensure effective goal execution (Amorim-Lopes et al., 2021; Moinzad et al., 2022)

Customer focus demonstrated significant relationships with several criteria, with a particularly strong connection to results, indicating its pivotal role in driving organizational excellence. Maintaining a strong customer orientation will help RSI Mabarrot Gresik improve patient satisfaction and competitive advantage. Measurement, analysis, and knowledge management also showed significant connections with operational activities and results, highlighting the importance of robust data systems in optimizing performance.

The strong relationship between human resources and operational activity focus emphasizes the importance of workforce development in achieving operational excellence. Additionally, the link between human resources and results underscores the role of well-managed human capital in meeting strategic objectives. Operational activity focus also strongly correlates with results, indicating the need for RSI Mabarrot Gresik to prioritize operational efficiency to deliver superior outcomes. The findings of this study are supported by Rangsungnoen et al. (2024), who emphasized the importance of strategic alignment across all criteria to enhance organizational performance.

Relationship Analysis of Organizational Performance

The analysis of organizational performance relationships in the inpatient unit of RSI Mabarrot Gresik demonstrates significant correlations between various Malcolm Baldrige criteria. The organizational profile showed a strong relationship with leadership, strategic planning, customer focus, human resources, operational activity focus, and results (Nurmeksela et al., 2021; Vanichchinchai, 2023). This suggests that the hospital's organizational structure and culture play a pivotal role in driving performance across these critical areas.

Leadership criteria also showed significant and strong correlations with strategic planning, customer focus, human resources, operational activity focus, and results, highlighting the importance of effective leadership in achieving organizational success (van Diggele et al., 2020; Wackers et al., 2021). However, the relationship with measurement, analysis, and knowledge management was moderate, indicating areas where leadership influence may need to be strengthened.

Strategic planning criteria demonstrated significant and very strong correlations with customer focus, human resources, operational activity focus, and results, reinforcing the role of strategic planning in aligning organizational efforts with overall goals (Shanafelt et al., 2020; Weston, 2022). Furthermore, customer focus criteria were strongly correlated with measurement, analysis, and knowledge management, human resources, operational activity focus, and results, emphasizing the centrality of customer satisfaction in driving organizational performance.

The study also found that measurement, analysis, and knowledge management criteria have significant and strong correlations with human resources, operational activity focus, and results. Human resources criteria were found to have a very strong correlation with operational activity focus and a strong correlation with results. Finally, operational activity focus criteria were strongly correlated with results, underscoring the importance of operational excellence in achieving superior organizational outcomes (Bakhtiari et al., 2020).

The focus of performance improvement at RSI Mabarrot Gresik should be on maintaining and enhancing aspects that already demonstrate excellent ratings. These areas include the Organizational Profile, Measurement, Analysis and Knowledge Management Criteria, Human Resources Criteria, Operational Activity Focus Criteria, and Results Criteria. Accourding to Alkhaldi & Abdallah (2020), continuous efforts to sustain and build upon these

strengths will help maintain the hospital's high level of performance in these critical areas. On the other hand, there are aspects that, while rated as good, require targeted improvements to elevate overall performance. These include the Leadership Criteria, Customer Focus Criteria, and Strategic Planning Criteria. Enhancing these areas will provide a more balanced approach to performance improvement, ensuring that all aspects of the hospital's operations are operating at their full potential (Dion & Evans, 2024; Ekiz Kavukoğlu & İşci, 2024).

One of the strengths of this study is the use of the Malcolm Baldrige Criteria as a comprehensive framework to evaluate organizational performance. The research instrument, validated using the Content Validity Ratio (CVR) method and achieving a Cronbach's Alpha coefficient of 0.986, indicates a very high level of reliability in the collected data. Additionally, the analytical observational method with a cross-sectional design allowed effective analysis of relationships between variables within a relatively short period.

However, the study has limitations regarding the generalizability of its findings, as the sample was limited to 34 respondents from a single hospital. The convenience sampling approach also carries the potential for selection bias, as it only included participants available during the study period. Furthermore, the cross-sectional design provides a snapshot of relationships at a single point in time, which limits the ability to infer causality or track changes over time.

CONCLUSIONS

The analysis of the Malcolm Baldrige Criteria for Performance Excellence (MBCfPE) at RSI Mabarrot Gresik identified key areas for improvement, particularly the weak correlation between the Organizational Profile and Measurement, Analysis, and Knowledge Management criteria, indicating a need for better alignment. Moderate relationships between the Organizational Profile, Customer Focus, and Re-

sults, as well as between Human Resources Focus and Customer Focus, suggest opportunities for stronger integration across these dimensions. Strengthening leadership roles and aligning organizational structures with strategic goals are critical to enhancing coordination and achieving better performance outcomes.

While RSI Mabarrot Gresik has been recognized as a Benchmark Leader for its strong performance, a more detailed analysis of the MBCfPE criteria is essential. This in-depth evaluation will identify critical factors influencing performance and enable the development of targeted strategies for sustained excellence, ensuring comprehensive solutions to address existing gaps and enhance organizational effectiveness. Future research is recommended to adopt a longitudinal design to observe changes and dynamics in variable relationships over a longer period. Expanding the scope of the study to include multiple hospitals or similar organizations would enhance the generalizability of the findings. Researchers could also explore more complex analytical methods, such as path analysis or structural equation modeling (SEM), to better depict causal relationships between variables. Finally, incorporating qualitative methods, such as in-depth interviews or focus group discussions, could provide richer insights into the factors influencing organizational performance.

AUTHORS' CONTRIBUTIONS
Setya Haksama designed the study and formulated the concept. Diansanto Prayoge and Syahprevi R. Zeinsar wrote the manuscript

and collected data. Muhammad Azhary reviewed the manuscript and collected data. Shyamkumar Sriram analyzed the data and revised the manuscript. Abdullah Al Mamun revised the manuscript and approved the final manuscript

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COMPETING INTERESTS

The authors confirm that all of the text, figures, and tables in the submitted manuscript work are original work created by the authors and that there are no competing professional, financial, or personal interests from other parties.

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