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Medical Equipment Procurement Management Strategy Efficiency-Based (Study on the Intensive Care Unit of Pradipa Medika Hospital in Kuningan Regency)

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Abstract
Medical equipment procurement is a crucial component in delivering effective and efficient healthcare services. Inadequate planning can lead to budget inefficiencies, service delays, and reduced care quality. This study aims to analyze efficiency-based procurement management strategies to improve hospital service quality. A qualitative descriptive method was employed through in-depth interviews, observations, and documentation involving procurement managers and hospital management. The findings show that efficiency strategies are influenced by need-based planning, value for money budgeting, and transparent supervision. Cross-department collaboration and the use of information systems are also essential for improving procurement effectiveness. This study highlights the need for innovation in procurement management and recommends strengthening governance through internal regulations, enhancing human resource capacity, and utilizing digital technology to support sustainable healthcare services.

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1. INTRODUCTION

As healthcare institutions, hospitals have a significant responsibility to provide quality, effective, and efficient services to the public. In this context, the availability of medical equipment is a key component in determining the success of these services. Medical equipment not only serves as diagnostic and therapeutic support but also serves as a benchmark for the hospital's readiness to respond quickly and appropriately to patient needs. Therefore, medical equipment procurement management plays a strategic role in supporting the sustainability of hospital operations while maintaining the quality of healthcare provided to the public.

Problems in the medical equipment procurement process remain a challenge in many hospitals, both public and private. A poorly planned process can have various negative impacts, such as procurement delays, cost overruns, and equipment mismatches with service needs. In many cases, procurement is carried out without considering a comprehensive needs analysis, potentially leading to inefficiencies and budget waste. Furthermore, weak oversight mechanisms and the underutilization of information technology exacerbate these conditions. As a result, the quality of healthcare provided to patients is suboptimal and can even decline.

Efficiency in medical equipment procurement is a necessity in an era of global competition and limited healthcare budgets. The concept of efficiency in resource management emphasizes the use of minimal input to achieve maximum output. In the hospital context, efficiency is not only related to cost savings but also encompasses timeliness, quality conformity, and the long-term sustainability of medical equipment. Therefore, an effective procurement management strategy must be based on the principle of value *for money*, where every expense can provide maximum benefits for both the institution and the patient.

Various previous studies have shown that good procurement management can improve hospital operational efficiency and positively impact service quality. For example, research by Wijayanti and Nurcahyo (2022) found that needs-based planning, the use of information technology, and integrated monitoring significantly contribute to the efficiency of medical device procurement. Similar findings were also presented by Rahardjo (2021), who emphasized the importance of cross-unit collaboration and transparency in the procurement process to avoid potential irregularities. Therefore, strengthening procurement management strategies is a crucial step to ensure the availability of appropriate, high-quality, and efficient medical devices.

Based on this background, this study aims to analyze efficiency-based medical device procurement management strategies in hospitals. This research is expected to provide theoretical contributions to the development of procurement management concepts in the healthcare sector and provide practical recommendations for hospitals in designing effective, efficient, and sustainable procurement policies.

2. RESEARCH METHODS

This study uses a qualitative approach with descriptive methods, aiming to analyze in-depth efficiency-based medical device procurement management strategies in an effort to improve the quality of hospital services. The qualitative approach was chosen because it allows researchers to comprehensively understand the phenomenon through the perspectives of participants and the real-world context. While descriptive methods are used to provide a detailed overview of procurement processes, strategies, and practices that occur within healthcare institutions. Through this approach, the study seeks to explain in depth the various factors that influence efficiency in medical device procurement, from planning and budgeting to oversight.

This research was conducted at Pradipa Medika Hospital as the case study location because this institution has implemented a structured and documented medical equipment procurement system, making it relevant to study from a management efficiency perspective. Data collection was conducted from January to March 2025, which included research preparation, instrument development, interviews and observations, and data analysis. Research subjects included parties directly involved in the medical equipment procurement process, such as procurement managers, logistics unit staff, the finance department, and hospital structural officials. Informants were selected using purposive sampling, considering their competence and involvement in the procurement process, so that the data obtained were relevant and in-depth.

Research data was collected through three main techniques: in-depth interviews, direct observation, and documentation studies. The interviews were conducted semi-structured to provide focused information while remaining open to new findings. Observations were conducted on procurement activities, from the planning stage to the distribution of medical devices, to gain a contextual understanding of the efficiency practices implemented. Meanwhile, documentation was conducted on procurement documents such as medical device requirement plans, budget documents, procurement realization reports, and internal

hospital policy guidelines. The combination of these three techniques aimed to obtain comprehensive and complementary data.

Data analysis was conducted using the Miles and Huberman interactive analysis model, which consists of three stages: data reduction, data presentation, and conclusion drawing. Data reduction was carried out by selecting, focusing, and simplifying data relevant to the research objectives. Data presentation was carried out in the form of a systematic narrative description to facilitate interpretation. The final stage was inductive conclusion drawing, namely summarizing findings based on patterns, themes, and relationships that emerged from the data. To maintain data validity, this study used source and method triangulation techniques. Triangulation was carried out by comparing interview results from various informants, matching observation findings with documentary data, and conducting reflective discussions to test the consistency and credibility of the information obtained.

Through this method, the research is expected to provide a comprehensive overview of efficiency-based medical device procurement management strategies. The descriptive qualitative approach allows for an in-depth exploration of best practices, challenges, and supporting and inhibiting factors in the procurement process. The analysis results will then serve as the basis for formulating relevant strategic recommendations for hospital policymakers to improve service quality through effective, efficient, and sustainable procurement governance.

3. RESEARCH RESULTS AND DISCUSSION

3.1. Research Results

This study aims to analyze efficiency-based medical device procurement management strategies to support improved hospital service quality. The results were obtained through in-depth interviews with eight informants: the head of procurement, logistics staff, hospital structural officials, and healthcare workers involved in the medical device utilization process. Data were also obtained through direct observation of the procurement process and documentation of hospital procurement policies.

In general, the research results show that efficiency strategies in procuring medical equipment include three main aspects, namely appropriate planning based on real needs, budgeting oriented towards the principle of value *for money*, as well as transparent supervision and accountability. Furthermore, two supporting factors proven to strengthen the implementation of this strategy are cross-work unit collaboration and the use of information technology in the procurement system. The implementation of these five aspects has been shown to contribute to increased procurement process effectiveness, budget savings, and improved health service quality.

During the planning stage, the hospital develops a medical equipment procurement plan based on actual needs data from each service unit. This process involves coordination with service units, the pharmacy, and the budget planning team to ensure that the proposed equipment aligns with service standards and clinical needs. This mechanism allows the hospital to avoid purchasing irrelevant or underutilized equipment. Interviews indicate that periodic needs evaluations conducted every semester help the hospital align procurement priorities with evolving service needs.

In terms of budgeting, the hospital applies the principal value *for money emphasizes* cost efficiency and benefit effectiveness. The budgeting process takes into account market prices, equipment quality, and long-term utility value. The

procurement team compares prices from various medical equipment suppliers to obtain the most competitive offers without sacrificing quality. This approach not only helps hospitals save money but also ensures the long-term sustainability of equipment use. Furthermore, most procurement is conducted through e-purchasing to increase transparency and accountability in the spending process.

Meanwhile, oversight of the procurement process is carried out through a multi-layered mechanism involving the procurement team, internal auditors, and the finance department. Oversight is conducted from the planning stage and through supplier selection to the receipt of equipment at the hospital warehouse. Procurement reports are prepared periodically and audited quarterly to ensure alignment between planning and implementation. Research shows that consistent oversight can reduce the potential for budget irregularities and increase public trust in hospital governance.

Two supporting factors that also play a crucial role are cross-unit collaboration and the use of information technology. Collaboration between service units, logistics, finance, and top management enables the procurement process to run synergistically and coordinated. Meanwhile, the use of a procurement information system simplifies stock monitoring, tracking procurement status, and provides more accurate digital documentation. Implementing an information system also helps expedite the decision-making process and minimize administrative errors.

3.2. Discussion

The results of this study confirm that an efficiency-based medical equipment procurement management strategy is a crucial pillar in supporting the quality of healthcare services in hospitals. In the context of modern hospitals facing budget constraints, increasing service demands, and the rapid dynamics of healthcare technology, medical equipment procurement can no longer be viewed solely as an administrative process, but as a managerial strategy that influences service effectiveness, institutional competitiveness, and patient satisfaction. The findings of this study are relevant to the concept of value *for money in* public sector management (Hood, 1991), which emphasizes that every rupiah spent must provide maximum benefits in the form of efficiency, effectiveness and economy.

First, the research results show that real-needs-based planning is the initial and crucial step in ensuring procurement efficiency. This process involves not only identifying equipment needs based on the volume and type of services provided, but also considering projected patient growth, disease trends, and developments in medical technology. In practice, the hospital where the research took place periodically conducted a mapping of medical equipment needs every semester, involving service units as direct users. This approach aligns with the principles of demand-driven *planning*, where procurement decisions are based on actual demand and evidence of need (*evidence-based*), not just on budget availability. Research by Supriyanto and Wibowo (2020) supports this finding, showing that needs-based planning can reduce risk of *overstocking*(the excess of unused tools) and *understocking*(lack of equipment that hinders service), both of which can lead to waste and a decrease in service quality.

Careful planning also enables integration between technical and financial aspects in the procurement process. This means that hospitals can ensure that purchased equipment not only meets clinical needs but also fits within available budget capacity. In this context, cross-unit coordination is key to success. Involving various parties, such as service units, logistics, finance, and the management team, in developing the requirements plan ensures that procurement decisions are collective, measurable, and

relevant to the institution's overall needs. This aligns with Rahardjo's (2021) findings, which emphasize the importance of a participatory approach in the procurement planning process to reduce the risk of errors in decision-making.

Second, the budgeting aspect is oriented towards the principal value *for money is* a major factor in creating efficiency. The results of the study show that hospitals not only consider price when budgeting, but also take into account quality, durability, and life cycle (*life cycle cost*) of the equipment to be purchased. This approach ensures that the purchased equipment provides long-term value and does not incur unnecessary additional costs in the future. Carter and Price (2019) emphasize the importance of considering life-cycle costs in the healthcare sector procurement process, as purchasing low-priced but low-quality equipment often leads to high maintenance costs and faster equipment replacement. Thus, the orientation value *for money not* only saves the budget directly, but also ensures a more sustainable allocation of resources.

Furthermore, the use of an e-purchasing system in the budgeting and purchasing process has been shown to increase transparency and accountability. This system allows hospitals to openly compare prices and quality, while minimizing the potential for collusion and misuse of funds. High transparency in this process not only strengthens internal trust between units but also enhances the hospital's credibility in the public eye. This finding aligns with research by Wijayanti and Nurcahyo (2022), which shows that digitizing the procurement process contributes to increased efficiency and accountability in hospital financial management.

The third aspect that plays a significant role is transparent and accountable oversight. Oversight in the context of medical device procurement encompasses not only administrative audits but also oversight of device specification compliance, the supplier selection process, and the distribution and use of equipment in service units. Research findings indicate that hospitals implement a multi-layered oversight system involving various parties, including the procurement team, internal auditors, and the finance department. Oversight is conducted continuously from the planning stage to the final evaluation. This mechanism minimizes the potential for budget deviations and ensures alignment between procurement plans and realization. Research by Sari and Pratama (2021) shows that strong internal oversight is a crucial determinant in preventing deviations and increasing the efficiency of resource use in public sector organizations.

Transparency in supervision also creates *feedback loop* which is useful for system improvement. Information from procurement audits and evaluations is used as material for improvements in the next procurement cycle. Thus, supervision functions not only as a control tool, but also as an organizational learning mechanism (*organizational learning*) to continuously improve procurement quality. In the long term, this practice can build an organizational culture that is accountable and adaptable to changes in the external environment, such as government regulations and developments in healthcare technology.

Apart from these three main aspects, this study also found that **cross-unit collaboration** is a crucial factor in improving procurement effectiveness and efficiency. The procurement process, which involves intensive communication between service units, logistics, finance, and top management, fosters good coordination and shared understanding in decision-making. This collaboration ensures that every procurement decision takes clinical, technical, and financial aspects into account in a balanced manner. This finding supports Rahardjo's (2021) research, which states that synergy between units in the procurement process can

increase decision-making speed, reduce the risk of miscommunication, and strengthen shared commitment to organizational efficiency goals.

Last but not least, an important factor is the use of information technology in the medical equipment procurement process. An integrated procurement information system helps hospitals in various ways, such as monitoring equipment stock, tracking procurement status, and digitally archiving documents. Information technology also accelerates the decision-making process by providing accurate, real-time data. This finding aligns with research by Gajanayake et al. (2014), which states that the use of information systems in medical equipment procurement not only improves operational efficiency but also strengthens transparency and accountability. Furthermore, the implementation of digital technology also helps hospitals adapt to the changing times. *smart hospital*, where resource management processes are digitally integrated to support data-driven decision making.

Information technology integration also has strategic implications for overall hospital governance. With digital systems, historical procurement data can be analyzed to predict future needs, design more efficient purchasing strategies, and evaluate provider performance. This strengthens hospital managerial capacity in long-term procurement planning that adapts to changing healthcare needs and advances in medical technology. These findings demonstrate that digital transformation in procurement is not only technical but also strategic in shaping a hospital's competitive advantage.

From a theoretical perspective, the results of this study also support the concept *Resource-Based View* (RBV) proposed by Barney (1991), which states that an organization's competitive advantage can be achieved through the management of unique, valuable, rare, and difficult-to-imitate resources. In this context, appropriate, high-quality, and readily available medical devices can be a strategic resource that increases hospital service capacity. Efficient procurement ensures that hospitals not only have adequate medical devices but are also able to utilize them optimally to provide high-quality services to patients.

In addition, the results of this study are also relevant to the theory of *New Public Management*(NPM), which emphasizes the importance of implementing private sector management principles in public organizations, including hospitals. The principles of efficiency, accountability, transparency, and results orientation are the foundation for designing medical equipment procurement strategies. The use of digital systems and the application of these principles, value *for money*, as well as performance-based monitoring, demonstrates a paradigm shift in procurement from merely an administrative activity to a strategic function in hospital management.

Overall, the findings of this study provide a comprehensive picture that efficiency strategies in medical device procurement are inseparable from the hospital's overarching goal of improving service quality. When procurement is conducted appropriately, planned, transparently, and data-driven, necessary medical devices are adequately available, service processes are faster, and patient satisfaction is enhanced. Thus, procurement efficiency not only impacts budget savings but also enhances reputation, public trust, and the sustainability of healthcare services.

4. CONCLUSION

This study concludes that an efficiency-based medical device procurement management strategy plays a crucial role in supporting the improvement of the quality of healthcare services in hospitals. The results show that efficiency is measured not only by cost savings but also by the accuracy of needs-based planning, the timeliness of

procurement, the conformity of device specifications to service standards, and the hospital's ability to utilize these devices optimally. Three key components proven to influence procurement efficiency are measurable, needs-based planning, and principle-oriented budgeting *value for money*, and transparent and accountable oversight. Furthermore, cross-unit collaboration and the use of information technology are supporting factors that strengthen the implementation of this strategy. These findings align with the principles of *New Public Management, which* emphasizes efficiency, accountability, and results orientation in the management of public sector organizations, including health care institutions.

The findings of this study also provide significant theoretical and practical implications. Theoretically, the results of the study strengthen the concept of *Resource-Based View*(RBV) that proper resource management can be a competitive advantage for an organization. In the context of hospitals, procuring appropriate, high-quality, and appropriate medical equipment can increase service capacity and differentiate the institution from its competitors. Meanwhile, from a practical perspective, the results of this study indicate that medical equipment procurement cannot be viewed as a mere administrative activity, but rather as a strategic function that requires careful planning, cross-unit coordination, strict oversight, and information technology support. Digital transformation in the procurement process is also a crucial element that enables data-driven decision-making, increases transparency, and strengthens public accountability. Consistent implementation of this strategy will encourage hospitals to achieve operational efficiency and improve service quality sustainably.

Based on the research results, several recommendations can be put forward to strengthen the medical equipment procurement strategy in hospitals. First, hospitals need to develop a procurement planning system based on an analysis of actual needs and long-term healthcare service projections. Second, the principle of *value for money*needs to be internalized at every stage of the budgeting process so that every allocation of funds can provide maximum benefits for hospitals and patients. Third, the monitoring system must be strengthened not only through internal audit mechanisms but also through the use of information technology that allows real-time monitoring of each procurement stage. Fourth, hospitals need to improve human resource capacity through continuous training so that all parties involved in procurement understand the principles of efficiency, transparency, and accountability. Finally, further research is recommended to explore other relevant variables such as user satisfaction, digital readiness (*digital readiness*), and organizational support, so that understanding of efficiency-based medical equipment procurement strategies can be more comprehensive and applicable. By implementing these recommendations, hospitals are expected to be able to create effective, efficient, and sustainable procurement systems to support the achievement of high-quality healthcare services.

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