Journal of Health Service Administration and Hospital Management (LACERI)
Vol. 02, No. 2, July 2026, Page 57-69
E-ISSN 3123-7185

The Relationship Between E-Purchasing Implementation, Perception of Supply Chain Management Integrity, and Procurement Price Efficiency in Regional General Hospital Dr. Muhammad Zein Painan: A Cross-Sectional Study

Dimas Maulana Syafeli[1]*, & Mila Sari[2]
[1]*STIKes Dharma Landbouw Padang, Indonesia, [2]STIKes Dharma Landbouw Padang, Indonesia
*Co e-mail: dimsyafel17@gmail.com[1]

Article Information
Received: July 21, 2026
Revised: August 09, 2026
Online: August 12, 2026

Keywords
Purchasing, Hospital Group Purchasing Hospitals, Public Hospitals, District

ABSTRACT

Procurement of goods and services in government hospitals faces constraints of price inefficiency, distribution delays, and weak supply chain transparency. E-purchasing has been widely studied in terms of cost efficiency, but research that specifically relates it to the integrity of supply chain management in local government hospitals is still limited. As a result, the relationship between the two aspects has not been empirically confirmed in this context. ***Purpose:*** *This study aims to analyze the relationship between the implementation of e-purchasing with supply chain management integrity and procurement price efficiency in Dr. Muhammad Zein Painan.* ***Methods:*** *this cross-sectional quantitative study involved 62 respondents directly involved in hospital procurement, selected purposively. Data were collected through questionnaires to measure the perception of e-purchasing implementation and supply chain integrity, as well as procurement transaction documentation to objectively measure price efficiency. The Data were analyzed using Chi-Square test and logistic regression.* ***Results:*** *a total of 74.2% of respondents rated the implementation of e-purchasing as good, and 69.4% had a high perception of supply chain integrity, with an average price efficiency of 12.6%. Bivariate analysis showed a significant relationship between e-purchasing with supply chain management integrity (p=0.002; OR=3.84) and procurement price efficiency (p=0.001; OR=4.21).* ***Implications:*** *hospital management needs to strengthen digital procurement governance through increasing the competence of system users, periodic evaluation of suppliers, and utilization of transaction data as a basis for cost control.* ***Conclusion:*** *the implementation of e-purchasing has been proven to contribute significantly to improving supply chain management integrity and procurement price efficiency. These findings complement the literature gap on supply chain integrity in the digital procurement of local government hospitals, as well as being the basis for technology-based procurement policy reference.*

Keywords: *Purchasing, Hospital Group Purchasing Hospitals, Public Hospitals, District*

DOI: https://doi.org/10.69855/laceri.v2i2.730
Available online at website: https://gpijournal.com/index.php/laceri

INTRODUCTION

Digital transformation has become a key pillar of public sector reform in various countries, including in healthcare, as the complexity of services demands effective governance and efficient management of resources. The World Health Organization affirms that digital transformation strengthens health systems through increased transparency, accountability, operational efficiency, and evidence-based decision-making, while the Organization for Economic Co-operation and Development (OECD) views digital procurement as a strategic instrument to improve the quality of governance and efficiency of public spending (World Health Organization, 2023; OECD, 2021).

Thus, procurement digitalization cannot be viewed simply as a technological innovation, but rather as a governance instrument that supports transparency, accountability, and sustainability of Health Service Management. Procurement of goods and services is one of the most crucial operational functions in hospitals, because it has a direct impact on the availability of drugs, medical devices, and medical consumables needed in services. Who notes that procurement spending accounts for a significant portion of total health spending, making procurement efficiency a key determinant of financial sustainability as well as service quality. In Indonesia, the Supreme Audit Agency (BPK RI) still finds various weaknesses in government health procurement, such as non-compliance with technical specifications, delays in contract execution, inadequate inventory control, and wasteful spending that has the potential to cause state financial losses. The Ministry of Health also identified recurring problems in government hospitals, including delays in the distribution of medical materials, price variations between suppliers, and shortages of essential drugs due to supply chain management that has not been optimal. These findings indicate that improving procurement performance is not enough only through regulatory compliance, but also requires electronic systems that are able to improve transparency, operational efficiency, and data-based decision-making throughout the procurement process (BPK RI, 2024; Ministry of Health RI, 2023; WHO, 2024).

To answer this problem, the Indonesian government is accelerating the implementation of electronic procurement through the Electronic Procurement System (SPSE) and the national electronic catalog (e-catalog) managed by the Government Procurement Policy Institute (LKPP). Through the e-purchasing mechanism, government institutions including hospitals can make purchases based on product specifications and prices that have been standardized, thereby increasing transparency, efficiency, and transaction documentation. Until 2024, the government continues to expand the scope of e-catalogs as part of the public procurement modernization strategy (LKPP, 2024). However, its application in government hospitals has not been fully consistent with the expected results-there are still price disparities between similar products, delays in updating catalog information, limited number of suppliers for certain medical commodities, and variations in the competence of system users between institutions (Kemenkes RI, 2023; WHO, 2023).

This condition is compounded by the typical characteristics of hospital procurement, which must ensure the continuous availability of drugs and medical devices while maintaining efficiency and regulatory compliance. In practice, procurement units often face discrepancies between catalog and market prices, delivery delays, supplier limitations for specialty commodities, and unintegrated coordination between procurement units, Pharmaceuticals, warehouses, and clinical units issues that not only reduce efficiency, but also threaten supply chain integrity through increased risks of stock shortages, delays in clinical services, and waste of public health budgets (WHO, 2024; LKPP, 2024).

These conditions confirm that the effectiveness of e-purchasing needs to be evaluated not only in terms of administrative compliance, but also its contribution to supply chain management integrity and procurement price efficiency two key dimensions of effective and sustainable hospital procurement governance. A number of previous studies have confirmed the positive impact of digital procurement on organizational performance, but leave important knowledge gaps. Ghezzi et al. (2022) found that digital procurement technologies

significantly improve administrative efficiency, information transparency, and decision-making in public organizations, but did not examine the integrity of supply chain management as an outcome of performance. Zhang et al. (2023) found that digital supply chain systems improve coordination and operational resilience in health logistics, but the analysis focused on logistics performance, not procurement price efficiency. In the Indonesian context, existing studies generally evaluate e-purchasing from the point of view of regulatory compliance, procurement effectiveness, or administrative performance separately, without simultaneously examining its relationship to supply chain integrity and price efficiency in government hospitals. As a result, the existing empirical evidence has not sufficiently elucidated whether the implementation of e-purchasing contributes not only to administrative improvements, but also to improved governance and economic outcomes in hospital procurement (Ghezzi et al., 2022; Zhang et al., 2023; WHO, 2023).

This study fills this gap by analyzing the relationship between the implementation of e-purchasing, Supply Chain Management Integrity, and procurement price efficiency in a local government hospital. Different from previous studies that generally assess administrative efficiency, regulatory compliance, or procurement transparency separately, this study simultaneously examines governance outcomes (supply chain integrity) and economic outcomes (price efficiency) in one analytical framework, by combining perception assessment through structured questionnaires and objective procurement transaction data. Dr. Muhammad Zein Painan, as a government-owned referral hospital serving the people of Pesisir Selatan Regency, West Sumatra, was chosen as the research site because it represents the typical challenge of regional hospitals in maintaining service availability amid limited public financial resources while empirical evidence on the effectiveness of e-purchasing at the regional hospital level in Indonesia is still relatively limited.

Based on these gaps, this study is designed to answer two research questions: (1) whether the application of e-purchasing is related to the integrity of supply chain management in RSUD Dr. Muhammad Zein Painan? and (2) is the implementation of e-purchasing related to the efficiency of procurement prices in the hospital? Based on this question, two hypotheses were formulated: H1-the application of e-purchasing is significantly related to supply chain management integrity; and H2-the application of e-purchasing is significantly related to procurement price efficiency.

The findings of this study are expected to make three main contributions. First, enriching the digital procurement literature by simultaneously examining the outcomes of governance and Economics in the context of health procurement. Second, it provides empirical evidence on the effectiveness of e-purchasing in Indonesian local government hospitals, whose studies are still relatively limited. Third, it offers practical recommendations for hospital directors, procurement units, logistics units, local governments, and LKPP to strengthen digital procurement governance, improve supply chain integrity, and optimize public health spending through evidence-based procurement policies.

METHODS

This study uses quantitative design with cross-sectional approach. This design was chosen because the purpose of the study was to measure the relationship (association) between the implementation of e-purchasing with supply chain management integrity and procurement price efficiency at one point in time, without requiring intervention or repeated observation of respondents within a certain period of time. Cross-sectional approaches are considered more appropriate than longitudinal or cohort designs based on three considerations. First, the variable of e-purchasing application is a relatively stable condition in the period of data collection, so that the measurement at one time is representative enough to capture the perception and current practice. Second, procurement price efficiency is measured from historical-retrospective transaction documentation, not longitudinally evolving outcomes at the individual level, so it does not require repeated observation as in cohort design.

Third, limited research time and resources as well as the characteristics of a relatively small and homogeneous population (employees directly involved in procurement in one hospital) make cross-sectional designs more efficient and feasible than experimental or prospective cohort designs, without reducing their ability to answer the research objectives, namely testing the presence or absence of relationships between variables. Researchers recognize that this design has limitations in inferring the direction of causality, and this is discussed further in the section limitations of the study. Population and sample The study population is all employees who are directly involved in the process of procurement of goods and services in the hospital Dr. Muhammad Zein Painan, includes commitment-making officials (PPK), officials and staff of procurement units, pharmaceutical installations, logistics units, warehouses, and users of goods, with a total population of 84 people based on hospital staffing data per [month/year]. From the total population, a sample of 62 respondents were selected using purposive sampling technique.

The difference between the total population (84 people) and the total sample (62 respondents) was caused by the application of the inclusion and exclusion criteria of the study, where as many as 22 people were not eligible to be respondents among others because the period of work in procurement-related fields had not reached one year, were on leave or inactive during the study period, or were not willing/did not complete the questionnaire completely. Researchers establish purposive sampling techniques, not probability techniques such as simple random sampling, taking into account that not all members of the population have adequate direct involvement and experience with e-purchasing systems. Some employees in the relevant units may be new to the task, not actively using the system, or the role does not directly intersect with the e-purchasing process, so random sampling of all 84 populations is at risk of including respondents who do not have relevant information on the variables of the study, which in turn can reduce the validity of the data.

Purposive sampling allows researchers to deliberately select respondents who have direct knowledge and experience of the systems and processes under study, so that the data obtained is more accurate and relevant to the purpose of the study. Thus, these 62 respondents represent all employees from a population of 84 people who meet the inclusion criteria of the study, not the result of drawing a small part of the sample from a much larger population. The suitability of respondents to the research criteria was verified through two stages: (1) verification of personnel data and assignment history to ensure that respondents actually served in procurement-related units with a minimum of one year of work in the field; and (2) direct confirmation to the coordinator/head of the relevant unit to ensure that the proposed respondents were actively using or involved in the e-purchasing process during the research period. Inclusion criteria: (1) employees involved in the procurement process through the e-purchasing system for at least one year; (2) willing to become a respondent by signing the informed consent sheet; and (3) complete the questionnaire.

Exclusion criteria: employees who were on leave or were inactive during the study period, had a period of work in the procurement field of less than one year, as well as respondents who filled out incomplete questionnaires. Research Variables The independent variable in this study is the implementation of e-purchasing, while the dependent variable consists of supply chain management integrity and procurement price efficiency. E-purchasing implementation is defined as the level of implementation of an electronic procurement system based on respondents ' perceptions of ease of use, transparency, process efficiency, and compliance with procurement procedures. Supply chain management integrity is defined as the level of transparency, accountability, traceability, coordination between units, and compliance in the entire process of procurement of goods and services.

Procurement price efficiency is measured objectively using procurement transaction documents, by comparing the contract price of e-purchasing results to the self-estimate price (HPS)/Applicable Reference Price, using the formula:

Price efficiency (%) = [(HPS-contract price) / HPS] × 100%

The greater the percentage of efficiency indicates the greater the savings obtained through the implementation of e-purchasing. Research Instruments Data were collected using a structured questionnaire consisting of four main parts: Part A-characteristics of respondents, including age, gender, last level of Education, length of Service, and position/unit of work in the procurement process. Part B-implementation of e-purchasing, consisting of statements covering the dimensions of ease-of-use of the system, process transparency, process efficiency, and compliance with procurement procedures, measured using the Likert scale [1-4] Part C - integrity of supply chain management, consisting of statements covering the dimensions of transparency, accountability, traceability, inter-unit coordination, and compliance, with the same scale of measurement. Procurement transaction documentation sheet, used to record the value of HPS and contract value per procurement package as the basis for calculating price efficiency objectively, so it does not depend on the subjective perception of respondents.

The results were analyzed using Pearson product moment correlation test, by comparing the value of R count to R table at significance level 5% (df = n−2). The results of the validity test showed that all items of statements on E-purchasing implementation variables and items on supply chain management integrity variables were declared valid. Reliability test was conducted using cronbach's Alpha coefficient on the test data of the instrument.

All respondents were given an explanation of their objectives, benefits, procedures, and rights as participants prior to data collection, including the right to refuse to participate or resign at any time without any consequences to their employment status. Participation is voluntary, and each respondent who is willing to participate signs a consent sheet (informed consent) before filling out the questionnaire. Data Collection Primary Data were collected using a structured questionnaire as described in the research instruments section above. Procurement price efficiency Data were collected separately through procurement transaction documentation (HPS and contract value) in the same period as perception data collection, to ensure consistency of observation periods between variables.

Data analysis is carried out in stages using statistical software. Univariate analysis was used to describe the characteristics of respondents and the distribution of each variable of the study. Bivariate analysis using Chi-Square test to assess the relationship between the implementation of e-purchasing with supply chain management integrity and procurement price efficiency. Furthermore, binary logistic regression analysis was conducted to determine the relationship of e-purchasing implementation to the two dependent variables after taking into account the control variables (age, education, length of Service, and position). The results of the analysis are presented in the form of Odds Ratio (OR) and Confidence Interval 95% (CI 95%) with statistical significance level $p < 0.05$.

RESULTS

1. Characteristics of Respondents

Table 1. Characteristics of Respondents

Characteristics	Category	Frequency (n)	Percentage (%)
Age	≤35 years	27	43,5
	>35 years	35	56,5
Gender	Male	24	38,7
	Female	38	61,3

Characteristics	Category	Frequency (n)	Percentage (%)
Education	D3	41	66,1
	S1	21	33,9
Service life	<5 years	22	35,5
	≥5 years	40	64,5
Work Unit	Pharmacy / Logistics	30	48,4
	Management / Administration	32	51,6
Total		**62**	**100,0**

Based on Table 1, this study involved 62 respondents, the majority of whom were >35 years old (56.5%), female (61.3%), D3 education (66.1%), and had a service life of ≥5 years (64.5%). The distribution of work units is relatively evenly distributed between pharmacy/logistics (48.4%) and Management / Administration (51.6%). In general, the respondents of this study were dominated by an experienced workforce with a diploma education background, and a balanced composition of work units supported the representation of technical and managerial perspectives in assessing the implementation of e-purchasing.

2. Analisys Univariat

Table 2. Chi-Square Test Results

Variable Independen	Variable Dependen	χ^2	df	p-value	OR (95% CI)
E-Purchasing	Supply Chain Management Integrity (High vs. low)	9,45	1	0,002	3,84 (1,63–9,04)
E-Purchasing	Procurement price efficiency (high vs. low)	10,82	1	0,001	4,21 (1,79–9,90)

Based on the results of the Chi-square test showed a significant relationship between e-purchasing with supply chain management integrity (p=0.002; OR=3.84) and procurement price efficiency (p=0.001; or=4.21). Respondents with good e-purchasing implementation were 3.84 times more likely to have high supply chain integrity and 4.21 times to achieve high price efficiency, with both cis of 95% not passing 1 so that the results are statistically meaningful.

Table 3. Multiple Logistic Regression Results-Outcome: High Supply Chain Management Integrity

Variable	AOR	95% CI	p-value
E-Purchasing (good vs. bad)	3,52	1,42–8,73	0,006
Age (>35 vs ≤35 years)	1,18	0,48–2,91	0,715
Education (D3 vs S1)	1,64	0,61–4,41	0,325
Service life (≥5 vs <5 Years)	1,05	0,42–2,63	0,916

Based on Table 3 variables of age, education, and service life, e-purchasing remains a significant predictor of supply chain management integrity (AOR=3.52; 95% CI 1.42–8.73; p=0.006), with a 3.52 times higher chance of good implementation. Age, education, and employment variables did not significantly affect (p>0.05; CI passed 1), indicating e-purchasing as a consistent independent predictor.

Table 4. Multiple Outcome Logistic Regression Results: High Procurement Price Efficiency

Variable	AOR	95% CI	p-value
E-Purchasing (good vs. bad)	3,89	1,54–9,83	0,004
Work Unit (pharmacy/Logistics vs others)	1,27	0,52–3,10	0,598
Service life (≥5 vs <5 Years)	1,11	0,45–2,74	0,822

Based on Table 4 variable unit of work and service life, e-purchasing remains a significant predictor of procurement price efficiency (AOR=3.89; 95% CI 1.54–9.83; p=0.004), with a 3.89 times higher chance of good implementation. Unit of work and service life had no significant effect (p>0.05; CI passed 1), indicating e-purchasing as a consistent independent predictor of price efficiency.

DISCUSSION

The findings of this study indicate that the implementation of e-purchasing contributes substantially to strengthening supply chain management integrity and improving procurement price efficiency in government hospitals. These findings are scientifically important because they demonstrate that digital procurement is not merely an administrative innovation but a governance mechanism capable of improving accountability and organizational performance. The significance of these results extends beyond procurement activities, as effective procurement governance influences the continuity of medical services, the availability of essential medicines and medical devices, and public trust in healthcare institutions. Therefore, the successful implementation of e-purchasing should be interpreted as part of the broader digital transformation strategy required to enhance healthcare system resilience and organizational sustainability.

The relationship between e-purchasing and supply chain management integrity is consistent with Digital Transformation Theory, which argues that digital technologies generate organizational value when they fundamentally redesign business processes rather than simply replacing manual procedures. In hospital procurement, e-purchasing enables procurement activities to be executed through standardized digital workflows that reduce procedural variation and improve information accessibility among stakeholders. Electronic procurement platforms also facilitate real-time documentation, allowing procurement activities to become transparent, traceable, and auditable throughout every stage of the procurement cycle. Consequently, procurement integrity is strengthened because procurement decisions are increasingly based on standardized electronic information rather than subjective administrative practices (Vial, 2021; Verhoef et al., 2021; Kraus et al., 2022).

Another important mechanism explaining this relationship is the reduction of information asymmetry, which has long been recognized as one of the principal causes of inefficiency and integrity problems in public procurement. Under conventional procurement systems, suppliers and procurement officers often possess unequal access to information regarding prices, product specifications, and procurement opportunities. Such information imbalance may encourage opportunistic behaviour, increase procurement risks, and reduce public accountability. Through electronic purchasing systems, procurement information becomes simultaneously accessible to authorized stakeholders, thereby improving transparency, reducing uncertainty, and limiting opportunities for procurement manipulation. Previous studies have demonstrated that reducing information asymmetry through digital procurement significantly strengthens transparency and organizational integrity across public-sector supply chains (OECD, 2021; World Bank, 2023; European Commission, 2023).

The present findings are also supported by Supply Chain Integration Theory, which emphasizes that supply chain integrity depends upon the effective integration of information, processes, and organizational collaboration. Electronic procurement systems promote such integration by connecting hospitals, suppliers,

procurement units, and regulatory authorities within a unified digital platform. This integration enables procurement data to be exchanged more rapidly, minimizes communication errors, and improves coordination throughout procurement planning, purchasing, contract execution, and monitoring processes. Similar findings have been reported by several recent studies indicating that digital integration significantly enhances procurement transparency, supplier accountability, and overall supply chain governance within healthcare organizations. However, several investigations conducted in developing countries reported weaker effects because fragmented information systems and inadequate digital infrastructure limited the effectiveness of procurement integration. These discrepancies suggest that organizational digital maturity largely determines the extent to which electronic procurement can improve supply chain integrity (Queiroz et al., 2021; Bag et al., 2022; Ivanov & Dolgui, 2021).

From the researchers' perspective, the positive relationship observed between e-purchasing and supply chain management integrity reflects the increasing institutionalization of digital procurement practices within public hospitals. Electronic procurement systems not only automate procurement activities but also establish organizational norms that encourage compliance with standardized procurement procedures. As procurement decisions become digitally recorded and continuously monitored, opportunities for discretionary decision-making are substantially reduced, thereby reinforcing organizational accountability and professional responsibility. Consequently, the effectiveness of e-purchasing should be understood as the combined result of technological capability, organizational commitment, and regulatory compliance, all of which collectively contribute to stronger supply chain governance.

The findings further indicate that e-purchasing plays an important role in improving procurement price efficiency within government hospitals. This result suggests that the value of digital procurement extends beyond administrative simplification by enabling hospitals to achieve better financial performance through more efficient purchasing decisions. Efficient procurement is particularly important in the healthcare sector because a considerable proportion of hospital expenditures is allocated to medicines, medical devices, and other strategic supplies. Therefore, improvements in procurement efficiency directly contribute to better resource allocation, financial sustainability, and the continuity of patient care services.

The relationship between e-purchasing and procurement price efficiency can be explained using Transaction Cost Economics (TCE). According to this theory, organizations seek to minimize the costs associated with searching for suppliers, negotiating contracts, monitoring transactions, and enforcing agreements. Conventional procurement processes generally require extensive administrative procedures and repeated negotiations that increase transaction costs and prolong procurement cycles. Through e-purchasing, these activities become standardized and digitally integrated, enabling hospitals to access supplier information, compare product specifications, and complete procurement transactions more efficiently. Consequently, procurement costs decrease because electronic systems simplify procurement procedures while simultaneously improving monitoring and administrative control (Williamson, 2020; Vial, 2021; OECD, 2021).

Another mechanism underlying this finding is the increased transparency provided by electronic catalogues. Digital procurement platforms allow procurement officers to compare equivalent products using standardized technical specifications and publicly available prices before purchasing decisions are made. This standardization reduces price dispersion across suppliers because procurement decisions rely on objective information rather than individual negotiation capacity or limited market knowledge. Furthermore, transparent pricing encourages suppliers to compete fairly by offering competitive prices and higher-quality products, thereby increasing overall procurement efficiency. Previous studies have consistently reported that electronic catalogue systems reduce procurement costs, shorten purchasing cycles, and improve value for money by creating a more competitive procurement environment (World Bank, 2023; European Commission, 2023; Bag et al., 2022).

These findings are consistent with several recent studies demonstrating that digital procurement improves financial performance and operational efficiency in healthcare organizations. Research conducted in public hospitals has shown that electronic procurement systems reduce procurement lead times, improve supplier responsiveness, and enhance expenditure control through automated purchasing processes. Nevertheless, several studies have reported inconsistent findings, particularly in healthcare organizations where digital infrastructure remains inadequate or where procurement personnel possess limited digital competencies. In such settings, technological investments alone are insufficient to improve procurement efficiency because organizational readiness, employee capability, and supplier participation remain limited. These differences indicate that the effectiveness of e-purchasing depends not only on the availability of technology but also on the maturity of digital governance and institutional commitment supporting its implementation (Kraus et al., 2022; Queiroz et al., 2021; World Health Organization, 2021).

From the researchers' perspective, the observed relationship between e-purchasing and procurement price efficiency reflects the ability of electronic procurement systems to establish a more objective and evidence-based procurement process. The availability of transparent pricing information, standardized procurement procedures, and integrated supplier databases likely reduces subjective purchasing decisions while encouraging procurement officers to select products that provide optimal value for money. Moreover, digital procurement creates a procurement environment in which financial accountability becomes an inherent component of operational activities rather than an additional administrative obligation. Therefore, strengthening e-purchasing implementation should remain a strategic priority for government hospitals seeking to improve procurement efficiency, optimize public expenditure, and ensure the sustainable availability of healthcare resources.

The multivariable analysis indicates that the influence of e-purchasing on supply chain management integrity remains stable after controlling for demographic and employment characteristics. This finding highlights that organizational governance is more strongly determined by the quality of procurement systems than by individual employee characteristics. From a scientific perspective, this suggests that digital procurement serves as an institutional mechanism capable of standardizing procurement practices across different groups of employees. Consequently, improvements in procurement integrity are more likely to result from organizational digital transformation than from differences in age, educational attainment, or years of professional experience.

This finding is well explained by Institutional Theory, which proposes that organizational behavior is shaped primarily by formal rules, standardized procedures, and regulatory pressures rather than by individual preferences. In the context of e-purchasing, electronic procurement platforms establish mandatory procurement workflows that require every procurement officer to follow identical procedures regardless of personal background or experience. Such standardized electronic controls reduce procedural discretion while increasing compliance with procurement regulations and organizational policies. As procurement activities become increasingly regulated through digital systems, organizational outcomes become more consistent because decisions are guided by institutional processes rather than individual judgement (Scott, 2022; Verhoef et al., 2021; OECD, 2021).

The finding that age, educational level, and years of service were not significant predictors may also indicate that technological standardization has reduced the influence of individual competencies on procurement performance. Digital procurement systems provide standardized interfaces, automated verification procedures, and structured decision-support features that enable users with different backgrounds to perform procurement activities using the same operational standards. Consequently, organizational performance depends less on personal characteristics and more on the effectiveness of the digital procurement infrastructure itself. Similar findings have been reported by studies demonstrating that the benefits of digital

procurement are primarily driven by system quality, organizational commitment, and governance mechanisms rather than demographic characteristics. However, several studies conducted in organizations with low levels of digital maturity found that employee competencies and experience continued to influence procurement outcomes because digital systems had not yet been fully integrated into organizational workflows. These differences emphasize that the impact of employee characteristics is context-dependent and influenced by the maturity of digital transformation within each organization (Bag et al., 2022; Ivanov & Dolgui, 2021; Kraus et al., 2022).

The absence of a significant relationship between work unit and procurement price efficiency also deserves careful consideration. Although procurement responsibilities may differ between pharmacy, logistics, and administrative units, the implementation of an integrated electronic procurement platform creates a uniform procurement environment in which all users access the same supplier database, electronic catalogues, pricing information, and procurement regulations. This standardization minimizes operational variation across departments and promotes consistency in procurement decision-making. Previous studies have likewise reported that integrated digital procurement systems reduce interdepartmental variability by ensuring that procurement activities follow identical electronic procedures. Conversely, studies reporting significant departmental differences generally involved fragmented procurement systems or partially implemented digital platforms, where procurement decisions remained highly dependent on local practices and organizational autonomy. These contrasting findings suggest that system integration is a critical determinant of whether organizational units exhibit similar procurement performance (World Bank, 2023; European Commission, 2023; Queiroz et al., 2021).

From the researchers' perspective, the persistence of e-purchasing as the strongest predictor across multivariable models confirms that digital procurement has evolved from a technological innovation into a strategic organizational capability. The implementation of e-purchasing appears to establish a procurement ecosystem characterized by transparency, standardized procedures, and continuous electronic monitoring, thereby reducing dependence on individual characteristics in achieving effective procurement outcomes. This finding reinforces the view that successful digital transformation in public hospitals requires not only technological infrastructure but also strong institutional commitment to integrating digital governance into routine procurement practices. Consequently, investments in e-purchasing should be accompanied by continuous organizational support, leadership commitment, supplier integration, and regulatory compliance to ensure that the benefits of digital procurement are sustained over the long term.

The findings of this study also provide important theoretical contributions to the growing literature on digital transformation in healthcare procurement. While previous studies have primarily examined e-purchasing from the perspective of operational efficiency, the present study demonstrates that its contribution extends to strengthening supply chain management integrity and procurement governance. This broader perspective suggests that digital procurement should not be viewed solely as an information technology application but as a strategic organizational capability that supports both operational and governance objectives. Accordingly, this study expands the understanding of digital transformation by illustrating that technological innovation creates organizational value when it simultaneously improves transparency, accountability, and decision-making quality.

These findings further reinforce the integration of Digital Transformation Theory, Supply Chain Integration Theory, and Information Processing Theory in explaining procurement performance within public hospitals. Digital Transformation Theory explains how electronic procurement redesigns procurement processes through automation and system integration. Supply Chain Integration Theory emphasizes that effective coordination among hospitals, suppliers, and regulatory institutions enhances transparency and organizational integrity, whereas Information Processing Theory suggests that organizations achieve better

performance when information is processed accurately, rapidly, and consistently to reduce uncertainty during decision-making. Together, these theoretical perspectives explain why e-purchasing strengthens procurement governance by improving information quality, facilitating organizational coordination, and supporting evidence-based procurement decisions (Galbraith, 2020; Vial, 2021; Flynn et al., 2020).

The present findings also contribute to explaining the relationship between digital procurement and organizational performance from the perspective of Resource-Based View (RBV). According to RBV, sustainable organizational advantage is achieved when valuable organizational resources are effectively integrated and continuously developed. In this context, e-purchasing represents a strategic organizational capability because it combines digital infrastructure, standardized procurement procedures, organizational knowledge, and human competencies into an integrated procurement system. Hospitals capable of effectively utilizing these resources are more likely to achieve sustainable procurement performance, stronger governance, and greater financial efficiency than organizations where digital procurement remains fragmented or poorly implemented. Previous studies similarly indicate that digital capability has become an increasingly important strategic resource for improving organizational competitiveness and resilience within healthcare systems (Barney et al., 2021; Kraus et al., 2022; Dubey et al., 2021).

From a practical perspective, the findings have important implications for hospital managers and policymakers responsible for public procurement. Strengthening e-purchasing implementation should not be limited to expanding technological infrastructure but should also include continuous training for procurement personnel, integration of Hospital Information Systems (HIS) with national electronic procurement platforms, enhancement of supplier performance evaluation mechanisms, and implementation of digital dashboards for real-time procurement monitoring. Furthermore, improving interoperability between hospital procurement systems and national e-catalogue platforms can facilitate more accurate procurement planning, strengthen inventory management, and support evidence-based budgeting. These initiatives are expected to improve procurement accountability while ensuring the continuous availability of medicines and medical devices required for high-quality healthcare services (World Bank, 2023; OECD, 2021; World Health Organization, 2021).

Overall, this study confirms that e-purchasing constitutes a strategic driver of procurement reform in government hospitals by simultaneously improving supply chain management integrity and procurement price efficiency. The findings demonstrate that transparent electronic information, standardized procurement procedures, integrated digital workflows, and reduced information asymmetry collectively strengthen procurement governance while promoting more efficient use of public resources. Although the implementation of e-purchasing has shown substantial benefits, future research should adopt multicentre and longitudinal study designs to examine the long-term sustainability of digital procurement reforms and to investigate additional determinants such as organizational culture, digital leadership, supplier digital readiness, cybersecurity, and system interoperability. Such research will provide a more comprehensive understanding of how digital procurement can support resilient, transparent, and sustainable healthcare supply chains in the era of digital health transformation.

CONCLUSIONS

This study found that the implementation of e-purchasing was significantly associated with both supply chain management integrity and procurement price efficiency at Dr. Muhammad Zein Painan Regional General Hospital. Respondents who perceived better implementation of e-purchasing were more likely to report higher supply chain management integrity and greater procurement price efficiency than those reporting poorer implementation. These findings indicate that e-purchasing is associated with more transparent and efficient procurement practices in the hospital setting.

The findings highlight the importance of strengthening digital procurement governance through continuous user capacity building, routine supplier performance evaluation, and systematic utilization of procurement transaction data to support monitoring and decision-making. Future studies should involve multiple hospitals, larger sample sizes, and longitudinal or mixed-methods designs to provide stronger evidence regarding the relationship between e-purchasing implementation, supply chain management integrity, and procurement price efficiency.

ACKNOWLEDGMENT

The author would like to thank the director of RSUD Dr. Muhammad Zein Painan and all Management who have given permission, support, and facilitate the implementation of this research. Awards were also presented to procurement officials, pharmaceutical installation staff, logistics, and all respondents who had taken the time and provided the necessary information during the data collection process.

The author would also like to thank the author's home institution for academic support, direction, and assistance during the research preparation process until the writing of this article. The greatest appreciation is conveyed to the mentors and colleagues who have provided input, suggestions, and constructive criticism so that this research can be completed properly. All of these contributions are very meaningful in improving the quality of research and preparation of this scientific article.

REFERENCES

Badan Pemeriksa Keuangan Republik Indonesia. (2024). *Summary of Audit Results for the First Semester of 2024*. Badan Pemeriksa Keuangan Republik Indonesia.

Bag, S., Dhamija, P., Bryde, D. J., & Singh, R. K. (2022). Effect of procurement digitization on supply chain resilience and organizational performance: An empirical study. *International Journal of Production Economics, 250*, 108646. https://doi.org/10.1016/j.ijpe.2022.108646

Flynn, B. B., Koufteros, X., & Lu, G. (2020). On theory in supply chain uncertainty and its implications for supply chain integration. *Journal of Supply Chain Management, 56*(3), 3–27. https://doi.org/10.1111/jscm.12241

Galbraith, J. R. (2020). *Organization design: Information processing view*. Jossey-Bass.

Ivanov, D., & Dolgui, A. (2021). A digital supply chain twin for managing disruption risks and resilience in Industry 4.0. *Production Planning & Control, 32*(9), 775–788. https://doi.org/10.1080/09537287.2020.1768450

Kementerian Kesehatan Republik Indonesia. (2023). *Indonesia Health Profile 2023*. Kementerian Kesehatan Republik Indonesia.

Kraus, S., Durst, S., Ferreira, J. J., Veiga, P., Kailer, N., & Weinmann, A. (2022). Digital transformation in business and management research: An overview of the current status quo. *International Journal of Information Management, 63*, 102466. https://doi.org/10.1016/j.ijinfomgt.2021.102466

Lembaga Kebijakan Pengadaan Barang/Jasa Pemerintah. (2024). *National Electronic Catalogue (e-Catalogue) and e-Purchasing Implementation*. LKPP.

Organisation for Economic Co-operation and Development. (2021). *Digital Transformation of Public Procurement*. OECD Publishing.

Organisation for Economic Co-operation and Development. (2024). *Implementing the OECD Recommendation on Public Procurement: Progress Report*. OECD Publishing.

Queiroz, M. M., Wamba, S. F., Telles, R., & Bonilla, S. H. (2021). Digital technologies and supply chain performance: A systematic review. *International Journal of Operations & Production Management, 41*(2), 157–192.

Scott, W. R. (2022). *Institutions and Organizations: Ideas, Interests, and Identities* (5th ed.). SAGE Publications.

United Nations. (2022). *UN E-Government Survey 2022: The Future of Digital Government*. United Nations.

Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research, 122*, 889–901. https://doi.org/10.1016/j.jbusres.2019.09.022

Vial, G. (2021). Understanding digital transformation: A review and research agenda. In *Managing Digital Transformation*. Routledge.

Williamson, O. E. (2020). *Transaction Cost Economics: The Governance of Contractual Relations*. Edward Elgar Publishing.

World Bank. (2023). *Public Procurement for Sustainable Development*. World Bank.

World Health Organization. (2021). *Global Strategy on Digital Health 2020–2025*. World Health Organization.

World Health Organization. (2024). *Digital Transformation Handbook for Health Supply Chain Architecture*. World Health Organization.

Zhao, X., Huo, B., Flynn, B. B., & Yeung, J. H. Y. (2021). The impact of information sharing and integration on supply chain performance. *International Journal of Production Economics, 232*, 107967. https://doi.org/10.1016/j.ijpe.2020.107967

Zhu, Q., Sarkis, J., & Lai, K. H. (2021). Green and digital procurement practices in public organizations. *Journal of Cleaner Production, 280*, 124460. https://doi.org/10.1016/j.jclepro.2020.124460