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Analysis of the Implementation of E-Purchasing for Construction Services on Efficiency and Transparency in the Bina Marga Division of the Public Works and Spatial Planning Department (PUP)

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ABSTRACT

Government procurement of goods and services is driven towards efficient, transparent, and accountable governance through digitalization, one of which is with an e-catalog-based e-purchasing system developed by LKPP to standardize and document transactions electronically. Analyze the implementation of e-purchasing construction services on the efficiency and transparency of procurement in the Highway Division of the PUPR Office of the Bangka Belitung Islands Province, including the effectiveness of its implementation, benefits, and implementation constraints. Analysis of the implementation of e-purchasing construction services by reviewing the effectiveness of the system, the benefits produced, and the obstacles in implementation practice. E-purchasing speeds up the procurement process, increases the disclosure of price and specification information, and reduces the potential for non-transparent practices. However, there are obstacles in the form of limited human resource competence, incompatibility with e-catalog specifications with field conditions, and not optimal updating of provider data. E-purchasing contributes to the efficiency and transparency of the procurement of construction services, but requires strengthening managerial, technical, and supervisory aspects so that its implementation is more optimal and sustainable.

INTRODUCTION

The procurement of government goods and services creates efficient, transparent, and accountable governance (Adam, 2024; Agu et al., 2024; Rahman, 2024; Solechan & Wibawa, 2024; Widanti, 2022). To improve the quality of procurement implementation, the Indonesian government, through the Government Procurement Policy Institute (Lembaga Kebijakan Pengadaan Barang/Jasa Pemerintah [LKPP]), has developed an e-purchasing system based on e-catalogs. This innovation is a strategic step in the digitalization of the procurement process, allowing each stage to be carried out openly and documented (Çetin et al., 2022; Karttunen et al., 2023; Mick et al., 2024; Rojas-García et al., 2024). The e-purchasing system makes it easier for government agencies to procure goods and services from verified providers listed in the e-catalog. This process can accelerate implementation time, simplify procedures, and ensure transparency regarding prices, specifications, and product availability. Thus, the

implementation of e-purchasing is expected to promote budget efficiency and increase accountability in procurement implementation.

In the construction sector, the implementation of this system is important because construction activities generally involve high project values and require complex technical specifications. The implementation of e-purchasing in the construction sector requires continuous supervision, adequate human resource competence, and discipline in updating data and technical specifications so that procurement results align with field requirements.

In Bangka Belitung Islands Province, particularly in the Highway Division of the Public Works and Spatial Planning Office (Dinas Pekerjaan Umum dan Penataan Ruang [PUPR]), the implementation of e-purchasing has been carried out as part of the modernization of procurement governance. However, the effectiveness of its implementation has not been thoroughly examined. In practice, several issues remain, such as limited human resources in the procurement sector, inadequate updating of provider data in the e-catalog, and discrepancies between the technical specifications in the catalog and actual field conditions. These issues indicate that the implementation of the system still needs to be strengthened from both managerial and technical perspectives to fully achieve an efficient, transparent, and accountable procurement process (Adam, 2024; Althabatah et al., 2023; Kokogho et al., 2024; Kumar et al., 2025; Mahuwi & Israel, 2024).

Several previous studies have also highlighted challenges in implementing e-purchasing in the construction sector. Sari, Rieke Puspita (2024), through a study entitled "Evaluation of Construction Work Procurement with Electronic Catalogs (E-Catalog) Reviewed in Terms of Effectiveness and Efficiency Principles (Banyuwangi Regency Case Study)," found that e-purchasing systems can improve time efficiency and process transparency but are still constrained by data synchronization issues and the limited number of providers capable of meeting field requirements. In addition, Imam Khairul (2022), in the research entitled "Analysis of the Selection of Construction Work Providers by Service Users with the E-Purchasing Method at the DKI Jakarta Provincial Highway Office," emphasized that the success of e-purchasing is influenced by the capacity of implementing personnel and the reliability of the information systems used.

The novelty of this research lies in its specific focus on the Highway Division of the PUPR Office in Bangka Belitung Islands Province, an archipelagic region that presents unique geographical and infrastructural challenges not extensively covered in previous e-purchasing literature. Unlike prior studies conducted in major urban centers or on Java Island, this research examines how factors such as limited internet connectivity, lower digital literacy, and a limited number of local e-catalog providers affect both efficiency and transparency outcomes. This provides a distinct contribution to the literature on public procurement digitalization in developing archipelagic nations.

Based on the results of previous studies, further research is still needed to examine the implementation of e-purchasing in the procurement of construction services at the regional level, particularly in relation to the efficiency and transparency of procurement implementation. This study focuses on analyzing the implementation of e-purchasing in fulfilling construction service needs in the Highway Division of the PUPR Office of Bangka Belitung Islands Province.

The results of this research are expected to provide input for improving procurement governance within local governments and to serve as a reference for efforts to optimize the implementation of e-purchasing so that its application becomes more effective, efficient, and accountable.

METHOD

This study uses a descriptive quantitative approach with a survey method. The research variables in this study consist of independent variables (X) and dependent variables (Y). The independent variable in this study is the implementation of E-Purchasing, while the dependent variable consists of two dimensions, namely Efficiency (Y1) and Transparency (Y2). The operationalization of variables in this study is based on theoretical studies and adaptations of previous research instruments that have been validated.

Table 1 Independent Operational Variable (X): E-Purchasing Implementation

Dimensions	Indicator	Statement Items	Item Number	Theoretical Source	Scale
System Quality	1. Availability of an easily accessible platform	LKPP's e-catalog platform is easily accessible at any time	X1	DeLone & McLean (2003); Davis (1989) - TAM	Likert (1-5)
	2. Ease of use of the system	The e-purchasing system has a user-friendly interface	X2	DeLone & McLean (2003); Davis (1989) - TAM	Likert (1-5)
Procedure Implementation	3. Level of compliance with procedures	Implementation of e-purchasing in accordance with Presidential Regulation No. 46/2025	X3	Presidential Decree 46/2025; Kurniawan (2020)	Likert (1-5)
	4. Consistency of system usage	The use of e-catalog is carried out consistently in every procurement	X4	Presidential Decree 46/2025; Kurniawan (2020)	Likert (1-5)
Time Effectiveness	5. Procurement process time speed	Faster procurement process through e-purchasing	X5	Shirley (2024); LKPP (2025)	Likert (1-5)
	6. Timeliness of completion	Timely procurement completion	X6	Shirley (2024); LKPP (2025)	Likert (1-5)
	7. System responsiveness	The system responds quickly to every transaction	X7	Shirley (2024); LKPP (2025)	Likert (1-5)

Dependent Variable 1 (Y_1): Operational Concept/Definition Efficiency:

The level of ability to implement e-purchasing in saving time, costs, and resources in the procurement of construction services.

Table 2 Dependent Operational Variable (Y_1): Efficiency

Dimensions	Indicator	Statement Items	Item Number	Theoretical Source	Scale
Time Savings	1. Reduction of procurement process duration	E-purchasing reduces the duration of the procurement process	Y1.1	Robbins & Coulter (2018); Shirley (2024)	Likert (1-5)
	2. Elimination of manual stages	Inefficient manual stages can be eliminated	Y1.2	Robbins & Coulter (2018); Shirley (2024)	Likert (1-5)
Cost Savings	3. Reduced operational costs	Reduced procurement operational costs	Y1.3	Drucker (1974); Mahmudi (2015)	Likert (1-5)
	4. Minimization of administrative costs	Administrative costs such as printing and travel are minimized	Y1.4	Drucker (1974); Mahmudi (2015)	Likert (1-5)
HR Optimization	5. Minimizing duplication of work	Duplication of work in the procurement process is minimized	Y1.5	Hasibuan (2016)	Likert (1-5)
	6. Increased productivity of the apparatus	Employee productivity increases with e-purchasing	Y1.6	Hasibuan (2016)	Likert (1-5)
Process Efficiency	7. Reduction of administrative errors	Administrative errors in procurement can be minimized	Y1.7	Robbins & Coulter (2018); Mahmudi (2015)	Likert (1-5)

Dependent Variable 2 (Y_2): Operational Concept/Definition Transparency:

The level of openness, fairness, and accountability in the e-purchasing process in the procurement of construction services.

Table 3 Dependent Operational Variable (Y_2): Transparency

Dimensions	Indicator	Statement Items	Item Number	Theoretical Source	Scale
Information Disclosure	1. Ease of access to procurement information	Procurement information is easily accessible to stakeholders	Y2.1	UNDP (1997) - Good Governance; Priest (2022)	Likert (1-5)
	2. Availability of pricing and specification data	Price and specification data are available in full in the system	Y2.2	UNDP (1997) - Good Governance; Priest (2022)	Likert (1-5)
Procedural Clarity	3. Clarity of procurement flow	The procurement process flow is clear and structured	Y2.3	Presidential Decree 46/2025; Mahmudi (2015)	Likert (1-5)
	4. Standardization of procedures	Standardized procurement procedures for all parties	Y2.4	Presidential Decree 46/2025; Mahmudi (2015)	Likert (1-5)
Accountability	5. Lack of potential for KKN	E-purchasing minimizes the potential for corruption, collusion, and nepotism	Y2.5	Mardiasmo (2018); Rahmawati (2023)	Likert (1-5)

	6. Ease of tracking and auditing	Every stage of procurement can be tracked and audited easily	Y2.6	Mardiasmo (2018); Rahmawati (2023)	Likert (1-5)
Equality of Access	7. Equal opportunities for service providers	All service providers have the same opportunity to participate in procurement	Y2.7	UNDP (1997) - Good Governance; Presidential Decree 46/2025	Likert (1-5)

The indicators in this study are compiled by juxtaposing theories, regulations, and results of previous empirical research, including research conducted by the author himself, so that the instrument used is expected to be able to measure research variables validly, reliably, and contextually.

The population in this study includes all employees in the Highway Division of the PUPR Office of the Bangka Belitung Islands Province who are involved in the process of procuring construction services. The determination of this population is based on the consideration that all of these subjects are directly related to the use of the e-purchasing system in the procurement process. The number of samples in this study is determined based on the total population of employees in the Highway Division of the PUPR Office of Bangka Belitung Islands Province who are involved in the process of procuring construction services, which is 41 people. Given the relatively small size of the population, this study uses a saturated sampling technique (census), in which all members of the population who meet the purposive sampling criteria are made respondents. This study is a closed questionnaire that is compiled based on the indicators of each research variable using a Likert scale.

RESULT AND DISCUSSION

Simple Linear Regression Analysis

Once all the classical assumptions are met, the next stage is to perform a simple linear regression analysis to test the influence of independent variables on dependent variables. This analysis was carried out separately for two research models, namely Model 1 which tests the effect of e-Purchasing Implementation (X) on Efficiency (Y1), and Model 2 which tests the effect of e-purchasing Implementation (X) on Transparency (Y2). The separation of these two models is carried out to obtain more accurate parameter estimates and clearer interpretations of the relationship between independent variables and each dependent variable.

Model 1: The Effect of e-Purchasing Implementation on Efficiency

A simple linear regression analysis for Model 1 was carried out to find out how much the implementation of e-purchasing affects the efficiency of construction service procurement in the Highway Sector of the PUPR Office of Bangka Belitung Islands Province. The results of the analysis are presented in three main tables, namely Model Summary, ANOVA, and Coefficients.

Table 4 Model Summary for Model 1

Model Summary				
Models	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,629a	,395	,380	1,400
a. Predictors: (Constant), X				

Based on Table 4 above, the value of the correlation coefficient (R) of 0.629 indicates that there is a positive and strong relationship between the implementation of e-purchasing and efficiency. According to Sugiyono's (2018) criteria, correlation values in the range of 0.60–0.799 are included in the strong category. The value of R Square (Coefficient of Determination) of 0.395 or 39.5% indicates a relatively large relationship According to Cohen (1988), the interpretation of the value of R^2 can be categorized as follows: $R^2 = 0.02$ (small), $R^2 = 0.13$ (medium), and $R^2 = 0.26$ (large). Thus, the R^2 value of 0.395 in this study belongs to the large category, which indicates that 39.5% of the variation in Efficiency can be explained by the e-purchasing implementation variable, while the remaining 60.5% is influenced by other factors outside the study model. This is a natural condition in research, where the phenomenon being studied is influenced by various complex factors.

The Adjusted R Square value of 0.380 indicates the predictive ability of the model that has been adjusted to the number of variables and sample size. The standard error of the estimate of 1,400 indicates a relatively small rate of model prediction error, which indicates that the regression model has good accuracy in predicting the Efficiency value.

Form of Implementation of e-Purchasing in the Highway Sector of the PUPR Office of Bangka Belitung Islands Province

The implementation of e-purchasing in the Highway Division of the PUPR Office of the Bangka Belitung Islands Province is carried out through an e-catalog system managed by the Government Goods/Services Procurement Policy Institute (LKPP) (2018). This system is an integral part of the government's procurement digitalization efforts aimed at realizing a more transparent and accountable procurement process.

Based on the results of the research, the form of e-purchasing implementation in the Highway Sector includes several systematic stages. First, the needs planning stage is carried out by identifying the type of construction services needed and ensuring their availability in the LKPP e-catalog. Second, the stage of finding and selecting suppliers through the e-catalog platform which provides complete information regarding technical specifications, prices, and verified provider profiles. Third, the ordering and negotiation stage is carried out digitally through the system, which allows the process of comparing prices and specifications transparently. Fourth, the contract and payment stage that is integrated with the regional financial system to ensure accountability for the use of the budget.

In an effort to realize more transparent and accountable procurement, the e-purchasing system in the Highway Sector implements several control mechanisms. The entire procurement process is digitally recorded and accessible to the authorities, including internal and external auditors. Information on pricing, providers, and technical specifications is publicly available in the system, reducing the scope for non-procedural practices. The system is also equipped

with an audit trail that records every user activity, from login, search, selection, to transaction finalization.

However, the implementation of e-purchasing in archipelagic areas such as the Bangka Belitung Islands Province faces its own challenges. The geographical conditions consisting of the islands cause limited internet access in some locations, which can hinder the smooth procurement process. In addition, not all procurement apparatus has an adequate understanding of the procedures and technicalities of operating the e-purchasing system, so intensive assistance is still needed in its implementation.

Contribution of e-purchasing to Improving the Efficiency of the Procurement Process

The results of simple linear regression analysis on Model 1 show that the first hypothesis (H_1) is accepted. The implementation of e-purchasing has been proven to have a positive and significant effect on the efficiency of the construction service procurement process within the Bangka Belitung Islands Provincial PUPR Office. This is evidenced by a regression coefficient value of 0.399 with t-count = 5.048 and a significance value of 0.000 ($p < 0.05$). An R-Square value of 0.395 indicates that 39.5% of efficiency variations can be explained by the implementation of e-purchasing, while the remaining 60.5% are influenced by other factors.

The regression equation obtained is $Y_1 = 20.047 + 0.399X$, which means that every one unit increase in the implementation of e-purchasing will increase efficiency by 0.399 units. The constant value of 20.047 indicates that even without the implementation of e-purchasing (X=0), there is still a basic efficiency level of 20.047 which comes from other factors such as the experience of the apparatus and the existing manual system.

The contribution of e-purchasing to efficiency can be seen from several aspects. First, in terms of procurement time, the e-purchasing system is able to shorten the duration of the procurement process due to the elimination of manual stages such as physical tender announcements, direct auction document retrieval, and manual document verification. Processes that previously took weeks can be completed in a matter of days through a digital system. This finding is in line with the research of Sari (2024) which found that the implementation of e-purchasing was able to reduce procurement time by up to 30% in Banyuwangi Regency.

Second, in terms of operational costs, e-purchasing reduces administrative costs related to document duplication, distribution of tender documents, and the cost of physical meetings or coordination meetings. This cost reduction not only benefits the users of goods/services, but also for providers who do not need to incur transportation and accommodation costs to participate in the tender process. These administrative cost savings can be allocated for improving the quality of procurement outputs or for other development needs.

Third, in terms of the use of human resources, e-purchasing allows procurement apparatus to focus on strategic aspects such as needs planning, quality evaluation of providers, and supervision of work implementation, rather than wasting time on repetitive administrative work. Digital systems also reduce the risk of human error in calculations and documentation, thereby improving the accuracy and reliability of procurement data.

Fourth, the e-catalog system provides standardized price information and can be compared directly, making it easier to make decisions and reduce negotiation time. The availability of complete information regarding technical specifications and reference prices

also helps procurement officials in justifying the selection of suppliers in a more objective and measurable manner.

Although e-purchasing's contribution to efficiency is quite significant, there is still a 60.5% variation in efficiency that is influenced by other factors outside the e-purchasing system. These factors can include the competence and experience of procurement apparatus, the complexity of the technical specifications of the construction project, the availability of providers that meet the needs in the e-catalog, the readiness of information technology infrastructure, as well as policy support and leadership commitment to the implementation of digital systems. This shows that although e-purchasing is an effective instrument, its success still depends on contextual and other supporting factors.

Level of Transparency and Accountability in the Implementation of e-purchasing

The results of a simple linear regression analysis on Model 2 show that the second hypothesis (H_2) is accepted. The implementation of e-purchasing has been proven to make a positive and significant contribution to increasing transparency and accountability in the procurement of construction services in the Highway Sector. This is evidenced by the value of the regression coefficient of 0.520 with t-calculation = 3.929 and a significance value of 0.000 ($p < 0.05$). The R Square value of 0.284 indicates that 28.4% of the variation in transparency can be explained by the implementation of e-purchasing, while the remaining 71.6% is influenced by other factors.

The regression equation obtained is $Y_2 = 15.766 + 0.520X$, which shows that every one unit increase in the implementation of e-purchasing will increase transparency by 0.520 units. Interestingly, the regression coefficient in Model 2 (0.520) is greater than in Model 1 (0.399), which indicates that any increase in the implementation of e-purchasing has a greater impact on transparency than on efficiency. These findings confirm that the main contribution of e-purchasing is in the aspect of openness and accountability of the procurement process.

The level of transparency shown in the implementation of e-purchasing can be seen from several dimensions. First, the openness of access to information, where the e-catalog system allows all stakeholders, including the general public, to access information regarding prices, technical specifications, and the identity of the registered provider. This openness creates a social control mechanism that can prevent irregularities in the procurement process. These findings are consistent with Imam's (2022) research which highlights that information disclosure in e-catalogs can increase the accountability of the procurement process.

Second, comprehensive digital documentation, where all stages of procurement are automatically recorded in the system, starting from planning, supplier selection, negotiation, to contract finalization. This digital documentation not only simplifies the audit process, but also ensures that every decision taken can be objectively accounted for based on the data stored in the system. The audit trail available in the system allows traceability of each user's activity, thereby increasing the accountability of individuals involved in the procurement process.

Third, standardization of procedures, where the e-purchasing system implements a standardized and consistent workflow for each procurement process. This standardization reduces the room for subjective interpretation or inconsistent policies, thereby increasing fairness and predictability in the procurement process. Every provider has an equal opportunity to compete in a transparent and scalable system.

Fourth, ease of supervision, where the digital system makes it easier for internal and external supervisory apparatus to monitor and evaluate the implementation of procurement in real-time. Information presented in digital format can be processed and analyzed more quickly than physical documents, allowing for early detection of potential irregularities or procedural inconsistencies.

However, although e-purchasing makes a significant contribution, there is still a 71.6% variation in transparency influenced by other factors. These factors can include leadership's commitment to the principle of information disclosure, organizational culture that supports transparency, the effectiveness of internal and external oversight systems, active participation of the community in public supervision, and the integration between the e-purchasing system and the reporting and performance evaluation system.

One of the challenges still faced is that transparency in the e-purchasing system is mostly focused on the procurement stage, while transparency at the implementation stage and supervision of physical work in the field has not been fully integrated. Therefore, it is necessary to develop a more comprehensive system that includes not only the procurement process, but also monitoring the implementation of work, evaluating the quality of results, and reporting the performance of providers. This integration will ensure that the principles of transparency and accountability are realized across the entire construction service procurement cycle.

Supporting Factors and Obstacles in the Implementation of e-purchasing

Based on the results of regression analysis on Model 1 and Model 2, it was found that the implementation of e-purchasing was only able to explain 39.5% of efficiency variations and 28.4% transparency variations. This indicates that there are other factors that have a substantial influence on the effectiveness of the implementation of e-purchasing.

Based on descriptive data and field observations conducted during the research, these contextual factors can be categorized into supporting factors and obstacle factors as follows:

Supporting Factors

The first supporting factor is government regulations and policies that support procurement digitalization. Presidential Regulation Number 46 of 2025 concerning the Procurement of Government Goods/Services and its amendments provides a strong legal basis for the implementation of e-purchasing. The central government's commitment through LKPP in providing and maintaining the e-catalog system infrastructure is also a significant supporting factor. This policy support creates legitimacy and an obligation for all government agencies to adopt an e-purchasing system in their procurement process.

The second factor is the availability of e-catalog platforms that are relatively user-friendly and integrated with the regional financial system. Although there is still room for improvement, the e-purchasing system developed by LKPP has been designed with an interface that is quite easy for users to understand. Integration with the regional financial system also facilitates the payment and reporting process, thereby reducing the administrative burden on procurement apparatus.

The third factor is the support of agency leaders who have a vision to improve procurement governance through the use of information technology. This leadership's commitment is reflected in the budget allocation for improving technology infrastructure, organizing training for procurement officials, and giving appreciation to employees who successfully implement e-purchasing well.

The fourth factor is the positive experience from other regions that have successfully implemented e-purchasing, which is a learning and motivation for the PUPR Office of Bangka Belitung Islands Province. Good practices from regions such as DKI Jakarta, East Java, and other regions that have adopted this system provide useful references and benchmarks in the implementation process.

The fifth factor is the efficiency and convenience felt directly by procurement apparatus after using the e-purchasing system. This positive experience creates strong internal support for the sustainability of the use of the system, even in the absence of external coercion.

Inhibition Factors

The first factor that is an obstacle is the limitation of information technology infrastructure, especially internet connectivity that is not even throughout the Bangka Belitung Islands Province. The geographical condition as an archipelago area causes some locations to experience difficulties in accessing a stable and fast internet network. These limitations can hinder the smooth procurement process through e-purchasing, especially when a quick response or real-time negotiation with suppliers is required. These findings are in line with Rahmawati's (2023) research which identified digital infrastructure as one of the main inhibiting factors in the implementation of e-purchasing in the regions.

The second factor is the competence and digital literacy of procurement apparatus which still needs to be improved. Although training has been carried out, not all apparatus have the same level of understanding and skills in operating the e-purchasing system. Differences in educational background, age, and experience in the use of technology cause variations in adaptability to digital systems. Some apparatus, especially more senior ones, tend to be more comfortable with conventional methods and take longer to adapt to the new system.

The third factor is the limited availability of local providers listed in the LKPP e-catalog. Many local construction service providers, especially small and medium-sized companies, have not registered or have not met the requirements for entry into the e-catalogue. These limitations lead to limited provider choice, which in some cases can reduce healthy competition and potentially increase procurement costs. In addition, providers from outside the region who are registered in the e-catalog are not always familiar with the local conditions of the Bangka Belitung Islands Province, so there can be a discrepancy between the specifications in the catalog and the real needs in the field.

The fourth factor is the mismatch between the technical specifications in the e-catalog and the specific needs of the construction project in the field. Road and bridge construction work often has unique characteristics based on local geographical, geological, and environmental conditions. The standard specifications in the e-catalogue cannot always accommodate these specific needs, so procurement officials have difficulty in finding suitable providers or products. This requires a more complex negotiation and customization process, which in some cases reduces the efficiency that would otherwise be gained from an e-purchasing system.

The fifth factor is the resistance to change from some stakeholders who are used to the conventional procurement system. System changes require adjustments in work patterns, responsibility allocation, and coordination mechanisms. Some who are comfortable with old systems tend to be resistant to the adoption of new technologies, especially if they don't see immediate benefits or feel threatened by increased transparency.

The sixth factor is the limitations in updating data and information in the e-catalog. In some cases, the information regarding prices, availability, or product specifications in the e-catalog is not always accurate or up-to-date. Delays in updating these data can lead to errors in procurement planning and execution, as well as reduce user trust in the system.

The seventh factor is the limited integration between the e-purchasing system and the project management system and the supervision of the implementation of the work. Currently, e-purchasing mostly focuses on the procurement stage, while monitoring the implementation of work and evaluating the performance of providers are still carried out separately. This lack of integration causes information to not be able to flow seamlessly between different stages in the procurement cycle, which ultimately reduces the effectiveness of the overall system.

Integration of Hypothesis Testing Results

The two hypotheses proposed in this study have been empirically proven. The first (H_1) and second (H_2) hypotheses were accepted based on the results of regression tests that showed a positive and significant influence of the implementation of e-purchasing on efficiency and transparency. Overall, the findings of this study confirm that e-purchasing is an effective instrument in increasing the efficiency and transparency of construction service procurement, but its effectiveness is highly dependent on infrastructure readiness, human resource competence, and provider participation. This indicates that the successful implementation of e-purchasing requires a comprehensive approach, not only focusing on the technological aspect, but also on human resource capacity development, infrastructure improvement, and fostering local providers.

CONCLUSION

The implementation of e-purchasing in the Highway Division of the PUPR Office of Bangka Belitung Islands Province, through the e-catalog system managed by LKPP, has created a more systematic, structured, and documented procurement process, supporting previous findings by Sari, R.P. (2024). The study demonstrates that e-purchasing significantly improves the efficiency of construction service procurement, as reflected by a regression coefficient of 0.399 and a significance value of 0.000, confirming earlier studies by Sari, R.P. (2024) and Kurniawan, A. (2020) that procurement digitalization can reduce processing time and administrative costs. However, the implementation of e-purchasing in the archipelagic context of Bangka Belitung still faces challenges, particularly limited internet access, infrastructure constraints, and insufficient apparatus competence in operating the system, which reduce the overall effectiveness and efficiency of procurement activities. Therefore, future research is recommended to examine the role of digital infrastructure development, capacity-building programs for procurement personnel, and the integration of adaptive technologies to improve the effectiveness of e-purchasing implementation in geographically dispersed regions.

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