

# Implementation of E-Procurement on Procurement Performance of Goods And Services at Pt Pertamina Hulu Rokan

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## ABSTRACT

This study aims to analyze the effect of the implementation of e-procurement on procurement principles that have an impact on procurement performance in the procurement of goods and services at PT Pertamina Hulu Rokan. The sample in this study was all employees in the procurement department of PT PHR and partners, totaling 114 employees. The analysis technique in this study uses SEM analysis. The results of the study show that the implementation of e-procurement influences procurement principles consisting of efficiency, effectiveness, transparency & accountability, and openness. Procurement principles consisting of effectiveness, transparency & accountability, and openness affect procurement performance, while the efficiency principle does not affect procurement performance in the procurement department of PT Pertamina Hulu Rokan.

**Keywords:** e-procurement, efficiency, effectiveness, transparency & accountability, openness, procurement performance

## INTRODUCTION

PT Pertamina Hulu Rokan is a company engaged in oil drilling. In this company, there is still no performance measurement system that is comprehensive or comprehensive, but so far it only displays performance that focuses on each department, making it less effective and efficient. The overall performance of the company also decreased. One that affects supply chain performance is e-procurement. E-procurement aims to assist supply chain management professionally in connecting the necessary components, increasing the speed of information transfer, and reducing processes that do not provide added value (Percy, and Larry C, 2008) needed to achieve supply chain management efficiency as an operational competitive advantage. Companies (Angeles and Ravinder, 2005) with a focus on process cost efficiency and procurement costs.

E-Procurement is a form of implementing the concept of e-Governance in the field of procurement. E-Procurement is the use of information technology, especially web-based applications in the stages of the goods/services procurement process. Two forms of e-Procurement have been implemented and developed in Indonesia, namely electronic auctions (e-Tendering) and electronic purchasing (e-Purchasing). E-Tendering is used for the procurement of goods/services through auctions, while e-Purchasing is used for procurement through purchases (negotiations).

E-procurement has provided benefits, namely direct benefits (increasing data accuracy, increasing efficiency in operations, faster application processes, reducing administrative costs, and reducing operating costs) and indirect benefits (e-procurement makes procurement more competitive, improves customer services, and improves relations with partners) (Teo, & Lai, 2009).

The electronic goods and services procurement system (e-Procurement) at PT Pertamina Hulu Rokan certainly still has deficiencies because it has just been implemented or implemented, especially in access to users in the e-Procurement system which does not yet have standards or rules by technical procedures in process of procuring goods and services. This is because PT Pertamina Hulu Rokan is still new to

implementing the e-Procurement system. So the features in the e-procurement system still have to be developed and completed to optimize the function of the e-procurement system used. However, this e-Procurement system has provided convenience and many benefits to procurement organizers in carrying out the process of procuring goods and services at PT Pertamina Hulu Rokan.

Based on the results of the pre-survey, related to the problem of procuring goods and services at Pertamina Hulu Rokan. The pre-survey was conducted for 1 day, Monday 5 December 2022. Several problems related to the procurement of goods and services at PT Pertamina Hulu Rokan, among others.

On-time delivery (goods and services) only reaches 90%, where 10% of goods/services providers are delayed from the specified time. Contract Development Cycle Time reaches 60 days (on average) where from the start of pre-qualification to contract implementation, it takes an average of 60 days. It should be done faster if e-procurement has been implemented, so that it can cut processes that take a long time using paper, waiting time for submitting documents to the office, approval processes, and others. LBD Contract Availability is only 80%, so for work with a value of below 5 billion that should be carried out by Regional Entrepreneurs, most of it is given to non-LBD category entrepreneurs. Empowerment of Local Business Development did not reach the right target, because 20% of the contracts were not implemented according to the plan. The use of Domestically Produced Goods has reached 60%, which should continue to encourage government programs to be able to find domestic product producers so that the supply of goods/services needed for operations with high TKDN values can be implemented. This phenomenon is interesting to conduct research related to the effect of implementing e-Procurement at PT Pertamina Hulu Rokan and to analyze the things that cause not the optimal implementation of e-Procurement at PT Pertamina Hulu Rokan. The implementation of e-Procurement at PT Pertamina Hulu Rokan is expected to improve the performance of procurement process organizers.

Based on the literature review and previous research, the following hypothesis can be formulated:

### **Effect of e-procurement implementation on the principles of e-procurement implementation**

Implementation in e-procurement is defined as the level at which e-procurement is used, namely how much the functions in e-procurement value are applied to each procurement process that is carried out. Masetti and Zmud (1996) in the research of Teo and Lai (2009) state the extent to which the use of e-procurement is based on four dimensions, namely volume, breadth, diversity, and depth. The four dimensions as a whole state the extent to which procurement activities in organizations are carried out via the internet including the percentage of procurement activities transacted via the internet, how extensively organizations can interact with suppliers, producers, and other stakeholders electronically in improving procurement capabilities, how many types of routine activities/processes carried out and the level of electronic consolidation that has been carried out from two or more trading partners (procurement connection). In the research of Teo and Lai (2009), it was also found that the percentage of procurement activities has a significant effect on efficiency, the extent to which organizations can interact has a significant effect on effectiveness and increased coordination, the number of activities that can be carried out with e-procurement has a significant effect on cost reduction and the level of electronic consolidation significant effect on the improvement of coordination. Based on the above review, a hypothesis is proposed regarding the e-procurement implementation factor:

H1: Implementation of e-procurement has a positive effect on efficiency in the principle of implementing e-procurement  
H2: The implementation of e-procurement has a positive effect on the effectiveness of the principle of implementing e-procurement  
H3: Implementation of e-procurement has a positive effect on transparency in the principle of implementing e-procurement  
H4: Implementation of e-procurement has a positive effect on openness in the principle of implementing e-procurement

### **The effect of the principles of e-procurement implementation on procurement performance**

DeLone and McLean (1992) show that there is an impact of an information system on individual performance which in turn also causes an impact on the organization. In the same vein, some researchers emphasize that the causal path for firm performance with the use of information technology is through information technology active processing capabilities that impact performance. Subramani (2004) emphasized the need to examine the first and second-order benefits of using information technology in supply chain management. The use of e-procurement shows that technology can also contribute to fixing various problems related to the procurement of goods/services which may be difficult to achieve. Implementation of e-procurement is influenced by several factors, benefits, obstacles, success factors, and expectations of increased performance. Teo and Lai (2009) state that efficiency in the use of e-procurement is demonstrated by reducing the time for the procurement cycle, increasing responsiveness to production and customer needs, increasing accuracy, and automating the approval process. Hsin Chang and Kit Hong Wong (2010) state that efficiency can increase bargaining power when dealing with suppliers. The existence of an efficient purchasing process is also a beneficial factor in the adoption of e-procurement (Peral Toctas, 2014). Panayitou et.al (2004) concluded that efficiency is a highly expected benefit from the implementation of e-procurement related to reduced supply costs, reduced tender costs, and the time needed in the tender process itself. Achievement of efficiency factors in implementing e-procurement will improve organizational performance (Gunasekaran, 2009). Teo and Lai (2009) also state that the effectiveness of using e-procurement is that there is better decision-making regarding the speed of accuracy, better use of resources, and higher visibility. Peral Toctas (2014) states that the existence of a fast response and an online and real-time reporting system are benefits of the adoption of e-procurement thereby increasing effectiveness. Panayitou et.al (2004) also stated that online reporting can increase the benefits of implementing e-procurement and effectiveness is also the expected benefit in improving organizational performance. One of the benefits expected from the implementation of e-procurement is transparency which is supported by a clear definition of rules and responsibility, namely compliance with applicable regulations (Panayitou, et.al, 2014). Neupane et.al (2014) states that the government can encourage the use of e-procurement as an anti-corruption reform in public procurement.

Countries can promote awareness of transparency and accountability as key instruments to promote integrity and prevent fraud and corruption in public procurement. Governments can do an excellent job through e-procurement web portals by creating transparent and accountable government procurement of goods and services.

Eadie Robert (2007) states how to gain a competitive advantage, especially for contractors who have capabilities in electronic systems to be one of the driving factors in the use of e-procurement. Ronchi et.al (2010) also stated that there are potential benefits from using e-procurement, one of which is preventing a single user from the purchase process so that the purchase process can be made from several different sources. Monopoly power to obtain auctions is also stated by Neupane (2014), whereby adopting e-procurement it is hoped that monopoly power can be reduced.

Gunasekaran, A. et.al (2008) in their research stated that the success of e-procurement can improve long-term and short-term organizational performance, increase cost performance within the organization, increase organizational competitiveness, and improve strategic alliances and networks. Chang and Wong (2010) researched that participation in e-marketplaces can improve company performance, where trust is a moderating factor between the adoption of e-procurement and e-marketplaces. And the results of the study show that companies that have adopted e-procurement are more likely to participate in the e-marketplace so that the adoption of e-procurement can increase the company's competitive advantage, namely increasing procurement activities and serve consumers more efficiently which in turn can increase sales performance because increasing customer satisfaction. Teo and Lai (2009) describe the effect of the level of use of e-procurement on increasing performance based on cost reduction, internal efficiency, managerial

effectiveness, and impact coordination. Based on the review above, a hypothesis is proposed regarding the factors of e-procurement implementation

H5: Efficiency in the e-procurement principle has a positive effect on performance improvement

H6: Effectiveness in the e-procurement principle has a positive effect on improving performance

H7: Transparency and accountability in the principles of e-procurement have a positive effect on improving performance

H8: Openness in the principles of e-procurement has a positive effect on improving performance

### The effect of E-procurement implementation on Procurement performance

Performance comes from the word job performance or actual performance which means work performance or actual achievement achieved by someone. The definition of performance (work achievement) is the result of work in quality and quantity achieved by an employee in carrying out his functions by the responsibilities given to him. Institutional performance is an effort made by an institution to achieve better performance, both in the form of work results and work processes.

The dimensions of institutional performance according to Muhaimin (2010:374) consist of 1) Context; 2) Inputs; 3) Process; 4) Outputs; and 5) Outcomes. The performance of goods/services procurement is influenced by the implementation of electronic procurement. Willem (2012: 11) states that in the implementation of procurement activities since planning must apply the principles of procurement of goods and services based on the principles of efficiency, effectiveness, competition, transparency, and responsibility.

E-procurement is very important for organizations because it offers benefits through increased purchasing process efficiency and price reduction, enhanced collaborative relationships, and significant opportunities to improve internal service and purchasing function status (Croom and Brandon, 2005). The use of e-procurement can also increase transparency, reduce auction cycle time, save taxpayers money, empower bidders, eliminate cartel contractors, and increase the availability of management and accounting information (Singh and Devendra, 2013; Oketch, 2014).

Based on the above review, a hypothesis is proposed for procurement performance:

H9: Implementation of e-procurement has a positive effect on procurement performance

The theoretical framework that describes the influence of the implementation of e-procurement on procurement performance is as follows (Figure 1):

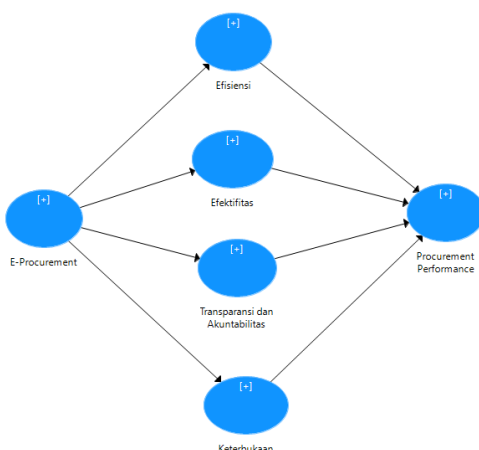


Fig.1:-Research Model

## RESEARCH METHODS

This study uses a mixed method approach, namely quantitative and qualitative. The research location was at PT Pertamina Hulu Rokan with a research sample of 95 respondents. It is hoped that from the 114 employees, the required data can be revealed, then it can be used as a basis for sharpening further studies so that a comprehensive and valid interpretation can be taken.

The data analysis used in this study is descriptive statistical analysis and quantitative analysis using the Structural Equation Modeling (SEM) method from the SmartPLS statistical package.

## RESULTS AND DISCUSSION

### Descriptive Statistical Analysis Results

In this chapter, the researcher will describe the results of research on the influence of procurement implementation on procurement principles and their implications for procurement performance at PT Pertamina Hulu Rokan. The main data source used in this study was in the form of questionnaires which were distributed to 114 employees and partners at PT Pertamina Hulu Rokan.

Based on the results of the descriptive analysis, describes the respondents' responses regarding that the average for the e-procurement implementation variable is 3.74 or agrees. The value of 3.74 is in a good category. Thus the variable implementation of e-procurement is in a good category.

Based on the processing results presented in the table above, it can be seen that the average for the efficiency variable is 4.03 or agrees. The value of 4.03 is in a good category. Thus the efficiency variable is in a good category.

Based on the processing results presented in the table above, it can be seen that the average for the effectiveness variable is 4.31 or agrees. The value of 4.31 is in the very good category. Thus the effectiveness variable is in the very good category.

Based on the processing results presented in the table above, it can be seen that the average for the variables of transparency and accountability is 4.19 or agree. The value of 4.19 is in a good category. Thus the variables of transparency and accountability are in a good category.

Based on the processing results presented in the table above, it can be seen that the average for the openness variable is 4.08 or agrees. The value of 4.08 is in a good category. Thus the openness variable is in a good category.

Based on the processing results presented in the table above, it can be seen that the average for procurement performance variables is 3.96 or agree. The value of 3.96 is in a good category. Thus the procurement performance variable is in a good category.

### Results of Statistical Calculations Using Path Analysis

In this study, model testing was carried out by showing the value of  $R^2$  in endogenous latent constructs. The hypothesis in this study will be tested using the path coefficient values ??and p-values ??which are presented as follows.



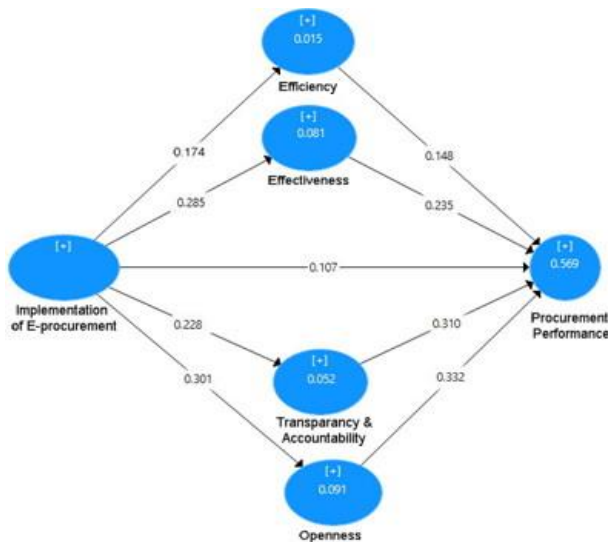


Fig. 2: – Structural Model

Table 1. Value of Path Coefficient

Construct of Relation	Path Coefficient	T Statistics	Sig.
Implementation of E-procurement à Efficiency	0.174	2.413	0.004
Implementasi E-procurement à Effectiveness	0.285	3.353	0.001
Implementation of E-procurement àTransparancy & Accountability	0.228	2.394	0.017
Implementation of E-procurement àOpenness	0.301	3.360	0.001
Efficiency à Procurement _Performance	0.148	1.502	0.134
Effectiveness àProcurement _Performance	0.235	2.640	0.003
Transparancy & Accountability àProcurement _Performance	0.310	2.926	0.004
Openness àProcurement Performance	0.332	3.077	0.002
Implmenetation of e-procurement àProcurement Performance	0,107	1,393	0.164

Table 2. Value of Determination Coefficient (R<sup>2</sup>)

	R Square	R Square Adjusted
Efficiency	0.150	0.007
Effectiveness	0.081	0.073
Transparancy & Accountability	0.052	0.043
Openness	0.091	0.083
Procurement Performance	0.569	0.549

In the table above, it can be seen that the R Square value for the Efficiency variable obtained is 0.150 or 15%. These results indicate that the implementation of e-procurement has a 15% effect on efficiency, while the remaining (1-R Square) 85% is the contribution of the influence exerted by other factors not examined. The R Square value for the Effectiveness variable obtained is 0.081 or 8.1%. These results indicate that the implementation of e-procurement has an effect of 8.1% on efficiency, while the remaining (1-R Square) 91.9% is the contribution of the influence exerted by other factors not examined. The R Square value for the Transparency & Accountability variable obtained is 0.052 or 5.2%. These results indicate that the implementation of e-procurement has an influence of 5.2% on efficiency, while the remaining (1-R Square) 94.8% is the contribution of the influence exerted by other factors not examined. The R Square value for the Openness variable obtained is 0.091 or 9.1%. These results indicate that the implementation of e-procurement has an influence of 9.1% on efficiency, while the remaining 90.9% (1-R Square) is the

contribution of the influence exerted by other factors not examined. The R Square value for the Efficiency, Effectiveness, Transparency & Accountability, and Disclosure variables obtained is 0.569 or 56.9%. These results show that Efficiency, Effectiveness, Transparency & Accountability and Openness have an influence of 56.9% on procurement performance, while the remaining (1-R Square) 43.1% is the contribution of the influence exerted by other factors not examined.

### **Discussion of Hypothesis Test Results 1. Effect of E-procurement Implementation on Efficiency**

Based on the research results, it can be seen that the structural construct relationship between e-procurement implementation variables and efficiency has a positive effect with a coefficient value of 0.174 and a significant value of 0.004 which is smaller at 5%. So that hypothesis 1 in this study was declared accepted. In the research of Teo and Lai (2009) it was stated that the use of e-procurement on the volume variable, namely the number of documents and electronic transactions used for external parties, has a significant effect on internal efficiency. Thus, the hypothesis in this study supports the hypothesis in the research of Teo and Lai (2009). If we look again at the measurement items that affect the two e-procurement implementation variables and the efficiency variable, we can see the relationship between the two.

This means that the principle of efficiency in e-procurement is influenced by the large use of e-procurement both in terms of reducing the number of documents that must be provided, the amount of procurement work that is auctioned electronically as well as all activities in the auction process that use e-procurement. The higher the use of e-procurement, the more efficient the auction activities are carried out related to the cost of making documents, saving the budget or reducing negotiations as a result of the large use of e-procurement for all process activities that must be carried out electronically because there is no face to face meeting with the provider during the process it's done. The efficiency factor which is affected by the reduction in document production costs, budget savings and negotiation costs illustrates the variability of the research construct of 17.4%, meaning that there are still or need other measurement items that may be added in order to better explain the effect of the efficiency variable on other variables. With regard to the relationship with the implementation of e-procurement obtained a significant relationship between these two variables. It is also interpreted that the higher the use of e-procurement, the more efficient the auction activities are carried out related to the cost of making documents, budget savings related to bid prices by providers and reduced negotiations as a result of the large use of e-procurement for all process activities that must be carried out electronically, because there was no face to face meeting with the provider during the auction process.

### **Effect of E-procurement Implementation on Effectiveness**

Implementation of e-procurement has a positive effect on effectiveness with a coefficient value of 0.285 and a significant value of 0.001 less than 5%, which means that Hypothesis 2 in this study is accepted. The effectiveness factor in the research of Teo and Lai (2009) is significantly influenced by the diversity factor, namely the diversity/variation in the exchange of documents sent and received to external parties. This hypothesis also supports the hypothesis in the research of Teo and Lai (2009). This condition illustrates that the large use of e-procurement affects the level of effectiveness in improving the decision-making process, improving file storage management and completing work faster. So that the higher the use of e-procurement, the higher the effectiveness, especially for the organizers in completing their work. The relationship between e-procurement implementation and effectiveness becomes significant or has a positive effect indicating that the greater the use of e-procurement, the greater the resulting level of effectiveness. It can also be interpreted that the greater the use of e-procurement, the easier it will be for the organizers to make decisions related to the announcement of auction activities, the announcement of auction winners, answering objections, and when evaluating incoming bids. Regarding file storage management, the greater the use of e-procurement in terms of transactions or process activities related to filing/documents, the easier it is for organizers to manage file storage, because data is automatically stored and can be opened at any time. Likewise with the faster completion of work, it means that the large use of e-procurement is able to make

activities in the auction process faster. The effectiveness variable has a variability to other variables of 28.5% but this variable is able to show a positive relationship to the e-procurement implementation variable. Which also means that measurement items are still needed on the effectiveness variable in order to be able to have better variability.

### **Effect of E-procurement Implementation on Transparency and Accountability**

The implementation of e-procurement has an influence on transparency and accountability, this is indicated by the estimated value of the path coefficient of 0.228 and a significant value of 0.017. In the research of Teo and Lai (2009) the magnitude of the use of e-procurement which affects the value of transparency is found in the value of efficiency, namely the reduction of unauthorized purchases and significant value. In this study the magnitude of the use of e-procurement affects the value of transparency. This condition illustrates that the relationship between e-procurement implementation and the principles of transparency and accountability represents the dominant relationship. If it is reviewed more deeply by looking at the measurement items for each variable, it is that the implementation of e-procurement, which is indicated by the large use of e-procurement, still has an influence on the values ??in the measurement items of transparency and accountability, namely making implementation more accountable, making implementation information more transparent, eliminate discrimination and no intervention. If viewed from the results of the respondents' answers on the transparency variable, it is obtained that the distribution of answers still indicates that the answers agree that the use of e-procurement is able to make auction activities more transparent and accountable. The researcher interprets that no matter how large the use of e-procurement in relation to transparency must be supported by the obedience and compliance of human resources in carrying out their duties, so that the values ??of transparency can be fulfilled.

However, at least the use of e-procurement in the procurement of goods and services will be able to realize better corporate governance in accordance with research by Neupane et.al (2014) which shows that the use of e-procurement can make the procurement of goods and services more transparent and accountable which in turn his research is described in the construct that transparency and accountability have a positive effect on the willingness to adopt e-procurement. Based on the analysis of the relationship between e-procurement implementation and the variables of transparency and accountability, the result is that the relationship between the two has a significant influence. This means that the high use of e-procurement has a significant effect on the transparency and accountability factor because the values ??formed in transparency have shown a connection with the high use of e-procurement. If we examine each measurement item on the transparency factor, it can be explained that implementation that is more accountable is not only influenced by the large use of e-procurement, it is also caused by personal compliance in carrying out duties and roles in goods and services procurement activities in an effort to make the implementation of electronic auction activities more effective better. The researcher concluded that the use of e-procurement, especially the large number of auction activities carried out electronically, will directly affect the overall information that must be provided in a more transparent manner so that nothing is deliberately hidden in electronic auction activities. Likewise, the greater the process of activities carried out electronically, the indirect effect will be on the absence of intervention by unscrupulous persons in the process of auction activities. Its meaning is the relationship between the variables of e-procurement implementation and significant transparency.

### **Effect of E-procurement Implementation on Disclosure**

Hypothesis 4 in the study shows the estimated value of the path coefficient is 0.301 and a significant value of 0.001 is less than 5%. This means that the implementation of e-procurement has a significant effect on openness. Teo and Lai (2009) state that the large use of e-procurement has a significant effect on the value of openness on effectiveness, namely making information more organized. Neupane et al (2014) also showed that a willingness to use e-procurement can reduce information asymmetry. The magnitude of the use of e-procurement affects the openness variable which is illustrated by the number of participating providers,



increased competition and reduced monopoly. This means that the amount of e-procurement used in the auction process makes the openness factor better. Respondents perceive the openness factor with a good mean value, and its correlation with e-procurement implementation makes the relationship strong. If viewed from the measurement items on the openness factor, the researcher interprets that the magnitude of the use of e-procurement affects the number of providers participating, increasing competition and reducing monopoly.

However, with the increasing size of all auction activities which are carried out electronically, especially the announcement stage, it will affect the number of providers participating as a result of equal opportunities and opportunities for providers both from within and from outside the region to be able to participate in auction activities due to the ease of information obtained. The more open the information can increase the competition so as to reduce the monopoly in the acquisition of tender activities. It is necessary to add measurement items which can further explain the effect of the openness variable on other variables. In this study the magnitude of the use of e-procurement has a significant impact on the value of openness. This condition illustrates how much e-procurement is used to have an impact on influencing the number of participating providers, increasing competition and the absence of monopoly power in auctions.

### **Effect of Efficiency on Procurement Performance**

Based on a review of the relationship between the efficiency variable and performance improvement, it is known that the estimated value of the path coefficient is 0.148, and a significant value of 0.134 is greater than 5%. This condition reflects that the relationship between these two variables is not significant, so the result of this test is that the efficiency factor still has a very small effect on performance improvement. Teo and Lai (2009) in their research stated that internal efficiency in terms of increasing production accuracy capacity, reducing unregistered purchases and increasing responsiveness to customer needs had a positive but not significant effect on improving financial performance. In H.H.'s research Chang and K.H. Wong (2010) shows that the efficiency factor reduces transaction costs, thereby affecting company performance.

However, in this study the efficiency factor did not have a significant effect on performance improvement. The results that were not significant in Hypothesis 5 when viewed from the construct of the efficiency variable on performance improvement were the level of efficiency in the use of e-procurement, namely the reduction in costs in preparing documents, budget savings and eliminating negotiation costs have no effect on performance improvement related to the use of e-procurement which is perceived as better than conventional methods. This is presumably due to the insignificant value that must be issued between conventional methods and e-procurement. The value in question is the amount of costs saved and the amount of budget that can be saved in the procurement of goods and services.

### **Effect of Effectiveness on Procurement Performance**

Based on the results of the SEM analysis, it can be seen that the structural construct relationship between the effectiveness variable on performance improvement has a significant effect with a coefficient value of 0.235 and a significant value of 0.003 which is 5% smaller. So that hypothesis 6 in this study was declared accepted. In this study the effectiveness of measuring the use of e-procurement in order to provide better convenience related to improving the decision-making process, improving file storage management and making work easier and faster. This explains that the greater the convenience obtained in using e-procurement, the greater the increase in performance in terms of knowing the auction activities carried out so as to facilitate monitoring, reducing the number of objections that occur and obtaining a winner for each tender related to improving the decision-making process.

Teo and Lai (2009) in their research stated managerial effectiveness in better use of resources, increased coordination in internal functions, better organized information, increased visibility of customer demand and

supply chain had a positive and significant effect on improving performance. Vaidyanathan and Dewaraj's (2008) research on the fulfilled order timeliness variable has a measurement item which states that timeliness which refers to the length of order and receipt has a significant impact on satisfaction in e-procurement performance. The effectiveness shown by an increase in the decision-making process, an increase in file storage management and a faster completion of work indicates that this variable has no significant relationship with the procurement performance variable. This means that the effectiveness variable is a variable that can be an appropriate dimension in measuring procurement performance. This means that the higher the effectiveness in the use of e-procurement which is influenced by the large use of e-procurement, the greater the increase in performance in terms of knowing the auction activities carried out so as to facilitate monitoring, reducing the number of objections that occur and obtaining a winner for each tender related to the improvement of the manufacturing process decision.

### **Effect of Transparency and Accountability on Procurement Performance**

Transparency and accountability have a significant effect on performance improvement, this is indicated by the estimated value of the path coefficient of 0.310, and a significant value of 0.004, less than 5%. Teo and Lai (2009) in their research stated that the value of transparency contained in the value of efficiency, namely the reduction of unauthorized purchases has a significant positive effect on financial performance. Researchers interpret that the use of e-procurement to make the implementation of the auction process more accountable, more transparent and guarantees that there is no interference that interferes in creating a good mechanism in the procurement of goods and services has a direct effect on improving performance. Increasing adherence to procedures for implementing electronic auctions will indirectly affect the decrease in the number of objections that occur because organizers are more careful not to make mistakes, especially during the bid evaluation process.

On the other hand, the absence of intervention by unscrupulous persons in the procurement process will lead to increased competition in terms of the number or bidders so that there are no failed bids because an auction winner is obtained for each tender made. Transparency and accountability in this study show a significant relationship to procurement performance. Actually, the transparency variable indirectly has a relationship with the performance variable. Because basically with a more accountable auction implementation will increase compliance in the implementation of auction activities. Increasing adherence to procedures for implementing electronic auctions will indirectly affect the decrease in the number of objections that occur because organizers are more careful not to make mistakes. On the other hand, the absence of intervention by unscrupulous persons in the procurement process will lead to increased competition in terms of the number or bidders so that there are no failed bids because a winning bidder is obtained for each tender conducted.

### **Effect of Disclosure on Procurement Performance**

The results of the analysis show that the relationship between openness and performance is significant with an estimated value of a path coefficient of 0.332, and a significant value of 0.002, less than 5%. Teo and Lai (2009) state the value of openness on effectiveness, namely making information more organized has a positive effect on financial performance. Significant results in Hypothesis 8 mean that on the principle of openness, the values contained therein can guarantee increased performance, especially on the factor of reduced monopoly power. Because basically with e-procurement and with more open information the organizers cannot limit the number of bidders who enter to win it as long as the incoming bids are in accordance with the rules and are competent. The causal relationship between openness and procurement performance based on the estimated value on the path coefficient shows a significant relationship between openness and performance. When reviewing the research of Teo and Lai (2009), the value of openness on effectiveness, namely making information more organized, has a positive relationship to financial performance. Transparency as measured by the participation of providers both from within and outside the

region basically reflects that the implementation of electronic auctions will be able to increase and increase provider competition in obtaining tenders with providers from within and from outside as a result of the disclosure of information. The more open the information will also affect the implementation of a more competitive auction so that ultimately can reduce the monopoly in job acquisition. E-procurement also plays a role in changing the attitude of providers to be able to continue to improve their competence.

### **Effect of e-procurement implementation on procurement performance**

Based on the results of the study, it shows that the effect of e-procurement implementation on procurement performance at PT Pertamina Hulu Rokan is not significant. This is evidenced by the tcount value of 1.393 while Ttable with degrees of freedom (df) 114 at  $\alpha$  (0.05) of 1.96, thus the value of tcount < Ttable, so the hypothesis taken is  $H_0$ : accepted and  $H_1$ : rejected, then it can be concluded that there is no significant effect of the implementation of E-Procurement on the procurement performance of goods and services at PT Pertamina Hulu Rokan. According to Willem (2012: 80) E-Procurement is the implementation of procurement of goods and services using electronic networks (internet or intranet networks) or electronic data interchange (EDI). As for the implementation of procurement activities since planning must apply the principles of procurement of goods and services based on the principles of efficiency, effectiveness, competitiveness, transparency and accountability. According to Sutedi (2012-254) the benefits of implementing E-Procurement are that with E-Procurement the auction process can take place in an effective, efficient, open, competitive, transparent, fair/non-discriminatory and accountable manner, so that it is expected to reflect openness/transparency and also minimize fraudulent practices/KKN in goods procurement auctions that result in losses to the company's finances. Based on the results of the hypothesis test, the implementation of e-procurement at PT Pertamina Hulu Rokan showed an insignificant effect, this happened because the process of implementing e-procurement at PT PHR was not optimal so that it did not have a significant impact on the procurement of goods and services. PHR officially took over the management of the Rokan Block from the previous operator, PT Chevron Pacific Indonesia on August 9, 2021. The management of the Rokan block is still new so that PT PHR requires adaptation in the procurement of goods and services from the system used by PT Chevron Pacific Indonesia which is then adjusted to the procurement process goods and services at PT Pertamina (Persero).

### **CONCLUSION**

This research tries to answer the research objectives, namely to analyze the implementation of e-procurement in terms of the principles of procurement in terms of physical procurement performance at PT Pertamina Hulu Rokan. Based on the results of the research, it can be concluded as follows. 1. Based on the results of the research, it is known that the structural relationship, the internal construct, is valuable for the implementation of e-procurement in terms of efficiency, which has a positive effect. Obviously the principle of efficiency in e-procurement is influenced by the magnitude of the use of e-procurement in terms of reducing the number of documents that must be provided, the number of workers who are required to be auctioned electronically as well as the overall activity in the auction process using e-procurement. 2. Implementation of e-procurement has a positive effect on effectiveness. This illustrates that the large use of e-procurement affects the level of effectiveness in increasing the process of making decisions, increasing the malmanagement of scalable storage and completing work to be done more quickly. So that the more the use of e-procurement will return, the more the effectiveness will return, especially for the organizers in completing the work. 3. The implementation of e-procurement has an impact on transactional and financial accountability. This takes into account the balance with the actual implementation of the analysis of the balance on an electronic basis, the balance will increase the principle of transferability in the financial balance for the implementation at PT Pertamina Hulu Rokan. 4. The research hypothesis shows the effect of E-procurement implementation on openness. The large use of e-procurement has had an impact on the value of openness, which is increased by the number of providers participating, increasing competition and

reducing monopoly. This means that the large amount of e-procurement that is used in the auction process makes the factor of openness become more backward. The more open, market informality in increasing competition so as to reduce monopoly in the acquisition of tender activities.<sup>5</sup> Based on the research results show that the efficiency variable has no significant effect on procurement performance. This shows that internal efficiency is not significant to improve procurement performance at PT Pertamina Hulu Rokan.<sup>6</sup> Based on the results of the analysis it is known that the influence of the effectiveness variable on improving procurement performance has a significant effect. This means that the higher the effectiveness in the use of e-procurement which is influenced by the large use of e-procurement, the greater the increase in performance in terms of knowing the auction activities carried out so as to facilitate monitoring, reducing the number of objections that occur and obtaining a winner for each tender related to the improvement of the manufacturing process decision.<sup>7</sup> Transparency and accountability have a significant effect on improving procurement performance at PT Pertamina Hulu Rokan.

This means that the use of e-procurement to make the implementation of the auction process more accountable, more transparent and guarantees that there is no interference that interferes in creating a good mechanism in the procurement of goods and services has a direct effect on improving performance.<sup>8</sup>

The results of the analysis show that there is a significant influence between transparency and procurement performance at PT Pertamina Hulu Rokan. This means that the principle of openness, the values contained therein guarantee an increase in performance, especially on the factor of reduced monopoly power. Because basically with e-procurement and with more open information the organizers cannot limit the number of bidders who enter to win it as long as the incoming bids are in accordance with the rules and are competent.<sup>9</sup> The implementation of e-procurement that has been carried out by PT Pertamina Hulu Rokan has not had a significant impact on improving procurement performance. This is possible because PT Pertamina Hulu Rokan is still new in implementing e-procurement, where previously the Rokan Block was managed by PT Chevron Pacific Indonesia.

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