

Factors Affecting The Effectiveness of E-procurement Application in the Bank Indonesia Office Jakarta

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ABSTRACT: E-procurement has been widely used by many companies including the manufacturing, banking, construction and government / public sector industries. The expected benefits from using e-procurement are more fast, precise, accurate and transparent. In fact, there are still some barriers to technology, organization, human resources, governance, and cost. This study analyzes the factors that influence the effectiveness of e-procurement implementation in the BI Jakarta office, and recommends strategies to increase the effectiveness of e-procurement implementation. The statistical analysis used to prove the existence of factors that affect the effectiveness of e-procurement is the Cross Tabulation Analysis (Cross Tab) and correlation analysis. The results of this study prove that there are factors that are interconnected and have an influence on the effectiveness of e-procurement in the BI Jakarta office, where the implementation management factor and changes in organizational characteristics greatly influence the effectiveness of e-procurement based on the results of the correlation measurement analysis. Due to the absence of a limitation stipulation in determining the level of effectiveness at the BI Jakarta Office, it is hoped that the institution can complete the effectiveness measure and improve the factors that have a correlation with the effectiveness of e-procurement, namely the ability of equipment and the ability of operators to be more effective. Further research can be carried out to measure the maturity level of e-procurement implementation.

Keywords: E-procurement, influential factors, effectiveness

I. INTRODUCTION

Bank Indonesia (BI) has regulations to carry out the procurement of goods and services (PBJ), which is written in Peraturan Dewan Gubernur (PDG) No.18/9/PDG/2016 tanggal 1 Juli 2016 about Bank Indonesia Logistic Management (MLBI). In its implementation, BI creates a procurement platform, which is the Strategic Procurement Department (DPS) that equivalent to The National Public Procurement Agency (LKPP) in the government. Web-based procurement (e-procurement) has long been developed at BI since 2013. The advantages of e-procurement in comparison to conventional procurement are the procurement process is more effective, efficient, transparent, open, competitive, fair, and accountable. Meanwhile, conventional procurement has a lot of weaknesses, as long processing time, ineffective and inefficient, obscure, private and not competitive, has the probability of fraud or deviance, and non-accountable.

Some of the applications developed by LKPP include Electronic Procurement Services (LPSE), E-Catalog, General Procurement Information System (SIRUP) and many other applications (Table 1). The goal of the application development is to facilitate the implementation of Government procurement of goods and services. In line with, BI has also implemented a Web-based application for the procurement of goods and services implementation at the Head Office and Domestic BI Representative Offices. Applications that have been used for procurement and implementation, especially for the procurement of goods and services process, were the BI e-procurement system (BISPro) (2013), or in using Enterprise Resource Planning (ERP) E-procurement (2020).

The e-procurement system compared to conventional procurement has many advantages, namely an effective, efficient, transparent, open, competitive, fair, and accountable procurement process. Meanwhile, conventional procurement has many weaknesses, namely long processing time, ineffective and efficient, not transparent, not open and competitive, has opportunities for fraud or irregularities and is less accountable.

Table 1. LKPP Web-based application

No	Aplikasi	Description
1	INAPROC	National Procurement Portal
2	SIRUP	Procurement General Plan Information System
3	E-Katalog LKPP	LKPP E-Katalog Application
4	WBS PBJ	Procurement Goods and Services Whistle blowing System
5	Smart Report	LKPP Smart Report
6	ADP	LKPP Data Aggregation Provider
7	LPSE LKPP	LKPP Electronic Procurement Services
8	E-Pengaduan	LKPP E-Pengaduan

Source : WEB Site LKPP 2020

The guideline for implementing BI procurement in goods and services is the Regulation of MLBI with the five basic principles: effective, efficient, transparent, accountable, and excellent service. Effective means the MLBI implementation adjusted with predetermined needs and can provide maximum benefits. Efficient means MLBI implementation used limited funds and resources to achieve the targets set in a short time and can be accounted. Transparent means that the MLBI implementation is open to all concerned parties. Accountable means MLBI implementation aims to achieve physical, financial, and beneficial goals for the successful duties execution. Excellent service means that MLBI implementation can provide the best service and compliance with the quality standards set by BI in fulfilling the needs of concerned parties. (source: hal 2 dan 3 Penjelasan Pasal 3 PDG MLBI No.18/9/PDG/2016 tanggal 1 Juli 2016).

The steps of MLBI implementation start from planning, procurement, implementation, maintenance, administration, utilization to elimination. The use of the E-procurement application was started in 2013, to facilitate the needs of procurement of goods and services, that change from doing manually to a website based.

E-procurement is a web-based system use to support the procuring goods/services process electronically, with interconnected modules, such as Project Planning (P-Plan), Procurement Planning, Provider of goods/services (vendor management), Compilation Self Estimated Price (HPS), Procurement Management (Tender Management), Contract Management, Ordering goods and services at unit prices (e-Purchase Order) and information management (Dashboard).

However, implementation of the procurement of goods and services still has differences between the number of the planned and the realization of their procurement (Table 2). It indicates that there are obstacles in the implementation process that makes the realization of procurement is not optimal.

Table 2. Procurement data at BI Office 2016 to 2020

No	Year	Total	Realization	Percentage (%)
1	2016	480	317	66
2	2017	1 365	1 091	80
3	2018	1 159	1 067	92
4	2019	779	654	83
5	2020	(Procurement Planning)	In Process	-
	Average	946	782	82

Source: PKPn Division in BI Strategic Procurement Department (2016-2020)

The average of procurement in the last four years was 946. Meanwhile, the average procurement that is performed and completed until the contract is created is 782 procurement. There is an average difference of 164 procurement that did not carry out due to various conditions. This data raised questions about whether the e-procurement process had been effective and what factors affect the effectiveness of using e-procurement. Hence, this study's objective is to analyze factors related to the effectiveness of e-procurement implementation, to analyze the need to improve e-procurement implementation at the BI Jakarta Head Office, and recommend strategies to improve the effectiveness and efficiency of e-procurement implementation. The scope of this study is to examine the effectiveness of e-procurement implementation at the BI Jakarta office related to influence factors based on a research study by Croom et al., (2007) that is System Specifications, Implementation Management, changes in procurement costs, changes in organizational characteristics and changes in governance structure, on the effectiveness of e-procurement.

II. LITERATURE REVIEW

2.a. Procurement

The definition of procurement of goods and services according to Sutedi (2012) includes an explanation of the entire process of planning, preparation, licensing, determining the winners of the auction to the implementation stage and administrative processes in the procurement of goods, work or services such as technical consulting

services, financial consulting services, legal consulting services or other services. This is almost the same as the explanation in Peraturan Presiden Nomor 16 Tahun 2018, concerning the Procurement of Goods and Services, "Government procurement of goods and services, after this referred to as the procurement of goods and services, is the activity of procuring goods and services by the Ministry, Institution, Regional Apparatus financed by APBN. APBD starts with identifying needs, up to the handover of work results" (Article 1 point 1). For the definition of procurement of goods and services according to PDG MLBI (2016, p. 2) is a series of activities performed in order to meet the needs of goods and / or services starting from the preparation of the procurement plan to the signing of the contract.

2.a.1. Conventional Procurement

Conventional procurement is generally done with face-to-face, requires many documents, takes a long time, costs a lot, is private, and has various risks. Conventional procurement is still being performed until now, particularly for small quantities and volumes, small amounts of prices, and general specifications on the market to meet general and hasty needs such as consumer goods and retail. However, conventional procurement has been abandoned for the procurement of specific goods in large quantities and high prices. Taking into account risk factors, competitive prices, transparency, and accountability, conventional procurement has now shifted to electronic procurement

2.a.2 E –Procurement.

Several experts have a similar understanding of e-procurement, Croom, Jones (2007) explains that e-procurement refers to the use of an amalgamation of information technology systems for procurement functions, including resource search, negotiation, ordering, and purchasing. Tatsis et al. (2006) define e-procurement as an amalgamation of management, automation, and optimization of an organization's procurement process using a web-based electronic system. Davila et al. (2003) define e-procurement, a technology designed to facilitate the procurement of goods via the internet. Panayitou et al. (2004) stated that e-procurement could reduce supply costs (on average, by 1%). Reduce costs per tender (on average 20% cost per tender), and can provide lead time savings (for open tenders an average of 6.8 months - 4.1 months and limited tenders an average of 11.8 months-7.7 months), process improvement (simple ordering, reducing paperwork, reducing waste, shortening bureaucracy, process standardization, and documentation. Besides, Teo et al., (2009) also added that dividing the benefits of e-procurement into 2, the 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 service, and improves partner relationships).

In general, the objectives of implementing e-procurement are to create and increase transparency, increase market access and business competition, improve procurement process efficiency, effectiveness, and accountability (for monitoring and auditing processes), meet the need for access to the latest information in the procurement of goods and services through electronic media between service users and service providers. Demin. (2002) provides additional information regarding the purpose of e-procurement, which is to improve services to users, develop a more integrated procurement method through the company's supply chain, and increase the effectiveness of the human resources use in the procurement process.

2.a.2.1 System Specification

In several studies, system specifications have a vast and fundamental influence on the implementation of e-procurement, according to Croom, (2007) System specifications are a critical problem in the use of e-procurement. The slow absorption of the e-procurement system emphasizes several IS-related issues that hinder implementation, including software integration. According to Subramaniam and Shaw (2002), the primary determinant in the efficiency and effectiveness of the e-procurement system is the extent to which the e-procurement system can integrate effectively with other information systems, especially production planning and control and financial systems. Rajkumar (2001) also identifies systems integration as a critical success factor for e-procurement implementation, both with customer information infrastructure and its links to suppliers. Lin and Hsieh (2000) use a single case study to highlight the importance of web content management and content rationalization as significant issues for e-procurement operations. They note that prices are continually changing, specifications, and account details across the supplier base cause significant problems in the maintenance of supplier catalogs.

Additionally, the way items are described (item coding) is recorded as a significant data management problem for e-procurement. By referring to the literature, it can be established that System Specifications are the main requirements for the use of effective and efficient e-procurement because of the right choice of software (SAP / Oracle / IFS / MFG / PRO), completion in fulfilling needs for the procurement process. (Vendor

Management, Contract Management, Tender Management, Strategic sourcing Management, e-purchase) and easiness of use (user-friendly).

2.a.2.2 Implementation Management

Croom et al. (2007) refer to McManus's (2002) research, which examined the level of e-procurement implementation in the public sector in the US. The study stated that the motivation for implementation is based on the expectation of lower purchase prices, reduced transaction costs, and increased speed. Still, Croom et al. (2007) provide an example of a Taiwan military procurement case by Liao et al. (2003) that documented the challenges to e-procurement adoption in terms of changing established procurement practices and particularly highlighted the significant levels of human deficiencies and errors (e.g., corruption and inefficiency) in the implementation process. According to Heijboer (2003) who acknowledges that the governance effect of e-procurement is subject to the dynamics of e-procurement application launch (roll-out), and proposes an analytical model based on both structural (e.g., overhead and internal process costs) and ROI generated from the launch of e-procurement on a commodity-by-commodity basis. Thus it can be concluded from the literature that proper implementation management must consider the aspects of human resource readiness, tools, and equipment to support e-procurement, governance SOPs and all regulations made to support e-procurement launches.

2.b. Changes

2.b.1. Organizational Characteristics(Changes to organizational characteristics)

According to the literature study, the nature of behavior change and the relationship with organizations and the supply chain has changed as the impact of adoption on e-procurement implementation. In the study conducted by Kennedy and Deeter-Schmelz (2001), which studied the motivation of buyers to use the internet as a resource and use it for various elements of the purchasing process, with the conclusion that 'organizational characteristics and organizational influence are significant motivators for the use of e-procurement, the extent to which e-procurement is used and developed is strongly influenced by the regulations of the organization as a whole. The relationship between user perceptions and level of compliance has been noted by several authors (de Boer et al., 2002; Croom and Johnston, 2003; Interface, 2006). By understanding the research literature above, the authors agree with Croom's conclusion that regarding changes in Organizational Characteristics, efforts to strengthen organizational regulations are needed to achieve improvements in procurement performance between buyers and suppliers so that the use of e-procurement can be effective and optimal according to objectives.

2.b.2. Governance Structure(Changes to governance structures)

In Croom's study (2007), it can be inferred that changes in the governance structure discussing the relationship between sellers and buyers who have their respective interests are facilitated by the opening of communication and information channels, making it easier and faster to get goods with many variations and more competitive prices. Malone et al. (1989) argue that the electronic network between organizations increases coordination between firms to reduce the cost of finding suitable goods and services - 'electronic securities brokers.' Consequently, they claim that one of the main effects of inter-organizational networking is a shift from hierarchical to market relationships. Barrat and Rosdahl's (2002) study also argues that ease of search and transparency are advantageous for buyers but can become a disadvantage for sellers, further strengthening market-based relationships under e-procurement. The author understands that changes to the governance structure are an internal requirement that must be performed, the better governance will provide the effectiveness of procurement implementation by using e-procurement, which is more comfortable, more transparent and faster.

2.b.3. Total Acquisition Cost(Changes to total acquisition costs)

From the existing literature study, it can be understood that changes also occur in the total acquisition costs, such as the costs incurred in the procurement process from start to finish. It is the benefits of e-procurement in reducing the total cost of purchases. In getting lower prices from suppliers and reducing costs in the 'demand to repayment' process, as cited as a summary of Croom's research, (2000); de Boer et al., (2002); Wyld, (2002); Kameshwaran and Narahari, (2007); Mishra et al., (2007), highlighting the reduced costs that arise as a result of 'digitizing' catalogs as well as fewer following errors in transmission, reduced inventory, and minimizing supplier marketing costs. The author considers that buyers and suppliers, in terms of costs, mutually benefit, either directly or indirectly.

2.c. Effectiveness

Effectiveness is a word that comes from the word "effective" and is the adoption of the English language, namely "effective," which means successful or something that is done well. So, the effectiveness here refers to the success in achieving a predetermined goal. The Oxford Advanced Dictionary defines 'Effectiveness'

as producing the expected results, whereas 'Efficient' is described as 'doing extraordinary, achieving or doing something well without wasting energy, money, and time. In other words, "effectiveness is about doing things right while being efficient is about doing things the right way." According to Islam (2014).

2.d. Previous Research

Some of the previous studies include Research in Malaysia conducted by Aman, Kasimin (2011), suggests that the challenges of implementing (effectiveness) e-procurement in the government sector are related to software integration, data management and Roll-Out strategy, legal and administrative procedures, information technology (IT) infrastructure, outsourcing contracts, and IT skills. The research method used is qualitative survey data, namely collecting data from interviews, reviewing documents, and observing the use of e-procurement.

Research in Singapore conducted by Teo, et al. (2008), concluded that seven factors influence e-procurement: direct profit perception, indirect profit perception, cost perception, company size, and top management support, information-sharing culture. And the influence of business partners.

Another Malaysian study by Kaliannan, et al. (2009) examined the overall application of e-procurement (e-acquisition) with the analysis results and correlation of the factors studied organizational factors, environmental factors, and technological factors influence e-procurement acquisition in Malaysia.

In Malaysia, research on e-procurement was also conducted to obtain information on effectiveness performance, including Rosli and Songip (2017), who examined the implementation of the e-procurement system in the industrial sector and its impact developing its internal system. From this study, it can be seen that the company's motivation to implement e-procurement, and at the same time, the practice and its implementation develops internal and faces difficulties. The results of this study indicate that e-procurement is an essential part of supply chain management, and the number of users is aggressively increasing with low-risk perception. The factors that influence the success of e-procurement are the sharing of supply chain integration systems, information sharing, and partnership relationships. The study method used qualitative survey data with a questionnaire to respondents who have experience and understanding of the e-procurement system applied.

Croom and Jones (2007), researched the implementation and operation of e-procurement in 9 (nine) public sector organizations in the UK, by exploring 5 (five) factors, which is System Specifications, Implementation Management, changes in organizational characteristics, changes in total acquisition costs and changes to governance structures.

III. RESEARCH METHOD

3.1. Framework

In this study uses the theoretical framework of Croom and Jones (2007) as a reference basis for observing the relationship between the implementation of e-procurement in BI offices and the resulting effectiveness (Fig. 1). There are 5 factors as a reference basis in analyzing the relationship, namely:

1. System Specifications,
2. Implementation Management,
3. Changes to Organizational Characteristics,
4. Changes to Governance Structure,
5. Changes to the Total Cost of the Acquisition.

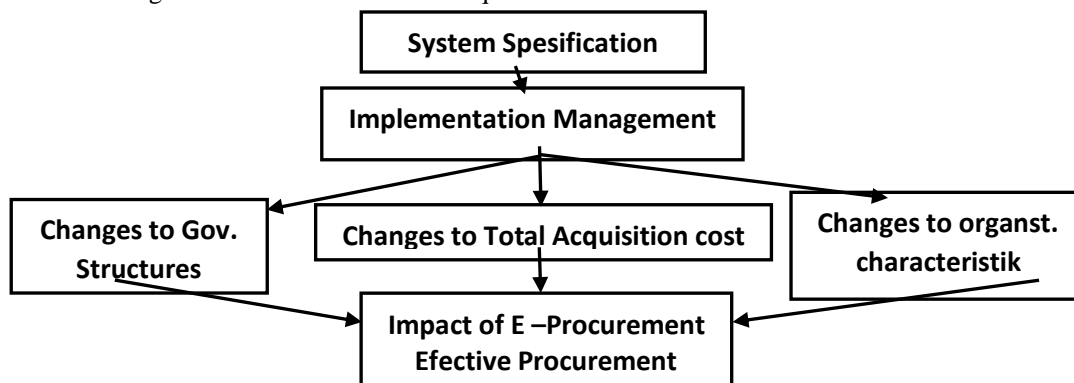


Figure.1. Framework(Croom 2007)

The results of the elaboration of the 5 factors above are then analyzed their correlation to the effectiveness of implementation by observing whether the objectives of e-procurement implementation are achieved, namely:

1. Creating good corporate governance in the implementation and management of investment project planning, procurement and contract monitoring;
2. Increase the effectiveness, efficiency, transparency, accountability, healthy, fair, open and competitive competition process between providers of goods and / or services of Bank Indonesia in the process of procuring goods and / or services;
3. Increase the effectiveness and efficiency of Bank Indonesia Vendor Management, including the performance appraisal of Partners;
4. Providing information for the needs of internal and external stakeholders that is faster, more accurate and real time; and
5. Facilitate the process of searching for data and information about goods and / or services, technical specifications, costs, as well as providers of goods and / or services that meet the procurement criteria.

3.2 Hypotheses

1. Hypotheses 1

- a. H₀ : There is no relationship between System Specification with E-procurement implementation effectivity.
- b. H₁ : There is relationship between System Specification with E-procurement implementation effectivity.

2. Hypotheses 2

- a. H₀ : There is no relationship between Implementation Management with E-procurement implementation effectivity
- b. H₁ : There is relationship between Implementation Management with E-procurement implementation effectivity.

3. Hypotheses 3

- a. H₀ : There is no relationship between Changes to Governance Structure with E-procurement implementation effectivity
- b. H₁ : There is relationship between Changes to Governance Structure with E-procurement implementation effectivity

4. Hypotheses 4

- c. H₀ : There is no relationship between Changes to Total Acquisition Cost with E-procurement implementation effectivity
- a. H₁ : There is relationship between Changes to Total Acquisition Cost with E-procurement implementation effectivity.

5. Hypotheses 5

- a. H₀ : There is no relationship between Changes to Organization Characteristic with E-procurement implementation effectivity
- b. H₁ : There is relationship between Changes to Organization Characteristic with E-procurement implementation effectivity

3.3 Location and Time

This study is located in Bank Indonesia Head Office, JL. MH Thamrin No2, Central Jakarta, and the study site are in BI Strategical Procurement Department. This study was conducted from February 2020 to July 2020.

3.4 Data Type and Source

The types of data used in this study are primary and secondary data. Primary data is obtained from questionnaires, interviews, and observations. Secondary data is in the form of information from related documents, scientific journals, and annual reports. Secondary data is in the form of information related to procurement, procurement realization reports for 2016 to 2020. And secondary data from The Satisfaction Survey in implementing procurement (PBJ) and the Procurement Maturity Assessment (PMA) result report in 2019, and also with a report on the implementation of procurement in 2016 to 2020. These data are used to assess the impact of using e-procurement by analyzing the data obtained.

3.4 Data Collection Method

The instrument used an online questionnaire with Google Form as the platform (<https://forms.gle/nuRD5DMGGW7HQEt9> dan <https://forms.gle/uBc3hgPFf63ibSBH6>). According to Miles and Hubberman in Sugiyono (2011), data analysis in this study uses an interactive model. The interactive model analysis consists of data collection, data reduction, data presentation, and conclusion drawing. The questionnaire was given to BI employees who handled procurement.

3.5 Respondent

The total samples were 25 respondents who were BI employees from several Divisions in the Management Category (CM) Work Unit with the composition that is: 7 people, in the Strategic Sourcing (SS)

Division 3 people in the Self-Estimated Price Division (HPS), the Procurement Implementation Division (PPn) 1 and 2 with four people, Contract Management Division 3 people, Planning and Procurement Policy Division (PKPn) with two people and three people BI Representative Office (KPw).

3.6 Analysis Method and Data Analysis

1. Associative Hypothesis Test (Relationship)

To find a relationship between two or more variables, we calculate the correlation between the variables. Correlation is a number that shows the direction and strength of the relationship between two or more variables. The direction is stated in the form of positive and negative relationships, while the strength of the relationship is expressed in the correlation coefficient's magnitude. The positive correlation coefficient is = 1, and the negative correlation coefficient is -1, while the smallest is 0.

2. Crosstabs Definition

Crosstabs analysis is the simplest method of analysis but has sufficiently strong explanatory power to explain the relationship between variables. Thus, some simple principles need to be considered in compiling cross tables so that the relationship between variables is visible.

For this reason, in the crosstabs analysis, statistical analysis is used, namely Chi-Square, which is symbolized by χ^2 . This method of analysis is used to test the correlation between variables in the contingency table so that it is known whether the proportion of the two (2) variables occurs because of need or because there is an association. This test is quite simple and easy to calculate from the results of the cross table. In the cross-table analysis, the researcher uses the frequency distribution of the cells in the table to infer the relationship between the research variables so that it can easily see the relationship between the two variables. Chi-squared is a straightforward statistical tool in which it is unknown whether the relationship is positive or negative, how linear or non-linear the relationship is, and how close the relationship is between the two. Variable then used the contingency coefficient. However, it should be emphasized that the contingency coefficient is also a simple statistical measure. From the explanation above, it can be concluded that crosstabs analysis is a statistical analysis method used to see the relationship between two variables using the chi-square and contingency coefficients. On this basis, it is then known that the crosstabs analysis can describe the relationship in this study regarding the relationship between the influencing factors (analysis factors) and the affected factors (movement patterns).

IV. RESULT AND DISCUSSION

4.1 General description of e-procurement in BI

The project plan formulation aims to increase the effectiveness and efficiency of the work programs and investment plans implementation, improve coordination between work units in the framework of determining strategies and implementing investment plans and strengthening good governance from the aspects of planning, implementing and controlling investment plans in BI and optimizing implementation and realization of the investment plan budget. As a follow-up to the P-Plan, details are made in the form of Procurement Planning, namely the proposed procurement plan activities, classification of proposed procurement plans and the strategic sourcing process by observing market potential. The results of strategic sourcing procurement in the form of market survey, price survey, and resource survey are formulated to be followed up in the tendering process. Tender Management is to carrying out an announcement or invitation process up to the appointment of a working executive. The next follow-up is Contract Management. The winning vendor is made a contract, and during the implementation of the contract is monitored until the handover and payment of the work executor. If the item is Pure Commodity, an e-purchase order is made.(Figure 2.)

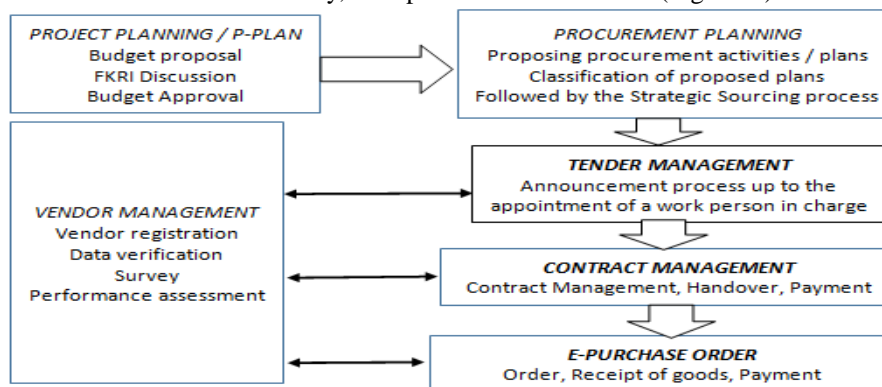


Figure 2. Procurement implementation flow (Source : MLBI 2016 socialization materials)

In connection with the effectiveness studied, an overview of the implementation of e-procurement in BI as quoted from the 2019 BI PBJ satisfaction survey report conducted by the PKPn Division that the effectiveness parameters measured include compliance with provisions, quality of procurement documents, suitability of procurement methods (Tender Management), the quality of the vendors obtained (Vendor Management), the speed of the procurement process, coordination between procurement modules, HR capabilities in the procurement process, the contract management process and the HPS preparation process. The data obtained in the report is that the majority answered it was good, for that it can be proven by testing in this study.

4.2 The relationship between system specifications and the effectiveness of e-procurement in BI

Since 2013 to 2019, BI has used BISPro, which is based on SAP software, the application has developed since its initial launch, and it has experienced several improvements in capabilities. However, with the growing need for integration of other applications for payments, asset monitoring, procurement auditing, and more reliable management vendors, since 2020, the procurement system has been changed to ERP based on Oracle. The existing specifications that have been implemented several months influence its effectiveness. Several constraints were noted as deficiencies in the specification, including the VM module, which was not user friendly. From the Crosstab statistical test, it is found that the relationship between system specifications and the effectiveness of e-procurement in BI. The Pearson chi-square result shows a significance value of 0.000, in which the value is less than 0.05, which means H₀ is rejected.

4.3 Relationship between Implementation Management and the effectiveness of e-procurement at BI

Procurement at BI has undergone two launches of the e-procurement system, namely 2013 and 2020. From existing experience, the implementation management factor greatly influences the effectiveness of e-procurement utilization. The steps for implementing the e-procurement application software must have taken into account the aspects of constraints or errors that arise as a result of the unpreparedness of human resources who have adequate skills to operate the e-procurement software and the readiness of the infrastructure provided must be adequate by considering the volume of use and with the same access time. As mitigation of obstacles, namely by preparing a particular training class to provide training for users/operators, providing a sufficient number of computer equipment, and providing access to passwords that follow the access needs and hierarchy. The Crosstab statistical test found the relationship between Implementation Management and the effectiveness of e-procurement in BI. The Pearson chi-square result shows a significance value of 0.004, in which the value is less than 0.05, which means H₀ is rejected.

4.4 The relationship between changes in organizational characteristics and the effectiveness of e-procurement at BI

Organizational characteristics at BI have changed in line with the issuance of a particular regulation regarding E-procurement re-organization, which is carried out to strengthen BI's procurement requirements. Some of the provisions made involve organizations outside of procurement to maintain good governance. Suppose there is a committee from another work unit to fulfill the four-eyes principle requirements. The relationship between organizational character and the effectiveness of e-procurement, namely the openness of communication and broader information, can increase the speed, effectiveness, efficiency, and accountability of procurement. Crosstab obtained a relationship between changes in organizational characteristics and the effectiveness of e-procurement in BI. The Pearson chi-square result shows a significance value of 0.015, in which the value is less than 0.05, which means H₀ is rejected.

4.5 The relationship between changes in governance and the effectiveness of e-procurement at BI

The use of e-procurement in more integrated applications such as payment systems, contract management, and asset management systems is significant to BI's internal governance. The impact of these changes is closely related to the effectiveness of re-processing, where the innate ability to need price information, tool specifications, asset lists, procurement, and payment lists are more accurate and easy to access for audit purposes. From the Crosstab statistical test, it is found that the relationship between changes in governance and the effectiveness of e-procurement in BI. The Pearson chi-square result shows a significance value of 0.000, where the value is less than 0.05, which means H₀ is rejected.

4.6 The relationship between changes in total acquisition costs and the effectiveness of e-procurement

Changes that occur are in the form of considerable cost efficiency in line with the ease of managing to tender, bidding, and sourcing. The amount of savings has been recorded in the annual report for the last three years. The cost change relationship can answer the costs required to make an application system, which is quite expensive, but the goal of e-procurement can be achieved. The Crosstab statistical test found the relationship

between changes in total acquisition costs and the effectiveness of e-procurement in BI. The Pearson chi-square result shows a significance value of 0.000, in which the value is less than 0.05, which means H₀ is rejected.

V. CONCLUSION AND SUGGESTION

5.1 Conclusion

Based on the results of the research and discussion that has been done above, it can be concluded that all the factors studied are proven to have a strong influence and are related to the effectiveness of the use of e-procurement in BI. Organizational characteristics change factors require greater attention, namely a stronger relationship to the effectiveness of e-procurement implementation seen from the square-test of 0.015. The fact in the field is that the drafting of the PBJ provisions, in this case MLBI, has not yet fully answered the needs of implementing the duties and responsibilities of procurement implementers, both internal BI and external parties. There are still gaps in the provisions that have not explicitly regulated several aspects of procurement, which have led to different interpretations and there are still conflicts with best practices outside BI, for example, the provisions concerning HPS are confidential, provisions regarding the scope of duties of CM's responsibility in making procurement request documents and so on. Recommendations that can be given to increase effectiveness in line with strengthening Organizational Characteristics are making MLBI (PBJ) provisions with adjustments to clear rules for each procurement stage and simultaneously strengthening the ability of operators to become more reliable.

5.2 Suggestion

Four things suggest the results of this study, first is the need to make adjustments to the software used, some input from the operator stated that Oracle software is not as flexible (not user friendly) compared to SAP software. Second, the user's skills need to be improved to streamline the procurement process. The third is that the provisions in making HPS need to be readjusted, namely the centralization of making HPS, which is one of the causes of delays in the procurement process (bottleneck), can be eliminated. Fourth, integration with other systems (vendor management) still requires additional software (additional software), this is a barrier to effectiveness.

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- 2) Peraturan Anggota Dewan Gubernur BI No 20/41/PADG INTERN/2018 tanggal 7 Desember 2018
- 3) Peraturan Presiden No 54 tahun 2010 mengenai pengadaan barang dan jasa
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- 9) SE No. 18/10/INTERN tgl 17 Maret 2016 tentang BI Sistem *E-procurement*