

Transformation of fraud activities in procurement system in Indonesia

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Abstract. E-procurement has been applied in Indonesia since 2008 through the adoption of Electronic Procurement System (SPSE). The purpose of the use of SPSE in the procurement process is to improve the efficiency of goods or services procurement. In the bidding process, intensive communication and data exchange between providers and organizers are urgently needed. Through SPSE, the frequency of face to face meetings between providers and the committee can be reduced. This is expected to minimize potential fraud behaviors in the goods or services procurement conducted through the tender process. There exists a transformation of activities in the procurement through SPSE from the tender process that was previously done manually. In this paper, we analyze this transformation between manual procurement process and SPSE-based procurement process. The result of the analysis is exploited for investigating the possibility of fraud behavior transformations in every phase of e-procurement activities.

1. Introduction

E-procurement has been applied in Indonesia since 2008 through the adoption of Electronic Procurement System (SPSE). According to LPSE smart report in 2015, the implementation of e-procurement was pioneered in 2008 by the Electronic Procurement Services (LPSE) of the Ministry of Finance with 2 tenders, LPSE of the Ministry of Education and Culture with 3 tenders, LPSE Denpasar with 2 tenders, LPSE Yogyakarta with 11 tenders, LPSE Special Region Yogyakarta with 2 tenders, LPSE Gorontalo Province with 6 tenders, LPSE West Java province with 3 tenders, LPSE East Java Province with 2 tenders, LPSE Riau Islands province with 1 tender, and LPSE West Sumatra province with 1 tender. Thus, there were in total 33 tenders and all of them are completed. These LPSEs rendered the tender processes more efficient by more than 6.6 billion Rupiahs, which is equivalent to 15.41% of the total budget ceiling. Each government agency has been required by Presidential Decree No. 54 of 2010 to use SPSE in each of their procurement above 200 million Rupiahs starting from 2012. The current number of SPSE users has reached 635 LPSEs distributed throughout Indonesia.

On the other hand, in the implementation of e-procurement, there exist some obstacles such as the availability of infrastructure in Indonesia and the capability of human resources in adopting SPSE. SPSE requires Internet connection for the entire procurement process, but the infrastructure for Internet services in several regions in Indonesia has not been available. Not only Internet services, limited supply of electricity and frequent rolling blackouts also may



obstruct the implementation of e-procurement. The problems of human resource aspect are related with the limited knowledge of the stakeholders, both the tender committee and the vendor companies participating in the tender process through e-procurement [1].

Goods/services procurement consists of planning process, product design process, provider selection (tender) process, execution of the contract process, and warranty and audit process. Procurement planning process is conducted by government agencies through the budget process. Selection of providers can be done through auction, direct procurement, direct appointment and e-purchasing. In the implementation phase of the contract, vendors realize the procurement of goods/services that has been promised. During the warranty period, vendors provide maintenance services and follow the audit process of the implementation of the of goods/services.

The purpose of the use of SPSE in procurement process is to improve the efficiency of the tendered goods/services procurement. In the bidding process, communication and intensive data exchange between providers and organizers are necessary. Through SPSE, the frequency of face to face meetings between providers and the committee can be reduced. This is expected to minimize potentials for fraud behaviors in the procurement of goods/services conducted through a tender process.

There is a transformation in the activities of goods/services tenders through SPSE from the tender processes of goods/services that were previously done manually. In this paper, we analyze the transformation between manual procurement processes and the auction processes through SPSE. The results of the study will be used to discuss the impact of the adoption of e-procurement for the activity that occurs.

2. E-procurement

The government's public procurement process consists of several phases and every phase is risky with corruption. Mathecak [2] identified three main phases in the procurement process: procurement planning and budgeting, procurement solicitation, and contract award and performance. Szymanski [3] instead proposed five phases of a procurement process: procurement planning and requirement assessment, product design and documentation, tender process, contract award and implementation, and accounting and auditing. The risks of corruption arise from the lack of transparency, limited access to information, and the lack of accountability and control at each phase.

Public e-procurement is defined as the use of information and communication technology (ICT) such as Internet or web based system by the government to carry out the procurement associated with bidders to acquire a product, employment, and other services needed by the public sector [4, 5]. E-procurement is defined as well as inter-organizational information system, which automates the entire part of the procurement process to improve efficiency, quality, and transparency in government procurement [6].

Lewis-Faupel et al. [7] conducted a study on the implementation of e-procurement in the two large developing countries, Indonesia and India. They arrived at a conclusion that there was not sufficient evidence to conclude that the implementation of e-procurement can reduce the amount of fees to be paid by the government. However, they found also a conclusion that the implementation of e-procurement in Indonesia has an impact on the reduction of delays in the completion of projects. On the other hand, the implementation of e-procurement also provides an opportunity for more variations in vendors/suppliers of goods and services that participate in the tender and the winning bidders tend to be more varied than before and have a better quality (measured from reduced delays in the completion of projects in Indonesia or the quality of jobs in India).

Neupane et al. [8] in their study discussed the direct impact of the implementation of e-procurement to the reduction of corruption. Identified factors that are prone to corrupt practices are project planning, product design and documentation, tendering processes, contract

enforcement, and accounting and auditing. Research result indicated that the ability of e-procurement in terms of anti-corruption through automation and audit capabilities has increased transparency and accountability of the auction process by the government.

3. Research Method

We use qualitative approach for conducting our research. Qualitative methods are a set of interpretative techniques that attempt to explain and extract meaning from a naturally occurring phenomenon in the social world [9]. We conduct our research in four steps as follows:

- (i) Literature review. At this steps, we perform a study of the various sources of literature in the procurement process, especially in Indonesia. The sources of literature include journals, papers, books, and credible websites such as lkpp.go.id, and bpkp.go.id. Topics studied covert procurement and SPSE (e-procurement in Indonesia).
- (ii) Data Collecting. To collect facts about procurement and implementation of SPSE in Indonesia, we carry out interviews with LKPP (Policy Institute for Government Procurement of Goods/Services), experienced vendors, and LPSE manager at several institutions such as state universities, and provincial and local government agencies.
- (iii) Data Analysis. We use open coding analysis for mapping the result of the data collected and the literature review to build a model describing the transformation of procurement activities and potential fraud behaviors in SPSE implementation.
- (iv) Conclusion making. And the last, we make conclusion of our research based on the result of data analysis process.

4. Adoption of SPSE as Indonesian e-procurement system

SPSE is Indonesia's e-procurement system built by LKPP. Now, SPSE has reached version 4, although not all government institutions have used SPSE version 4. Many government institutions still use SPSE version 3. In this research, we limit the area of analysis to SPSE version 3 and 4 because lack of documentation of SPSE version 1 and 2. In version 3, the e-procurement system emphasizes the exchange of online documents, such as the announcement of procurement plan through the web, uploading procurement documents by tender committee, so it can be downloaded by all interested prospective providers, as well as uploading bidding documents by potential providers so the procurement committee can download them. Discussions between organizers and providers before uploading providers' bidding documents are recorded in the system, so the conversation can be viewed and audited. The evaluation process is carried out offline, and then the evaluation result is uploaded to the system. There may be potential provider's errors when making quotation, thus, the committee needs to recalculate (arithmetic correction). The result of the recalculation will also be uploaded to the system. Determining the winner of the tender, however, is carried out manually, and then the result is entered into the system. SPSE version 3 therefore aims at transparency, because most of the procurement committee activities are recorded in the system.

SPSE version 4, on the other hand, has been semi-automatic. Procurement documents are generated by the system, so the tender committee only needs to input data to the system. Official reports can also be generated by the system so no need to create them manually. Uploading price by potential providers is also using a web page that resembles Microsoft Excel spreadsheet with automatic calculation, so there is no required arithmetic correction from the committee. For the auction by knockout, a potential provider with the lowest bid automatically wins in the SPSE version 4. SPSE version 4 has been used in about 100 LPSEs of local government level. The transformation of procurement activities is presented in table 1.

Table 1. Transformation of Procurement Activities.

No	Activity	Before SPSE	SPSE version 3	SPSE version 4
1	Tender announcement	Information board in the committee office.	Website.	Website.
2	Procurement document	Written by tender committee and saved in hardcopy format.	Written in PDF document and uploaded to the website by tender committee.	Submitted in website form by the tender committee and generated by the system.
3	Vendor quotation	Submitted by vendor to the office in hardcopy format.	Uploaded by vendor to the website in PDF format.	Submitted in website form by the vendor and generated by the system.
4	Aanwijzing	Vendor and tender committee meet in the committee office.	Vendor and tender committee join the forum in the website.	Vendor and tender committee join the forum in the website.
5	Evaluation	Tender committee evaluates based on vendor quotation documents.	Tender committee evaluates based on vendor quotation documents.	Semi-automated by the system, especially for the price components

SPSE is developed by LKPP to run by LPSE (Electronic Procurement Services) as institutions responsible for running SPSE. At the beginning of 2008 when SPSE was first applied, there are only 10 LPSEs. Now the total number has reached 635 LPSEs. The growing process of LPSEs is a process that takes time and effort. It mainly depends on the political will of the local governments and on the awareness of the need for SPSE application. With a corrupt culture in many previous procurement, initial resistance to the application of SPSE is strong. Until 2010, the number of LPSEs only reached 137 LPSEs in 28 provinces. With the Presidential Decree no. 54 of 2010, which states that the e-procurement should be applied starting in 2012, the number of LPSEs in Indonesia increased considerably. In 2011, the number of LPSEs has reached 315 LPSEs that cover 31 provinces. In 2012, the number of LPSEs reached 543 LPSEs which cover 33 provinces.

To get willingness of each region to implement SPSE has not been easy. If there is a willingness of the leadership, it is easy for the region to adopt SPSE. But if there is no willingness, especially if there are many local authorities that play in procurement, coercion is needed as in the presidential decree. In addition to the problem of willingness of local government leaders, another main problem is the budget. Many areas refuse to implement SPSE by reason of the lack of budget. Another problem is the lack of personnel to form LPSE. Ad hoc LPSEs are not uncommon, where personnel in those LPSEs has main duty in her base institutions and her duty in the LPSEs is only a side job. Some of the obstacles cause LPSE structure between one region and another in Indonesia is not under the same institution. LPSE placement is very diverse, for example, in the Development Administration, Bappeda, Diskominfo, or UPT ULP. Resistance and willingness factors affect the commitment of personnel and the committee in conducting procurement activities through SPSE. Potential fraud behaviors, such as subjectivity from the committee on provider assessment, have higher possibility to arise in the ULP with lower willingness and higher resistance.

The next obstacle is the problem of infrastructure: e-procurement focuses on the use of the

Internet for the exchange of data and information, while there are many areas in Indonesia with inadequate Internet access. In fact, SPSE is decentralized in each LPSE server. Hence, especially the eastern parts of Indonesia face obstacles in building the necessary infrastructure for LPSE server. SPSE implementation, however, has a positive impact, where the local governments are forced to build Internet infrastructure in cooperation with major ISPs so they can build LPSE servers. Nowadays there are 635 LPSE servers running decentralized SPSE. The decentralized servers will later cause some problems because of the condition of the servers that varies between each LPSE. Nonetheless, the initial goal of decentralized LPSE servers is to increase the reliability of the overall procurement. For example, in a centralized server, when the server is down, then the entire electronic procurements in Indonesia is hampered. In decentralized servers, if one LPSE server goes down, then it only hampers the procurement at the respective LPSE.

On the other hand, the infrastructure problem is also felt by the providers, where not all providers have good Internet access. With decentralized LPSE servers, in each LPSE a bidding room is available to serve providers to access SPSE via local network (LAN). Potential providers who have difficulty accessing SPSE via Internet may come and use the LPSE bidding room to access SPSE, such as uploading the bidding documents. The varying condition of infrastructure and server decentralization also affects the level of system security in the LPSEs. Although LKPP has defined a system security standard based on ISO 27001, it is not well implemented in a number of LPSEs.

5. Transformation of procurement activities through SPSE

As mentioned above, Szymanski [3] has identified five phases of procurement process, *i.e.*, procurement planning and needs assessment, product design and documentation, tender process, contract award and implementation, and accounting and auditing. The planning stage of procurement lies fully in the ministries, agencies, regional work units or other institutions, namely those using the national budget (APBN) or regional budget (APBD). In this planning phase, there is still potential for cheating, for example with a mark-up during the preparation of the budget by raising the value of the budget to unreasonable price for personal profit. Now the General Procurement Plan (Rencana Umum Pengadaan/RUP) has been made public, though not detailed, and administered using SIRUP (Sistem Informasi Rencana Umum Pengadaan/Information System for General Procurement Plan). LKPP also has plans to integrate SIRUP, SPSE, SIKAP (Sistem Informasi Kinerja Penyedia/Information System for Provider's Performance), contract and financial management applications. The focus for the development in this year (2016) is to build SIKAP and integrate it with other existing systems.

The implementation of e-procurement has a positive influence in transparency. Prior to the implementation of e-procurement, procurement in Indonesia were still fraught with corrupt practices, particularly in the phase of the tender process. This started from the announcement of the tender, which was usually done using notice boards and newspapers. In remote areas, cases of tender announcement removals from notice boards—with the aim that other potential providers would not know the procurement information—were often encountered. Announcements through newspapers could be sabotaged by big providers by means of buying up all the newspapers immediately after printing.

After the announcement phase of the procurement plan, potential providers who are interested in participating the tender need to take the procurement documents in the government institution that organizes the tender. This stage in the past, before using e-procurement, was also vulnerable to fraud. The use of thugs to stand by in the institution office by cheating big providers often happened so that other providers cannot take the procurement documents.

The next stage is *aanwijzing*; that is the process of auction explanation. The tender committee accompanied by a technical team explains the procedures for the auction and the technical

specifications of the procurement. At this stage, there was a direct face to face between the tender committee and the potential providers. Direct face to face could trigger the initiative of those who wanted to commit fraud. Not only between committee members and providers, fellow providers could conduct discussions and project distribution. As for the committee and the providers, for instance, if there is an addendum or specification changes that must be made public, the tender committee that wanted a certain provider to win could cheat by informing the addendum to the preferred provider first so that such provider could have more time to prepare the bidding documents in accordance with the addendum.

After that, providers must enter the bidding documents. At this time, the use of thugs (especially in rural areas) reoccurs. Some providers are intimidated by people from big providers so they cannot submit their bidding documents.

The entered bidding documents are then evaluated by the procurement committee to determine the winner of the auction. In general, the evaluation consists of evaluation of the qualifications, technical, pricing, and administration. Potential frauds are on qualification and technical evaluations because they involve assessments that rely on the procurement committee. The committee could subjectively elevate the value of the technical evaluation of some preferred providers. This subjectivity is usually based on personal ties, personal background, as well as elements of fraud.

After the implementation of e-procurement, some frauds can be averted, although e-procurement cannot solve all problems. The announcement of the procurement plan is done through each LPSE's web, so there is no potential for taking off and buying all newspapers announcing the plan. Procurement documents can be downloaded online, so there is no potential to play the role of thugs. Similarly, the bidding documents can be uploaded online by potential providers, so there is no potential for intimidation by thugs. However, there are still other methods to commit fraudulent behaviors using e-procurement as described in table 2.

As for the subjectivity factor, for example relating to personal ties during the technical and qualification evaluation by the committee, it is beyond SPSE scope. Because the qualification evaluation and technical assessment are based on human judgement, it is still possible that assessments are not appropriate, and favor one provider over the others. It is admitted by a provider who becomes our interviewee that the assessment of qualification and technical evaluation is still playable. Despite the stage of proof of qualification and assessment guidelines rubric, as human beings, elements of subjectivity remain. Automatizing the process of qualification and technical evaluation is difficult. On the other hand, the way a provider presents itself can be one way for the tender committee to assess its qualification. The element of subjectivity is unavoidable, can even be regarded as art in the tender. This has to be guarded so that assessments are more objective, for example by strengthening the assessment rubric or by more thorough audit.

6. Concluding remarks

SPSE version 4 emphasizes on the semi automation of generating procurement documents and pricing input, while SPSE version 3 emphasizes on the recording of procurement activities to provide transparency in procurement process. The adoption of SPSE has made some changes in the procurement activities. The changes eliminate several potential frauds that exist in manual procurement systems especially in two activities, namely tender announcement and procurement document dissemination. However, subjectivity factor in technical and qualification assessment still exists. There is also a need to integrate existing systems to link every phase in the procurement process.

Table 2. Potential Fraudulent Behaviors during Procurement Activities.

No	Activity	Before SPSE	SPSE version 3	SPSE version 4
1	Tender announcement	A vendor obstructs other vendors from getting procurement announcement, for example by revoking the announcement from the information board or by buying all newspapers containing tender information.	N/A	N/A
2	Procurement document dissemination	A vendor obstructs other vendors from getting procurement documents, for example by using thugs to stand by in the committee office.	N/A	N/A
3	Vendor quotation	A vendor intimidates other vendors so they cannot submit bidding/quotation documents.	Deadline of quotation is not clear. Bandwidth setting or DDOS attack.	Deadline of quotation is not clear. Bandwidth setting or DDOS attack.
4	Aanwijzing	The committee and the vendor compromise about the addendum of tender specifications.	An internal (ex-internal) admin of SPSE edits or deletes quotation documents of some vendors in the Aanwijzing phase.	N/A
5	Evaluation	The committee assesses quotation documents based on the deal with the vendor.	The committee submits assessment based on their preferences or deal with the vendor. Evaluation process is conducted by an external person who infiltrates the system [10].	The committee submits assessments based on their preferences or deal with the vendor.

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References

- [1] Purwanto A, Ibtly I, Rofikah N and Indroyono P 2008 E-procurement in Indonesia (development services procurement electronic government) *Kemitraan Partnership dan LPSE Nasional*

- [2] Matechak J P 2002 Fighting corruption in public procurement *Center for International Private Enterprise CIPE, Feature Service Articles* **12** 1047–55
- [3] Szymanski S 2007 How to fight corruption effectively in public procurement in SEE countries *Concept Paper* URL <http://www.oecd.org/dataoecd/24/28/39637617.pdf>
- [4] Davila A, Gupta M and Palmer R 2003 Moving procurement systems to the Internet: the adoption and use of e-procurement technology models *European Management Journal* **21** 11–23
- [5] Leipold K, Holloway F, Klemow J and Vaidya K 2008 The world bank e-procurement for the selection of consultants: challenges and lessons learned *International Handbook of Public Procurement* ed Thai K V (Auerbach Publications) pp 512–27
- [6] Vaidya K and Hyde M 2011 Inter-organisational information systems assimilation: an empirical evaluation in light of the diffusion of innovation theory *International Journal of Business Information Systems* **7** 247–68
- [7] Lewis-Faupel S, Neggers Y, Olken B A and Pande R 2016 Can electronic procurement improve infrastructure provision? Evidence from public works in India and Indonesia *American Economic Journal: Economic Policy* **8** 258–83
- [8] Neupane A, Soar J, Vaidya K and Yong J 2012 Role of public e-procurement technology to reduce corruption in government procurement *5th International Public Procurement Conference (IPPC5)* pp 304–34
- [9] Cooper D and Schindler P 2008 *Business Research Methods* The McGraw-Hill/Irwin series operations and decisions sciences (McGraw-Hill)
- [10] Arumsari, Totok, Iswahyudi, Mucharor and Akib 2014 Audit Atas Pelaksanaan Lelang Secara Elektronik dalam Pengadaan Barang dan Jasa Pemerintah *Badan Pengawasan Keuangan dan Pembangunan* URL <http://www.bpkp.go.id/investigasi/berita/read/13521/0/AUDIT-ATAS-PELAKSANAAN-LELANG-SECARA-ELEKTRONIK-DALAM-PENGADAAN-BARANG-DAN-JASA-PEMERINTAH>. bpkp