



Risk analysis of tender failure in the procurement of construction services

Andreana Janita ^{a,1}, Jati Utomo Dwi Hatmoko ^a, Ferry Hermawan ^a

^aDepartment of Civil Engineering, Faculty of Engineering, Universitas Diponegoro, Jl. Prof.Sudharto,SH Semarang 50275, Indonesia

¹Corresponding Author: andreana.janita@gmail.com

ARTICLE INFO

Article history:

Submitted 29 May 2023

Received 6 June 2023

Received in revised form 14 June 2023

Accepted 14 June 2023

Available online on 30 June 2023

Keywords:

Failed auction, procurement, risk level risk analysis, risk response

Kata kunci:

Gagal lelang, pengadaan, analisis risiko level risiko, respon risiko.

ABSTRACT

Failed tender often occurs in the process of procuring in government agencies. In BP2JK Central Java, the number of failed tender packages in the last 3 years is quite high, namely 10-35%. This study aims to analyze the risk of failed tender in the BP2JK area. The method used in this study is descriptive quantitative, where the analysis was based on historical procurement data in the last 4 (four) years and also on a questionnaire to 90 respondents consisting of 28 Pokja and 62 PPK in the BP2JK Central Java area. The results of the analysis show that there are 12 identified risks. If sorted from the highest risk level, these include: selection document errors, evaluation process errors, procurement implementation that was not on schedule, no participants passed the evaluation, bids did not meet requirements, procurement process errors, more than 1 (one) document uploaded, overqualified, owner estimate too low, participants did not show evidence, e-procurement system was hacked and price negotiations were not reached. While the method was frequently used as a risk response is reducing the possibility of a risk occurring, and followed by reducing the impact of risk, sharing risk, avoiding risk or accepting risk.

ABSTRAK

Gagal lelang kerap terjadi dalam proses pengadaan barang/ jasa di instansi pemerintah. Dampak yang diakibatkan dari gagal lelang adalah mundurnya timeline pengadaan secara keseluruhan sehingga dapat menyebabkan gangguan pelayanan dari suatu instansi. Di lingkungan BP2JK Jateng jumlah paket gagal lelang dalam kurun waktu 3 (tiga) tahun terakhir cukup tinggi yaitu 10-35%. Penelitian ini bertujuan untuk menganalisis risiko gagal lelang di wilayah BP2JK. Metode yang digunakan pada penelitian ini adalah deskriptif kuantitatif, di mana analisis didasarkan dari data historis pengadaan dalam kurun waktu 4 (empat) tahun terakhir dan juga berdasarkan kuesioner kepada 90 responden yang terdiri dari 28 Pokja dan 62 PPK di wilayah BP2JK Jateng. Hasil analisis menunjukkan ada 12 risiko penyebab gagal lelang yang diidentifikasi. Jika diurutkan dari yang level risikonya tertinggi maka antara lain kesalahan dokumen pemilihan, kesalahan proses evaluasi, pelaksanaan timeline pengadaan yang tidak sesuai, tidak ada peserta yang lulus evaluasi, penawaran tidak sesuai persyaratan, kesalahan dalam proses pengadaan, terdapat lebih dari 1 (satu) dokumen yang diunggah, overkualifikasi, nilai HPS terlalu rendah, peserta tidak hadir pembuktian, peretasan system e-procurement dan negosiasi harga tidak tercapai. Sementara respon risiko yang dapat dilakukan antara lain mengurangi kemungkinan terjadinya risiko, mengurangi dampak risiko, membagi risiko, menghindari risiko atau menerima risiko tersebut.

Available online at <http://dx.doi.org/10.36055/tjst.v19i1.20059>

1. Introduction

Failed auction is one of the risks that often occurs in the process of procuring goods/services. Failed auction generally occurs when the goods/services provider fails to be selected in a procurement process so that a re-tender process is needed [1]. One of the impacts resulting from the failure of the auction is the delay in the overall project schedule, because additional time is needed to carry out the re-tender process [2]. In addition, failed auctions in the process of procuring government goods/services can also hinder the achievement of output and absorption of the budget [3], and can cause losses to the country's economy, reduce project costs and possibly reduce project quality [4]. Within the government sphere, the ability of an agency to absorb the budget is often used as an indicator of the performance of a city/district government [5].



The higher spending of the budget that can be done by a government will show the higher the level of performance of an institution. Thus, the large number of procurement packages that have failed tenders will indirectly have an impact on the assessment of government performance. The problem currently faced by the government is the low of spending budget throughout the year and the tendency for accumulation at the end of the year. One of the reasons for the low absorption comes from goods/services procurement activities [6]. Meanwhile, the proportion of the budget for the procurement of goods and services within the government every year spends at least around 40% of the APBN and/or APBD allocation [7]. Even in 2019, the goods/services procurement budget has an allocation of 54% or Rp. 1,039 trillion [8]. This causes the procurement of goods/services within the government to always be in the spotlight due to the large allocation of funds and the high potential risk of failed auctions which can result in the allocation of these funds not being optimally absorbed [9];[10].

In Indonesia, the procurement of goods/construction services is under the authority of the Construction Service Selection Implementation Center (BP2JK) which is divided into 34 centers throughout Indonesia. Failed auctions occur every year evenly across all halls in Indonesia, where the average percentage of the number of packages that experience auction failures in all BP2JK is 11% or an average of around 17 procurement packages that experience auction failures each year. Based on these data it is known that the 3 BP2JK regions with the highest number of failed auction packages were BP2JK for the Papua Region, BP2JK for the DKI Jakarta region and BP2JK for the Central Java Region. This condition indicates that the number of packages in the Central Java region that have failed in the procurement process is quite high.

In Central Java, in the last 3 (three) years it is known that the number of procurements that failed to experience auction failures in the 2019 fiscal year was 10.57%, in 2020 it was 35.95% and in the 2021 fiscal year it was 18.82 %. This condition indicates that the number of packages in the Central Java region that have failed in the procurement process is quite high. The high number of procurement packages that have failed to bid in the last 3 (three) years will generally have an impact on the overall project timeline [2] and budget absorption [5]. As well as influencing the achievement of government performance appraisal.

Factors that cause auction failure include delays in the auction schedule caused by changes in planning documents; the number of goods/services providers who have a certain Business Entity Certificate (SBU) is very limited; limited goods/services providers who have material and equipment support from distributors; limited time for execution of work; work packages have experienced auction failures, and goods/services procurement packages are less desirable [5]. Meanwhile, other research states that the causes of failed auctions in government procurement of goods/services are caused by inaccurate identification of procurement needs; low participation of goods/services providers; and the goods/services providers are not careful in understanding the contents of procurement documents [5]. The high number of work packages that have failed tenders is an indicator of less effective and efficient implementation of goods/services procurement in terms of time and cost. The implementation of goods/services procurement that is not effective and efficient has implications for community services [9]. The government has regulated the implementation so that the procurement of goods/services within the scope of the government can run more effectively and efficiently through Presidential Regulation of the Republic of Indonesia Number 12 of 2021 concerning Amendments to Presidential Regulation Number 16 of 2018 concerning Government Procurement of Goods/Services. In addition, through article 13 of Government Regulation Number 60 of 2008 concerning the Government Internal Control System (SPIP), the Government regulates that each agency head is required to carry out a risk assessment in the form of risk identification and analysis. It is important to identify risks that may arise in order to minimize the possibility of their occurrence and the impact that will result [11];[12]. Therefore, it is necessary to conduct research on risks in the procurement process to identify the main factors causing failed bids so that development performance becomes more optimal. The purpose of this research is to identify the risk factors that cause failed bids in construction service procurement, analyze the risk level of the causes of failed bids in construction service procurement, and analyze the risk response to the causes of failed bids in the procurement of construction services.

2. Method

The method used in this study is descriptive quantitative with the help of a questionnaire as a tool for data collection. While the analysis process in this study refers to SNI 8848: 2019 concerning Risk Management-Guidelines for the implementation of SNI ISO 31000: 2018, the stages of risk analysis are as follows:

Stage 1: Risk Identification

Risk identification is obtained from 2 (two) sources, namely historical data from the results of the procurement working group's analysis of packages that have failed in tenders and literature studies related to failed tenders in procurement. Based on the results of historical data and literature studies, it was found that risk identification was then broken down based on its hierarchical group or called using the RBS (Risk Breakdown Structure) method. The results of risk identification are as follows:

Table 1. Risk Breakdown Structure

Level I	Level II	Level III	Reference
Type	Main risk	Risk factors	
Internal risk	Fault by Pokja	There is more than 1 (one) document uploaded (F1)	[13]; [14]
		Document selection error (F2)	[13]; [6]; [14]; [15]; [16]
		Error in the evaluation process (F3)	[13]; [14]; [17]
		Errors in the procurement process (F4)	[13]; [14]; [17]
	Fault by PPK	Overqualification (F5)	[18]; [6]
		Implementation of inappropriate procurement timelines (F6)	[18]; [19]
		The OE value is too low (F7)	[18]; [20]; [15]; [16]; [19]

Level I	Level II	Level III	Reference
Type	Main risk	Risk factors	
		None of the participants passed the evaluation (F8)	[13]
		The offer does not meet the requirements (F9)	[13]; [6]
External risk	Fault by contractors	Participants do not present evidence (F10)	[13]
		Price negotiations were not reached (F11)	[13]
	System E-procurement	E-procurement system hacking (F12)	[20]

Based on the table it is known that risk identification based on historical data is F2, F3, F4, F6, F8, F11 and F12. While identification based on related literature studies are F1, F5, F7, F9 and F10. The risks that have been identified will then be presented in a questionnaire as a research instrument to be asked of respondents, namely the Working Group and PPK of procurement at the Implementing Agency. Where the respondents in this study were 90 people consisting of 62 PPK and 28 Working Groups in the Central Java BP2JK area with the majority of 11-15 years' experience in the construction sector.

Stage 2: Risk Analysis

The risk analysis stage is divided into 2 (two), namely risk analysis based on historical data (F2, F3, F4, F6, F8, F11 and F12) and from the results of the questionnaire (F1, F5, F7, F9 and F10). The risk analyzed is based on the respondent's assessment of the questionnaire. Likelihood and impact criteria are stated on a Likert scale with a score of 1 to 5 which refers to the Circular of the Minister of PUPR No.04 of 2021 concerning Guidelines for the Implementation of Risk Management at the Ministry of Public Works and Public Housing, SNI 8848: 2019 concerning Risk Management-SNI Implementation Guide ISO 31000:2018 in the public sector and has been adapted to the conditions at the Central Java Regional Construction Services Selection Implementation Center. The criteria for the probability of occurrence used are as follows:

Table 2. Risk Probability

Probability Level	Value	Frequently
Very low	1	$x < 2$ times a year
Low	2	$2 < x \leq 5$ times a year
Medium	3	$6 < x \leq 9$ times a year
High	4	$10 < x \leq 12$ times a year
Very high	5	$X > 12$ times a year

Meanwhile, the impact criteria that can be caused by the risk of failed auction are as follows:

Table 3. Risk Impact

Impact Level	Impact
Very Low (1)	Causing delay < 15 days
Low (2)	Causing delay 15 until < 30 days
Medium (3)	Causing delay 30 until < 45 days
High (4)	Causing delay 45 until < 60 days
Very high (5)	Causing delay ≥ 60 days

Next, the respondent's assessment of the possibility and impact of a risk will be carried out which will then be plotted in a matrix to find out the value of the risk referring to the SNI 8848: 2019 concerning Risk Management as follows:

Table 4. Matrix of Risk Probability and Impact Level

Matrix		Impact Level					
		1	2	3	4	5	
		Very low	Low	Medium	High	Very high	
Probability	5	Very high	5	10	15	20	25
	4	High	4	8	12	16	20
	3	Medium	3	6	9	12	15
	2	Low	2	4	6	8	10
	1	Very Low	1	2	3	4	5

Furthermore, from the risk value on the risk scale map, the risk level can be determined through the risk priority determination table as follows:

Table 5. Risk Scale Map

Risk Level	Risks Value
Extreme (5)	20 - 25
High (4)	16 - 19
Moderate (3)	11 - 15
Low (2)	6 - 10
Very Low (1)	1 - 5

Based on the risk priority table, it will be known that the higher the level of risk will be linear with the urgency of the risk or the more important it is for a risk to receive attention or determine the steps to be taken as an effort to respond to this risk.

Stage 3: Risk Response

The form of risk response according to the SNI 8848: 2019 is as follows:

1. Reducing the possibility of Risk occurring, namely responding to the causes of risk so that the possibility of Risk occurring is smaller. This option is selected if the Risk Owner is able to influence the cause of the Risk event.
2. Reducing the impact of Risk, namely responding to the impact of Risk so that the impact of Risk is getting smaller. This option is chosen if the Risk Owner is able to influence the impact when the Risk occurs.
3. Sharing Risk, namely risk response by transferring part or all of the risk to other agencies/entities.
4. Avoiding Risk, namely responding to Risk by not carrying out or stopping activities that will cause Risk.
5. Accepting Risk, i.e. responding to Risk by not taking any action against Risk at an acceptable Risk Scale/Level.

3. Results and Discussion

One of the data used for analysis of possible risks is based on historical data on the number of packages that have failed at auction over the last 4 (four) years, namely from 2019-2022 which is presented in the following table:

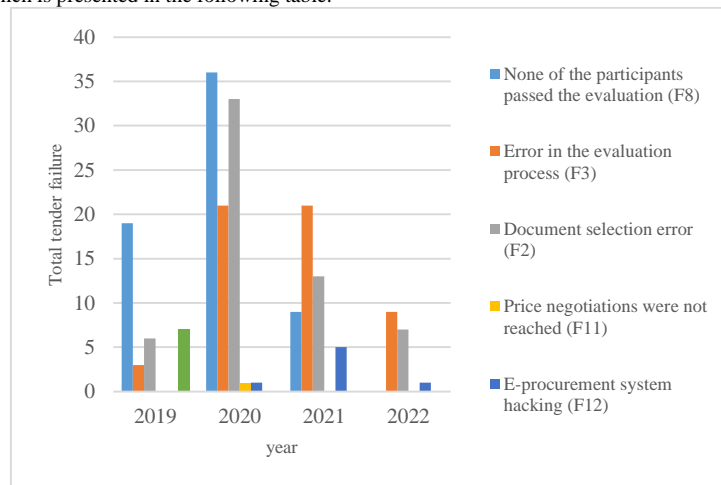


Figure 1. Total Causes of Project Tender Failures

In addition, the data on the probability and impact of an event is also based on the results of a questionnaire that refers to the criteria refers to SNI 8848: 2019. So, the analysis of the possibility of a failed auction risk in procurement in the BP2JK Central Java area is as follows:

Table 6. Risk Analysis

No	Risk Factors	Probability	Impact	Risk Value	Risk Level
1.	There is more than 1 (one) document uploaded (F1)	2	2	4	Low
2.	Document selection error (F2)	4	4	16	Moderate
.	Error in the evaluation process (F3)	4	4	16	Moderate
4.	Errors in the procurement process (F4)	2	2	4	Low
5.	Overqualification (F5)	2	2	4	Low
6.	Implementation of inappropriate procurement timelines (F6)	1	1	1	Very Low
7.	The OE value is too low (F7)	2	2	4	Low
8.	None of the participants passed the evaluation (F8)	4	4	16	Moderate

No	Risk Factors	Probability	Impact	Risk Value	Risk Level
9.	The offer does not meet the requirements (F9)	3	3	9	Moderate
10.	Participants do not present evidence (F10)	2	2	4	Low
11.	Price negotiations were not reached (F11)	1	1	1	Very Low
12.	E-procurement system hacking (F12)	1	5	5	Low

Furthermore, the results of the analysis of the likelihood of events and impacts can be plotted in the following matrix:

Table 7. Risks Matrix Mapping

Matrix		Impact Level				
		1	2	3	4	5
Probability	5	Very low	Low	Medium	High	Very high
	5	5	10	15	20	25
	4	4	8	12	16 (F2, F3, F8)	20
	3	3	6	9 (F9)	12	15
	2	2	4 (F1, F4, F5, F7, F10)	6	8	10
1	1 (F6, F11)	2	3	4	5 (F12)	

Based on the results of the analysis, it is known that the factors that cause auction failure in the BP2JK area, if sorted from the highest risk level, include:

- Document selection error
Errors in selecting documents are risks originating from these internal agencies, one of which is the poor quality of bidding documents where this can lead to errors in making estimates and decisions on claims and settlement of disputes in contracts [21]. In the Central Java BP2JK Balai area, an error in document selection is an event that occurs every year in the last 4 (four) years with a level 5 possibility, which is almost certain to occur. Errors in document selection often occur due to the complexity of the monitoring process due to the large number of work packages that must be borne by working groups and PPK so that they are prone to errors in their preparation [22]. The risk of errors in election documents entering at the level of probability is almost certain to occur and has a very significant impact where the average number of days of delay caused by this risk is 113 days.
- Error in the evaluation process
The evaluation stage plays an important role in the procurement process because this stage will screen which service providers will enter the next stage until they become the winner. Errors in the evaluation process can be caused because there is no system that records the history of the contractor's performance appraisal so that the assessment is only based on the amount of work experience without being completed with work performance which can potentially cause an appraisal error [22]. Errors in carrying out the evaluation process such as errors in giving an assessment can led to errors in determining the winner [23]. In the Central Java BP2JK area, errors in the evaluation process are also included in the category of events that are almost certain to occur, with the average number of incidents per year being 14 errors in the evaluation process carried out by the Working Group. The error in the evaluation process carried out by the procurement Working Group is almost certain to occur and has a very significant impact where the average number of days of delay caused by this risk is 113 days.
- Implementation of inappropriate procurement timelines
The implementation of the procurement timeline that is not in accordance with one of the causes is the delay in the auction schedule due to changes in the selection document [18]. Apart from that, what generally happens is that in Indonesia there are frequent changes to the list of budget executions at the end of each fiscal year so that the budget is still absorbed, the construction work packages are still being carried out with a very fast and rushed procurement process [11]. In the Central Java BP2JK area, the implementation of the procurement timeline was not appropriate, generally due to PPK errors. The implementation of the procurement timeline that is not in accordance with the provisions is a risk that rarely occurs in the Central Java BP2JK area. Even though it is in the level of a rare possibility, this risk has a very significant impact by producing an average service delay of 65 days per year.
- None of the participants passed the evaluation
In the Central Java BP2JK area, the risk that no participant will pass the evaluation is at the level of probability that it will almost certainly occur. According to the Presidential Regulation of the Republic of Indonesia Number 12 of 2021, no participants passed the evaluation because there were no providers who made offers, no participants passed the evaluation stage or the number of participants who passed the evaluation was less than 3 (three) [13].
- The offer does not meet the requirements
Offers that do not meet the requirements can be caused because during *aanwijzing* the provider is not focused and tends to be passive, resulting in a lack of understanding for the provider in preparing the bidding document [22].
- Errors in the procurement process

Errors in the procurement process can result from a lack of competency of the authorized officials, both the PPK and the procurement Working Group [17]. Errors in the procurement process occur if the implementation does not comply with the provisions stipulated in the Presidential Regulation of the Republic of Indonesia Number 12 of 2021[13].

7. There is more than 1 (one) document uploaded
The high workload of the procurement Working Group due to the large number of work packages causes the risk of document upload errors often occurring in the procurement process at government agencies [17]. Having more than 1 (one) document uploaded can be confusing for prospective providers who will make an offer
8. Over qualification
Sometimes because they want to guarantee the project to be carried out, agencies often over qualify in providing service provider requirements. Even though it is known that the number of service providers who have certain business entity certificates and service provider personnel with certain certifications is limited in Indonesia [18].
9. The owner estimate value is too low
The owner estimate (OE) value that is too low can be caused by the PPK not being focused because it holds too many work packages, limited time and competence so that it does not have time to conduct a price survey [22]. So that the OE compiled is not based on valid data [14]. The OE value that is too low will reduce the interest of providers to bid, thereby risking causing the auction to fail [20].
10. Participants do not present evidence
According to the Presidential Regulation of the Republic of Indonesia Number 12 of 2021 [13], even though there are participants who have passed the qualification stage, if these participants do not attend the verification, it can cause the auction to fail in a procurement process.
11. E-procurement system hacking
The transition of the government procurement system from conventional to electronic raises new risks, namely system hacking by irresponsible people. The impact resulting from this hack was quite significant, for example in 2015 SPSE Lampung Province experienced a hack which resulted in 166 out of 168 procurement packages having to undergo a re-auction [24]. Hacking of the e-proc system is a risk that rarely occurs in procurement in the BP2JK area with an average of 2 (two) events per year.
12. Price negotiations were not reached.
According to the RI Presidential Regulation No. 12 of 2021 the stages before the potential provider is declared the winner are negotiations on the bid price submitted, if the negotiation process is not reached then it can cause the auction to fail [13]. Price negotiations that were not reached included risks that almost did not occur in procurement in the BP2JK area.

If sorted by risk level ranking, the results of the risk analysis of the factors causing the failure of the auction in the procurement of construction services in the Central Java Balai area are as follows:

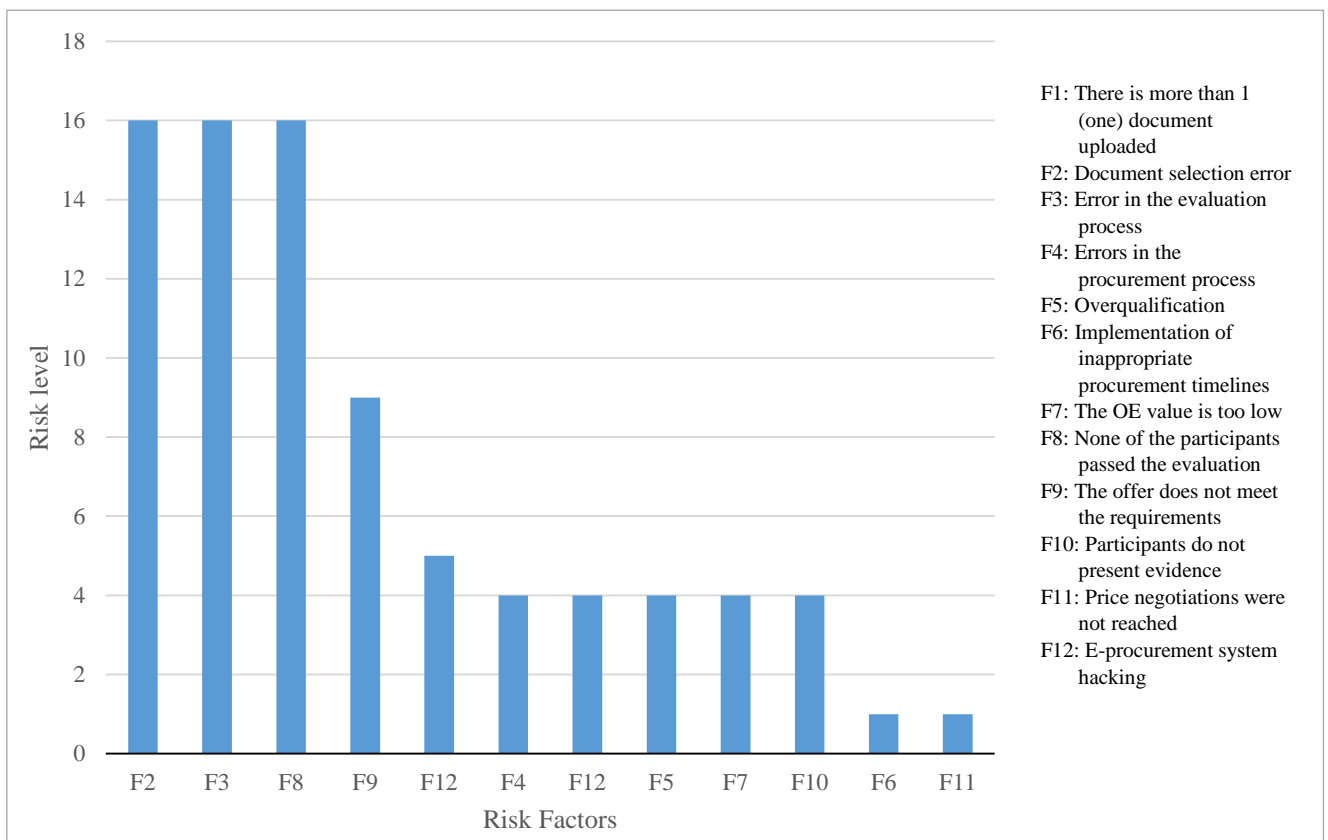


Figure 2. Risk Level of Tender Failures

Based on the results of a questionnaire from 90 respondents, it was found that the risk response to the risk factors for failed tenders in the procurement of construction services for the Central Java Region Construction Service Selection Implementation Center is as follows:

Table 8. Correlation Risk Factors, Risk level and Risk Responses

No	Risk Factors	Risks Level	Risk Response	r
1	Document selection error (F2)	Low	Reduce the probability of occurrence (62%)	0,011
2	Error in the evaluation process (F3)	Moderate	Reduce the probability of occurrence (60%)	0,008
3	None of the participants passed the evaluation (F8)	Moderate	Reduce the probability of occurrence (48%)	0,014
4	The offer does not meet the requirements (F9)	Low	Reduce the probability of occurrence (51%)	0,071
5	E-procurement system hacking (F12)	Low	Reduce the probability of occurrence (56%)	0,009
6	Errors in the procurement process (F4)	Very Low	Reduce the probability of occurrence (47%)	0,010
7	There is more than 1 (one) document uploaded (F1)	Low	Reduce the probability of occurrence (47%)	0,006
8	Overqualification (F5)	Moderate	Reduce the probability of occurrence (37%)	0,024
9	The OE value is too low (F7)	Moderate	Reduce the impact (31%)	0,027
10	Participants do not present evidence (F10)	Low	Reduce the probability of occurrence (32%)	0,020
11	Implementation of inappropriate procurement timelines (F6)	Very Low	Reduce the probability of occurrence (50%)	0,027
12	Price negotiations were not reached (F11)	Low	Reduce the probability of occurrence (41%)	0,016

In Table 4.8 the value of r shows the correlation or relationship between the level of risk and risk response for each risk factor. While the correlation value (r) for all risk factors is 0.188. According to (Haris et al. 2019) the magnitude of the correlation value indicates the level of relationship between variables where the level of relationship is very weak, has a coefficient interval of 0.00-0.199, a correlation interval for a weak relationship is 0.20-0.399, a moderate correlation interval is 0.40- 0.599, a strong correlation interval between 0.60 and 0.799 and a very strong correlation between 0.8 and 1.00. If you look at the results of the analysis it is known that the average correlation value for all risks is 0.188 indicating that the relationship between the level of risk and risk response is positive/linear but has a very weak level of relationship. Or it can be said that whatever the level of risk is, it will not affect the risk response that will be taken.

If you look further, then based on Table 4.8 it shows that the majority of the risk responses taken are to reduce the possibility of risk occurring. This is in line with research [25] which explains that reducing risk is the method most often used in risk response, followed by sharing risks, and avoiding risks. If you look at it in general, the procurement risk that causes the auction to fail is caused by internal factors, so one of the risk responses that can be implemented to reduce the possibility of this incident is to ensure that the selection working group is required to have a competency certificate in the field of Goods/Services Procurement [26]. So that from the results of the analysis it is found that the risk response is more influenced by the factors that cause the risk. If the risk factor comes from an internal organization, the risk response taken is to reduce the possibility of a risk occurring. Meanwhile, if the risk factor comes from external to the organization, because the control is on the external side, it reduces the impact that might result from that risk. The application of sustainable risk management throughout the project life cycle can assist decision makers in determining responses to risks that arise during project implementation [27]. Determining the appropriate risk response is necessary to reduce the impact of the risk or the possibility of the risk occurring [28].

4. Conclusions

The conclusions of this study are as follows:

1. Based on the identification results, there are 12 (twelve) risk factors for failed auctions in the Central Java BP2JK area, among others selection document errors, evaluation process errors, procurement implementation that was not on schedule, no participants passed the evaluation, bids did not meet requirements, procurement process errors, more than 1 (one) document uploaded, overqualified, owner estimate too low, participants did not show evidence, e-procurement system was hacked and price negotiations were not reached.
2. Risk factors with a moderate level of risk include the risk of errors in the selection documents, errors in the evaluation process, no participants passing the evaluation and bids that do not meet the requirements. Risk factors with a low level of risk are more than 1 (one) procurement document uploaded, errors in the procurement process, overqualification, the OE value is too low, participants do not attend verification and hacking of the e-procurement system. Meanwhile, the risk factors with a very low level of risk are the risk that the implementation of the procurement timeline does not comply with the provisions and the risk of price negotiations not being reached.
3. The general risk response is to reduce the probability of a risk occurring. This response was chosen because the majority of risks originate from within the organization so that the possibility of these risks can be controlled internally. Subsequent risk responses include reducing the impact of risks for risks originating from external parties such as errors in bidding documents that do not meet specifications, sharing risks for risks that cannot be handled internally by the organization, avoiding risks for risks that have a very high impact on the organization and accept risks for risks that have a very high probability of occurring and have very little impact on the organization.

REFERENCES

- [1] R. Made, Sudarsana, and M. Nadiasa, "Penawaran Peserta Lelang Elektronik (E-Procurement) Jasa Analysis of Factors Affecting the

- Participation and Value Offers Electronic Bidders (E-Procurement) Construction Services in Buleleng Regency,” *J. Spektran*, vol. 5, no. 1, pp. 1–10, 2017.
- [2] N. L. Y. Ekawati, G. C. Dharmayanti, and I. W. Yansen, “Analisis Faktor – Faktor Yang Mempengaruhi Keterlambatan Proyek Jalan Lingkungan Permukiman Di Kabupaten Badung,” *J. Spektran*, vol. 3, no. 2, pp. 57–65, 2015, doi: 10.24843/spektran.2015.v03.i02.p07.
- [3] M. Iek, “Studi Dampak Covid 19 Terhadap Perekonomian Provinsi Papua 2020,” *Jumabis J. Manaj. dan Bisnis*, vol. 4, pp. 27–39, 2020, [Online]. Available: <http://jurnal.manuncen.ac.id/index.php/jmb/article/view/68>.
- [4] F. S. Sajjah, “Penyebab Keterlambatan Penyelesaian Proyek Kontrak Tahun Jamak,” *J. Anggar. dan Keuang. Negara Indones.*, vol. 2, no. 2, 2020.
- [5] N. G. Astadi, I. N. Sutarja, and M. Nadiasa, “Analisis Sistem Pengadaan Proyek Konstruksi Terhadap Penyerapan Anggaran Pemerintah Kabupaten Badung,” *J. Spektran*, vol. 3, no. 1, pp. 82–89, 2015, doi: 10.24843/spektran.2015.v03.i01.p010.
- [6] M. U. Albab, “Analisis Pelaksanaan Pengadaan Barang/ Jasa Pemerintah (Studi Pada Unit Layanan Pengadaan Daerah Kementerian Keuangan Provinsi Daerah Istimewa Yogyakarta),” Universitas Gadjah Mada, 2017.
- [7] Djairan, “Analisis Problematika Korupsi Serta Peranan Lembaga Pengawas Pengadaan Barang dan Jasa Pemerintah,” *Sarj. Ilmu Huk.*, no. Juli, 2018.
- [8] B. T. Tulungen and V. Adrison, “Kompetisi dan Efisiensi pada Pengadaan Pemerintah: Bukti Empiris pada Kementerian/ Lembaga di Indonesia,” *Indones. Treas. Rev. J. Perbendaharaan, Keuang. Negara dan Kebijakan. Publik*, vol. 6, no. 1, pp. 19–29, 2021, doi: 10.33105/itrev.v6i1.225.
- [9] M. Reza, T. Jantje, and W. Heince, “Pengendalian Internal Melalui Risk Assessment Pengadaan Barang Dan Jasa Pada Dinas Perumahan Rakyat Dan Kawasan Permukiman Kabupaten Tolitoli,” *J. Ris. Akunt. dan Audit. “GOODWILL,”* vol. 12, no. 1, pp. 38–50, 2021.
- [10] Darma, “Analisis Manajemen Risiko Dan Pengendalian Intern Pada Pengadaan Jasa Konstruksi (Studi Kasus Pengadaan Jasa Konstruksi Pada SKPD Di Lingkungan Pemerintah Provinsi Sumatera Barat),” *jpn*, vol. 2, no. 1, pp. 1–23, 2017, doi: <https://doi.org/10.30559/jpn.v2i2.39>.
- [11] R. Wulandari, “Evaluasi Sistem Pengadaan Barang/ Jasa di Universitas Gadjah Mada (UGM) Berbasis Manajemen Risiko,” Universitas Gadjah Mada, 2013.
- [12] Y. Yuhana, “Identifikasi Risiko E-Purchasing dalam Aktivitas Pengadaan Barang dan Jasa di Politeknik Negeri Bandung E-Purchasing Risk Identification On Procurement Activity at Politeknik Negeri Bandung,” *SIGMA-Mu*, vol. 13, no. 2, pp. 15–22, 2021.
- [13] Perpres, “Peraturan Presiden Republik Indonesia Nomor 12 Tahun 2021 Tentang Perubahan Atas Peraturan Presiden Nomor 16 Tahun 2018 Tentang Pengadaan Barang/Jasa Pemerintah,” *Republik Indones.*, no. 086130, pp. 1–47, 2021.
- [14] M. Kamal, “Peta Risiko Fraud Pengadaan Barang dan Jasa Pemerintah,” *J. Transform. Adm.*, vol. 09, no. 02, pp. 139–163, 2019.
- [15] F. A. Safitri, M. A. Rohman, and R. Indryani, “Critical factors that influence the success of construction projects procurement in Surabaya,” *IOP Conf. Ser. Mater. Sci. Eng.*, vol. 930, no. 1, 2020, doi: 10.1088/1757-899X/930/1/012008.
- [16] A. Serpell, X. Ferrada, and R. Howard, “Assessing the Client’s Risk Management Performance in Construction Procurement and Contracting: Case Studies,” *Procedia Eng.*, vol. 123, pp. 510–518, 2015, doi: 10.1016/j.proeng.2015.10.103.
- [17] A. O. F. Dita, M. A. Rohman, and C. B. Nurcahyo, “Risks of Public Procurement for Construction Works,” *IOP Conf. Ser. Mater. Sci. Eng.*, vol. 930, no. 1, 2020, doi: 10.1088/1757-899X/930/1/012002.
- [18] S. Hapsari, “Analisis Faktor-Faktor Penyebab Gagal Lelang dan Putus Kontrak Pengadaan Barang/ JAsta Studi Kasus pada Pemerintah Kota Yogyakarta,” Universitas Gadjah Mada, 2017.
- [19] M. R. Ismail, M. Sun, and G. Bowles, “A risk-oriented tender evaluation system for construction projects in Malaysia,” *Eng. Constr. Archit. Manag.*, vol. 28, no. 7, pp. 1887–1907, 2020, doi: 10.1108/ECAM-06-2018-0225.
- [20] N. Sa’adah, “The Implementation of E-Procurement in Indonesia: Benefits, Risks, and Problems,” *INFERENSI J. Penelit. Sos. Keagamaan*, vol. 14, no. 2, pp. 283–304, 2020, doi: 10.18326/infsl3.v14i2.283-304.
- [21] S. Laryea, “Quality of tender documents: Case studies from the UK,” *Constr. Manag. Econ.*, vol. 29, no. 3, pp. 275–286, 2011, doi: 10.1080/01446193.2010.540019.
- [22] E. I. Kusumarukmi, “Identifikasi dan analisis permasalahan pelelangan umum proyek konstruksi,” Institut Teknologi Sepuluh Nopember, 2018.
- [23] A. Sopian, “Evaluasi Penawaran dalam Proses Pemilihan Penyedia Barang/ Jasa Pemerintah,” *Balai Diklat Keuang. Palembang*, 2013.
- [24] A. Wijaya, P. Studi, P. Asimetris, F. Strategi, and P. Unhan, “Information Security Strategy To Counter Cyber Threats in Electronic Procurement Systems (Study of Hacker Attacks in,” *J. Peperangan Asimetris*, vol. 5, no. 3, pp. 71–86, 2019.
- [25] T. Lyons and M. Skitmore, “Project risk management in the Queensland engineering construction industry: A survey,” *Int. J. Proj. Manag.*, vol. 22, no. 1, pp. 51–61, 2004, doi: 10.1016/S0263-7863(03)00005-X.
- [26] A. Akbari Ahmadabadi and G. Heravi, “Risk assessment framework of PPP-megaprojects focusing on risk interaction and project success,” *Transp. Res. Part A Policy Pract.*, vol. 124, no. March, pp. 169–188, 2019, doi: 10.1016/j.tra.2019.03.011.
- [27] O. Okudan, C. Budayan, and I. Dikmen, “A knowledge-based risk management tool for construction projects using case-based reasoning,” *Expert Syst. Appl.*, vol. 173, no. January, p. 114776, 2021, doi: 10.1016/j.eswa.2021.114776.
- [28] G. M. Albirru, A. Ratnaningsih, and S. Sukmawati, “Analisis Risiko Penggunaan Aplikasi Sistem Pengadaan Elektronik (SPSE) Versi 4.3 di Kabupaten Lumajang Menggunakan Metode AHP,” 2019.