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Research Paper

The Analysis of Additional Requirement for Construction Work Tender to the Achievement of Work Output at the Highways and Construction Department of Pasuruan Regency

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ABSTRACT: *Around the working environment of Pasuruan Regency government, further concerns arises as a result of over simplification of additional requirements according to the regulations, in aspect of ability of tender winner to carry out construction work both in terms of its technical and financial capabilities because the tender winner is produced from a competition process where the requirements were very simple with the lowest price, so that the bidding tendency will reduce the price as low as possible to increase the possibility of becoming a tender winner. Data analysis used in this study was a path analysis and multiple linear regression analysis to questionnaire answers which distributed to 38 respondents as a sample of companies that procuring goods and services. According to the research result, it was found that: (1) the value of the provider's offer tends to fall very far from the Self Estimated Price (Harga Perkiraan Sendiri/HPS) value, where the decline exceeds 20 % of the HPS value, (2) the effect from the additional technical requirements for construction work tender (X) on provider work performance (Y) is stated with series of equations: Y = 0.304 X1 + 0.275 X2 + 0.380 X3, namely Z = 0.202 X1 + 0.210 X2 + 0.324 X3 + 0.303 Y, Z = 0.202 Q = 11.376 + 0.297 X1 + 0.550 X2 + 0.443 X3; the additional technical requirements for construction work tender (X) and provider work performance (Y) to work output (Z) is Z = 0,202 X1 + 0,210 X2 + 0,324 X3 + 0,303 Y, Z = 0,202 X1 + 0,210 X2 + 0,324 X3 + 0,303 Y and implementation of the additional of technical requirement not conflicting to procurement principles (Q) can be observed by the following equation: Q = 11,376 + 0,297 X1 + 0,550 X2 + 0,443 X3; (3) the influence of additional technical requirements for construction work tender (X) on not conflicting with procurement principles (Q) obtained a positive path coefficient meaning it has a significant effect with a contribution value of 84.3 %.*

KEYWORDS: *Additional Requirement, Additional Prerequisite, Construction Work, Achievement of Work Output.*

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I. INTRODUCTION

Indonesia government through LKPP RI has established an implementation guideline for procurement of government goods or services through providers by issuing LKPP Regulation Number 12 of 2021. This institutional regulation serves as a guideline for doers involved in the procurement of the government goods/services to work on procuring process in accordance with Indonesia Presidential Regulation Number 16 of 2018 about Procurement of Government Goods/Services which has been altered by the Indonesia Presidential Regulation Number 12 of 2021 regarding Amendments to Indonesia Presidential Regulation Number 16 of 2018 [1,2,3].

In a general conclusion, the publication of LKPP Regulation Number 12 of 2021, apart from the effort to prevent and eradicate corruption, it also aims to open job vacancies as widest as possible in relation to equalize the economic and giving support to the development of micro, small and medium enterprises (MSMEs) by increasing active role of many national business doers and also by acceleration of development in related

areas. This regulation put into effect by reality where many simplifications of fulfillment of assessment elements and technical requirements for providers, qualification requirements, and construction work tender methods use the lowest price system to make this obligation easier for service providers or business doers to be participated in a construction work tender and becomes the tender winner [1].

Nevertheless, in the end, at the Pasuruan Regency government, within its working environment, a further concern emerging about the impact of over simplification of requirements according to these regulations in aspect of tender winner abilities in executing the construction work (both technical and financial capabilities) since the tender winner was produced from a competition process that its requirements becomes so simple with the lowest tender price so that in the bidding process tends to reduce the price as low as possible to increase the possibility of becoming a tender winner.

The explanation above could be an inhibiting factor for following up any strategic issues related to infrastructure development problems in Pasuruan Regency as well as efforts to achieve vision and mission of Pasuruan Regency government as stated in the 2018-2023 Pasuruan Regency RPJMD where one of which is 'improving infrastructure region quality to strengthen the community connectivity and accessibility in order to increase the regional competitiveness by paying attention to utilization of all potential natural resources in a responsible and sustainable ways as a form of environmental conservation in Pasuruan Regency'.

To this extent, any discussion related to analysis of additional requirements for construction work tender to the achievement of work output at the Pasuruan Regency Highways and Construction Department have not been carried out by many researchers, thus, the study problem raised in this article are: (1) what are conditions before the additional technical requirements implemented?, (2) how is the relationship between additional technical requirements to provider work performance in achieving the work output?, (3) Will the application of additional technical requirements has no contradiction effect or conflicting with the procurement principles?

II. LITERATURE REVIEW

2.1 Procurement of Goods or Services

In realizing goals in regional developments and carry out the government functions certainly requires resources in formats of equipment, logistics, and services from other parties that support the optimization of regional government work performance. Fulfillment of these necessities must be carried out in accordance with applicable law and regulations, in specific way through the process of procuring government goods/services since the funding source comes from the Regional Revenue and Expenditure Budget (*Anggaran Pendapatan Belanja Daerah*/APBD)

2.1.1 Definition of Goods/Services Procurement

There are numbers of formulations regarding to procurement definition that have been put forward by many experts such as Arrowsmith, Bahagia, Christopher & Schooner and others. In principle, procurement is an activity to obtain goods or service with transparency, effectively, and efficiently according to the needs and desires of the users. Goods are equipment and buildings which both use for public and private purposes [4,5,6,7].

According to Indonesia Presidential regulation Number 16 of 2018 in regards to Procurement of Government Goods/Services stated that any purchase of government goods/services hereinafter referred as procurement of goods/services is the activity of procuring goods or services by the Ministries/ Institutions/ Regional Apparatus which financed by the APBN/APBD, starting from process of identification of necessities until the completion (hand over) of the work results. Government procurement (of goods and services) has an important role in the implementation of national development to improve public service sector and to develop the national and regional economy [2].

Wardiyanto defines public goods or services as material where its usage is related to the community interest at large, both as a group and as a general community. From the explanation above, then procurement of goods or services within Pasuruan Regency government is included in the category of public procurement in term of the source of fund that been using, as well as the user factor or its utilization factor are aimed for the general public, both in a direct and indirect way [8].

2.1.2 Purpose of Goods/Service Procurement

The objectives of goods or services procurement are stated in Article 4 of Indonesia Presidential Regulation Number 12 of 2021 as listed below [1].

1. Produce the appropriate goods/services for every rupiah spent as measured in aspects of quality, time, cost, location and provider.
2. Increase the domestic products usage.

3. Increase the participation of micro and small businesses (MSMEs) also from the cooperative organization.
4. Increase the role of national business doers.
5. Support any research implementation and utilization of goods or services resulting from research.
6. Increase participation in creative industry.
7. Create economy equality and providing an expansion of business opportunities
8. Improve a sustainable procurement

2.1.3 Policies of the Goods/Services Procurement

Policy becomes the method and strategies of government which must be obeyed by policy makers and the procurement doers that involved within this activity, such as PPK, PA/KPA, and certain work groups (*Pokja*) to achieve the procurement goals optimally.

Article 5 of Indonesia Presidential Regulation Number 16 of 2018 stated the policies for goods or services procurement and listed as follow [2]:

1. Improve the quality of planning for goods/services procurement.
2. Carry out the procurement of goods/services in more transparent, open, and more competitive way.
3. Strengthen the institutional capacity and human resources for goods/services procurement.
4. Develop e-marketplace for goods/services procurement.
5. Employ information and communication technology, as well as electronic transactions.
6. Encourage the use of domestic goods/services also the Indonesian National Standards (*Standar Nasional Indonesia*/SNI).
7. Provide opportunities to Micro, Small, and Medium (MSMEs) businesses
8. Encourage the implementation of research and creative industry.
9. Implement a sustainable procurement.

There are implementations and concrete actions from the procurement policy that have been established according to Syarif [9], such as:

1. Systematic efforts for improving qualities in identifying necessities, determining goods/services, determining procurement methods, determining schedules and improving the quality of budgeting.
2. Related efforts in utilizing advances in science and technology, such as usage of SPSE, SIRUP, E-Catalog and SIKAP.
3. Efforts in constructing a structural and permanent UKPBJ, no-intervention and filled with procurement of professional human resources and a standardized competency level.
4. Efforts in developing electronic markets with format of electronic catalogs (national, sectoral and local), online shops, and selection of the provider (e-tendering or e-selection*).*
5. Efforts to ensure K/L/PD able to carry out the function of electronic procurement services (LPSE) so that the procurement can be conducted in efficient and effective way as well as upgrading the national economy by developing the e-marketplace.
6. Efforts in maximizing the use of goods or services that produced domestically with special consideration to TKDN and BMP value as well as providing the price references, limiting the use of imported goods unless the particular goods unable to be produced domestically or the volume of the domestic produced goods unable to meet the demands.
7. Efforts to establish work packages as many as possible for small businesses, value of package for goods procurement, construction works and other services with maximum amount of IDR 15 billion to be reserved and its allocation will be targeted to small businesses except for work packages that required technical capabilities that unable to be met by small businesses.
8. Effort to encourage research conduct in accordance with the needs of research work, therefore must be given separate authority to regulate through ministerial regulations that handle research and technology matters as well as integrating creativity industry assets and potentialities, creating industry-based creative innovation and awareness, as well as appreciation of the creative industry including Intellectual Property Right/IPR (*Hak Kekayaan Intelektual/* HAKI).
9. Efforts to achieve beneficial values that economically profitable not only for K/L/PD as users but also for the community and in significant able to reduce negative impacts on the environment within the entire usage cycle.

2.1.4 Principles of Goods/Services Procurement

The article 6 of Indonesia Presidential Regulation Number 16 of 2018 stated the procurement of goods or services applies the following principles: (a) efficient, (b) effective, (c) transparent, (d) open, (e) competitive, (f) fair, (g) accountable [2].

The explanation from seven principles of goods/service procurement according to Seno is explained in the following explanation:

1. Efficient, the goods/services procurement must be carried out through:
   - The use of minimum fund and resources to achieve the desired quality and target within the specified time, or
   - Use predetermined funds to achieve result and targets with maximum quality.
2. Effective, the goods/services procurement must be in accordance with the necessities and targets which had been set also able to provide maximum benefits.
3. Transparent, all provisions and information regarding the goods/services procurement are clear and widely known by any interested providers of the goods/services, as well as the public in general.
4. Open, the goods/services procurement are open to all providers of the related goods/services who meet certain requirements or criteria based on clear provisions and procedures.
5. Competitive, the goods/services procurement must be carried out through fair competition among as many eligible providers as possible who meet the requirements, so the goods/services can be obtained competitively and no intervention that disrupts the creation of market mechanism in the procurement process of the related goods or services.
6. Fair/non-discriminatory, providing same treatment to all prospective providers of goods/services without aiming to provide benefits to certain parties while still focusing to national interest.
7. Accountable, it must comply with the rules and regulations related to the goods/services procurement so it can be accounted for.

2.1.5 Ethics in Goods/Service Procurement

Ethics derives from Greek word of 'ethos' which means 'custom'. According to KBBI, ethics is science of what is good and what is bad also the moral right and moral obligation (*akhlak*). In simple term, ethics is a system of moral principles [10]. Whereas according to Britannica, ethics is also referred as moral philosophy. Ethics is a disciple concerned with what is morally good and bad or morally right or wrong.

The ethic about goods/services procurement can be seen in article 7 of Indonesia Presidential Regulation Number 16 of 2018 which stated all parties involved in the goods/services procurement must comply to following ethics [2]:

1. Carrying out tasks in orderly manner with a sense of responsibility to achieve targets, smoothness, and accuracy of objectives of the goods/services procurement.
2. Working in professional, independent and capable to maintain the confidentiality of information which by nature must be keep in secrecy to prevent irregularities in the goods/services procurement.
3. Not influence each other, either in direct or indirect ways that able to result an unhealthy business competition.
4. Accept and be responsible to all established decisions in accordance to the written agreement of the related parties.
5. Avoid and prevent conflict of interest from the related parties either in direct or indirect ways that able to result in unhealthy business competition in the goods/services procurement.
6. Avoid and prevent any waste of money and leakage of the country financial condition.
7. Avoid and prevent authority abuse and/or collusion.
8. No acceptance or no offering of rewards, commission, rebates, and other things from or to anyone known or reasonably suspected to be related to the good/services procurement.

In reality, the implementation activity of government procurements (of goods/services) is vulnerable to the occurrence of problems in technical, administrative or operational in nature which can be related to legal issues (whether criminal or civil issues) and to the business competition, also to the state administration (*Tata Usaha Negara*/TUN). Underlying issues whether direct or indirect are closely related to the objectives, policies, principles and ethics of procurement of goods/services, because the procurement process for goods/services must be harmonious with and guided by the objectives, policies, principles and ethics of procurements and it will have material and formal consequences, so the procurement doers must understand these matters stated above while conducting their role and their respective responsibility in working on the procurement of government goods/services.

2.2 The Procurement of Construction Work through Provider

2.2.1 Stages of Procurement

The implementation of procurement of construction work through providers are consisted of procurement planning activity, procurement of preparation, selection preparation, selection implementation,

contract implementation and hand over of the work result. Each stage will be explained in detail in Appendix II of LKPP Regulation Number 12 of 2022 as listed below [11]:

1. Planning of Goods/Services Procurement
   The procurement planning is prepared by the PPK and determined by the PA/KPA includes several matters of identification of needs, determination of goods/services, method, schedule and budget for goods/services procurement.
2. Preparation of Goods/Service Procurement
   Procurement preparation can be carried out after the RKA-K/L is approved by the House of Representative/DPR or RKA or the Regional Apparatus RKA has obtained an approval from the Regional Legislative Council/DPRD. Preparation for procurement of construction work is carried out by PPK including reviewing and determining technical specifications, preparing and determining HPS, contract drafting and determining the DED (Detailed Engineering Design).
3. Preparation for Selection
   The preparation for selection of providers is conducted by the selection work group after the group receives inquiry for selecting a provider from the PPK accompanied by preparation of documents for the procurement of goods/services through providers which are submitted by the PPK to the Head of UKPBJ. Preparation for selecting construction work through providers will be conducted by the work group (*Pokja*) with several tasks of reviewing procurement preparation documents. Determining selection method, determining qualification method, determining provider requirements, determining bid evaluation methods, preparing and determining selection schedules, and preparing selection documents.
4. Implementation of Selection
   The selection of provider will be conducted by PPK and the selection work group according to the selection method. In this research, construction work procurement uses post-qualification tender method, single file, lowest price system and the contract is measured by unit price.
5. Implementation of Contract
   Contract implementation is carried out by parties conforming to the provisions within the contract and statutory regulations.
6. Hand Over or Completion of the Work Result
   The written request to the contract signing official for delivering work result. In this research, discussion focus is on the preparation stage for selecting provider for construction work.

2.2.2 Method of the Provider Selection

Referring to Appendix II of LKPP Regulation Number 12 of 2021, the selection work group establishes method to select provider with consideration of: (a) type of construction work, (b) technical specifications and complexity of the work, (c) budget ceiling/HPS, (d) contact design, (e) market analysis results and/or (f) consolidation results. In addition, the selection work group implements method for selecting construction work providers like direct appointment, fast tender and regular tender [1].

In this research, the research object of the provider selection method uses the tender method since the HPS value of entire package is worth over IDR 200,000,000.00 (two hundred million rupiah) up to IDR 15,000,000,000 (fifteen billion rupiah) and this value is included into the type of small business qualifications.

2.2.3 Administrative or Legal Requirement for Provider

The qualification requirements consisted of administrative (legality) and technical requirements. It is clearly stated within Appendix II of LKPP Regulation Number 12 of 2021 for determining provider qualification requirements, the selection work group is prohibited from adding discriminatory and non-objective qualification requirements that could hinder and limit the participation of business doers in the selection process. The selection work group prepares qualification requirements to ensure that business doers who will become the provider has the ability to provide construction work [1].

The administrative or Legal Qualification requirements for providers include:

1. Fulfill the statutory provisions for carrying out activities/businesses, budget ceiling value to IDR.15,000,000,000.00 (fifteen billion rupiah) using small business qualifications/segmentation except for type of work packages that require technical capabilities which cannot be met by small businesses and or cooperative organization.
2. Have valid taxpayer information status based on confirmation result of taxpayer status.
3. In legal standing, the business doers have the capacity to bind themselves to the contract as evident by company's deed of establishment and its amendments, a power of attorney if authorized and an identity card (*Kartu Tanda Penduduk*/KTP).
4. Agree to the statement of Integrity Pact.
5. Approve the Participant's statement letter.

6. For the event of joint operation, the participant must have a joint operation agreement.
7. Requirement for Ownership of a Business Entity Certificate (*Sertifikat Badan Usaha*/SBU).

2.2.4 Technical Qualification Requirement for Provider

The requirements have been clearly described in Appendix II of LKPP Regulation Number 12 of 2021, technical qualification for construction work providers for business entities include [1]:

1. Have experience of at least 1 (one) construction work within the last 4 (four) years, either in a government or private environment including subcontracting experiences.
2. By considering to the Remaining Capability of the Package (*Sisa Kemampuan Paket*/SKP).
3. For the qualification specific for small businesses which only been established for less than 3 (three) years:
   - For the amateur (non/less experience) provider, point 'a' is excluded for procurement with a package value up to maximum of IDR. 2,500,000,000.00 (two billion five hundred million rupiah).
   - Must have 1 (one) experience in the same field, for the procurement with work package value of at least more than IDR 2,500,000,000.00 (two billion five hundred million rupiah) up to a maximum of IDR 15,000,000,000.00 (fifteen billion rupiah).
4. For medium or large business qualifications, have basic abilities (*Kemampuan Dasar*/KD) with value equal to 3 x NPt (highest experience value in the last 15 (fifteen) years).
5. Having a qualified management certificate, environmental management certificate, and occupational safety and health certificate that only required for complex/high risk construction work and or intended for large business qualifications.

2.2.5 Method of Bidding Evaluation for Construction Work

Method of bidding evaluation in the selection of construction work providers is feasible by using the lowest price evaluation method. The lowest price evaluation method is used for the procurement of construction work as the basis determination for finding the winner among bids that meet the technical requirements while in the meantime the administrative evaluation uses a knockout system (pass and fail). Technical evaluation uses a pass and fail system or threshold system. The knockout system for lowest price evaluation method is used to procure non-complex construction work while the threshold lowest price evaluation method is used for procurement of complex construction work. The selection work group prepares evaluation criteria and procedures in accordance with the evaluation method and is included in the selection document as stated in Appendix II of LKPP Regulation Number 12 of 2021 [1].

2.2.6 Elements of Technical Assessment of Construction Work

As mentioned in Appendix II of LKPP Regulation Number 12 of 2021 [1], the technical requirements for the offer to be provider for construction work tenders consisted of:

1. Work Implementation Method
   The work implementation method is only required for tenders with complex work and/or work intended for large business qualifications.
2. Main Equipment
   Requirement of main equipment selection must consider two following conditions:
   - Number of types from the required main equipment.
   - Number of main equipment required.
3. Managerial Personnel
   Requirements for selecting managerial personnel must pay attention to the following rules:
   - Number of managerial personnel needed.
   - Each required personnel only oblige to have 1 (one) work competency certificate (SKA/SKT).
   - The financial managers do not need / require work competency certificate.
   - For construction safety officers certificates or construction K3 expert certificates, these certificates must not be limited have been issued from only one professional certification agency or authorized agency in accordance with the provisions of statutory regulations.
   - Experience requirements are needed for construction safety officers/construction K3 experts/construction safety experts.
   - Experience requirements are needed for managerial personnel other than construction safety officers/construction K3 experts/construction safety experts.
4. Documents of Construction Safety Plan (*Rencana Keselamatan Konstruksi*/RKK)
   RKK document requirements must take in to consideration to several items below:
   - Set or established 1 (one) job description and 1 (one) hazard identification.

- The job description and hazard identification as referred to above are based on the greatest level of risk from the work description and hazard identification which has been determined by the contract signing official in the conceptual design of the construction safety management system.

5. Section of the works to be subcontracted.

2.3 Additional Prerequisites

LKPP Regulation Number 12 of 2021 stated that, if necessary additional requirements can be added into the provider's qualification requirements and technical requirements. The additional prerequisites should be put to each work package. The addition of provider's qualification requirements and technical requirements must not in conflict with procurement principles, procurement ethics and statutory provisions.

The following section will explain the matrix of differences in technical requirements according to selection document model (*Model Dokumen Pemilihan*/MDP) from LKPP Regulation No.12 of 2021 with technical requirements after the inclusion of additional prerequisites [1].

III. RESEARCH METHODS

3.1 Population and Sample

Population is a generalization area consisted of objects/subjects with certain quantities and characteristics determined by researchers to be studied which later will be drawn into the conclusions. Furthermore, Sugiyono stated that in quantitative research, sample is a part of number and characteristic of the population. Of what is learned from the sample, then the conclusion can be applied to the population. For this reason, any sample taken from the population must be truly representative. Whereas the sampling technique used in this research was the census method or total sampling. Census or total sampling is a sampling technique where all members of population are taken into samples and research on population under 100 individuals should be carried out using a census so all members of the population are sampled as subject studied or as respondents who providing information [12].

The population sample of this study was the service providers as tender participants for 15 work tender packages of construction work for Pasuruan Regency Highways and Construction Department for tender period from 14 April 2022 to 23 June 2022. There were 72 service providers who took part as participants in the15 construction work tender packages of that period However, there were several service providers who participate in more than one tender of work packages that also been counted in population so there was a slice in the number of tender participants. Finally, the population of this study in effective number was 38 service providers and the sample taken was a saturated sample (population with the same sample) of 38 respondents.

3.2 Research Variable

According to Singarimbun and Effendi, research variable is a concept contains of variations in value [13]. Meanwhile, Sugiyono defines a research variable as an attribute or trait or value of a person, object or activity that has certain variations determined by the researchers to be studied so the obtainable information can be drawn into conclusion [12]. The employed variables in this research are:

1. The independent Variables
   This variable often referred to a stimulus variable, predictor or antecedent, and in Indonesia it is often referred to be an independent variable. The independent variable is a type of variable that influences or becomes the cause of changes or emergence of dependent (bound) variable. In both research models there are three independent variables; (1) additional prerequisite of equipment technicality, (2) additional prerequisite of material support, and (3) additional prerequisite of cash flow projection.
2. The dependent Variable
   The dependent variable often referred to be the output, criterion, or consequent variable. In Indonesia this variable often referred as a dependent variable. The dependent variable is a variable which will be influenced or be a consequence because of the existence of an independent variable. In both research model there are two dependent variables; (1) work output, and (2) not conflicting with procurement principles.
3. The Intervening Variable
   The intervening variable is a variable that theoretically influences the relationship between independent and dependent variable into an indirect relationship but cannot be observed or measured. This variable is an intervening/intermediate variable located between the independent and dependent variables, so that the independent variable does not directly influence changes or the occurrence of the dependent variable.
   In this research model there was one connecting (intervening) variable, the provider work performance.

3.3 Data Collection

In connection to data requirement of this research in forms of primary data and secondary data, the data collection techniques used for this study are explained below:

1. Literature Study
   A method of collecting secondary data in the form of scientific literature, journals, books, website articles, written works and scientific research related to the research object.
2. Field Study
   - Perform an observation and have a direct engage by participating in the tender process, for this case the researcher is a member of selection work group (*Pokja)* in the Goods/Services Procurement Section of the Regional Secretariat of Pasuruan Regency from July 2021 until present day, and also involved as a supervisor road and bridge engineering at the Pasuruan Regency Highways and Construction Department from January 2010 to June 2021.
   - Questionnaire
     A questionnaire is a data collection technique conducted by giving a set of questions or written statements to respondents to answer. Questionnaires are an efficient data collection technique if the researcher knows exactly the variable to be measured and knows what to expect from the respondents (Sugiyono, 2020). The researchers will deliver open questions to respondents (service providers participating in tender), and assessing the answers using a Likert Scale consisting of 5 (five) choices: (a) Strongly Agree (*Sangat Setuju*/SS) with value of 5 points, (b) Agree (*Setuju*/S) with value of 4 points, Slighty Agree (*Kurang Setuju*/KS) with value of 3 points, disagree (*Tidak Setuju*/TS) with value of 2 points and Strongly Disagree (*Sangat Tidak Setuju*/STS) with value of 1 point.

3.4 Feasibility Test of the Research Instruments

3.4.1 Validity Test

A Validity test later will be able to show the extent of accuracy level from the use of measuring instrument to the symptoms intended to be measured. A questionnaire can be said to be valid when the questions in questionnaire are able to reveal something that later will be measured by the questionnaire [13].

Determination of valid or invalid of an instrument can be found by comparing the Product Moment Pearson Correlation Index with a significant level of 0.05 (5%) as the critical value with formula 2.1 by comparing R_{Mung} with R_{table}, then, the validity from the research instrument can be determined by following criteria:

$r_{count} > r_{table}$: Valid

$r_{count} < r_{table}$: Invalid

3.4.2 Reliability Test

Research testing is conducted by employing the Cronbach Alpha test technique, where a construct or variable will be said to be reliable when its Cronbach Alpha has a value greater than 0.60 and conversely, it is said to be unreliable if its Cronbach Alpha value is smaller than 0.60 [14]. Result of reliability test on research variables and taken by SPSS program version 26 is presented in table 1 below:

Table 1. Result of Reliability Test

Variable	*Cronbach Alpha*	Condition	Interpretation
Additional Prerequisite of Equipment Technicality	0.934	> 0.600	Reliable
Additional Prerequisite of Material Support	0.806	> 0.600	Reliable
Additional Prerequisite of Cash Flow Projection	0.659	> 0.600	Reliable
Provider Work performance	0.815	> 0.600	Reliable
Achievement of Work Output	0.815	> 0.600	Reliable
Not conflicting with Procurement Principles	0.825	> 0.600	Reliable

According to table 1 above, it is found that the reliability test result by Cronbach Alpha to questionnaire about additional prerequisite of equipment technicality (X1), additional prerequisite for material support (X2), additional prerequisite for cash flow projection (X3), provider work performance (Y), achievement of work output (Z), and not conflicting with procurement principles (Q), showed a reliable result for all variables, provided that Cronbach Alpha value is more than 0.600, therefore, all of these items can be used in the research.

3.5 Method of Data Analysis

3.5.1 Path Analysis Method

In this research, method for data analysis uses path analysis test with SPSS program version 26 for testing whether there is an indirect influence or not caused by the independent variables namely additional prerequisite of equipment technicality, additional prerequisite for material support, and additional conditions for cash flow projection through intervening variable (i.e provider work performance) to the dependent variable (the work output).

Path analysis is an extension of multiple linear regression analysis, or in other word, path analysis is an extension of regression analysis to estimate the quality of relationship between variables that have been previously determined based on the theory [14].

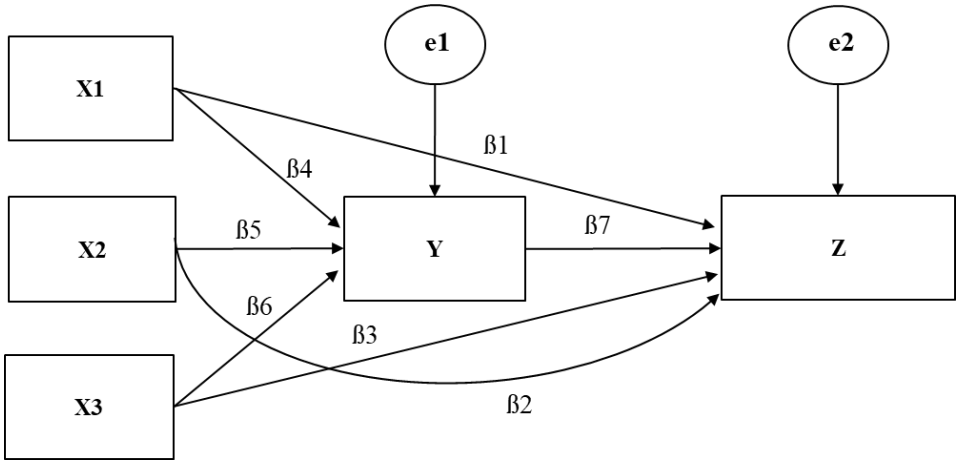

Figure 1. Path Analysis Diagram

The diagram above explains the quality of relationship between variables based on theory explicitly. Arrow sign depicts relationship between variables, where ß values indicate the path and the path coefficients. According on the image of path analysis model, a relationship will be shown based on theory that additional prerequisite of equipment technicality has a direct relationship with the work output (ß1), additional prerequisite of material support has a direct relationship with work output (ß2), additional prerequisite of cash flow projection has a direct relationship with work output (ß3). However, the additional prerequisite of equipment technicality has an indirect influence on work output through provider work performance (ß5 x ß7), and additional prerequisite of cash flow project has an indirect influence on work output through the provider work performance (ß6 x ß7). Meanwhile, the 'e1' arrow to provider work performance shows the amount of variance in the provider work performance variable that is left unexplained by the work output. Meanwhile, the 'e2' arrow to work output shows the amount of variance in work output variable that is unexplained by the work output and the provider work performance. The value of e1 and e2 is √((1-R^2)).

The path coefficients are calculated by creating two structural equations; regression equations which showed the hypothesized relationships. In here, there are two equations of:

$Y = ß4.X1 + ß5.X2 + ß6.X3 + e1$

$Z = ß1.X1 + ß2.X2 + ß3.X3 + ß7.Y + e2$

Descriptions :

Y	=	Provider Workperformance	ß5	=	Path coefficient X2 with Y
Z	=	Work Output	ß6	=	Path coefficient X3 with Y
ß1	=	Path Coefficient X1 with Z	ß7	=	Path coefficient Y with Z
ß2	=	Path coefficient X2 with Z	e1	=	Residual over Y
ß3	=	Path coefficient X3 with Z	e2	=	Residual over Z
ß4	=	Path coefficient X1 with Y			

3.5.2 Path Analysis Method

In this research, data analysis method for the second research model uses a multiple linear regression analysis with SPSS program version 26 to test the linear relationship between one dependent variable which does not conflict to procurement principles, and with three independent variables of: (a) additional prerequisite

of equipment technicality, (b) additional prerequisite for material support, (c) and additional prerequisite of cash flow projection.

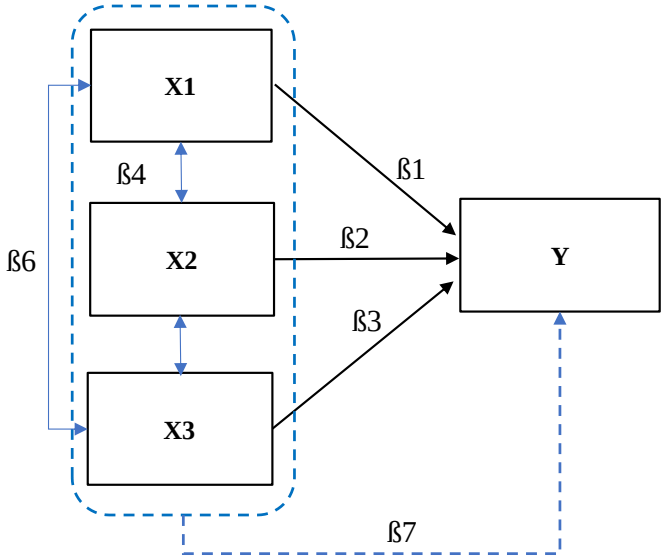

Figure 2. Diagram Analysis Regression Multiple Linear

The multiple linear analysis method aims to predict how much influence the independent variables have (the additional prerequisite of equipment technicality, additional prerequisite of material support, and additional prerequiste of cash flow projection) to the dependent variable (they do not conflict with procurement principles). The regression equation is as follows:

$$Y = \alpha + ß1.X1 + ß2.X2 + ß3.X3 + e$$

Descriptions :

Y	=	does not conflict to procurement principles.
α	=	constant coefficient
ß1.X1	=	regression coefficient for additional prerequisite of equipment technicality
ß2.X2	=	regression coefficient for additional prerequisite of material support
ß3.X3	=	regression coefficient for additional prerequisite of cash flow projection
e	=	*Error* or disruptive variable

IV. RESULT OF RESEARCH

4.1 Test of Path Analysis

The path analysis method is a test to determine influence from independent variable to the dependent variable in the presence of a mediating or connecting variable. In this research, testing was held to observe the effect of additional prerequisite of equipment technicality (X1), additional prerequisite of material support (X2), additional prerequisite of cash flow projection (X3), on work output (Z) mediated by provider work performance (Y). In answering three research hypotheses (H_1, H_2, and H_3), the test results are described into three parts, namely:

1. Additional prerequisite of equipment technicality (X1), additional prerequisite of material support (X2), and additional prerequisite for cash flow projection (X3) to provider work performance (Y)
2. Additional prerequisite of equipment technicality (X1), additional prerequisite of material support (X2), and additional prerequisite for cash flow projection (X3), and provider work performance (Y) to work output (Z)
3. Additional prerequisite of equipment technicality (X1), additional prerequisite of material support (X2), and additional prerequisite for cash flow projection (X3) to work output (Z) mediated by provider work performance (Y).

The following section is the description of testing result from the three models.

4.1.1 Testing of Model 1

Model 1 tested the influence of additional prerequisite equipment technicality (X1), additional prerequisite material support (X2), and additional prerequisite of cash flow projection (X3) to provider work performance (Y) with the test result obtained and presented in table 2 below.

Table 2. Result of Path Analysis Model 1

No	Independent Variable	Coeff.	t hit	P	Intepretation
1	Additional prerequisite of equipment technicality (X1)	0.304	2.092	0.044	Significant
2	Additional prerequisite of material support (X2)	0.275	2.060	0.047	Significant
3	Additional prerequisite of Cash Flow Projection (X3)	0.380	2.077	0.045	Significant
	R = 0.881				
	R-Square = 0.776				
	F hit = 39.231				
	p = 0.000				

Test on influence of the additional prerequisite of equipment technicality (X1) to provider work performance (Y) obtained a significant value (p) of 0.044 ($p<0.05$) meaning the additional prerequisite of equipment technicality (X1) has a significant influence on provider work performance (Y). Whereas for influence of additional prerequisite for material support (X2) to provider work performance (Y) also obtained a significance value (p) of 0.047 ($p < 0.05$) meaning the additional prerequisite for material support (X2) also has a significant influence to provider work performance (Y). The influence of additional prerequisite of cash flow projection (X3) to provider work performance (Y) also obtained a significant value (p) of 0.045 ($p<0.05$) meaning the additional prerequisite of cash flow projection has a significant influence to provider work performance (Y).

As the path equation formed from this result is presented below:

$$Y = 0{,}304\ X1 + 0{,}275\ X2 + 0{,}380\ X3$$

The equation can be explained into the influence of additional prerequisite equipment technicality (X1) to provider workperformance (Y) is obtained by a path coefficient of 0.304 meaning there is a positive influence, when the respondents' perception of additional prerequisite equipment technicality (X1) is higher, it will have significant effect for the better workperformance of the provider (Y). For more detail discussion, it is displayed on the following graph.

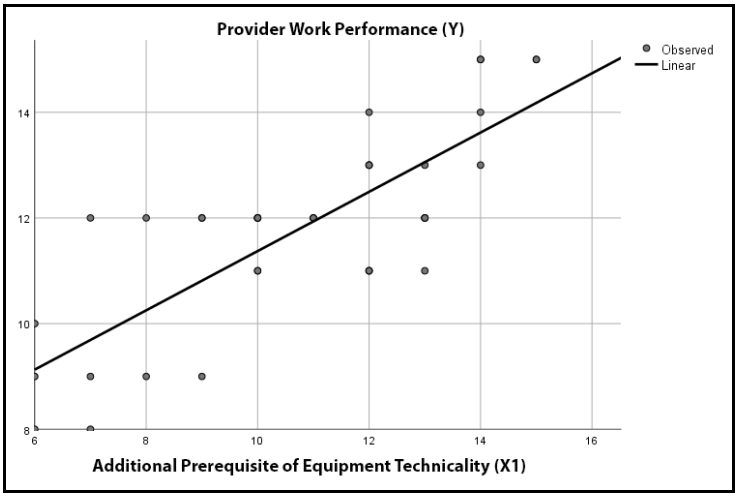

Figure 3. The Influence of Additional Prerequisite of Equipment Technicality (X1) to Provider Work Performance (Y)

The influence between the additional prerequisite for material support (X2) to provider work performance (Y) obtained a path coefficient of 0.275 meaning there is a positive influence, when the respondents' perception to additional prerequisite for material support (X2) is higher, it will have a significant effect on better work performance of the provider (Y). For more detail discussion, it is displayed on the following graph.

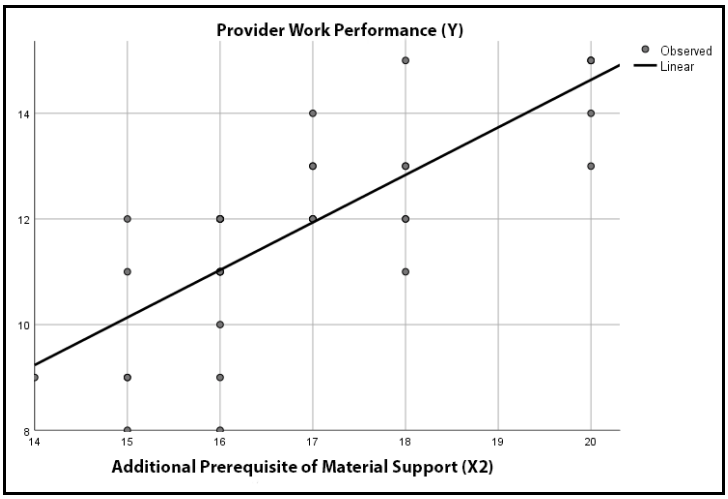

Figure 4. The Influence of Additional Prerequisite of Material Support (X2) to Provider Work Performance (Y)

Next, for the influence of additional prerequisite of cash flow projection (X3) to provider work performance (Y) as shown in the graph above obtained a path coefficient of 0.380 meaning there is a positive influence when the respondents' perception to the additional prerequisite of cash flow projection (X3) is higher, it will have a significant effect to better provider work performance (Y). For more detail discussion, it is displayed on the following graph.

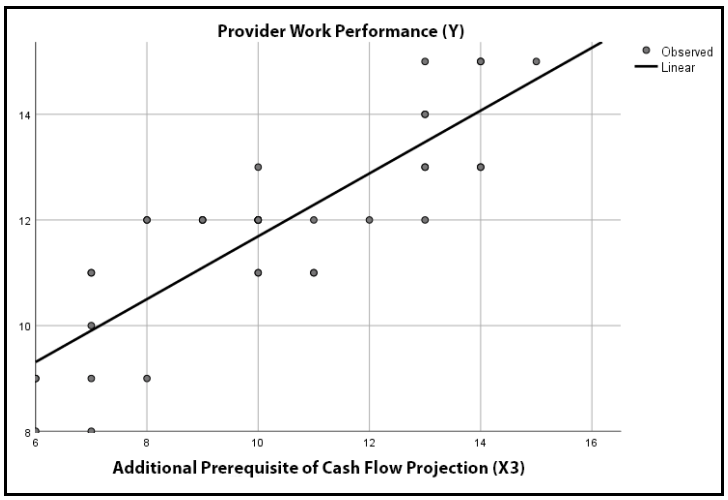

Figure 5. The Influence of Additional Prerequisite of Cash Flow Projection (X3) to Provider Work Performance (Y)

Meanwhile, for the test about simultaneous influence of additional prerequisite of equipment technicality (X1), additional prerequisite of material support (X2), and additional prerequisite of cash flow projection (X3) to provider work performance (Y) obtained a significant value of 0.000 ($p < 0.05$) meaning there is a simultaneous influence of additional prerequisite of equipment technicality (X1), additional prerequisite of material support (X2), and additional prerequisite of cash flow projection (X3) to provider work performance (Y) significantly.

The result of determination coefficient of the influence from additional prerequisite of equipment technicality (X1), additional prerequisite of material support (X2), and additional prerequisite of cash flow

projection (X3) on provider work performance (Y) obtained an R square value of 0.776 meaning that the amount of contribution value of 77.6 % to provider work performance (Y) is explainable.

4.1.2 Testing of Model 2

Model 2 tested the influence between the additional prerequisite equipment technicality (X1), additional prerequisite of material support (X2), additional prerequisite of cash flow projection (X3) and provider work performance (Y), also work output (Z). The test obtained result as presented below in table 3.

Table 3. Result of Path Analysis Model 2

No	Independent Variable	Coeff.	t hit	P	Intepretation
1	Additional prerequisite of equipment technicality (X1)	0.202	2.100	0.043	Significant
2	Additional prerequisite of material support (X2)	0.210	2.382	0.023	Significant
3	Additional prerequisite of Cash Flow Projection (X3)	0.324	2.677	0.011	Significant
4	Provider Workperformance (Y)	0.303	2.836	0.008	Significant
	R = 0.957				
	R-Square = 0.915				
	F hit = 89.287				
	p = 0.000				

Test on the influence of additional prerequisite of equipment technicality (X1) to work output (Z) obtained a significant value (p) of 0.043 ($p<0.05$) meaning the additional prerequisite of equipment technicality (X1) has a significant influence to the work output (Z). The influence between the additional prerequisite of material support (X2) to work output (Z) obtained a significant value (p) of 0.023 ($p<0.05$), meaning the additional prerequisite of material support has a significant influence to the work output (Z). Whereas, the influence between the additional prerequisite of cash flow projection (X3) to the work output (Z) obtained a significant value (p) of 0.011 ($p<0.05$) meaning the additional prerequisite of cash flow projection (X3) has a significant influence on the work output (Z).

Meanwhile, the influence between the provider work performance (Y) to work output (Z) obtained a significant value (p) of 0.008 ($p<0.05$) meaning the provider work performance (Y) has a significant influence on work output (Z). As the path equation formed from this result is presented below:

$$Z = 0.202\ X1 + 0.210\ X2 + 0.324\ X3 + 0.303\ Y$$

From the equation, it can be explained that the influence of additional prerequisite of equipment technicality (X1) to work output (Z) is obtained by a path coefficient of 0.202 meaning there is a positive influence when the respondents' perception to additional prerequisite of equipment technicality (X1) is higher, it will have a significant effect on the better work output (Z). For more detail discussion, it is displayed on the following graph.

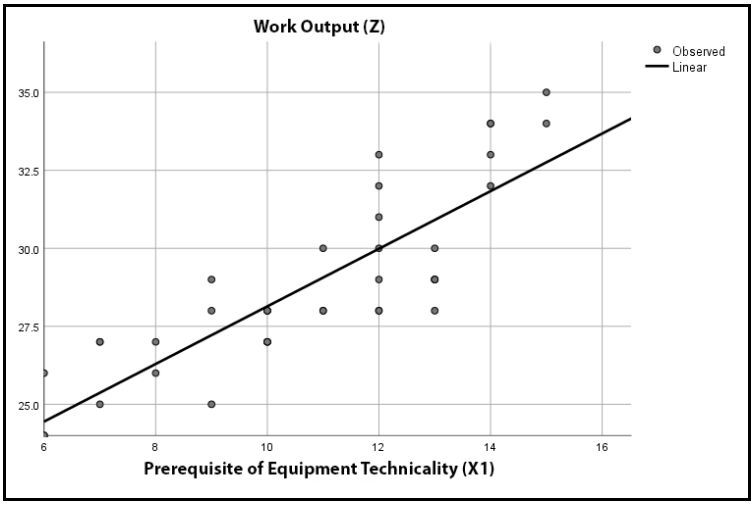

Figure 6. The Influence of Additional Prerequisite of Equipment Technicality (X1) to Work Output (Z)

The influence between the additional prerequisite of material support (X2) to the work output (Z) obtained a path coefficient of 0.210 meaning there is a positive influence, when the respondents' perception to additional prerequisite of material support (X2) is higher, it will have a significant effect on the better work output (Z). For more detail discussion, it is displayed on the following graph.

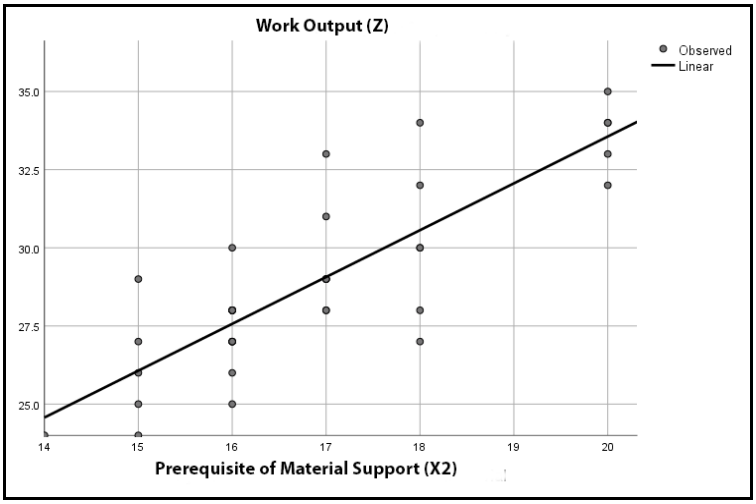

Figure 7. The Influence of Additional Prerequisite of Material Support (X2) to Work Output (Z)

The influence between the additional prerequisite of cash flow projection (X3) to the work output (Z) obtained a path coefficient of 0.324 meaning there is a positive influence when the respondents' perception to additional prerequisite of cash flow projection (X3) is higher, it will have a significant effect on the better work output (Z). For more detail discussion, it is displayed on the following graph.

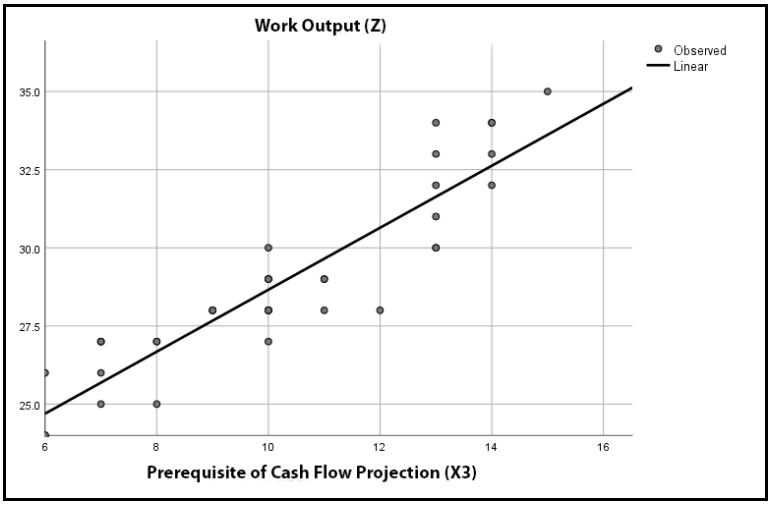

Figure 8. The Influence of Additional Prerequisite of Cash Flow Projection (X3) to Work Output (Z)

The influence between the provider work performance (Y) to the work output (Z) obtained a path coefficient of 0.303 meaning there is a positive influence, when the respondents' perception to provider work performance (Y) is higher, it will have a significant effect on the better work output (Z).

Figure 9. The Influence of Provider Work Performance (Y) to Work Output (Z)

Test of the simultaneous influence from additional prerequisite of equipment technicality (X1), additional prerequisite of material support (X2), additional prerequisite of cash flow projection (X3), and provider work performance (Y) to work output (Z) obtained a significant value of 0.000 (p , 0.05) meaning there is a significant simultaneous influence of additional prerequisite of equipment technicality (X1), additional prerequisite of material support (X2), additional prerequisite of cash flow projection (X3) and provider work performance (Y) to the work output (Z) as a whole.

While the result of determination coefficient from the influence of additional prerequisite equipment technicality (X1), additional prerequisite of material support (X2), additional prerequisite of cash flow projection (X3), and provider work performance (Y) to the work output (Z) obtained an R square value of 0.915 meaning the contribution amount to work output (Z) is 91.5 % and can be explained by the additional prerequisite of equipment technicality (X1), additional prerequisite of material support (X2), additional prerequisite of cash flow projection (X3), and provider work performance (Y).

4.1.3 Test of Multiple Linear Regression

The regression test is a test to determine the effect of independent variables to the dependent variable. In this research, test was carried out to observe the effect of additional prerequisite of equipment technicality (X1), additional prerequisite of material support (X2), and additional prerequisite of cash flow projection (X3) questioning of do these variables conflicting with procurement principles (Q). Obtainable test result is presented below.

Table 4. Result of Regression Test

No	Independent Variable	Coeff.	t hit	P	Intepretation
1	Constant	11.376	4.483	0.000	Significant
2	Additional Prerequisite of SIA and SIO equipment (X1)	0.297	2.270	0.030	Significant
3	Additional Prerequisite of Material Support (X2)	0.550	2.766	0.009	Significant
4	Additional Prerequisite of Cash Flow Projection (X3)	0.443	2.711	0.010	Significant
	R = 0.918				
	R-Square = 0.843				
	F hit = 61.066				
	p = 0.000				

Test on the influence of additional prerequisite equipment technicality (X1) on not conflicting with procurement principles (Q) obtained a significant value (p) of 0.030 (p < 0.05) meaning that additional prerequisite of equipment technicality (X1) has a significant influence on not conflicting with the procurement principles (Q).

The influence between the additional prerequisite of material support (X2) on not conflicting with procurement principles (Q) obtained a significant value (p) of 0.009 ($p < 0.05$) meaning the additional prerequisite for material support (X2) has a significant influence of not conflicting to procurement principles (Q).

The influence between the additional prerequisite for cash flow projection (X3) on not conflicting with procurement principles (Q) obtained a significant value (p) of 0.010 ($p < 0.05$) meaning that the additional prerequisite for cash flow projection (X3) has a significant influence on not conflicting to the procurement principles (Q). Then, the path equation created from this result is:

$$Q = 11{,}376 + 0{,}297\ X1 + 0{,}550\ X2 + 0{,}443\ X3$$

From the equation, it can be explained that influence from additional prerequisite of equipment technicality (X1) on not conflicting with procurement principles (Q) obtained a path coefficient of 0.297 meaning there is a positive influence when the respondents' perception on additional prerequisite of equipment technicality (X1) is higher, it will have a significant effect to higher respondent's perception on not conflicting with procurement principles (Q).

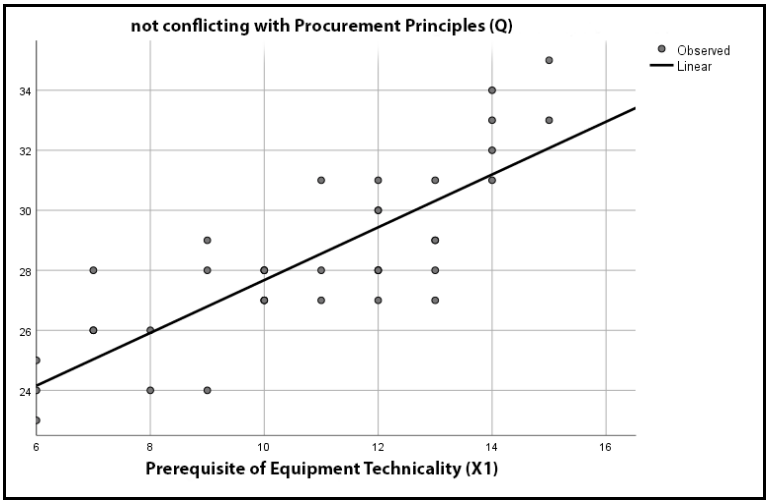

Figure 10. The Influence of Additional Prerequisite of Equipment Technically (X1) to not conflicting with Procurement Principles (Q)

The influence between additional prerequisite for material support (X2) on not conflicting to procurement principles (Q) obtained a path coefficient of 0.550 meaning there is a positive influence, when the respondents' perception on additional prerequisite for material support (X2) is higher, it will have a significant effect to higher respondent's perception on not conflicting with procurement principles (Q).

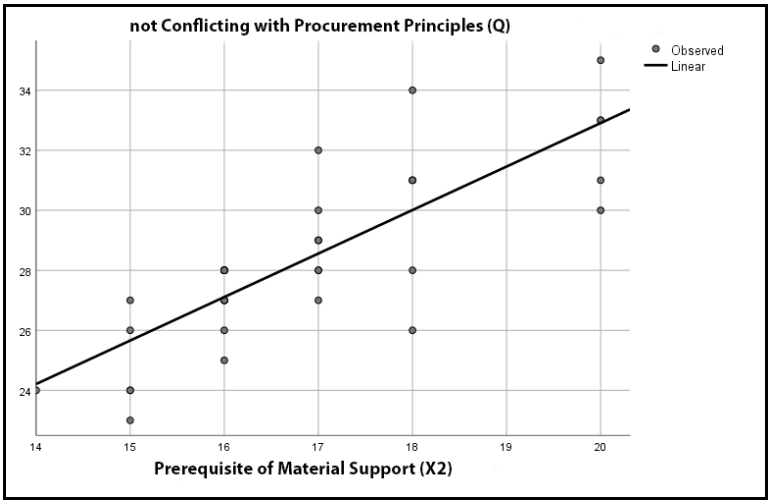

Figure 11. The Influence of Additional Prerequisite of Material Support (X2) to not conflicting with Procurement Principles (Q)

The influence between additional prerequisite for cash flow projection (X3) on not conflicting to the procurement principle (Q) obtained a path coefficient of 0.443 meaning there is a positive influence, when the respondents' perception on the additional prerequisite of cash flow projection (X3) is higher, it will have a significant effect to higher respondents' perception on not conflicting with the procurement principles (Q).

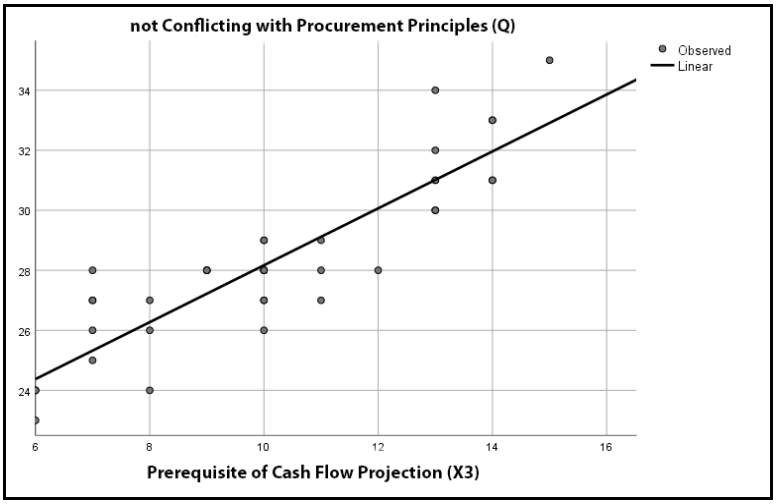

Figure 12. The Influence of Additional Prerequisite of Cash Flow Projection (X3) to not conflicting with Procurement Principles (Q)

Test of the simultaneous influence of additional prerequisite of equipment technicality (X1), additional prerequisite of material support (X2), and additional prerequisite of cash flow projection (X3) on not conflicting to procurement principles (Q) obtained a significant value of 0.000 ($p < 0.05$) meaning there is a simultaneous influence of additional prerequisite of equipment technicality (X1), additional prerequisite of material support (X2), and additional prerequisite of cash flow projection (X3) that has significant effect to the procurement principles (Q).

The result from determination coefficient of the influence of additional prerequisite equipment technicality (X1), additional prerequisite of material support (X2), and additional prerequisite of cash flow projection (X3) on not conflicting to procurement principles (Q), obtained an R square value of 0.843 meaning that amount of contribution towards not conflicting to procurement principles (Q) is 84.3 % and can be explained by additional prerequisite of equipment technicality (X1), additional prerequisite of material support (X2), and additional prerequisite of cash flow projection (X3).

V. CONCLUSION

According to the result from data analysis and discussion of research results, to test the formulation of the four hypotheses and answer the study problem in this research can be concluded as follows:

1. Condition before the implementation of additional prerequisite of equipment technicality for construction work tender:
   a. The provider's bid value is plummeting from the Self-Estimated Price (HPS) value, where its value decreasing more than 20 % of the HPS value to pursue the ranking resulting from arithmetic corrections because some providers still believe that lowest price has a greater chance of winning the tender, not the best price (value for money), this causes the PPK has concerns (worry) to the participant who wins the tender, in later days at the implementation stage, of a potential reduction that could be happen in the quality and quantity of work as a result of the low bid value, while the PPK already arranged the HPS in accordance to the actual market price.
   b. Certain parties have competencies in making the document for tender offering but they do not have sufficient resources for the work implementation stage when they have won the tender, so it is very possible the work package that have been won will be handed over to another party with certain compensation, also there is practice termed as 'borrowing a flag' from another party's company to take part (competing) in tender bid, so, at the post-construction stage, when there are findings and claims from auditors or law enforcement officials, it is not clear who the party that should take responsibility for, and there are obstacles in term of coordination with the regional officials.

2. There is a significant relationship from additional technical requirements for the construction work tender and the provider's work performance in the implementation phase to achieve the work output which can be explained as follows:
   a. The influence of additional technical requirements for the construction work tender (X) on provider work performance (Y) obtained a positive path coefficient meaning it has a significant effect with a contribution value of 77.6 % as shown by the following equation:

$$Y = 0{,}304\ X1 + 0{,}275\ X2 + 0{,}380\ X3$$

   b. The influence of additional technical requirements for the construction work tender (X) and provider work performance (Y) to work output (Z) obtained a positive path coefficient meaning it has a significant effect with a contribution value of 91.5 % as shown by the following equation:

$$Z = 0{,}202\ X1 + 0{,}210\ X2 + 0{,}324\ X3 + 0{,}303\ Y$$

   c. Whereas for the indirect influence in the nature of partial mediation, the additional technical requirements for the construction work tender (X) have a significant effect to the provider work performance (Y) and indirectly will have a significant effect on the better work output (Z).

3. The implementation of additional technical conditions for construction work tender does not conflicting to the procurement principles which can be seen from the following equation:

$$Q = 11{,}376 + 0{,}297\ X1 + 0{,}550\ X2 + 0{,}443\ X3$$

The influence of additional technical requirements for the construction work tender (X) on not conflicting with procurement principles (Q) obtained a positive path coefficient, meaning it has a significant effect with a contribution value of 84.3 %.

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