Investigating The Success of Public Procurement Innovation in Government Organization: Does e-Procurement Really Work?

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Abstract—**Despite the lengthy implementation periods of electronic procurement (e-procurement) as one of strategic public innovations, there is still a lack of empirical research on its potential benefits and outcomes in the context of governmental sector. Meanwhile, the examination about how the competitive environment affects e-procurement implementation is also remaining unclear. The present study aims to investigate the relationships between estimated cost of procurement, procurement type, number of auction participants and the efficiency of e-procurement practices in government organization. For this purpose, a dataset provided by the Electronic Procurement Service Unit of Badung Local Government of Bali Province that covers the entire government procurement auction for the years 2012-2017 were analyzed using a linear regression analysis. Results indicated a positive and significant relationship between the estimated cost and the number of auction participants of government e-procurement. In addition, the type of procurement significantly affects the number of auction participants. Procurement auctions for goods and for construction are found to have a stronger effect than the services auctions on the increasing number of auction participants. Finally, the number of auction participants has a positive and significant impact on the efficiency of the procurement in local government organization. These findings have several implications on design of government e-procurement.**

Keywords—government e-procurement; cost of procurement; efficiency; Auction Theory; Government Accounting

I. INTRODUCTION

Within the last few years, innovation has been consistently a topic of discussion that attracts attention within the realm of public sector [1-5], while the practice of electronic procurement (e-procurement) has been recognized as one of the most phenomenal public innovations [6, 7]. E-Procurement refers to the use of information and communication technology to execute a series of stages of procurement process, including search, sourcing, conducting negotiation, making order, receipt and post-purchase reviews [8]. The adoption of e-procurement is believed to be able to improve the quality of public procurement process [9-12] that statistically has given

significant contribution to average GDP (Gross Domestic Product) of the OECD member countries [13], the European countries [14] and countries in the Southeast Asia region as one whose public procurement have highest share in its GDP [15].

Despite the lengthy implementation periods of e-procurement as one of strategic public innovations, however, there is still a lack of empirical research on its potential benefits and outcomes in the context of governmental sector [6, 16]. Much of practitioner literature are coming from the IT/Business management companies and e-procurement solution providers [17]. Whilst a few studies on government e-procurement could be identified, most of them fail to explicitly define the distinct outcomes harnessed from the implementation of this innovation. In addition, the inquiry of e-procurement outcome has only been partially discussed on the introductory parts of academic articles and is mainly based on conceptual or normative sense, thereby lacking an evidence-based approach [18]. This is very unfortunate when considering that it is a wider discussion and agreement on what the benefits can e-procurement be achieved that is critical for government organizations if they are intending to evaluate the success or failure of the innovation [6].

Meanwhile, the examination about how the competitive environment affects e-procurement implementation is also remaining unclear. A competitive environment can be described as a condition in which a number of auction participants are allowed to make a bid for procurement of certain goods/services. From the perspective of Auction Theory, it is generally assumes that competitive auction environment would direct the prices to the most minimum level (in other words, to be efficient) [19]. It is also said that auction participants' decision to participate in the auction process are influenced by each participant's perception towards the value of the procured object. In the context of government organization, [6] contends that in compare with the private sector, the public procurement is more competitive as the buyer attempts to include as many sellers as possible in order to broaden competition and maximize opportunities for value for money. Nevertheless, some

previous studies still give inconclusive results since they show that the effect of an increase in the number of participants toward the government auction outcome might be positive or negative [16].

The present study aims to investigate the relationships between estimated cost of procurement, procurement type, number of auction participants and the efficiency of e-procurement practices in government organization. In Indonesia, the practice of e-procurement has been explicitly regulated in the Presidential Regulation of the Republic of Indonesia Number 4 of 2015 on the fourth ammendment to the Presidential Regulation Number 54 of 2010 on the procurement of government goods/services (Presidential Regulation 4/2015), Article 106 paragraph (1) which sets forth that "The Procurement of Government shall be performed electronically[1]." This regulation further specifies that the implementation of e-procurement is expected to facilitate the realization of an efficient, open and competitive procurement in order to have an impact on improved public services. The aspect of efficiency is indeed the objective that the Indonesian government organization expects to achieve through the e-procurement of government as specified in article 107 of Presidential Regulation 54/2010[2] which set forth that "Government e-Procurement aims to: [among others] enhance transparency and accountability [and] improve the efficiency of the procurement process".

This study was conducted in Local Government Organizations of Badung Regency, Bali Province. E-procurement practice has been technically implemented in Badung Regency since 2010 with a relatively higher number of procurement packages and a relatively good efficiency estimate (Table I). Badung Regency Government has formed a Procurement Services Unit (PSU) which now serves as a pilot PSU in Indonesia. In addition, as a form of proactive measures in the implementation of the function of selecting goods and services provider or in maximizing the procurement services, PSU Badung has built a web-based management system called online management system (e-PSU). In the e-PSU application, a commitment maker official can submit his bidding proposals online to PSU in order to be further processed and recorded in real time. Due to this innovation, Badung Regency Government has received a number of awards as shown in Table II. This ideal condition of e-procurement practice may serve as a basis for logical consideration to use Badung Regency as an empirical "laboratory" for evaluating the success of the

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[1] The previous Presidential Regulation of the Republic of Indonesia Number 54 of 2010 on the procurement of Government goods/services (Presidential regulation No. 54/2010), e-procurement practices is specified only as an alternative to the process of procurement of goods/services for government organizations as specified in Article 106 paragraph (1) as follows: "Procurement of Government Goods/services **can be** performed electronically."

[2] Presidential Regulation of the Republic of Indonesia Number 54 of 2010 on the Procurement Of Government Goods/Services

implementation of innovation in the public procurement of within the government sector.

TABLE I. TOTAL PACKAGE AFTER BIDDING AND EFFICIENCY OF LOCAL GOVERNMENT BUDGET THROUGH THE PROCUREMENT OF GOOD/SERVICES OF BADUNG REGENCY GOVERNMENT DURING 2012 – 2016

Year	Package	Efficiency (IDR)	Efficiency (%)
2012	530	61,839,056,651.00	8.52
2013	493	128,865,157,772.00	11.95
2014	507	191,255,940,118.00	16.30
2015	468	233,437,518,007.00	20.46
2016	536	256,140,153,087.00	19.58

TABLE II. LIST OF AWARDS ACHIEVED BY BADUNG REGENCY GOVERNMENT WITH RESPECT TO THE IMPLEMENTATION OF E-PROCUREMENT

No	Year	Awards
1	2012	2nd national rank for regency/city with the highest procurement through e-procurement
2	2012	Nominee in the category of "User Support Experience".
3	2013	e-Procurement award for the achivement of Presidential Decree No. 1 of 2013
4	2014	National Procurement Award in LPSE innovation
5	2014	National Procurement Award in terms of "Commitment in the achievement of Presidential Decree No 2 of 2014 on the implementation of transparency and accountability in procurement"

The next sections of this paper are organized as follows. The review of related literatures and the formulation of hypothesis are outlined together with the method of research. Next, the research results obtained are further discussed and closed with conclusion, recommendation and limitations of the research.

II. LITERATURE REVIEW

A. Auction Theory

Auction theory mainly aims to identify auction mechanisms that help maximize seller's expected revenues by taking account of auction participants' (buyer) behavior which is highly influenced by applicable rules in the auction mechanisms [22]. This theory views that a seller, in essence, has a comparative advantage in determining pre-commitment on technical policies that must be complied with in an auction process. This policy allows the seller to direct and even govern auction participants to participate in making bids under certain mechanisms, so that an auction deal that can bring more economical benefits to the seller can be reached. On the other hand, the auction theory also considers the situation where the seller does not have sufficient knowledge on true valuation of auction participants on the procured objects—the aspect of informational asymmetry. This situation will restrict seller's ability in either exploiting the competition among participants in the auction process or upscaling the object's price at the highest value. This limitation is due to the fact that the sellers have been uninformed of such information.

There are several approaches in an auction theory and one of the most dominant approaches in the existing literatures is Independent Private Values (IPV). In this model, it is assumed that an object that cannot be divided (indivisible object) is sold to only one among many of the auction participants [23]. Each of the auction participants involved should behave neutrally to risk and personally knows well the value of the procured object, however, they should not know the value put by other auction participants over the object. The auction participants are assumed to be competing against each other, so that the auction process will serve as a platform for uncooperative competition among auction participants. Based on this model, the auction will be highly competitive and thus leads to the determination of competitive (efficient) prices. Similarly, increasing additional number of auction participants will consistently give pressure to further reduce the price rate of the commodities as the objects of the auction [13].

B. Estimated Cost of Procurement and the Number of Auction Participants

Reference [16] found that information availability about the amount of cost estimate may affect goods/service provider's willingness to participate in the auction. Cost estimate is the amount of procurement costs of goods/services estimated by the experts and are controlled and published by the auctioneers. The higher the cost estimate on the procured objects, the higher the service provider's willingness to participate in the auction since the providers will take bigger contract value in order to maximize their profits.   In an e-procurement mechanism, information regarding cost estimate is adequately available that the effect of the amount of cost estimate on the number of auction participants involved in the auction can be examined empirically. Based on the preceding explanation, we subsequently propose the following hypothesis (H_1):
H_1: The amount of cost estimate has a positive effect on the number of auction participants

C. Procurement Type and the Number of Auction Participants

Auction theory puts it, that the auction process can be implemented effectively when the auction participants have sufficient understanding about the value of the procured object. The level of the evaluation can be highly influenced by the type of the procurement performed. This owes to the fact that the type of the procured goods/services affects the value of the profit that the procured object has from the auction participants' perspectives. The higher the perception of the value towards the type of certain procured object, the more willing the goods/service provider decide to participate in the auction. Reference [16] found that the level of participation of the auction participants in the procurement of goods and services for Turkish government is relatively higher than the procurement of construction projects. On the other hand, [24] found that there is no significant difference in the number of auction participants for the procurement of building works, the procurement of transportation infrastructures and the procurement of information and technology. Based on the preceding explanation, we subsequently propose the following hypothesis (H_2):
H_2: Type of procurement has an effect on the number of auction participants

D. The Number of Auction Participants and Cost of Procurement

Technically, e-procurement allows many parties to participate in the procurement of government goods/services. As put in the auction theory, this situation will create a healthy competition atmosphere and will trigger the goods and services providers to compete making the lowest offers with the best quality. Reference [25] empirically found that the e-procurement implemented by Greece government was proved to reduce the cost of equipment supply as such electronic system allows multiple suppliers to participate in the procurement process of goods/services so that the government can appoint a supplier with the lowest offer. In the meantime, [26] discovered that the offer submitted by the auction participants to one of the state governments in the United States gets more "centralized" (the ratio between the lowest price is small) when there is an increase in the number of auction participants. Another findings discovered by [24] statistically proved that in the Slovakian government, every single auction participant's participation in an e-procurement, the cost of the procurement of goods/services is reduced by up to 3.4%. According to the above-mentioned explanation, we subsequently propose the following hypothesis (H_3):
H_3: The number of auction participants has a negative effect on the cost of goods and services procurement

III. RESEARCH METHOD

A. Research Design

This research applied quantitative research approach with secondary data analysis method. The data were obtained from the official website of electronic procurement service unit (e-PSU) of Badung Regency Government - Bali Province (www.lpse.badungkab.go.id). In addition, semi-structured inteviews were conducted to parties participated in the e-procurement organized by Badung Regency Government, so that a more comprehensive understanding about the research topic can be obtained.

B. Populaton and Samples

In this study, the populations are all auctions listed on the electronic procurement service unit website of Badung Regency Government – Bali Province. While the samples in this research are the auctions that meet the following criteria:

a) Sourced from the Local Government Budget

b) Current year expenditure

c) Applying the method of competitive auction

d) Auction period of 2012-2017

C. Operational Definitions and Variables's Measurement

Some variables were tested in this research, including:

a) **Estimated Cost of Procurement (ECP)** measured with rupiah value of the Owner Estimate (OE) set by the Commitment Maker Official (CMO). Based on the Presidential Regulation Number 70 of 2012 on the Second Amendment to the Presidential Regulation Number 54 of 2010 on the procurement of Government goods/services (Presidential Regulation 70/2012), OE is the price controlled and set by the commitment maker official in compliance with reasonable profits and costs estimation. OE is used as a tool to assess the fairness of the offer including the details and the basis to set the highest and valid offer limit for competitive auction (Presidential Regulation No.70/2012 Article 66 paragraph 5 letter a and b).

b) **Procurement Type[3] (PT)** is categorized into 3 (three), namely the procurement of goods, the procurement of construction works, and the procurement of services. This variable is a dummy variable measured by the value of 1 ("yes") and 0 ("no") for each category of type of procurement.

c) **Number of Auction Participants (NAP)** is the number of service providers that participate in the auction on a certain etype of procurement (construction works, goods or services) organized by the local government. This variable is measured based on the number of valid bids submitted by the auction participants by considering that the system has specified the mechanism in such a way that an auction participant is not allowed to submit extra bids for each type of procurement.

d) **Cost of Procurement (CP)** is measured with the natural log value (*Ln*) from the ratio between the price of the auction winner[4] and OE or the ratio between the log value of the price of the auction winner and OE log value. This measurement was used in several researches, such as [28], [29], and [16].

D. Data Analysis and Hypothesis Testing

a) *Data Quality Testing*

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[3] Pursuant to the Presidential Regulation No. 70 2012 on the Second Amendment to the Presidential Regulation Number 54 of 2010 on the procurement of Government goods/services, there are 6 (six) electronic auction methods in Indonesia, including competitive auction, limited auction, simple auction, direct appointment, competitive selection and simple selection. This research applied the method of competitive auction, that is the selection method for goods/Construction Work/Other Services Providers for all the works that all qualified goods/construction work/other services provider can participate in (Presidential Regulation No.70 of 2012 Article 1 number 23)..

[4] The value of the price of the auction winner (rupiah) is available on the website of electronic procurement service unit (LPSE) of Badung Regency Government - Bali.

Prior to analyzing the data, we conducted a series of data testing in order to ensure that the classical assumptions requirements are fulfilled, including free from multicollinearity, free from autocorrelation, free from heteroscedasticity and the data are normally distributed. The multicollinearity test was conducted to anticipate the correlation between the independent variables in the regression model [30]. The model is said to be free from multicollinearity if the tolerance value and Variance Inflation Factor (VIF) is bigger than 0.1 and smaller than 10. The autocorrelation test was conducted to examine whether there is a correlation between the disturbance errors in period t and the disturbance errors in period t-1 in the linear regression model. Meanwhile, a heteroscedasticity test with Glejser analysis was conducted to detect any nonuniformity of variance from the residual of one observation to another observation. On this test, the absolute residual value is regressed against its independent variables. The model is said to be free from heterocedasticity if the significance value of the regression is bigger than 0.05. Finally, the normality test was conducted to determine the "normality" of residual distribution pattern. This research applied Kolmogorov-Smirnov statistical test for normality test provided that the significance value is higher than 0.05[30].

b) *Hypothesis Testing*

The research hypothesis was tested by analyzing the data using linear regression analysis technique. There are two regression models used to separately evaluate (i) the effect of cost estimate and the type of procurement on the number of auction participants and (ii) the effect of the number of auction participants and cost of goods and services procurement. Hypothesis H_1 is said to be supported when the coefficient of cost estimate variable has a positive value and has a significance level of $p < 0.05$ when regressed against the variable of the number of auction participants. Meanwhile, hypothesis H_2 is said to be supported when two of three dummy variables of the type of procurement has a positive value coefficient and a significance value of $p < 0.05$ 05 when regressed against the variable of the number of auction participants. Finally, hypothesis H_3 is said to be supported when the coefficient of the number of auction participants' variable has a significance level of $p < 0.05$ 05 when regressed against the variable of cost of goods and services procurement.

IV. RESULTS AND DISCUSSION

A. Descriptive Statistical Analysis

In aggregate, the total of electronic auction organized by the the Government of Badung Regency in the period of 2012-2017 is 3.291 auction packages with the contract value of Rp 5.929.760.938,32. From the figure, an analysis was made on 698 auction packages that meet the research criteria. Table III demonstrates information regarding the type of procurement that takes place during the research. In general, the procurement of construction work was the most

dominantly performed (*n* = 514 packages; 73,64%), followed by the procurement of goods (*n* = 141 packages; 20,20%) and the procurement of services (*n* = 43 packages; 6,16%).

TABLE III
DISTRIBUTION OF THE TYPE OF PROCUREMENT OF BADUNG REGENCY GOVERNMENT DURING 2012-2017

Type	Number of Packages	Percentage
Goods	141	20.20%
Construction	514	73.64%
Services	43	6.16%

Descriptively, (Table IV) showed that during the period of 2012-2017, there were at least one auction participant and a maximum of 100 participants on each auction package on offer. In addition, a minimum value of cost estimate (owner estimate) is Rp 115,190,000.00 with a maximum value of Rp 336,210,968,000.00 and the average value of Rp 6,078,987,934.89. As for the price of the auction winner (HPL), the minimum value is Rp 56,333,000.00, the maximum value of Rp 317,975,777,000.00 and the average value is Rp 5,427,603,114.76. The results of the descriptive analysis also discovered that the ratio between HPL and CE provides negative values in the sense that the amount of the price of the auction winner is consistently lower than the amount of CE or OE specified by the Badung Regency Government. This might provide early indication that the e-procurement implemented may stimulate low cost of the procurement of goods/services in Badung regency.

TABLE IV
DESCRIPTIVE STATISTICAL ANALYSIS OF THE RESEARCH VARIABLES

	Minimum	Maksimum	*Mean*
BKD[a]	115519000	336210968000	6078987934.89
HPL[a]	56333000	317975777000	5427603114.76
(HPL-BKD)[a]	-18235191000.00	0.00	-596793635.2994
JPL	1	100	21.27
JPB	0	1	0.20
JPK	0	1	0.74
JPJ	0	1	0.06
Valid N			

[a] = in Indonesian Rupiah (IDR)

CE = Cost Estimate; HPL=Price of the Auction's Winner; JPL= Number of Auction Participants; JPB = Procurement of Goods; JPK= Procurement of Construction Works; JPJ= Procurement of Services

B. Classical Assumptions Test of Model I

Classical assumptions test was conducted before testing the hypothesis of the first model. The classical assumption tests conducted include normality test, multicolinearity test, and heteroscedasticity test. Based on the results of normality test in figure I using P-P plot, it can be seen that the data of this research are normally distributed. The multicollinearity test revealed that the VIF values for each of the variables

tested is smaller than 10 (VIF < 10), thus the data meet the multicollinearity assumption. While for the heteroscedasticity test, based on the *Scatterplot* on figure II, it can be seen that there is no specific pattern drawn from the plot distribution, thus the data are free from heteroscedasticity. Below is the description of the results of classical assumption test:
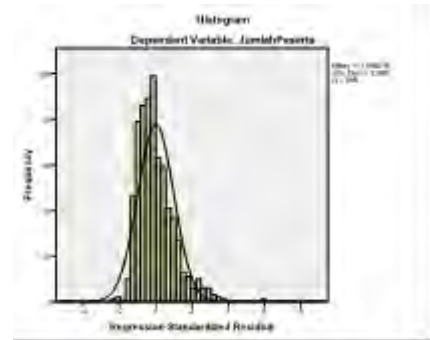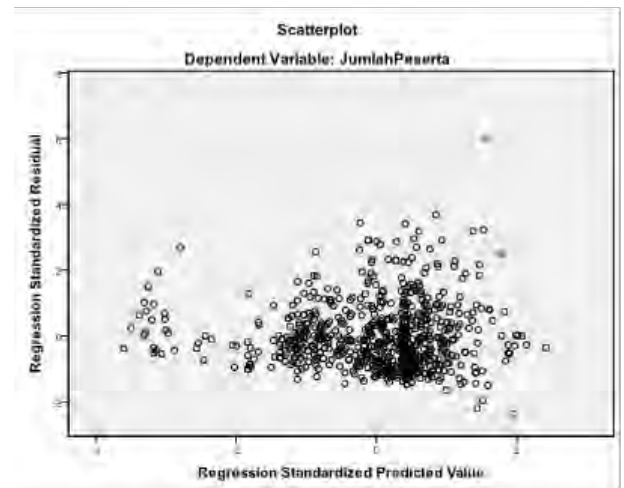

Figure I. Normality Test Results of Model I

Figure II. Heteroscedasticity Test Results of Model I

C. Classical Assumption Test of Model II

For the second model test, the classical assumption test conducted was similar to that of the first model, viz. normality test, multicolinearity test, and heteroscedasticity test. Based on the results of normality test as presented in figure III, it can be seen that the data of this research are normally distributed. The multicollinearity test revealed that the VIF values for each of the variables tested is respectively smaller than 10 (VIF < 10), so that the research data for the second model meet the multicollinearity assumption. Meanwhile, for the heteroscedasticity test as presented in figure IV, it can be seen that that the research data are found to be free from heteroscedasticity.

From the results obtained, the data for both of the research models have met the classical assumption. Thus, the research models can be tested by using a linear

regression analysis. Below is the description of the results of classical assumption test conducted:
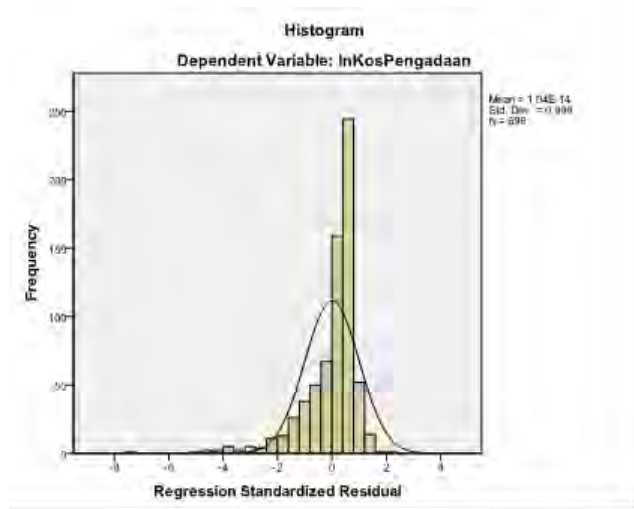

Figure III. Results of Normality of Model II

Figure IV. Results of Heteroscedasticity of Model II

D. Regression Test of Model I

Below are the results of linear regression test of the first model:

TABLE IV
MODEL SUMMARY FOR MODEL I

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.298ᵃ	.089	.085	12.103

a. Predictors: (Constant), the amount of cost estimate, the procurement of goods, the Procurement of Construction Projects

TABLE V
RESULTS OF REGRESSION TEST OF MODEL II

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Contant)	-27.078	6.686		-4.050	0.000
JPB	12.041	2.109	0.382	5.709	0.000
JPK	8.251	1.941	0.288	4.252	0.000
BKD	1.853	0.308	0.228	6.016	0.000

a. Dependent Variable: The number of auction participants

Based on table IV, it can be seen that the value of coefficient of determination (R) is 0,289. It indicates the level of correlation between the variables is low. While the value of *R Square* (R^2) is 0,089, this indicates that 8.9 percent of the total variance of dependent variables (the number of auction participants) can be explained by independent variables (CE and type of procurement). For the regression test of model I, this research classifies the type of procurement into 3, namely goods, construction works, and services. The three variables are treated as dummy variables. To examine the effect of the type of procurement on the number of auction participants, this research uses the type of the procurement of services as a comparison, so that when the statistical test is conducted, this research includes only the variables of procurement of goods and procurement of construction works into the multiple regression analysis.
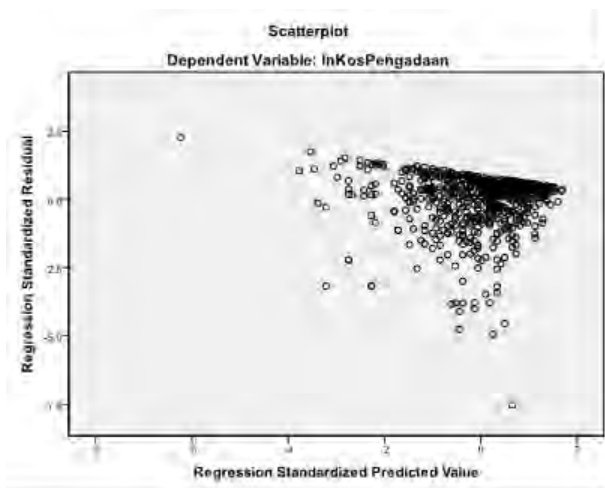
From the analysis results obtained as presented in table V, it can be seen that the procurement of goods and the procurement of construction works have a significant effect on the number of auction participants (*Sig* = 0.00). The procurement of goods and the procurement of construction works have Beta coefficients of 0,382 and 0,288 respectively. This means that the effect of the procurement of goods is more significant than the procurement of services, while the procurement of construction works has more significant effect than the procurement of services on the number of auction participants. In other words, a specific type of procurement has an effect on the number of auction participants, which in this case, the type of procurement of goods has the most significanet effect, thus H_2 can be supported. This result is consistent with the research conducted by [16] who found that there is a significant effect between a specific type of procurement and the number of auction participants. The difference between his findings and our findings is that in our study, the procurement of goods and the procurement of construction projects dominates the procurement of services, while the findings of [16] found that the procurement of goods and the procurement of services dominates the procurement of construction projects.

As for the effect of CE variable, this research found that the amount of cost estimate has a positive and significant effect on the number of auction participants (*Sig*=0.00) with coefficient of 0,288. This means that the higher the cost estimate of the procurement, the higher the participants'

interest in participating in the auction, thus H_1 can be supported. This result is consistent with the findings of [16] who found that the amount of cost estimate has a positive and significant effect on the number of auction participants. The higher the cost estimate on the procurement, the higher the service provider's willingness to participate in the auction as the providers consider taking bigger contract value in order to maximize their profits.

E. Regression Test of Model II

Below are the results of linear regression test of the second model:

TABLE VI. MODEL SUMMARY FOR MODEL I

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.261ᵃ	.068	.067	0.00817

a. Predictors: (Constant), the number of auction participants

TABLE VII. RESULTS OF REGRESSION OF MODEL II

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Contant)	0,997	0,001		1648,058	0,000
NAP	0,000	0,000	-0,261	-7,129	0,000

a. Dependent Variable: Cost of procurement

The data in table VI shows that the value of *R* is 0,261 which thus indicate a low correlation between the variables. While the value of *R Square* obtained is 068. This indicates that 6.8% of the total variance of dependent variables (cost of goods and services procurement) can be explained by independent variables (the number of auction participants). From the results of linear regression test, it is indicated that the number of auction participants provides negative and significant effect on the cost of goods and services procurement (*Sig* = 0.00) with Beta coefficient of -0,261. This means that the high number of auction participants will enhance auction-competition climate which caused a decline in the price of goods/services offered, thus H_3 can be supported. This result is consistent with the findings of [16] who found that the number of auction participants has a negative and significant effect on the cost of the procurement of goods and services. High and healthy competition climate marked with high number of auction participants will trigger the goods and services provider to compete each other offering the lowest price with the best quality..

V. CONCLUSION

This research aims to investigate empirically the success level of the implementation of e-procurement particularly in realizing an efficient procurement of goods/services by local government organizations of Badung Regency – Bali Province. The investigation was conducted by testing the relationship between the amount of cost estimate, type of the procurement, the number of auction participants and cost

(efficiency) of procurement of goods/services. The results further demonstrated that (a) the amount of cost estimate has a positive and significant effect on the number of e-procurement participants of government goods/services of government goods/services on local government organizations of Badung Regency; (b) the type of procurement has a significant effect on the number of e-procurement participants of government goods/services on local government organizations of Badung Regency where the procurement of goods and the procurement of construction works has a dominant effect over the procurement of services on the increased number of auction participants; and (c) the number of e-procurement participants has a negative and significant effect on the efficiency of the e-procurement of government goods/services on local government organizations of Badung Regency.

The results of this research provide some implications for the implementation of e-procurement especially by local government organizations of Badung Regency – Bali Province. Firstly, Badung Regency Government can set the amount of cost estimate to a relatively high value in order to increase the number of participants participating in the e-procurement. Cost estimating must always take account of the amount of procurement budget ceiling and fair value of the auction contract. Secondly, one should consider the research findings which showed that the type of procurement has an effect on participants' enthusiasm in e-procurement, therefore, Badung Regency Government can set a scale of priority for which procurement is to be performed. However, it does not mean that the procurement of goods should be the priority as we must always consider the needs for procurement at any point in time and the party who makes the bid. Thirdly, the research results which indicated that the increased number of auction participants with a significant effect on the decline in procurement cost may serve as a basis for consideration for Badung Regency Government to set up strategies that raise incentives for participation in the practice of e-procurement for goods and services providers. The technical aspects such as easy access, a more user-friendly display, more transparent and more interesting information dissemination should need improvement.

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