

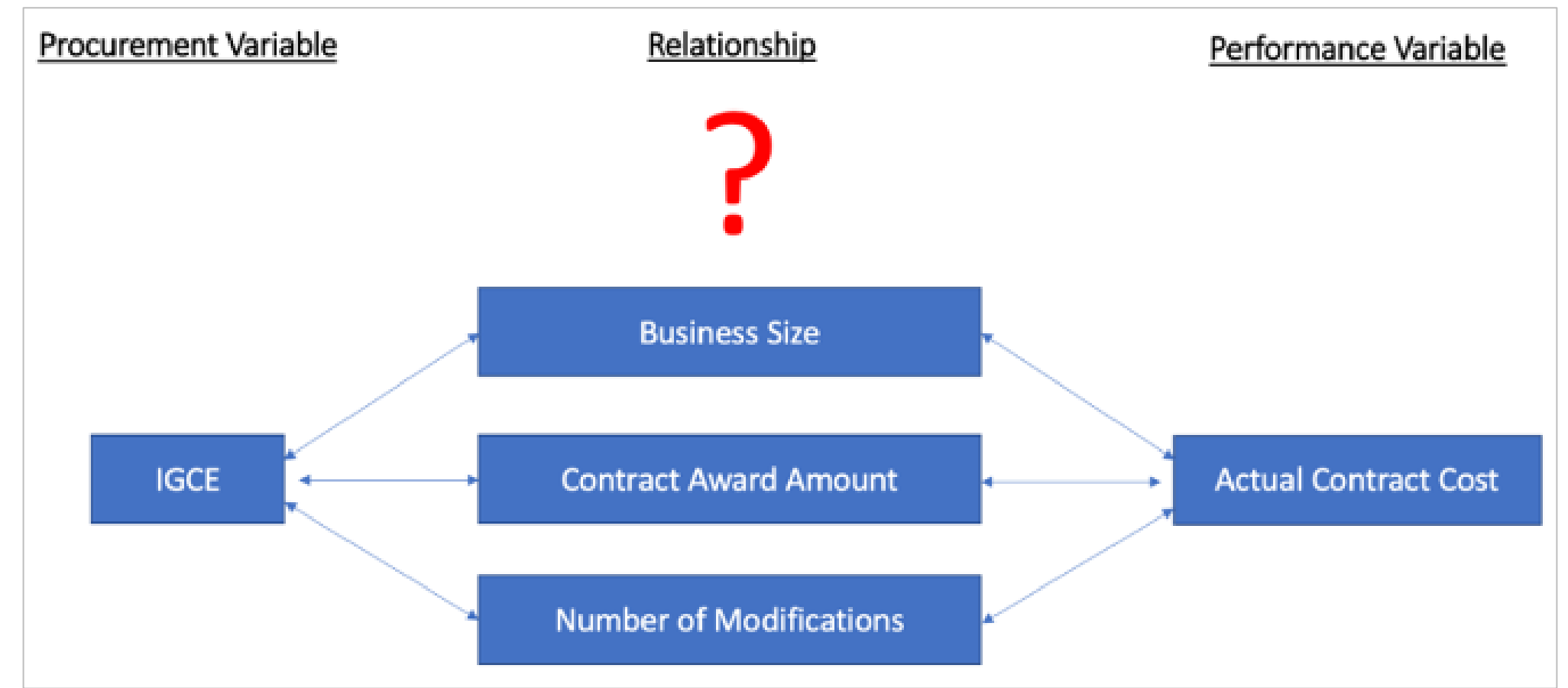
Investigating the Relationship Between the Independent Government Cost Estimate and Actual Contract Costs for Knowledge-Based Services Contracts



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Abstract

The DOD remains on the Government Accountability Office's (GAO) High-Risk List for contract management, and the DOD Inspector General declared that DOD contract management is a top ten management challenge. One of the significant causes to acquisition program risks is cost overruns, which can be mitigated by establishing an accurate and reliable independent government cost estimate (IGCE). Although the IGCE provides a baseline for contract cost, many DOD acquisition professionals believe that it has little to no value in determining the actual contract cost. However, per the DOD's Independent Government Cost Estimate Handbook for Services Acquisitions, the IGCE serves as the best estimate of a contract's potential costs and is an essential factor in awarding and administering services contracts. Using multiple linear regression and correlation techniques, this study aimed to identify the relationship between IGCE and actual contract costs and how other procurement variables effect that relationship. One of the keys findings was that the IGCE has a strong relationship and is a good predictor of actual contract costs. Additionally, this relationship is affected when introducing additional explanatory variables to the model. Overall, this study deepened our understanding of the relationship between the independent government cost estimate and actual contract costs providing insight into the need for accurate and reliable cost estimates for government contracting.



Relationship between Procurement Variables (Inputs) and Associated Performance Variable (Output) for Knowledge-Based Services (KBS) Contracts

Variable	Obs	Mean	Median	StdDev	Min	Max
IGCE	35	\$12,297,382.42	\$3,982,000.00	\$18,986,692.67	\$588,679.71	\$87,660,013.00
	<i>10</i>	<i>\$6,680,612.63</i>	<i>\$4,082,564.00</i>	<i>\$6,331,040.96</i>	<i>\$588,679.71</i>	<i>\$21,260,458.00</i>
	25	\$14,544,090.34	\$3,963,197.00	\$21,846,434.48	\$896,000.00	\$87,660,013.00
Contract Award Amount	164	\$5,880,413.57	\$1,780,688	\$16,709,272.83	\$22,965.03	\$174,727,318.00
	<i>82</i>	<i>\$3,417,455.91</i>	<i>\$780,878.18</i>	<i>\$6,371,673.66</i>	<i>\$22,965.03</i>	<i>\$42,557,744.68</i>
	82	\$8,343,371.23	\$2,963,760.55	\$22,560,278.81	\$291,815.77	\$174,727,318.00
Number of Modifications	146	102.48	9	183.75	1	527
	<i>65</i>	<i>215.58</i>	<i>12</i>	<i>230.06</i>	<i>1</i>	<i>527</i>
	81	11.72	9	10.94	1	66
Actual Contract Cost	122	\$8,291,937.10	\$1,430,787.72	\$33,980,875.07	\$163,464.42	\$253,927,214.63
	<i>61</i>	<i>\$10,522,024.90</i>	<i>\$862,395.64</i>	<i>\$44,424,374.76</i>	<i>\$163,464.42</i>	<i>\$253,927,214.63</i>
	61	\$6,061,849.31	\$2,610,479	\$18,574,372.32	\$291,815.77	\$142,876,639.00

Descriptive Statistics

Bold: Data subset total, *Italicized:* large business awards, *Non-Italicized:* small business award

Methods

- Used multiple linear regression (MLR) and correlation techniques to identify the relationship between IGCE and actual contract costs and how other procurement variables effect that relationship
- Random sampling of 175,330 contract actions
 - 120 contracts selected
 - 35 contracts had complete data, to include IGCE amount
 - Criteria included:
 - Knowledge-Based Service Contracts
 - Fiscal Years 2014-2020
 - PSCs: R408, R425, R609, R706, R707, R799

Results

- By using MLR, we determined that IGCE has a strong relationship with and is a reliable predictor of actual contract cost.
- Based on our analysis, when contract award amount is included as an explanatory variable in our model, the relationship between IGCE and actual contract cost weakens.
- The number of modifications has a moderately significant relationship with actual contract costs.
- Based on the data analyzed, business size has an insignificant relationship with actual contract costs.

Table 7. MLR Results with AWARDAMT

Variable	Coefficient	StdErr	t	P> t	95% CI	
IGCE	-6.445E-08*	3.6695E-08	-1.7564122	0.09079213	-1.399E-07	1.0976E-08
AWARDAMT	1.2674E-07**	4.8134E-08	2.63299326	0.01405781	2.7796E-08	2.2568E-07
NUMMOD	0.02992912**	0.01192403	2.5099834	0.01863138	0.00541892	0.05443932
BIZSIZE	0.08885252	0.20009673	0.44404786	0.66068186	-0.3224522	0.50015724
*p<.10 **p<.05 ***p<.01						
Number of Observations = 31						

Recommendations

- Expanding analysis to other government agencies (focused on one Navy organization)
- Cast a wider net for spend data (more FYs)
- Incorporate larger amount, or modify, the procurement variables used in the model
- SCOs emphasize the importance of accurate and reliable IGCEs