A THEORETICAL MANPOWER OPTIMIZATION MODEL FOR THE AIR FORCE INSTALLATION CONTRACTING AGENCY (AFICA)

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Abstract

This project examined the potential impact of process savings achieved through strategically sourced contracts on AFICA's manpower. The project leveraged AFICA's contract man-hour data to make logical inferences concerning the transaction costs of various strategically sourced contracts. The information derived from the transaction cost analysis was used to construct a theoretical linear program to optimize manpower with respect to man-hour savings achieved through strategically sourced contracts. The optimized manpower solution provides a theoretical framework to identify manpower savings that may be used to address AFICA mission objectives.

Framework

The literature review informed the following theoretical framework for manpower optimization in AFICA:

(1) The Air Force's Manpower Personnel Center (AFPC) manpower optimizations do not include man-hour savings attributable to strategically sourced contracts. Assume AFICA manpower optimizations include man-hour savings attributable to strategically sourced contracts.

(2) If AFPC determines manpower in accordance to the minimum manning required to meet mission objectives, AFPC's optimized manpower level must be more than AFICA's optimized manpower level.

(3) If items one and two are true, the implication is that ***operational CONSs may have excess manpower that may be used to accomplish other mission objectives.***

(4) As AFICA continues to achieve more man-hour savings through strategically sourced contracts, ***AFICA may achieve more manpower savings that may be used to accomplish other mission objectives.***

Methods

PHASE I

1. Develop decentrally executed, strategically sourced contract categories from AFICA's manpower standards
2. Estimate the man-hour requirement for the decentrally executed, strategically sourced contract categories
3. Estimate the labor input & transaction cost of all contract categories based on contract complexity.
4. Build the linear program

PHASE II

1. Simulate AFPC's manpower optimization
2. Simulate AFICA's manpower optimization
3. Analyze the manpower variance

Findings

**Contract quantities are for illustrative purposes only*

Contract Categories	Quantity	Man-Hours per Category	Applied Rate	Transaction Cost
Commodity Contracts				
Commodity Contract (Commercial > $150K or Master Strategically Sourced Contract)	10	475.1	$ 42.94	$ 203,984.67
Commodity DO	100	40.25	$ 25.47	$ 102,528.95
Commodity PO	100	35.46	$ 25.47	$ 90,327.37
Decentrally Executed, Strategically Sourced Commodity	50	24.15	$ 23.72	$ 28,640.78
Service Contracts				
Service Contract (Commercial > $150K or Master Strategically Sourced Contract)	10	615.08	$ 42.94	$ 264,085.23
Service TO	50	219.66	$ 28.00	$ 307,491.24
Decentrally Executed, Strategically Sourced Service (Commercial>$150K)	25	131.796	$ 28.00	$ 92,247.37
Service PO (Commercial <$150K)	50	38.37	$ 28.00	$ 53,712.28
Decentrally Executed, Strategically Sourced Service (Commercial<$150K)	25	23.022	$ 28.00	$ 16,113.68
Sealed Bid				
Sealed Bid	12	214.03	$ 25.47	$ 65,423.91
Miscellaneous				
Options	38	22.34	$ 23.72	$ 20,135.59
Modifications	228	17.22	$ 23.72	$ 93,124.86
Closeouts	25	7.63	$ 23.72	$ 4,524.41

Revised Transaction Cost Schedule

Contains the open-market contract categories contained in the contracting manpower standard ***and*** the new decentrally executed, strategically sourced contract categories.

To determine the man-hours of the decentrally executed, strategically contracts…
(1) First, the decentrally executed, strategically categories were assigned the man-hours of their comparable open-market category.
(2) Then, the decentrally executed, strategically man-hours were discounted for best-in-class acquisition practices and enterprise-wide learning.

The rate is a function of contract complexity. The more complex the category, the more experienced (and expensive) labor inputs required for execution.

The simulated manpower optimization revealed…

1x 1x 1x

may be used to meet other AFICA mission objectives

**Manpower savings will be different for each CONS*

Objective Function

Min: $58.53X_A + 48.42X_B + 35.74X_C + 50.82X_D + 42.68X_E + 38.19X_F + 33.33X_G + 28.28X_H + 23.03X_I + 17.84X_J$

Constraints

Subject To:

$$\sum_{i=1}^{10} X_i \geq Y_c Q_c$$

$$X_i \geq Z_{ij}\left(Y_c Q_c\right)$$

$$X_i; Y_c Q_c; Z_{ij} \geq 0$$

Manpower Optimizations for a Notional CONS

1. Simulated AFPC optimization by allocating contract actions to open-market contract categories.
2. Simulated AFICA optimization by allocating contract actions to open-market ***and*** strategically sourced contract categories. This captures potential man-hour savings attributable to strategically sourced contracts.
3. Compared manpower variance between the two optimized solutions.

**Refer to the report for the variable definitions and the formulation of the linear program.*

Results

Can AFICA leverage process savings achieved through strategically sourced contracts to identify manpower savings that may be used to address other mission objectives?

Theoretically, yes. The model provided a theoretical framework to analyze the manpower impact of leveraging process savings achieved through strategically sourced contracts at the operational CONS level. Although few (if any) decentrally executed, strategically sourced contracts currently reap the full process savings of best-in-class acquisition practices and enterprise-wide learning, this project assumes that, in the long-run, all strategically sourced contracts will reap these process savings.

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