

# Outperform and Outlast: 100% Employee-Owned Contractors Top the Charts

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## Summary

Research has long confirmed that employee owners enjoy greater wealth, higher income, longer job tenure, and better benefits than employees of investor-owned firms. In the United States, recent federal legislation incentivized defense contracting with wholly employee-owned firms, by facilitating non-competitive follow-on awards to them. But do such firms actually perform better for federal customers? And if so, in a sector subject to considerable consolidation, do they last longer as independent firms? Statistical analysis of Contractor Performance Assessment Rating System (CPARS) scores indicates that firms entirely owned by employee stock ownership plans (ESOPs) achieve higher ratings from federal officials than all other firms, and at a significance level well beyond 99%. In particular, they more frequently achieve ratings in CPARS of Excellent or Very Good than other firms (see below). Statistical analysis of survival rates of 100% ESOP firms indicate as well that they are more resistant to consolidation, and at a significance level of 99%. These findings suggest that federal contracting officials can confidently develop business relationships with many 100% ESOP firms, and for the long term.



Federal Nonsystems Contractors, 2017 through 2023

## Introduction

Since the 1970s, one of the most effective means for building workers' wealth and securing their incomes has been the employee stock ownership plan (ESOP). Today, across the United States, the ESOP is the most widely used legal and economic structure by which workers share in the ownership of enterprises, covering over 6,500 firms and 10.5 million employees. By one recent estimate (Wiefek, 2017), even comparatively young workers in ESOPs have 92% higher household wealth, 33% higher wage income, and 53% longer median job tenure than other workers. They are even more likely to have access to subsidized childcare. For employees, forming beneficial and lasting relationships with firms is easier when they are also owners.

Since 1974, federal law has facilitated formation of ESOPs specifically to enable this wider sharing of wealth. Since that time, a wide variety of federal laws and policies have encouraged social goals through procurement, for small businesses, businesses with socially disadvantaged owners, and businesses with veteran owners. Public procurement is used in this way the world over, and the United States is no exception (Grandia & Meehan, 2017). Most recently, the 2022 National Defense Authorization Act incentivized contracting by the US Defense Department with wholly employee-owned firms, through a mechanism to facilitate non-competitive follow-on awards from satisfied federal customers.

This begs two questions of performance not just for employees, but for customers. First, do 100% ESOP firms in federal contracting actually perform better on contracts? The answer can inform the debate on whether special treatment in procurement policy is warranted. Second, can federal customers anticipate that their relationships with 100% ESOP firms are likely to endure, perhaps because such firms are less prone to consolidation than others in federal contracting? The answer to this question can inform debates on approaches in law and policy to the restructuring of the industries involved in government contracting.

### Do 100% ESOP federal contractors perform better?

So, do 100% ESOP firms perform better? Pugh, Oswald, and Sahara (2001) found that ESOP formation provided only a short-term boost to a firm's financial performance. Financial returns are important for any profit-seeking going concern, but customers are rightfully concerned about performance against the strictures of their contracts. In this regard, years of research point to multiple benefits of ESOPs. Perhaps foremost, employee ownership is associated with greater willingness to work hard (Blasi *et alia*, 2010), and actually higher workplace effort (Kurtulus & Kruse, 2016). The lower turnover, higher loyalty, and longer-term employment of ESOP firms generally leads to greater investment in firm-specific skills, which in turn improves performance in work-related tasks (Blasi *et alia*, 2010). ESOP firms are less likely to suffer labor strikes, which would both interrupt contracted activities and interfere with organizational morale and alignment (Crampton, Mehran & Tracy, 2008).

Higher percentages of employee ownership are associated with lower risk tolerance by management, as all employee-owners may greatly care about organizational survival, for that longer-term employment (Gamble, 2000). If this suppresses appetite for risk-taking, innovation could theoretically suffer. However, Garrett (2010) found that "employee stock ownership positively moderates the relationship between R&D [research & development] intensity and innovative output." That is, employee-owned firms make greater use of each dollar of R&D spending, perhaps because they are not spending other people's money.

Data on how some customers view their contractors' performance is another matter. The US federal government maintains a huge database of its contracting officials' assessments of the performance of its contractors, by individual contract, from 2003 through the present. More than 33 million entries across 22 years in the Contractor Performance Assessment Reporting System (CPARS, pronounced *See-Pars*) record these official scores. The CPARS was created by the Navy Department in 1998 to meet its

interpretation of requirements in the Federal Acquisition Regulation. In 2010, the Office of Federal Procurement Policy (OFPP) directed all federal agencies to integrate their past performance databases into CPARS (Bradshaw & Chang, 2013). In 2014, the OFPP standardized the purchasing categories and rating areas for the entire federal government.

Each contract falls into one of four purchasing categories: *Systems*, *Nonsystems*, *Construction*, and *Architect-Engineer*. *Nonsystems* is by far the largest category, with 68% of all contracts over all time. Each contract is evaluated in seven rating areas: *Quality*, *Schedule*, *Cost Control*, *Management*, *Utilization of Small Business*, *Regulatory Compliance*, and *Other*. In each area, each contract receives a final rating on a qualitative scale: *Exceptional*, *Very Good*, *Satisfactory*, *Marginal*, or *Unsatisfactory*. Notably, not every contract is evaluated in every area (e.g., some fixed-price contracts may not receive a rating in *Cost Control*). The number of individual records in each rating area by procurement category does thus vary, but all contain millions of records. The total number of ratings by calendar quarter, procurement category, and rating area is available publicly at <https://www.cpars.gov/sysreq.htm>.

Customers' assessments from a large population of customers may be a good proxy for actual performance. However, while this database is vast, it is only fully available to the buyers inside the US federal government. Each contractor receives copies of its own CPARS reports, but only its own, as the ratings are considered competition-sensitive. Perhaps because of this confidentiality, only a few previously published papers have used CPARS scores in research. Woods *et alia* (2020) summarized scores for all defense contractors with any ESOP at all. A small group of faculty and their students at the Naval Postgraduate School (NPS), where official access was possible, relied primarily on CPARS ratings in a series of theses and studies on services contracting between 2013 and 2018 (see Wilhite *et al.*, 2013; Black *et al.*, 2014; Landale *et al.*, 2017; and Oartega, 2018). Results from this research program suggest that CPARS ratings are an underutilized source for economic research--if either they can be made available outside the federal government, or with the cooperation of samples of individual contractors.

Obtaining the ratings privately can be difficult. For our purposes here, firms' percentages of employee ownership is not reported on Labor Department Form 5500, a common tool for determining whether a firm has an ESOP at all. The National Center for Employee Ownership (NCEO) maintains a database of federal contractors (see NCEO, 2021) that does record percentage of ownership, but only when the companies choose to mention this in their marketing materials. For this study, 16 members of the Employee Contractors Roundtable, a coalition of 100% ESOP firms engaged in federal contracting, provided actual CPARS reports, CPARS ratings, or summaries of CPARS ratings, on the condition of anonymity. Instructions to the firms required that participation meant submitting all scores for any time period, as far back in time as their records and costs would reasonably allow.

The data call yielded hundreds of useful records, which on the assumption of equidistance between ratings, could be converted to numerical scores: *Exceptional* = 4, *Very Good* = 3, *Satisfactory* = 2, *Marginal* = 1, and *Unsatisfactory* = 0. This provided a commonly recognizable "grade point average" for analysis. With enough ratings from ESOP firms, we were able to employ simple Student's t-tests of the data (Student, 1908). The t-test is perhaps the most common, and most widely-understood, standardized statistical test for determining whether or not two groups of data have significantly different means. Here, the test can help us evaluate whether any differences found between the average quantified ratings in our sample of 100% ESOP firms, and the overall set of ratings for federal contractors, are likely just the result of randomness, or not.

In general, the conceptual distance between ratings in qualitative scales may not be consistent—that is, raters may not consider *Exceptional* to be just as better than *Very Good* as they consider *Very Good* to be better than *Satisfactory*. For this reason, non-parametric tests such as the Mann-Wilcoxon-Whitney Rank-Sum are often preferred for these sorts of data. However, the results of the t-test and the Rank-Sum are

generally close for samples with skewness under 0.5 and with variances close to those of the populations from which they are drawn (Zimmerman, 1987). Moreover, we may assume that with a large number of individual raters providing ratings, conceptual differences across rating levels may be close.

Almost all the ratings from all but one firm were in the category *Nonsystems*. Descriptions of the ratings in the category *Other* were not consistently available, and when available, not consistent. As expected, the individual records varied in number (see above) across rating areas, and rather fewer were available in the rating areas *Utilization of Small Business* and *Regulatory Compliance*. Moreover, the skewness of the populations in these latter two rating areas exceeded 1. For these reasons, this study is confined to 100% ESOP federal contractors, in *Nonsystems* procurements, in the rating categories of *Quality*, *Schedule*, *Cost Control (Cost)*, and *Management*. The time period under study is confined to 2017 through 2023, as almost all the data from the participating firms fell into this interval.

Table 1 shows the distributions of the ratings for the population and the overall sample of 100% ESOP firms. Figure 1 shows the same information graphically, as a set of paired histograms. The results are impressive.

- ◆ In each rating category, the population of all federal contractors had modal ratings of *Satisfactory* across all categories tabulated. That is, a federal official completing a CPARS form at the conclusion of a *Nonsystems* contract between 2017 and 2023 was most likely to grade the overall performance as *Satisfactory*, and in all respects. Just above half of all ratings were better than that. Amongst all contractors, the frequency of ratings above *Satisfactory* were 57.2% in *Quality*, 54.1% in *Schedule*, 55.6% in *Cost*, and 57.6% in *Management*.
- ◆ In stark contrast, the modal ratings for the 100% ESOP sample were *Exceptional* in *Quality* and *Management*, and *Very Good* in *Schedule* and *Cost*. That is, a federal official completing a CPARS form at the conclusion of a *Nonsystems* contract with a 100% ESOP firm between 2017 and 2023 was most likely to grade the overall performance as either *Exceptional* or *Very Good*, and in all respects. Amongst 100% ESOP contractors, the frequency of ratings above *Satisfactory* were 79.1% in *Quality*, 73.9% in *Schedule*, 68.8% in *Cost*, and 73.5% in *Management*.

Statistical testing of the 100% ESOP sample to the full population confirms that their outperformance is not an artifact of randomness. Table 2 shows that across the entirety of these samples, Student's t-tests provide highly significant results on all four variables tested, well beyond the 99% level.

Table 3 shows that these results are also not functions of an outsized effect from a small subset of the sample. Of the 16 firms (identified with anonymizing letters), four show individually significant results on all four tested variables of *Quality*, *Schedule*, *Cost*, and *Management*. Another three show individually significant results on *Quality*, *Schedule*, and *Management*. One shows an individually significant result on *Cost* and *Management*. Another actually shows individually significant negative results on *Schedule*, *Cost*, and *Management*, indicating that not all 100% ESOP firms are equally successful in fulfilling their customers' needs. The other seven firms provided individually inconclusive results, as their sample sizes were too small, with fewer than 25 observations each. Overall, the positive results for the broad sample were substantially, but not wholly, driven by seven of the 16 firms in the group.

In short, in the estimation of a wide group of federal contracting officials, wholly employee-owned firms have clearly been outperforming contractors as a whole.

## Do 100% ESOP federal contractors better resist consolidation?

We may thus conclude that 100% ESOP services contractors earn higher marks from their federal customers. Naturally, federal agencies forming relationships with such firms may wonder about their

durability. Their investment of relational capital with outstanding contractors would be worth more if those firms were more likely to survive.

Past research has generally shown that employee-owned firms across the economy are indeed more likely to survive as independent entities than firms without employee ownership. Employee ownership is associated with higher survival rates, and fewer layoffs, during recessions (Kruse, 2022). Park *et alia* (2004) found that firms with greater than 5% employee ownership were only 76% as likely to disappear from 1988 through 2001 as firms without employee ownership. Kustulus and Kruse (2017) found that firms with any ESOP were only 82% as likely to disappear from 1999 through 2010 as firms without ESOPs. Factors associated with this durability include employee motivation, greater involvement in relevant decision-making, teamwork, and valuable on-the-job training (see Blasi *et al*, 2013; and Kurtulus, Kruse & Blasi, 2011).

The ESOP actually originated as a means for corporate survival through seamless transition of ownership. The first ESOP was devised in 1956 by attorney Louis Kelso to facilitate the transfer of the ownership of a newspaper publishing company from “its two founders (both then in their 80s) to their chosen successors, the managers and employees” (Menke & Buxton, 2010). Flinchum and Etkind (2014) argued that the ESOP specifically provides “a manageable, cash-efficient method of transferring ownership” in professional services firms, which approximates the nature of most “non-systems” providers.

ESOPs have also been established specifically for the purpose of resisting takeovers, as their charters can be written to require wide agreement of employees for any transfer of ownership. Uninitiated acquiring firms often find ESOPs “peculiar and complex,” leading to “a source of anxiety” that can discourage transactions (Hart, 2001). Serial acquirers often eschew discussions with ESOP firms to avoid endgame disagreements between managers and less enthused employees. That is, “as a defensive mechanism, ESOPs operate on the assumption that ESOP shares are likely to be voted or tendered in accordance with management’s interests” (Block *et al.*, 1997). ESOPs are thus often seen as strong deterrents to takeovers (Chaplinsky & Niehaus, 1994). Establishing an ESOP for this purpose can reduce overall shareholder value, though the agency problem of granting insiders greater voting rights (Gordon & Pound, 1990). However, Kaswan (2022) noted that control of the ESOP firm is not always fully with the employees, but particularly with the trustees of the plan and their chosen sitting managers. Lu *et alia* earlier (2007) found that ESOPs lead to greater managerial control, but not necessarily managerial entrenchment, in which a firm’s leadership will not sell on even generous terms.

Indeed, part of the point of building all that wealth for employees may be a payday exit. In 2020, the employees of Dynetics, then the second-largest 100% ESOP firm that was primarily a federal contractor, sold their business to Leidos. Leidos was an interesting acquirer, as it is one of the two successor firms of the original Scientific Applications International Corporation (SAIC), which was long the largest and most prominent majority ESOP firm in federal contracting. For some time, Dynetics continued to operate under its own name, as a separate subsidiary. By December 2021, that unit had grown from 2,300 to 4,100 staff. How much of that growth was organic, and how much was the result of assignments from other parts of Leidos, is unclear. However, the investment in the business indicates that the acquisition may have been a sound solution economically, for both companies and their customers.

Federal agencies may not, however, want a wanton pace of acquisition of their services contractors, particularly if acquisition changes the nature of the companies with which they have maintained strong customer-service relationships. Thus, we should ask whether 100% ESOP firms in federal contracting have proven more resistant to acquisition than much larger federal contractors, which are generally harder to acquire simply for their size.

For data, we drew from USA Spending ([www.usaspending.gov](http://www.usaspending.gov)) the list of the top 100 federal contractors by contract volume in fiscal year 2017. From the NCEO database of federal contractors, we extracted a list of 227 firms, from calendar years 2017 through 2021, which both which received federal contract awards and which identify themselves as federal contractors. Only one firm, Chemonics, appeared on both lists, and was eliminated to avoid double-counting. (It is notably still a very large 100% ESOP federal contractor.) Three sources provided signals for removals of firms from those sets, of now initially 99 and 226 firms, over time. The newsletter *Defense M&A Daily* records transactions in US military and intelligence contracting, which accounts for over half of all US federal contracting. The consultancy Renaissance Strategic Advisors maintains a graphical map, released on request, of acquisitions of aerospace and military contracting firms since 1993. For ESOP firms specifically, the NCEO database records contract volumes by year. Any firm with a drop to zero dollars in awards merited investigation, and all of these were found to be associated with firms that were acquired by other firms.

Table 4 shows that between 2017 and 2021, nine of the 99 largest federal contractors, and six of the 226 100% ESOP federal contractors, disappeared as independent entities. This suggests that the rates of survival for large federal contractors of any type, and for 100% ESOP federal contractors, are quite different. Table 5 shows the results of a Log-Rank test of the two survival rates. The Log-Rank test assumes that the probability distributions are identical, and then asks how many events (firm exits) we should expect to see in each group. The table indicates 10.56 rather than six disappearing ESOP firms, and 4.44 rather than nine disappearing large firms of other ownership types. The resulting Chi-squared statistic of 6.68, with one degree of freedom for the testing of two subsets, is associated with a probability ( $p$ ) value of 0.0097. We can thus conclude that 100% ESOP federal contractors have indeed been more resistant to acquisition, with statistical significance at the 99% level.

## Recommendations for Further Research

The results from the first part of this study, and the paucity of attention to contractor ratings, strongly suggests that CPARS ratings are indeed underutilized as a data set. Federal procurement policy could be usefully informed by analysis of many demographic, geographic, managerial categories of firms involved in federal contracting. The results of the second part of the study suggest another look at performance. Mergers often produce financial performance for federal contractors (Yan, Lee & Josephson, 2023), but do they lead to better performance on the actual contracts? Studies matching merger events to changes in CPARS ratings, and financial gains and losses to changes in CPARS ratings, could produce interesting findings. To enable both types of research, the OFPP should consider making access to anonymized CPARS ratings more widely available to researchers.

## References

Black, Sean, Jarred Henley, and Matthew Clute, 2014. *Determining the Value of Contractor Performance Assessment Reporting System Narratives for the Acquisition Process*, thesis, Naval Postgraduate School.

Blasi, Joseph, Douglas Kruse, and Dan Weltman, 2013. "Firm Survival and Performance in Privately Held ESOP Companies," in Douglas Kruse, ed., *Sharing Ownership, Profits, and Decision-Making in the 21st Century, Advances in the Economic Analysis of Participatory & Labor-Managed Firms*, Vol. 14, Emerald Publishing.

Blasi, Joseph, Richard Freeman, Christopher Mackin, and Douglas Kruse, 2010. "Creating a Bigger Pie? The Effects of Employee Ownership, Profit Sharing, and Stock Options of Workplace Performance," in Kruse, Freeman, and Blasi, eds., *Shared Capitalism at Work: Employee Ownership, Profit and Gain Sharing, and Broad-based Stock Options*, University of Chicago Press.

Block, Dennis J., Jonathan M. Hoff, and H. Esther Cochran, 1997. "Defensive Measures in Anticipation of and in Response to Unsolicited Takeover Proposals," *University of Miami Law Review*, Vol. 51, No. 3.

Bradshaw, James, and Su Chang, 2013. "Past Performance as an Indicator of Future Performance: Selecting an Industry Partner to Maximize the Probability of Program Success," *Defense Acquisition Research Journal*, Vol. 20, No. 1.

Chaplinsky, Susan and Greg Niehaus, 1994. "The Role of ESOPs in Corporate Takeovers," *Journal of Finance*, Vol. 49, No. 4.

Crampton, Peter, Hamid Mehran, and Joseph Tracy, 2008. "ESOP Fables: The Impact of Employee Stock Ownership Plans on Labor Disputes," *Federal Reserve Bank of New York Staff Reports*, No. 347.

Flinchum, Mark A., and Steve Etkind, 2014, "Using an ESOP as an Ownership Transition Strategy in Professional Services Firms," *CPA Journal*, Vol. 84, No. 4.

Gamble, John E., 2000. "Management Commitment to Innovation and ESOP Stock Concentration," *Journal of Business Venturing*, Vol. 15, No. 5-6.

Garrett, Robert P., 2010. "Does Employee Ownership Increase Innovation?" *New England Journal of Entrepreneurship*, Vol. 13, No. 2.

Gordon, Lilli A., and John Pound, 1990. "ESOPs and Corporate Control," *Journal of Financial Economics*, Vol. 27, No. 2.

Grandia, J. and Meehan, J. (2017), "Public procurement as a policy tool: using procurement to reach desired outcomes in society", *International Journal of Public Sector Management*, Vol. 30 No. 4.

Hart, Michael A., 2001. "ESOPs in Corporate Acquisitions: What Every Buyer Should Know about the Target Company's ESOP," *Benefits Law Journal*, Vol. 14, No. 1.

Kaswan, Mark J., 2022. "Property, Ownership, and Employee Ownership: Employee Control in ESOPs," *Journal of Participation and Employee Ownership*, Vol. 5, No. 1.

Kruse, Douglas, 2022. "Does Employee Ownership Improve Performance?" *IZA World of Labor*.

Kurtulus, Fidan Ana, and Douglas L. Kruse, 2017. *How Did Employee-Owned Firms Weather the Last Two Recessions?* W. E. Upjohn Institute for Employment Research.

Kurtulus, Fidan Ana, Douglas Kruse, and Joseph Blasi, 2011. "Worker Attitudes toward Employee Ownership, Profit Sharing, and Variable Pay," in Jed Devaro, ed., *Advances in the Economic Analysis of Participatory and Labor-Managed Firms*, Volume 12, Emerald Publishing.

Landale, Karen A.F., Rene G. Rendon, and Timothy G. Hawkins, 2017. "Examining the Effects of Source Selection Methods on Procurement Outcomes," *Journal of Defense Analytics and Logistics*, Vol. 1, No. 1.

Lu, Weili, Joseph Reising, and Mark Hoven Stohs, 2007. "Managerial Turnover and ESOP Performance," *Quarterly Journal of Business and Economics*, Vol. 46, No. 1.

Menke, John D., and Dixon C. Buxton, 2010. "The Origin and History of the ESOP and its Future Role as a Business Succession Tool," *Journal of Financial Service Professionals*, May.

Ortega, Alan, 2018. *Relationship between Contracting Officer Representatives, Surveillance, and Contractor Performance*, thesis, Naval Postgraduate School.

Park, Rhokeun, Douglas Kruse, and James Sesil, 2004. "Does Employee Ownership Enhance Firm Survival?" in Virginie Perotin and Andrew Robinson, eds., *Employee Participation, Firm Performance, and Survival, Advances in Economic Analysis of Participatory and Labor-Managed Firms*, Vol. 8, Emerald Publishing.

Pugh, William M., Sharon L. Oswald, and John S. Jahara Jr., 2001, "The Effects of ESOP Adoptions on Corporate Performance: Are There Really Performance Changes?" *Managerial and Decision Economics*, Vol. 21, No. 5.

Ren, Ting, Youzhi Xiao, Daniel Pinto, and Hongyan Yang, 2022. "Employee Ownership and Firm R&D Investment: Evidence from China," *Journal of Participation and Employee Ownership*, Vol. 5, No. 2.

Student (William Sealy Gosset), 1908. "The Probable Error of a Mean." *Biometrika*, vol. 6, no. 1.

Wiefek, Nancy, 2017. *Research Report: Employee Ownership and Economic Well-Being*, National Center for Employee Ownership.

Wilhite, Trenton, Adam Stover, and Jeffrey Hart, 2013. *Management Levers that Drive Services Contracting Success*, thesis, Naval Postgraduate School.

Woods, William T., et al., 2020. *Defense Contracting: DoD Contracts with Companies Having Employee Stock Ownership Plans*, GAO-20-514R, US Government Accountability Office.

Yan, Shuai, Ju-Yeon Lee, and Brett W. Josephson, 2023. "The effect of customer asset strategies on acquisition performance in business-to-government markets," *Journal of the Academy of Marketing Science*.

Zimmerman, Donald W., 1987. "Comparative Power of Student T Test and Mann-Whitney U Test for Unequal Sample Sizes and Variances," *Journal of Experimental Education*, Vol. 55, No. 3.



**Table 1**

**CPARS Ratings for All Federal Contractors and for those Wholly Owned by ESOPs**

SAMPLE OF 100% ESOP FEDERAL *NONSYSTEMS* CONTRACTORS, 2017 THROUGH 2023

	<b>Quality</b>	<b>Schedule</b>	<b>Cost</b>	<b>Management</b>
Exceptional	<b>41.8%</b>	33.0%	31.7%	<b>38.1%</b>
Very Good	37.3%	<b>40.9%</b>	<b>37.1%</b>	35.4%
Satisfactory	20.5%	25.2%	30.6%	26.2%
Marginal	0.5%	0.9%	0.7%	0.3%
Unsatisfactory	0.0%	0.0%	0.0%	0.0%

POPULATION OF ALL FEDERAL *NONSYSTEMS* CONTRACTORS, 2017 THROUGH 2023

	<b>Quality</b>	<b>Schedule</b>	<b>Cost</b>	<b>Management</b>
Exceptional	24.9%	21.9%	22.7%	25.0%
Very Good	32.3%	32.2%	32.9%	32.6%
Satisfactory	<b>41.6%</b>	<b>44.1%</b>	<b>43.4%</b>	<b>41.0%</b>
Marginal	1.2%	1.8%	1.0%	1.5%
Unsatisfactory	0.4%	0.7%	0.3%	0.5%

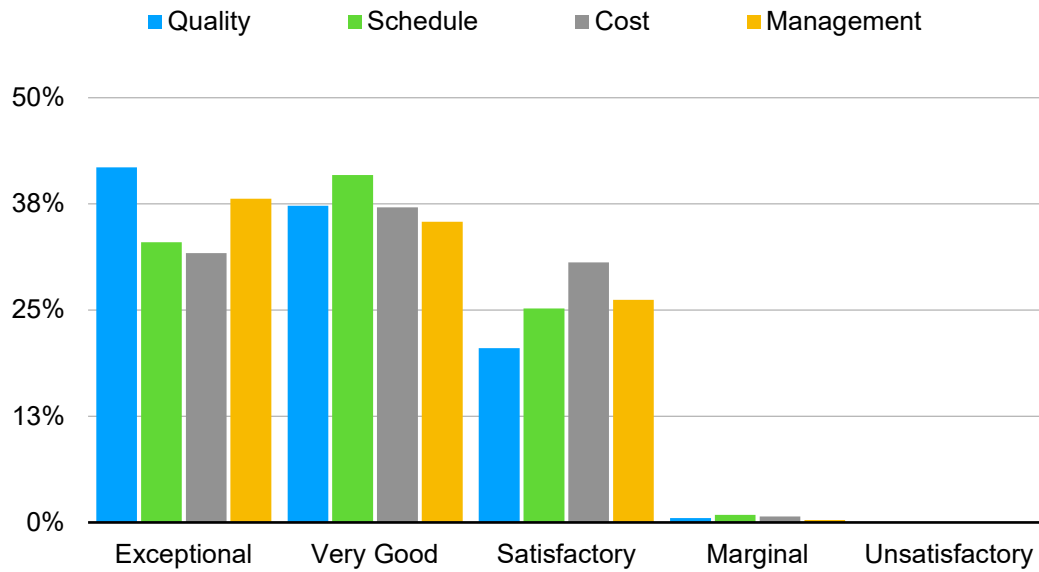
NB: Modal values highlighted.

All results were calculated in Microsoft Excel, and spot-checked with an HP-12C calculator.

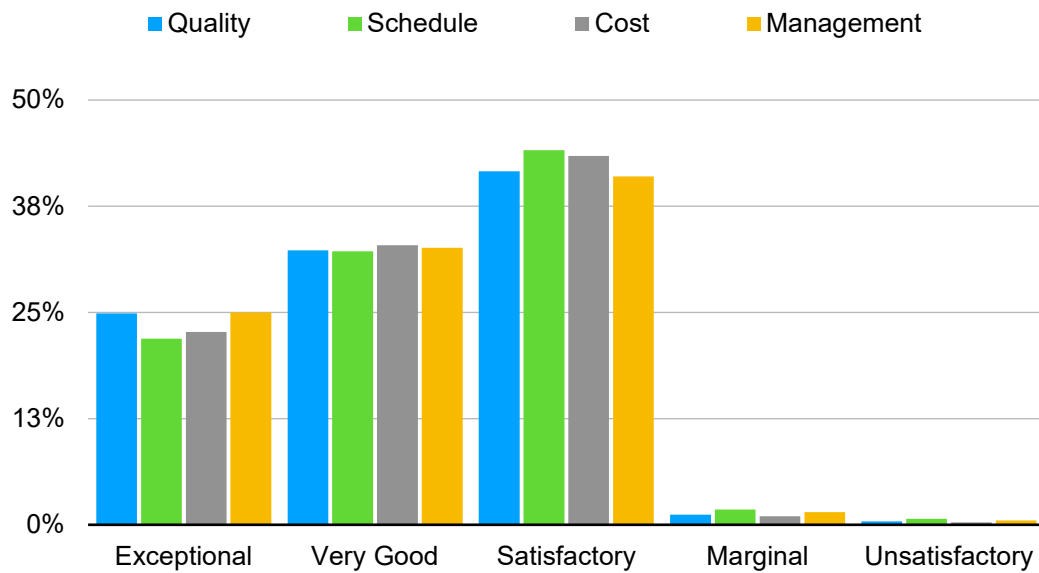
**Figure 1**

**CPARS Ratings for All Federal Contractors and for those Wholly Owned by ESOPs**

SAMPLE OF 100% ESOP FEDERAL *NONSYSTEMS* CONTRACTORS, 2017 THROUGH 2023



POPULATION OF ALL FEDERAL *NONSYSTEMS* CONTRACTORS, 2017 THROUGH 2023



**Table 2**

**Test of Differing Means, 100-Percent ESOP Federal *Nonsystems* Contractors versus All Federal *Nonsystems* Contractors, 2017 through 2023**

	Quality	Schedule	Cost	Management
<b>100% ESOPs</b>	3.205	3.059	2.998	3.113
Variance	0.600	0.616	0.650	0.643
Skewness	-0.429	-0.222	-0.071	-0.243
Count	665	640	461	661
<b>All Contractors</b>	2.797	2.725	2.764	2.799
Variance	0.674	0.661	0.646	0.680
Skewness	-0.157	0.121	0.015	-0.195
Count	18,171,661	17,285,140	10,727,105	16,507,261
<b>Student's t</b>	<b>12.799</b>	<b>10.421</b>	<b>6.241</b>	<b>9.820</b>

Significance at the 99% level emphasized in boldface.

NB: All results were calculated in Microsoft Excel, and spot-checked with an HP-12C calculator.

Table 3

Results for Individual 100% ESOP Firms in the Sample, 2017 through 2023

Firm	Averages				Counts				T-statistics			
	Qual.	Schd.	Cost	Mgt.	Qual.	Schd.	Cost	Mgt.	Qual.	Schd.	Cost	Mgt.
A	3.723	3.255	3.125	3.362	47	47	40	47	<b>7.736</b>	<b>4.477</b>	<b>2.839</b>	<b>4.683</b>
B	3.636	3.636	3.440	3.537	55	55	50	54	<b>7.582</b>	<b>8.320</b>	<b>5.944</b>	<b>6.582</b>
C	3.500	3.500	4.000	4.000	4	4	4	4	1.712	1.908	3.074	2.915
D	3.436	3.282	3.261	3.256	117	117	111	117	<b>8.417</b>	<b>7.419</b>	<b>6.514</b>	<b>6.007</b>
E	3.400	3.200	3.000	3.667	5	5	4	3	1.642	1.308	0.587	1.824
F	3.314	3.061	2.934	3.255	169	148	76	165	<b>8.180</b>	<b>5.033</b>	1.844	7.104
G	3.290	3.194	3.161	3.355	31	31	31	31	<b>3.345</b>	<b>3.213</b>	<b>2.750</b>	<b>3.757</b>
H	3.125	2.750	2.917	2.833	24	24	24	24	1.957	0.153	0.929	0.206
I	3.019	3.000	2.870	3.028	105	103	54	106	<b>2.771</b>	<b>3.439</b>	0.971	<b>2.869</b>
J	3.016	3.000	2.700	3.032	63	63	40	63	<b>2.116</b>	<b>2.690</b>	-0.505	<b>2.245</b>
K	3.000	3.000	3.200	2.857	7	6	5	7	0.654	0.830	1.212	0.188
L	3.000	3.000	4.000	3.000	1	1	1	1	0.247	0.339	1.537	0.244
M	2.818	2.500	2.500	2.545	11	8	8	11	0.085	-0.781	-0.929	-1.018
N	2.745	2.449	2.290	2.429	47	49	31	49	-0.437	<b>-2.374</b>	<b>-3.281</b>	<b>-3.142</b>
O	2.708	2.583	2.450	2.667	24	24	20	24	-0.529	-0.851	-1.747	-0.784
P	2.500	2.500	3.000	2.000	2	2	2	2	-0.512	-0.391	0.415	-1.370

Significance at the 95% level emphasized in boldface.

NB: All results were calculated in Microsoft Excel, and spot-checked with an HP-12C calculator.

**Table 4****Non-Survival of Large and 100-Percent ESOP Contractors, 2017 through 2021**

## LOSSES AMONGST THE TOP 99 FEDERAL CONTRACTORS

Firm	Disposition	Year
Alion Science and Technology	Acquired by Huntington Ingalls Industries	2019
CSRA	Acquired by General Dynamics and CACI	2018
Engility	Acquired by SAIC	2018
Harris	Acquired by L3	2019
Rockwell Collins	Acquired by United Technologies	2018
United Technologies	Acquired by Raytheon	2020
Perspecta	Acquired by Peraton	2018
Orbital ATK	Acquired by Northrop Grumman	2017
Ch2MHill	Acquired by Jacobs Engineering	2017

## LOSSES AMONGST THE 226 100-PERCENT ESOP FEDERAL CONTRACTORS, 2017 THROUGH 2021

Firm	Disposition	Year
Custom Vault Corporation	Acquired by Convergent	2021
Dynetics	Acquired by Leidos	2020
Enercon Services	Acquired by AE Industrial Partners	2021
McLean Defense Group	Acquired by Nobles	2021
Raydon	Acquired by By Light	2020
Social & Scientific Systems	Acquired by DLH	2019

**Table 5**

**Log-Rank Test of the Equality of Survivor Functions**

Group	Observed exits	Expected exits
ESOP 226	6	10.56
Top 99	9	4.44
	15	15.00

The Chi-Squared statistic with one degree of freedom is 6.68. The associated probability is  $p = 0.0097$ . The result, rejection of the null hypothesis of equal survival functions, is thus significant at the 99% level.

NB: Identical calculations provided by Stata and Datatab.