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JOURNAL *of* CONTRACT MANAGEMENT

Linking scholarly research with best practices in the contract management field

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Linking scholarly research with best practices in the contract management field

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Editor's Welcome

NCMA is pleased to present the 2021 issue of the *Journal of Contract Management (JCM)*. Since 1966, the *JCM* (originally called the *National Contract Management Journal*) has been supporting NCMA's mission of advancing the contract management profession through advocacy and the execution of programs to connect NCMA members and enable their professional development. Specifically, the *JCM* does this by publishing research aimed at expanding the contract management body of knowledge, serving both the buying and selling communities of the private and public sector. The *JCM* scope spans a wide-range of topics in the contract management field. It strives to comprehensively cover the contract management body of knowledge by publishing conceptual, empirical, and practice-based application research that demonstrates substantial conceptual development, appropriate methodology, proven-best practices, and value-added topics.

We hope that the *JCM* will promote and foster discussion of both theory and practice across the Contract Management Body of Knowledge (CMBOK) competencies. To this end, the *JCM* brings together key theory and practice applications, making the research available not only to the academic community but also to the private and public sector buying and selling communities. The *JCM* seeks research on both cutting-edge theories and practice applications in areas impacting the contract management profession. We invite both academics and practitioners to contribute to and read the *JCM*.

The *JCM* uses a double-blind peer-review process. Neither the authors nor the reviewers are made aware of each other's identity during the manuscript review process. This approach removes potential

biases in the review process, thereby retaining quality and objectivity. The authors submit manuscripts with findings based on their own perspective, and the blind peer reviewers provide comments related to the quality, impact, and technical accuracy of the research.

This year's issue contains four peer-reviewed articles covering a range of contract management topics. In the first article, "Developing 21st Century Procurement Personnel— The Stars Model," Charles Bray introduces a procurement staff development model derived from phenomenological research synthesized with a literature review. His research shows that staff development frameworks and tools can add value to procurement leaders by providing an outline to align staff development with personal and organizational needs. He also finds that transformational leadership and emotional intelligence characteristics aid staff development, employee engagement and retention.

The second article "Improving Business Capture Strategies: A Case Study," Dreux Johnson, Frank Douglas, Bernard Rizkallah, and Abdelrahman Abdelhaq present a case study focused on a service-disabled, veteran-owned small business. The case identifies evidence-based methods to improve the small business government contract business development (BD) win rate and ensure its sustainability. Using the lens of systems theory, the authors explain the concerns of the small business government contractor, identifying overarching themes, and developing recommendations for the small business government contractor to improve its business development capabilities.

The third article is authored by Enrique Mu and John Young and is entitled "Comparative Evalua-

tions for Simplified Acquisitions in *FAR* 13.” In this article, the authors first present an actionable definition of comparative evaluation for *FAR* Part 13 Simplified Acquisition Procedures. They then use the Analytic Hierarchy Process multi-criteria decision-making methodology for the practical implementation of *FAR* Part 13 comparative evaluations.

The fourth article authored by James Dimock is entitled “The Department of Defense’s Guidance on the Commercial Product “Of a Type” Language is Problematic.” In this article, Dimock argues that the Department of Defense’s guidance that the “of a type” language allows for a product to be deemed commercial based on sales or offers of “similar to” products is misaligned with the Federal Acquisition Regulation. He further states that DOD’s position creates a framework that places both DoD and industry buyers at a disadvantage when negotiating prices on single and sole source procurements. He finds that DoD’s guidance deviates from the regulation and often forces buyers to rely on imprecise and less reliable approaches to establishing price reasonableness.

As you can see from the above description of these articles, the *JCM* covers a wide-range of topics in the Contract Management Body of Knowledge (CMBOK). This *JCM* issue would not have been possible without the support of our editorial board and their volunteer efforts in conducting the manuscript reviews. I would like to thank the editorial board members for taking the time out of their busy schedules to perform the reviews of these manuscripts. I sincerely appreciate the sharing of their time and expertise to ensure that the *Journal of Contract Management* continues as the top contract management journal for both scholars and practitioners across the globe.

Dr. Rene G. Rendon, CPCM, CFCM, Fellow
Editor in Chief
Journal of Contract Management

Developing 21st Century Procurement Personnel– The Stars Model

BY DR. CHARLES BRAY, JR.

Abstract

Purpose: Introduce a procurement staff development model derived from a literature review and empirical research.

Design/Methodology/Approach : Phenomenological research synthesized with literature review.

Findings: Transformational leadership and emotional intelligence characteristics aid staff development, employee engagement, and retention. Staff development frameworks and tools can add value to procurement leaders by providing an outline to align staff development with personal and organizational needs.

Research Limitations/Implications: Sample size of 15 limits generalizations; additional research is needed.

Practical Implications: Framework and tools can help leaders manage varied staff needs across multiple generations and growth needs.

Originality/Value: Research synthesizes foundational research with practitioner experience to craft unique staff development model.

Keywords

talent development, employee engagement, procurement talent development, learning and development, transformational leadership, stars staff development model, emotional intelligence

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1.0 Leadership

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About the Author

DR. CHARLES E. BRAY, JR. is Manager of the Small Business Program Office at Jet Propulsion Laboratory. As a diversity, equity, and inclusion professional, Bray has more than 20 years of experience as a leader and consultant. Charles is a part of several teams at JPL, examining how to foster greater levels of diversity and inclusion at the Lab. He also designed and implemented Southern CA Edison's Supplier Development Program (\$4B annual spend). Bray is a Project Management Professional and has a Balanced Scorecard certification from Kaplan & Norton. Charles received his BS in Electrical Engineering from Purdue University and his MBA from Harvard Business School. He received his Doctorate in Education in Organizational Leadership from Pepperdine University. He is currently pursuing a PhD in Global Leadership and Change.

An effective procurement strategy positively affects the ability of a company to drive profitability through its supply chain (Mena et al. 2018). However, over half of the 504 leaders surveyed in the Deloitte Global Chief Procurement Officer Survey did not believe their teams had the requisite skill to execute their company's procurement strategy (Umbenhauer et al. 2018). Specifically, respondents cited talent deficiencies in leadership, innovation, and digital transformation. Also, the chief procurement officers felt their organizations were less proficient in pioneering change, inspiring others, and talent development (Umbenhauer et al. 2018). Industry experts are making an effort to address the talent development gap. However, their efforts to do so are inconsistent (Harrington 2015; Umbenhauer et al. 2018).

While other industry pundits cite adequate staff preparation in data analytics and process control, they also note gaps in soft skills and emotional intelligence (Harrington 2015; Ruamsook and Craighead 2014). Ruamsook and Craighead (2014) elaborate and describe a perfect storm of talent deficiencies, increased demand for supply chain staff, and a shortage of supply chain instructors as contributors to the scarcity of qualified procurement personnel. Other writers also detail a shortage of qualified supply chain personnel. Gravier (2017) theorizes that the talent shortage emanates from poor talent management strategies rather than a scarcity of talent. Gravier (2017) notes that millennials have a greater need for personal engagement with the corporate vision to maximize involvement and productivity. Cecere (2014) says the most significant gap in the supply chain talent pipeline is in developing existing employees, followed by deficiencies in middle management, followed by a skill gap for entry-level workers. Christopher (2016) cites the difficulty firms have in developing teams with the requisite breadth of skill and flexibility to meet today's supply chain challenges.

In summary, multiple industry writers discuss the gap in skill level of supply chain personnel, including procurement staff. The gap has the potential to impact supply chains adversely and, thus, business performance for companies worldwide. Leading firms seek to leverage their procurement activities to drive competitive advantage and outperform their

competitors (Petty and van der Meulen 2018; Umbenhauer et al. 2018). Therefore, companies must actively develop personnel to execute their supply chain and procurement strategies in support of organizational objectives.

Current Efforts to Address the Procurement Talent Gap

Industry literature proposes several solutions to address the need to develop a more robust cadre of qualified procurement personnel. Deloitte Consulting suggests that organizations implement digital procurement strategies to demonstrate alignment with millennials' desires to stay abreast of the latest trends, including digitization, the development of strong supervisors in procurement, and increased organizational investment in learning (Umbenhauer et al. 2018). Umbenhauer et al. (2018) also mention talent identification, focused staff engagement, and skill optimization as other vital elements to address the talent gap. Gravier (2017) implies that companies need to implement a talent development strategy inclusive of worker alignment with the firm's vision and message. In *Supply Chain Insights*, Cecere (2014) cites the importance of a greater emphasis on employee career planning and working to make supply chain planners feel valued as part of the talent development and retention strategy. In addition, Cecere (2014) proposes focused efforts by human resources in the areas of job design and talent development to fill the skill gap. Harrington (2015) recommends expanded learning and development opportunities, and an "employer of choice focus" (p. 11) to help companies retain staff and be "an attractive place to work" (p. 11). Clark (2016) suggests firms and universities collaborate to engage youth interest in supply chain careers to fill an early stage of the talent pipeline.

In summary, research highlights the impact of investment, staff engagement, job design, and leadership on talent development and retention. Digital transformation factors (Umbenhauer et al. 2018), engagement (Umbenhauer et al. 2018), leadership style (Ghasabeh et al. 2015), and the work environment (Harrington 2015) all play essential roles in developing and retaining talent. Firms that actively work to develop their procurement staff as a

business practice will improve the company's overall performance by addressing the staff developmental needs. Alignment of personal values with a company's strategic vision, mission, and ethics will also aid employee development and company performance (Gravier 2017; Kahn 1990).

The STARS Staff Development Model—One Approach to Addressing the Talent Gap

Informed by a phenomenological study of procurement leaders and a literature review on emotional intelligence, transformational leadership, and employee engagement, this article proposes a staff learning and growth model that may aid practitioners in their efforts to develop employees. The Systems, Technical, Availability, Relationship Management, and Self-Actualization (STARS) staff development model blends findings from peer-reviewed research and a study of how today's procurement leaders develop personnel into a tool for use by managers. The model may be useful to leaders from other disciplines as well in their effort to build the skill level of their teams. The theoretical framework of the study, the research design, and study results are discussed in the following sections.

Theoretical Framework—What Theories Support the STARS Approach?

What will help procurement leaders develop appropriately skilled employees to meet supply chain challenges in the 21st century? How can leaders develop staff with a healthy blend of both technical and interpersonal skills? As noted earlier, some industry experts and leaders note staff shortcomings in soft skills, emotional intelligence, and digital transformation. Other sources cite the importance of talent development efforts that include worker personal alignment with the company's vision; a greater emphasis on employee career planning; and expanded learning and development opportunities. As part of a study to understand and address procurement staff development needs, the author blended concepts, including adult learning, transformational leadership, emotional intelligence, and employee engagement, to craft a theoretical

framework. An overview of these theories appears below.

In their work on adult learning, Knowles et al. (2015) note that “andragogy works best in practice when it is adapted to fit the uniqueness of the learner and the learning situation” (p. 72). According to Knowles et al. (2015), adult learners characteristically are practical seekers of relevant information who are goal-oriented, internally motivated, and who leverage life experiences to frame learning. Based on Knowles et al.'s (2015) assertion, both learner characteristics and their situations require consideration in developing a suitable developmental approach or plan. Similarly, Bass and Avolio's (1994) notion of individual attention as a component of a transformational leadership style is synergistic with crafting an approach to fit the uniqueness of a learner.

As defined by Bass and Avolio (1994), transformational leadership includes inspirational motivation, idealized influence, intellectual stimulation, and individual consideration. In summary, effective leaders motivate and inspire followers in part through personal example; challenging assignments; and crafting of work roles and tasks to leverage the unique attributes of individuals (Bass and Avolio 1994). Kahn (1990) discusses the idea that employees are psychologically engaged at work to varying degrees, expressing their authentic selves in their work roles with a presumed impact on performance (Bailey et al. 2017). Kahn's 1990 article on work roles “describes and illustrates three psychological conditions—meaningfulness, safety, and availability” (Kahn 1990, 692). Leaders have a direct influence on employees' work roles and their job environment, thereby impacting the psychological conditions affecting performance. In his work, Maslow crystallizes the concept of need fulfillment and personal involvement in work and other activities (Maslow, 1943). From transformational leadership, Maslow's work, and employee engagement literature, the author derives that transformational leaders help to create psychological conditions at work leading to higher levels of employee engagement. Lee et al. (2011) note that the elements of transformational leadership affect team satisfaction, competence, and levels of performance.

As noted in the paragraph above, the ability to influence and inspire others (idealized influence and inspirational motivation) are elements of a transformational leadership style. Similarly, both of these elements are components of the relationship management domain of emotional intelligence (Goleman 2018; Hay Group 2011). According to Goleman (2018), the four domains of emotional intelligence are self-awareness, self-management, social awareness, and relationship management. These four domains consist of 12 competencies. Two of the four domains—social awareness and relationship management—tie directly to a transformational leadership style inclusive of empathy toward individuals, organizational awareness, influence, and inspirational leadership. Transformational leaders discern and connect with factors that motivate employees and help them to engage and buy into the company's or leader's vision for their job role (Bass and Avolio 1994). Leadership style has an effect on workers and the organization through empathy, influence, inspiration, and relationship management (Bass and Avolio 1994). Goleman's work is consistent with earlier work by Salovey and Mayer (1990), which laid out a three-level conceptualization of emotional intelligence. The author concludes that emotional intelligence is an essential component of leadership effectiveness and a necessary factor in successful staff development.

Literature from Gallup Research (Harter et al. 2010; Harter et al. 2016) on employee engagement, and writings from other foundational authors (Hackman and Oldham 1980; Herzberg 1968; Maslow 1943) on job design, motivation, and personal fulfillment, also touch upon the importance of leadership to individual and organizational performance. In summary, the theoretical framework for this article is a blend of several intersecting concepts developed and elaborated on by multiple researchers over the decades. As illustrated above, theories, including adult learning, transformational leadership, emotional intelligence, employee engagement, job design, motivation, and personal fulfillment, are relevant considerations in staff development. The theoretical framework cited above incorporates phenomenological research on staff development practices of current procurement managers. The research questions from the phenomenological study appear in the following section.

Research on Current Procurement Staff Development Practices

In addition to the literature review, a research study employed the phenomenological methodology to interview fifteen procurement leaders to leverage the subjects' experiences to develop insight into their staff development efforts (Moustakas 1994). As a post-positivist constructivist, the author believes individuals frame their worldview based on personal perceptions (Kubáľková 2019). Therefore, the author acknowledges that his interpretive lens, as well as the perspectives of the interviewees, may have introduced bias into the analysis. Therefore, the author factored the appropriateness, strength, and weakness of the phenomenological approach into the research design to optimize the validity and reliability of the study. A succinct outline of the author's worldview, study's goals, and methodology appear as the theoretical framework shown in Table 1 below.

TABLE 1: RESEARCH THEORETICAL FRAMEWORK

<i>Element</i>	<i>Descriptions</i>
Researcher World View	Post-positivist, constructivist—Subjects construct reality from personal perspectives.
Research Goals	Understand current procurement staff development practices; tie into literature; gain insight into effective staff development techniques.
Methodology	Phenomenology/General qualitative inquiry—supported by literature review.

The primary tool for the phenomenological research was the use of research questions, and corresponding semi-structured interview questions, to obtain the subject's perspectives. There were four research questions and 12 relevant interview questions. The research questions and the corresponding interview inquiries are shown in Table 2 below.

TABLE 2: RESEARCH AND INTERVIEW QUESTIONS

<i>Element</i>	<i>Descriptions</i>
RQ1: What strategies and practices do current purchasing managers use to develop employees?	IQ 1: What strategies and practices do you use to develop employees? IQ 2: What steps do you take to implement your strategies and practices to develop employees? IQ 3: What additional elements do you use?
RQ2: What challenges do purchasing managers face in their efforts to develop employees?	IQ 4: How do you manage the biggest challenges in developing employees? IQ 5: How do you overcome employee resistance to your efforts? IQ 6: Did anything go wrong you had not anticipated?
RQ3: How do purchasing managers measure and track success in developing employees?	IQ 7: What are the top metrics you track to measure success in developing employees? (limit them to 3-5 if they went long) IQ 8: What outcome(s) are you willing to accept? IQ 9: What assistance does your organization give you in measuring and tracking employee development? IQ 10: What factors would you like to measure and track but are unable to do so?
RQ4: What recommendations would current purchasing managers give the future generation of leaders in developing employees?	IQ 11: What lessons have you learned in employee development we have not covered in this interview? IQ 12: What would you not do-over?

The research subject population was from Southern California chapters of procurement member organizations, including the Institute for Supply Management (ISM), the National Contracts Management Association (NCMA), and the Institute for Public Procurement (NIGP). Interviews with fifteen subjects occurred. The study employed purposive sampling, and included only procurement managers with at least two years' experience in a supervisory role, who were active in personnel management and development, with purchasing budgets ranging from \$20 million to \$13 billion annually.

Results

Common themes across the participants began to emerge during the data analysis. Fifteen participant interviews provided sufficient evidence of data saturation (Saldaña 2015). The findings distill the talent development practices of procurement managers interviewed. Themes for each research question appear separately. A few themes fit under other topics but appear separately to provide greater insight into the participants' perspectives and to align with knowledge gleaned from the literature review. A summary of the themes from participant answers to the research questions is given in Table 3 on page 14.

TABLE 3: SUMMARY OF THEMES FOR FOUR RESEARCH QUESTIONS

RQ1	RQ2	RQ3	RQ4
Transformational Leadership	Providing Effective Feedback	Performance Against Company Standards	Give Timely and Candid Feedback
Emotional Intelligence	Managing Discipline Issues	Customer Service and Comments	Be Servant Leaders
Technical Skill Training	Transformational Leadership	Promotions	Engage Employees
Resources and Tools Such as IDPs	Provide Better Coaching	EQ Growth of Staff	Set an Example and Show Empathy
Coaching	Employee Engagement	Progress Toward Developmental Goals/Qualitative Measures	Leverage Leadership Concepts
Feedback	Training	Self-Generated Performance Metrics	Attend Training
Mentoring	Leveraging the Right Leadership Concept	IDPs, Reports, and Other Tools	
Emotional Safety	Resource Management (Time)	Training Attended	
Other Leadership Concepts Such as Crucial Conversations	Managing Change	Employee Engagement	
Succession Planning	Managing out Underperformers	Work-Life Balance	

Genesis of the STARS Staff Development Model

From the literature review and interviews, practices on “How” leaders approach staff development and the “What” skills/content they leverage became apparent. Based on the analysis, the STARS model addresses both content and approach based on career stage. “How” leaders approach staff development centered on leadership style, emotional intelligence, and efforts to provide meaningful work in a psychologically safe, constructive environment. “What” leaders center on information technology, job specific technical skills, and soft skills. The “What” of staff development varied based on career stage.

In summary, each leader interviewed had a definite leadership style and a personal approach on how to develop staff. However, not all leaders had a consistent framework through which to categorize what staff development topics were most relevant for employees. Some leaders spoke of a general framework leveraging the employee annual performance evaluation from human resources and curricula provided by industry associations. Other leaders found the yearly performance evaluation lacking and the categorization of developmental content from industry groups too limited for mid and late-career staff development. Some leaders relied on self-developed frameworks or Individual Development Plans (IDPs). All leaders interviewed recognized the need to approach staff development thoughtfully.

Given the variation in the use of developmental approaches and the leader's additional comments on staff engagement, the researcher leveraged components from both the interviews and the literature review to create a staff development model. The model addresses both the "How" to approach staff development and the "What" of content. Ultimately, the model is a tool that facilitates the creation of a custom, organization-specific staff development approach around a relevant set of topics. A procurement leadership team could use the model to quickly outline the content in each area, with limited support from their human resources department. Using the model, a two-hour brainstorming session with specific deliverables should yield actionable results for most teams. The model provides a general list of suggested content for use in staff Individual Development Plans (IDPs). Below is a brief discussion of the framework, called the Systems, Technical, Availability, Relationship Management, Self-Actualization (STARS) staff development model.

Systems, Technical, Availability, Relationship Management, Self-Actualization (STARS) Staff Development Model (SDM)

Leveraging participants' comments around their staff development efforts, and incorporating relevant scholarly literature, the Systems, Technical, Availability, Relationship Management, and Self-Actualization Staff Development Model (STARS SDM) emerged. The definitions of the STARS SDM components are as follows:

- Systems* are the information systems and digital platforms procurement personnel use to execute their work. These systems include dynamic inventory management systems and automated procurement systems (Pang et al. 2019). Big data tools, artificial intelligence, and computer software basics such as Microsoft Windows, Office, and Google Chrome are additional systems (Gupta 2019; Strafford 2018). Study participants most cited systems in reference to the developmental needs of senior personnel in their efforts to keep pace with technological change. Additional comments revolved around training for early and mid-career staff on in-house systems.
- Technical* content includes procurement specific training such as terms and conditions, contract types, category management, procurement industry certifications, and contract law (Institute for Public Procurement 2018; Institute for Supply Management 2018; National Contracts Management Association 2018). Multiple participants mentioned ISM, NIGP, or NCMA as organizations providing training and certification. The need for technical development content was apparent from participant comments on the importance of conferences; on-the-job training; and the pairing of junior and senior personnel for developmental purposes. Managers often cited the need for technical competence early in the conversation, before pivoting to other developmental needs.
- Availability* refers to the employee's sense of capacity to invest in the job role (Kahn 1990). "Psychological availability is the sense of having the physical, emotional, or psychological resources to engage at a particular moment" (Kahn, 1990, 717). From the research in this paper, availability appeared through participant comments on community involvement projects, leadership roles in outside industry associations, or efforts to encourage staff work-life balance. These same themes also appear in the literature related to corporate social responsibility, and work-life balance considerations to develop employees (Aguenza and Som 2018; Fairlie and Svergun 2015). Multiple participants sought to engage staff beyond the specific job role and to leverage personal concerns in staff retention or development efforts.
- Relationship Management* refers to both soft skills and leadership development training on how to navigate and manage the human element in procurement and corporate organizations. Relationship management includes training on emotional intelligence and transformational factors, including idealized influence, presentation, speaking, and other interpersonal skills (Bass and Avolio 1994; Goleman 2018). Of note, participants mentioned the importance of relationship management skills more often than the need for techni-

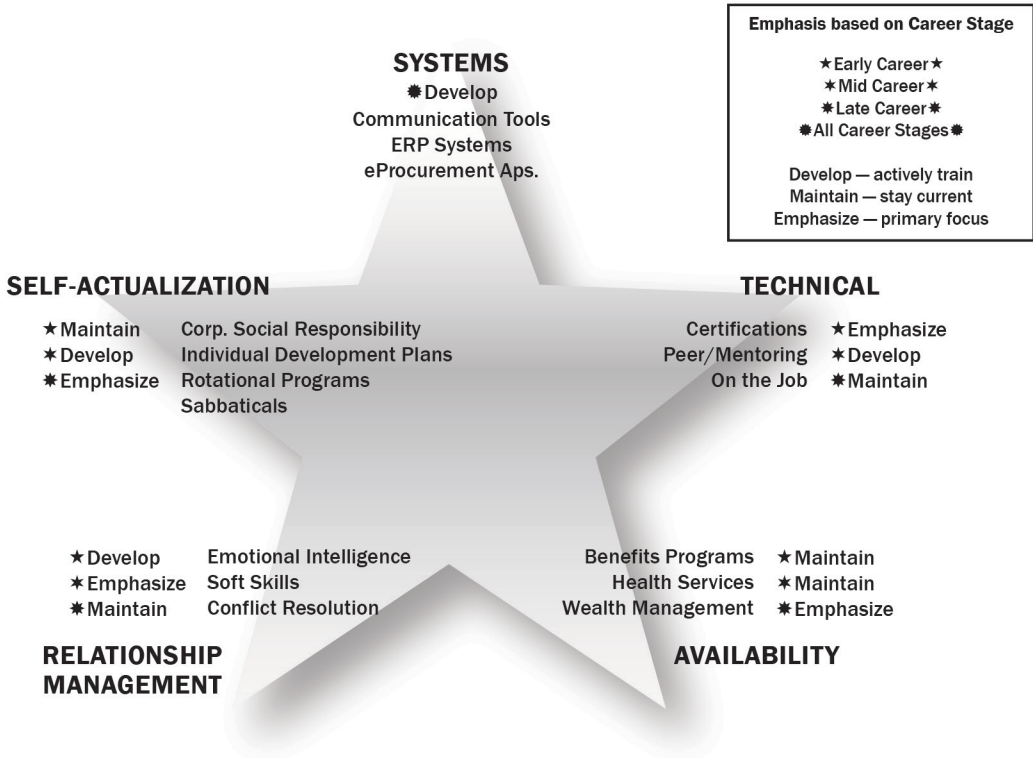
cal training, particularly indicated by the executive level. Procurement is a customer service organization, according to the study participants. Therefore, the ability to engage the customer effectively is a crucial success factor, inclusive of both leadership and communication skills. Performance challenges cited more often were indicative of relationship management challenges versus technical skills.

- *Self-Actualization* leverages Maslow (1943) and, in the context of this paper, is when a procurement employee can realize their full potential and capabilities. With self-actualization, congruence exists between job roles and an employee’s nature, and the employee feels happy and engaged in his or her work.

Figure 1 further defines the STARS SDM with a graphical representation, suggesting a developmental focus based on the career stage. Study participants often spoke of the varying needs of employees based on career stage, and the skills or interest present or

lacking at different points in an individual’s professional development. The *maintain* designation proposes that the staff at a particular career stage generally have the skill set necessary in a particular area to perform satisfactorily on the job. To keep pace with change, it is required for staff to maintain their skills. *Develop* indicates staff need for active training, either formally or informally, to ensure the employee’s skill set is growing and building to perform effectively in his or her role. *Develop* is indicative of an employee’s need for growth in a particular area. *Emphasize* indicates a likely topic of a more intense developmental need or coaching focus in a specific career stage. The timeframes associated with each career stage are estimates by the researcher based on general comments from study participants. The designations in Figure 1 below derived from the researcher’s interpretation of the participants’ descriptions of developmental needs at various career stages.

FIGURE 1: STARS STAFF DEVELOPMENT MODEL
POTENTIAL CONTENT WITHIN STARS SDM



Research Summary

Based on data from fifteen interviews with procurement leaders, and informed by a literature review on relevant topics, the researcher reached the following conclusions:

1. Procurement leaders deem leadership style as an essential factor in staff development. Many leaders seemed unaware of the body of research on leadership style, yet were keenly aware of the importance of it. While the leaders spoke of leadership style in a limited fashion in their interviews, they embodied elements of transformational leadership, including individual consideration, idealized influence, and inspirational motivation. Interestingly, the intellectual stimulation component of transformational leadership, and in particular the stimulation of innovative ideas, was not a prevalent theme from the interviews.
2. Emotional intelligence was also crucial, according to the procurement managers. Nearly every leader interviewed mentioned one of emotional intelligence's elements—self-awareness, self-management, social awareness, or relationship management (Goleman 2018; Hay Group 2011). Multiple participants mentioned emotional intelligence outright. Relationship management was the component appearing most often in the interview transcripts, particularly in the form of coaching and teamwork. None of the leaders articulated a specific approach on how to measure and develop emotional intelligence, but most mentioned the importance of EQ.
3. The bimodal distribution of age in the workforce (Baby Boomers and Millennials) requires an approach crafted to each, as well as the active management of potential points of disunity between the two groups. Opportunities for mentoring and sharing of expertise across career stages were a recurring theme among participants. Challenges in motivating staffers that are more experienced were another recurring theme.

Potential approaches to solving the motivation challenge appear in the STARS model.

4. Staff development tools and metrics are lacking in some organizations, much to the chagrin of the procurement managers. IDPs were the most chosen tools, along with company-specific documents, to measure employee growth and development.
5. Employee engagement elements are also tools to drive staff development. While in literature, there is evidence of efforts to measure employee engagement, in practice, these metrics seem to come more from human resources than from line procurement managers. Participants did mention emotional safety and meaningful work, two of the three components of employee engagement, as necessary in developing employees. Employee engagement elements were not as prevalent as transformational leadership and emotional intelligence factors in procurement staff development, based on comments from the participants.

The items covered in this research summary are not unique to procurement or supply chain management. Also, a sample size of fifteen participants may be insufficient to draw generalizable conclusions, even when supported by a relevant literature review. Nonetheless, a broader application may exist.

Recommendations for Future Research and Practical Application

This examination of procurement talent development practices sought to develop a cross-industry profile across multiple levels of management. As a result, the study yields information that may not necessarily apply to a specific situation. Nonetheless, the study is a representation of current practices employed by today's procurement managers to address staff performance and developmental needs. The following areas for additional research became evident from this study:

1. Variation in results and staff development strategy and tactics based on managerial level (supervisor, manager, or executive);
2. Further developmental research and effectiveness measures of the STARS SDM, the rationale for differences across various career stages, and the tie into organizational strategic planning vision, mission, and goals;
3. Quantitative staff development measures (EQ and others);
4. Industry-specific tactics and measures for staff development unique to a vertical industry segment;
5. Application of STARS SDM to disciplines beyond procurement, and customer-facing organizations in particular.

In addition to recommendations for future research, a few practical applications of the STARS SDM appear below. Procurement organizations, apart from human resources, or with human resources support could:

1. Develop a simple, easy-to-use Individual Development Plan (IDP) for procurement managers to operationalize the STARS SDM. The tool could contain sections for specific staff courses or training activities around each STARS element. An additional worksheet could list course and training options by topic, career stage, or both.
2. The tools and staff development approach could evolve every two to three years in a two-hour brainstorming/update meeting attended by procurement managers. The deliverable at the end of the two hours is an updated tool. A strong facilitator will help to achieve this goal.
3. Currently, the bimodal distribution of workers with different needs requires a specialized focus to help equip managers adequately to meet the developmental needs of both groups. A strong facilitator could help the leadership team develop an approach.

Companies must not allow the importance of leadership development and training to get drowned out by the need to achieve operational goals. Companies must, therefore, both develop staff and managers well—to excel today AND tomorrow. STARS SDM and similar tools hold promise to help organizations drive performance results through improved staff development activities and outcomes.

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Improving Business Capture Strategies: A Case Study

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Abstract

Purpose: This case study researches evidence-based solutions for a Government Contractor (GC), in which the organization's annual revenue is shrinking. The case study provides evidence-based recommendations to improve its government-contract business development (BD) win rate and ensure its sustainability.

Design/Methodology/Approach: A systematic review of 39 articles was completed focusing on four intervention points. These articles underwent two rounds of quality assessment and two rounds of coding for themes, with the results used to develop evidence-based recommendations for GC.

Findings: Three overarching themes—(a) organizational decision making, (b) customer relationships, and (c) business development infrastructure—were discovered and led to the development of 13 recommendations for GC to improve its business development capabilities.

Originality/Value: This research contributes to the body of evidence by providing evidence-based solutions for a small business as it develops its BD efforts, with a focus on the federal contract context.

Keywords

contracting, contract management, business development, government contractor

Contract Management Body of Knowledge® (CMBOK®) Competencies:

- 3.0 Guiding Principles
- 4.0 Pre-Award
- 5.0 Award

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IMPROVING BUSINESS CAPTURE STRATEGIES: A CASE STUDY

This case study presents the results of integrated, evidence-based research (EBR) to address the business development (BD) needs of Government Contractor (GC). Though the company has operated for less than 10 years, it has strong relationships with current clients and satisfies its employees and management. Nevertheless, GC has been unable to acquire new federal contracts and has experienced shrinking revenue for several years. As a result, GC management approached a team of EBR practitioners for recommendations to improve its BD methodology.

Background and Organizational Problem

GC is a service-disabled veteran–owned small business (SDVOSB) comprised of less than 50 staff members. A majority of the staff members are senior grade as opposed to junior grade. The company's principal product is acquisition assistance to U.S. agencies. Secondary products include project and program management support, and relocation support.

The company was founded through strong relationships with government procurement staff. As those government staff resigned and assumed positions with other agencies, these government staff members opened opportunities for GC at new agencies. Growth and business development have been largely through word of mouth.

Organizational Problem

Attempts to win new contracts through standard federal procurement efforts have largely failed. Though GC's principal product is to assist the government with federal acquisitions, it has been unable to optimize its own federal BD efforts, resulting in only one winning proposal out of eight recent efforts, a very limited pipeline of upcoming opportunities, and shrinking revenue in recent years. Table 1 on page 23 lists key corporate aspects important to the problem.

TABLE 1: ASPECTS OF GC IMPORTANT TO BD SUCCESS

Aspect	Description
1	The company has no defined and stated strategic plan to which employees are working, and that would guide BD efforts.
2	The company works virtually, largely from client offices or employee homes.
3	The chief executive officer (CEO) manages all current contracts through four or five project managers who report to the CEO, but who work directly for clients.
4	BD at GC is led by its only vice president (VP), who is also in charge of all corporate administrative duties. The VP identifies opportunities to pursue by monitoring upcoming procurements twice a week. When he identifies an opportunity, the VP contacts one of the project managers, and together they decide to pursue or not. If pursuing, they lead the proposal effort, ultimately turning in a proposal.
5	GC has no dedicated, trained staff, space, or other infrastructure devoted to BD.
6	GC employs no system to leverage prior work or increase the impact of its organizational learning. It has no systematic method of managing and employing past knowledge.
7	Although the company has a special status as an Service-Disabled Veteran-Owned Small Business (SDVOSB), it has not been leveraging those contracts or its special status to acquire new work.
8	The company does not fully leverage and integrate feedback from government agencies provided following procurement efforts.
9	Prior BD process improvement efforts have included: <ul style="list-style-type: none"> • Use of GovWin, a Deltek-owned database of former and current procurements, and companies pursuing them (Deltek, 2019). GC determined the service was too expensive and discontinued it. This may have been due to inexperience in using the service. • Hiring consultants to assist with proposal preparation. GC executives found that they spent too much time explaining to these consultants their company, clients, and business methods. GC discontinued their use.

Research Question

The four researchers worked together to define a comprehensive research question using the CIMO (context, intervention, mechanism, outcome) framework (Denyer, Tranfield, and Ernst van Aken 2008). CIMO ensures the question is grounded in the current context such that an intervention being considered facilitates mechanisms to produce desired outcomes. For this study business capture is defined as winning new business opportunities through federal contracts. Table 2 (below) details the CIMO attributes of the research question.

TABLE 2: CIMO ATTRIBUTES

Context	Small businesses like GC
Intervention	Factors that identify opportunities, internal decision-making processes, proposal processes, and feedback from potential customers
Mechanism	To be discovered in research effort
Outcome	Increase business capture

The question guiding this research is: What factors influence BD success in small businesses like GC to increase business capture?

Organizational Assessment

Figure 1 below presents a SWOT analysis of the current situation at GC, based on an organizational assessment.

FIGURE 1: SWOT ANALYSIS OF GC BD EFFORTS.

I N T E R N A L	STRENGTHS	OPPORTUNITIES	E X T E R N A L
	<ul style="list-style-type: none"> Existing customers perceive quality Specialized skill sets and competencies Satisfied employees Highly skilled and experienced employees Low turnover Low overhead due to little infrastructure Over specialized May require others to hire and develop junior staff Homogenous thought/ideas No pipeline No BD trained staff, follow-through on debriefings and BD processes Weak proposal writing process 	<ul style="list-style-type: none"> SDVOSB advantage Small Business set-asides Target small opportunities to build/grow reputation Recruit younger staff Identify and recruit BD professionals Listen and learn from debriefings Artificial Intelligence Workforce retiring Federal consolidation of opportunities Too good at their job (work themselves out of work) Changing the regulatory framework Very competitive market 	
	WEAKNESSES	THREATS	

Theoretical Frame

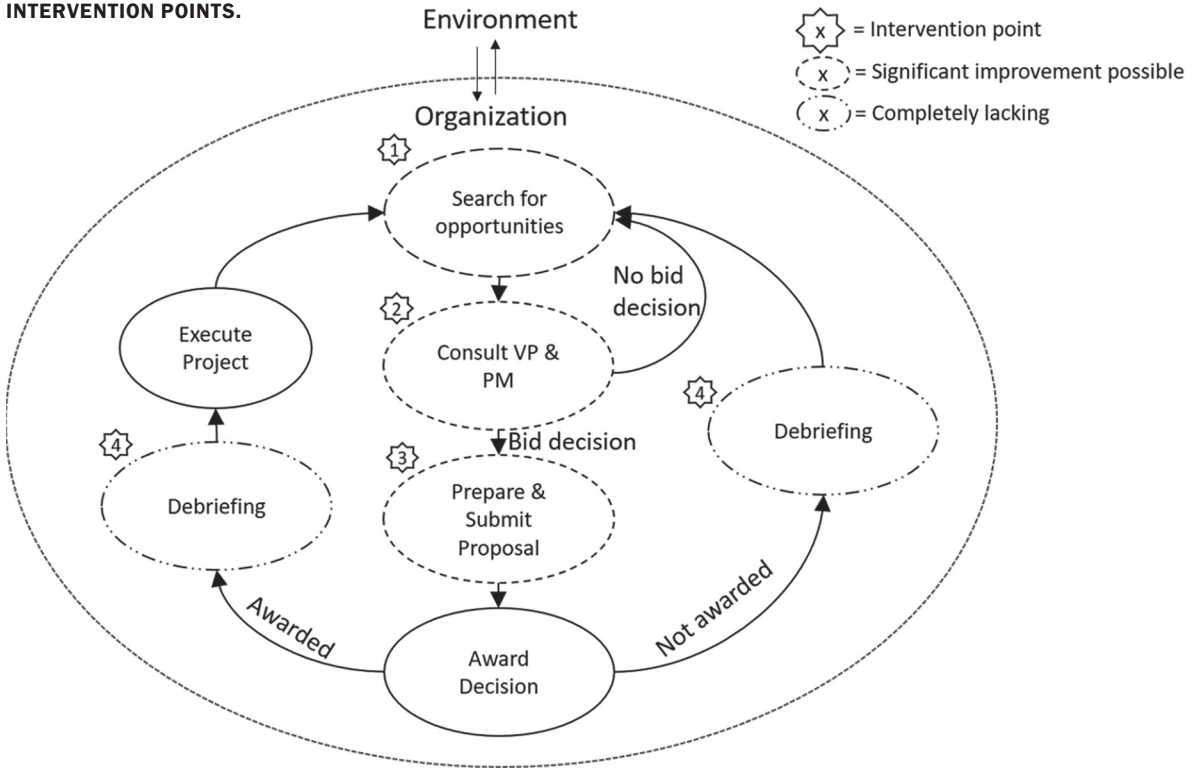
The potential issues at GC include the entire BD process, the company's infrastructure, its managing methods, its organization, and its desire to maintain current positive corporate attributes. While a wide range of theories were explored to capture these issues, one—systems theory—offered a greater understanding of the complexity of the issues at GC. The researchers, therefore, selected systems theory as the theoretical lens.

Theoretical Lens

A system is a group of interacting, interrelating, or interdependent elements that form the whole (Haywood, Forsyth, Lange and Trotter 2017). Further, Kast and Rosenzweig (1972) state that the theory provides a macro paradigm to study social organizations, and Senge (1990) adapted systems thinking to assist practitioners with the relationship between the “invisible fabrics of interrelated actions” that bind businesses and human actions (p. 7). Through the use of this lens, investigating GC's BD challenges embraces the business and related environment to provide solutions that address issues over time.

Systems theory provides an understanding of the interdependency of each potential change at GC and

how it might impact the company's positive attributes, including employees, company culture, turnover rates, client satisfaction, and management satisfaction. Also, the systems theory allows for easy integration of more narrowly defined theories concerning decision-making, change management, organizational structures, and process improvement. From this perspective, the systems theory is not in conflict with any of these narrowly defined theories, allowing their benefits to be integrated into recommendations. Figure 2 on the next page illustrates the BD process of GC through the systems theory lens. The graphic shows the overall environment—including competitors, the desires of clients, and the political environment—encompassed within the standard government BD process that includes opportunity identification, opportunity assessment, proposal preparation, awards, and responses to awards.

FIGURE 2: CONCEPTUAL GRAPHIC OF GC BD PROCESS THROUGH THE SYSTEMS THEORY LENS, SHOWING POTENTIAL INTERVENTION POINTS.

Explanation of the Organizational Problem

The issues at GC are not uncommon. Many small businesses led by their owners do not have the infrastructure, processes, and systems required for a sustainable entity. During its lifetime, GC has grown into a small government contractor that enjoys good relationships with clients and employees. However, GC must win new contracts.

Alternative Perspectives

GC owners want to create a sustainable business enterprise. This will lead to change. While there are other managerial theories that are specific to change, systems theory was determined by the team to be the most appropriate and comprehensive theory to analyze GC's BD challenges.

Methodology

This case study integrates four Rapid Evidence Assessments (REAs) prepared using the Center of Evidence-Based Management's guidelines (Barends, Rousseau, and Briner, 2017). This guideline was selected because it is an industry-standard in these types of analyses. REAs trade scholarly rigor for the speed necessary to make urgent decisions. Management and employees need to respond quickly.

Each of the four REAs investigated one of the intervention points shown in Figure 2. The researchers then integrated and synthesized the findings into this case study.

Search Strategy and Inclusion/Exclusion Criteria

Extensive searches of scholarly journals' databases were conducted for relevant peer-reviewed studies. The searches excluded articles not in English and not in peer-reviewed journals. As detailed in

Figure B1 and Table B1 of Appendix A, 14 search strings were prepared using Boolean operators, permitted equivalent subjects, and searched the full text for terms. The identification of relevant peer-reviewed articles proved challenging. According to Smartt and Ferreira (2011):

As a whole, the primary knowledge base of these references is consultant field experience, and the primary focus is on the mechanics of preparing a bid and the management of the bid process. Many of these sources lack explicit references to other works.... (p. 258)

Snider and Walkner (2001) present similar results (p. 118).

Appendix A provides the search terms and database selection in Table A1 and the flow from initial findings to ultimate articles selection in Figure B1.

The critical appraisal of the articles used a quality assessment tool based on Transparency, Accuracy, Purposivity, Utility, Propriety, Accessibility, and Specificity (TAPUPAS) (Pawson, Greenhaigh, Harvey, and Walshe, 2004); the Mixed Method Appraisal Tool (MMAT) (Pace et al., 2012); and the Weight of Evidence (Gough, 2007). Aspects of each were combined into an appraisal

worksheet with 24 quality criteria questions in five categories. Each criterion is weighted using the rank-ordered centroid method (Roszkowska, 2013), based on its relative importance in the overall study, and scored using a three-point scale. The spreadsheet generates a score by criteria, by category, and overall. Overall scores range from 0 to 20. Higher scores denote higher quality and more relevance.

The articles were then rescored by a second analyst. When an article's total score differed by more than two points, the analysts discussed the issue to resolve the difference. The final scores for each article are presented in Table C1 Appendix B. The top 39 articles, based on quality and relevance, were included in the analysis.

Identification of Evidence

Data extraction used two methods. First, a data extraction table with the headings presented in Table 3 below was populated. The far-right column with the heading "Level" is based on Step 7 of Barends et al. (2017), which bundles types of articles based on their acceptance as scientific evidence. Table C1 of Appendix B presents the complete data extraction table.

TABLE 3: DATA EXTRACTION TABLE HEADINGS.

Author/ Year	Type/ Sample Size	Title	Journal	Findings	Limita- tions	Appraisal Score	Level
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Secondly, the analysts coded the articles using Atlas.ti and Excel to identify trends and themes among the articles. In all, 288 quotations were identified and coded, among the 39 articles, resulting in 250 codes. This was then verified independently by a second analyst, and when the codes were not aligned, the analysts met to resolve any issues.

The codes were grouped into 24 code groups by theme. It is of special note that in a few cases an article was coded into a single theme. In these cases, the analysts determined that the nature of the findings may be questionable. An additional effort was made to identify, assess, and extract data from gray literature to compare with the results.

Gray Literature

Two relevant studies were identified among the gray literature. The first is a benchmarking study conducted from December 2018 through January 2019 by EurekaFacts, a social science consulting company, on behalf of the Association of Proposal Management Professionals (APMP), the U.S. certification body for BD professionals with an emphasis on government contracting. The study includes survey results from 831 APMP members about what the association sees as best practices for government and private sector proposal efforts. A total of 271 responders were working for companies with fewer than 50 employees at the time, like GC.

The results, which lean heavily on descriptive statistics but also include some regression analyses, are extensive and are presented in 110 pages within the report. Of particular interest, 38 percent of those surveyed reported win rates of 50 percent or higher. Among the key findings to improving win rates were: (1) having established proposal best practices in place, (2) engaging with customers and future customers frequently and defining customer desires and needs, and (3) investing in training. Corporate leadership engagement was also recognized as essential.

The second study was prepared by the Business Development Institute International executive director, Howard Nutt, in 2018. It also was a survey concerning 15 best practices in the BD community

with a focus on government contracts. This study was also based on a web-based survey, though the report does not say how many surveys were completed. It relies extensively on descriptive statistics, with a focus on whether there is a gap between how best practices are perceived as necessary and whether they are implemented by organizations.

Both reports were coded using Atlas.ti, identifying 59 quotations in 25 codes. The codes were mapped to the findings from the 39 scholarly articles. Though both of these documents had limitations, including whether the identified best practices have been demonstrated as such by scholarly research, the findings of both studies support the findings of the scholarly research presented below.

Findings

The syntheses' results are presented in Table D1 of Appendix C. Three themes were identified with a total of 15 subthemes, each linked to a recommendation for improvement of GC BD efforts. Of the 39 articles, all but four rated critical appraisal scores higher than 15 on a 20-point scale. Two scored 20 points. All were considered levels D and E on the scale from AA to E presented in Barends et al. (2007), the lowest two levels, but the scale notes that this is common for management research. Overall, the scores were very high, considering the types of analyses conducted. They, therefore, were included within the overall synthesis. The themes and the results of the syntheses are discussed below.

Theme 1: Evolving Leadership Methods and Introducing Strategic Planning Will Improve BD Decision Making

Three key subthemes were identified during the analysis: (a) the need for more expert management in decision making, (b) the need for a defined strategic plan, and (c) the need to integrate more emphasis on SDVOSB set-asides within the government procurement context. Adel Rastkhiz, Mobini Dehkordi, Yadollahi Farsi, and Azar (2019) state that the integration of multi expert, multi criteria decision making (ME-MCDM) and fuzzy screening in the context of

opportunity evaluation helps an entrepreneurial team evaluate a set of opportunities such as those regarding BD. It guides practitioners to more accurately select and appropriately invest time and resources in fruitful opportunities. Three additional investigations, presented in Table 4 below, suggest the use of multi-criteria mathematical tools, with substantial value given to group input. These tools, when used by industry experts, improve the bid/no-bid decision making.

TABLE 4: USE OF TOOLS AND A LARGER NUMBER OF EXPERTS IN DECISION MAKING.

<i>Article (date)</i>	<i>Summary</i>	<i>Relevance</i>
Chou, Pham, and Wang (2013)	Present a framework to support bid decision making that combines the Fuzzy Analytical Hierarchy Process (FAHP) and regression-based simulation.	The proposed model helps bidders determine whether to submit a bid and, if they do, to estimate a bid amount with the desired level of confidence that the bid will be successful.
Tan, Shen, Lanagston, and Liu (2010)	Developed the fuzzy TOPSIS method to help contractors select appropriate projects for bidding by considering multiple attributes and integrating decision group member opinions.	The results provide contractors with valuable insight into the project selection (bid/no-bid decision) problem.
El-Mashaleh (2013)	Proposed an empirical framework with two parts for making the bid/no-bid decision.	One framework part determines key bidding factors to be considered by those evaluating bids. The second uses data envelopment analysis (DEA) to make the bid/no-bid decision.

Levasseur (2009) states, “Every organization needs to plan.” Without such a plan, there is no clear direction for those making BD decisions. Also, as this plan is developed, evidence suggests that GC would benefit from leveraging its status as a small business and SDVOSB. These two statuses allow GC to compete against a smaller and less qualified range of competitors than if it were a large business with no status. More than \$90 billion of U.S. government contracts were awarded to such companies in 2015 alone, including \$35 billion to small disadvantaged businesses and \$14 billion to SDVOSB (Lewis, 2017). A predetermined percentage of U.S. government contracts are set aside for these special small business categories (Lewis, 2017). A large number of contracts are targeted toward SDVOSBs (3 percent of all U.S. contract dollars) (Lewis, 2017). Lewis (2017) assessed data using government databases that included 16,000 small businesses of all types (1,621 SDVOSBs like GC) attempting to earn government contracts. Abramowicz and Sparks (2007) support leveraging these

statuses, presenting the benefits and opportunities that the special programs of the federal government’s Small Business Administration provide to small businesses with government agencies.

Theme 2: Frequent Face-to-Face Interactions with Potential Clients and Active Listening Are Essential

Sixteen articles found that close customer relationships, including frequent face-to-face customer interactions with active listening, had a strong positive association with opportunity discovery and opportunity capture, two key concerns of GC (Abramowicz and Sparks, 2007; Almonaitiene and Zakauskas, 2015; Bergeron and Laroche, 2009; Curasi, Boles, and Reynolds, 2018; Drollinger, Comer, and Warrington, 2006; Gruber et al., 2008; Gruber, 2011; Jamalzadeh, Behravan, Espahbodi and Masoudi, 2012; Korenkova, 2014; Morrison, Breen, and Ali, 2003; Nixon, 2011; Pelham, 2010; Rezvani et al., 2018; Shoemaker and Pelham, 2013; Smartt and Ferreira, 2014; Smartt

and Ferreira, 2015). This is an overarching theme, as three of four analysts investigating three different intervention points, found the need to engage potential clients fully. Curasi et al. (2018), states that those making decisions about which company should win multimillion dollar contracts, in spite of efforts and processes to be fair to all bidders, rely on emotion and their feelings about companies and corporate management in decision making. The article states that those making such decisions recognize the importance of what they are deciding and how the decision may impact their own careers. Among the findings are the following: (a) buyers were impressed most by responsive companies that presented an image of being easy to work with, attentive to client desires, and openly communicative; (b) companies that showed interest by taking advantage of site visits with senior leadership and allowable communication, such as asking questions, were identified as being better choices by buyers; (c) buyers were irritated when they felt proposals were missing key elements of their request or when they recognized the proposal was not customized to their needs; and (d) buyers were irritated when a proposal included products not requested in their requests.

In addition, Gruber (2011) suggests that "... companies should recognize the role of customer emotions and recruit employees who are capable of detecting complaining customers' emotional states and dealing appropriately with them" (p. 99). Pelham (2010) suggests that salespersons may improve relationships with customers through active listening. Also, Korenkova (2014) suggests that listening skills may improve relationships, and Almonaitiene and Zukauskas (2015) identifies a positive relationship between empathetic listening and trust, which in turn improves relationships.

Theme 3: The Need for Infrastructure and Deliberate Proposal Processes

While its competitors are employing a wide range of proposal infrastructure, GC has yet to establish a similar infrastructure. Rezvani, Lashgari, and Farsi (2018) found that professional resource commitment at the organizational level is needed for effective opportunity management. In all, scholarly research presented eight infrastructure aspects that improve BD success:

Strong entrepreneurial relationships to identify opportunities. Three studies noted the strong positive relationship between entrepreneurial alertness to opportunities in the marketplace and successful opportunity discovery (Abramowicz and Sparks, 2007b; Morrison, Breen, and Ali 2003; Rezvani, Lashgari, and Farsi, 2018).

Use of social networks to identify opportunities. Jamalzadeh et al. (2012), reported a positive association between determinants of social networks and opportunity discovery/finding key users. It also noted a similar positive association of opportunity discovery with advertising/marketing and specifically word-of-mouth dissemination.

Past performance monitoring and use in proposals. Four articles emphasize that government regulations now require: (a) that past performance be considered for all government procurements (Bradshaw and Chang, 2013); (b) that strong past performance is a key selling point and helps protect against decision protests (Smartt and Ferreira, 2015a; Snider and Walkner, 2001); and (c) that strong past performance plays a role in establishing strong positive emotions for a bidder (Curasi et al., 2018).

Use of a bid-selection decision-making tool. Adel Rastkhiz, Mobini Dehkordi, Yadollahi Farsi, and Azar (2019) state that input from multiple experienced managers using a mathematical bid-selection tool results in a better bid decision. Chou et al. (2013); Tan, Shen, Langston, and Liu (2010); and El-Mashaleh (2013) also say the same.

A knowledge management system. Frey (2002) studied a small disadvantaged government contractor, much like GC, based near Washington, D.C.. The company credits its creation of a knowledge management system with enabling it to grow from 120 staff and \$15 million revenue to 1,200 staff and \$142 million revenue over three years. Frey (2002) defines knowledge management as a "combination of structured processes and automated tools multiplied by executive-level leadership and vision—and in turn, leveraged exponentially by passionate people..." (p. 172). The article states that two staff, working in addition to their other efforts, began the knowledge management system by extracting key information

from past proposals that had already been generated and then organizing that material for quick reference. This effort expedited proposals. This case study is supported by the efforts of Werr and Stjernberg (2003) in an empirical study of international consulting firms.

Structured proposal processes and trained employees.

Bradshaw and Chang (2013) argue that leveling occurs in the preparation of proposals due to the use of highly experienced proposal professionals and proven proposal processes. They note that when past performance is not considered, “evaluations are based on the quality of a document produced by a professional proposal writing team during the 45- to 90-day solicitation timeframe” (p. 65). This is reinforced by Gillies (2016).

Problem Restated and Findings

GC’s annual revenue is declining. The findings of this case study include a wide array of options to consider as GC attempts to become a sustainable, growing small business. Among the findings are the following:

- Expand decision making to more than one or two managers.
- Establish a strategic plan, and communicate that plan to its workforce. The plan should include an emphasis on pursuing set-aside contracts.
- Consider the importance of relationship building at the company’s highest level. This includes frequent interactions with clients using active listening and other trained skills.
- Build infrastructure. This includes establishing a pipeline of upcoming opportunities using electronic systems (including entrepreneurial and social networking methodology) and identifying an employee for this job. This also includes building a knowledge management system, establishing standard proposal preparation efforts, ensuring employees are properly trained in BD efforts, and ensuring feedback is considered.

Conclusions from the Key Findings

The answer to the research question “What factors influence BD success in small businesses like GC to increase business capture?” is as follows: To increase business capture and become a sustainable small business, management needs to carefully consider a range of modifications to how the company is run and to thoughtfully and deliberately make changes to its BD methodology.

Discussion of the Implications for Management

As it attempts to grow beyond its current startup status and into a sustainable and growing small business, GC must modify its leadership, management, BD, and infrastructure methods to be more in line with industry standards demonstrated through evidence-based methods. These include a redefinition of the role of its CEO and VP, a broadening of decision making, an emphasis on building relationships with current and future clients, and the establishment of a wide range of infrastructure for BD.

Discussion

GC is a young company largely controlled by its CEO and VP, who make key decisions, including which opportunities to pursue. There is no expressed strategic plan, the company does not target special status markets, and these two key managers have extensive other responsibilities, including oversight on all contracts and all administrative duties. The evidence suggests that GC needs to transition to a different management model as it attempts to move from startup to a sustainable and growing small business, a model that engages more managers within the company in decision making. The evidence also suggests that company leadership needs to establish a strategic plan to guide BD efforts and that that plan should include more emphasis on small business and SDVOSB set-aside contracts.

This study identified additional opportunities for improvement, each demonstrated through peer-reviewed articles and reinforced by industry benchmark studies. These include engagement of clients well in advance of procurements to build relationships and to engage in active listening that will build a strong bond with those clients. The opportunities for improvement also include engagement of professionals in government BD efforts, including those that can develop and use tools to identify opportunities, build relationships with clients, and develop strong proposals. These opportunities, once carefully selected, diligently planned, and implemented, will result in GC becoming a sustainable, growing small business in the government contracting environment. No alternative views were identified.

Recommendations

It is recommended that GC carefully, thoughtfully, and deliberately consider and then implement the recommendations of this research effort. Systems theory recognizes that changes to one aspect of the company are likely to lead to positive or negative changes to other aspects of company performance. It, therefore, is essential that the recommendations be well considered before a decision is made to implement them and that their implementation be deliberately planned.

While the complexity of the BD environment, as expressed by the systems theory lens, demonstrates the care needed to mitigate negative impacts on positive attributes of the company, the company is shrinking. Government contracts take months to award, and the need to make changes is urgent.

Table 5 below presents highlights of suggested modifications and an implementation plan.

TABLE 5: RECOMMENDATIONS

No.	Proposal	Supporting Evidence
1	Modify the decision-making process to involve additional managers and experts, develop a strategic plan, and include emphasis on SDVOSB set-asides.	Abramowicz and Sparks, 2007; Adel Rastkhiz et al., 2019; Chou, Pham, and Wang, 2013; El-Mashaleh, 2013; EurekaFacts, 2019; Levasseur, 2009; Lewis, 2017; Nutt, 2018; Tan, Shen, Langston, and Liu, 2010
2	Identify opportunities farther in advance and begin building relationships with clients well ahead of opportunities to bid.	Abramowicz and Sparks, 2007; Almonaitiene and Zukauskas, 2015; Bergeron and Laroche, 2009; Curasi, Boles, and Reynolds, 2018; Drollinger, Comer, and Warrington, 2006; Gruber, 2011; Jamalzadeh, Behravan, Espahbodi, and Masoudi, 2012; Korenkova, 2014; Pelham, 2010
3	Use a mathematical tool and group discussion and decision making to decide which potential opportunities to pursue.	Adel Rastkhiz et al., 2019; Chou, Lin, Pham and Shao, 2015; Chou, Pham, and Wang, 2013; Cheng et al., 2011; Sonmez and Sözen, 2017; El-Mashaleh, 2013; Tan et al., 2010
4	Recruit, train, and develop active listening methods in those who interact with clients, including those present for bid debriefings.	Bergeron and Laroche, 2009; Drollinger et al., 2006; Gruber, 2011; Gruber et al., 2008; Korenkova, 2014; Longweni and Kroon, 2018.; Pelham, 2010; Tyler, 2011; Shoemaker and Pelham, 2013
5	Develop and nurture infrastructure. This includes developing a knowledge management system to expedite proposal preparation; monitoring past performance; recruiting proposal management professionals; and using established proposal generation processes.	Bradshaw and Chang, 2013; Curasi, Boles, and Reynolds, 2018; Frey, 2002; Gillies, 2016; Smartt and Ferreira, 2011; Smartt and Ferreira, 2015; Smartt et al., 2014; Snider and Walkner, 2001; Werr and Stjernberg, 2003

Risks of Implementation

The greatest risk is the potential disruption of positive aspects of GC while trying to ensure its viability. Changes need to be thoughtfully considered and incrementally implemented. There is also a risk that the current decision-makers may hesitate to relinquish control of decisions to new methods that may seem alien at first. In addition, developing customer relations management (CRM) and engaging in face-to-face interaction may be limited in a federal procurement context. GC also has limited control over how the organization is perceived.

Further, with different personalities, one strategy for engaging with the client may not work with another. Even when developing active listening abilities for face-to-face interaction, this approach may meet with mixed success until its practitioners fully develop their methods. Hiring someone with active listening abilities may help but also carries a risk that the individual is not a good fit for the organization. Lastly, all the recommendations will have a cost of money, time, or both.

Limitations

All research efforts have limitations. Among those for this effort are the following: (a) The effort was completed in an expedited manner with limited pages permitted in reports. It was important to trade scholarly rigor in this case for expedited decision making. (b) Some intervention points had limited peer-reviewed scholarly articles available. All that were identified were assessed and used in this study. Two extensive surveys, done in gray literature, were used to compare findings and were found to mitigate this limitation by confirming results. (c) The expedited assessment of articles led to quality assessment using only one tool and only two reviewers. The second reviewer was added to quality assessment and coding to mitigate the limitation of having only a single review.

Conclusion

GC needs to become a sustainable, growing small business. This effort identified 13 opportunities to win more work while mitigating the impact of too much change, too fast. The suggested methods are presented in Table 5 on page 31. Through thoughtful, deliberate implementation of these suggested methods, the evidence suggests that GC will likely become a sustainable, growing small business.

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An (*) indicates an article used in the analysis in this case study.

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Comparative Evaluations for Simplified Acquisitions in FAR Part 13

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Abstract

Purpose: This article proposes an intuitive but rigorous definition of comparative evaluation in FAR 13 Simplified Acquisition Procedures and most importantly, offers a sound methodology for the practical implementation of comparative evaluation as stated in FAR 13.

Design/Methodology/Approach: This study uses a multi-criteria decision-making methodology called The Analytic Hierarchy Process to perform comparative evaluations of offers in a case study example under the comparative evaluation procedures in FAR 13.

Findings: This study provides an actionable definition of comparative evaluation in FAR 13 based on The Analytical Hierarchy Process and proposes and demonstrates a practical methodology for its implementation using a spreadsheet.

Research Limitations: The case example applies to the simple case of the evaluation of two offers using a spreadsheet. While extending the approach to more offers is intuitive, there was not the opportunity to develop more examples for reasons of suitability and paper length.

Practical Implications: This study allows a simple, workable definition of comparative evaluation and the practical implementation of comparative evaluation as stated in FAR 13.

Keywords

FAR13, FAR3 comparative evaluation, FAR13 definition, analytic hierarchy process, ahp, comparative evaluation, simplified acquisitions

Contract Management Body of Knowledge® (CMBOK®) Competencies:

3.0 Guiding Principles

5.0 Award

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Introduction

The *Federal Acquisition Regulation (FAR)* Simplified Acquisition Procedures allow but do not define *comparative evaluation of offers*¹ in subpart 13.1. Also, the *FAR* does not define the process of conducting a comparative evaluation of offers. In contrast, *FAR* part 14, Sealed Bidding, and *FAR* part 15, Contracting by Negotiation, lay out their own terminology and defined processes for competitive contract formation.²

Research Question: What could constitute a process, framework, and definition of comparative evaluation of offers³ in *FAR* part 13?

We offer a practical definition of comparative evaluation for *FAR* part 13, Simplified Acquisition Procedures (SAP), and we offer a sound methodology for the practical implementation of comparative evaluation as stated in *FAR* part 13 that is based on a multi-criteria decision-making methodology called the Analytic Hierarchy Process. The definition that emerges is intuitive yet rigorous.⁴

Background

In 1994, the U.S. Congress passed the Federal

Acquisition Streamlining Act (FASA). The goal of the statute was to simplify and streamline acquisitions, especially acquisitions that were less than \$5,000,000, i.e., small purchases⁵, and to promote the use of commercial items.

FASA did not change the fundamental duties of the contracting officer. The contracting officer promotes competition, implements socio-economic set-asides, obtains fair and reasonable prices, and procures goods and services on time and under budget while balancing cost, schedule, and performance risk. In theory, contract formation is simpler and streamlined under FASA provided that the contracting officer implements methods and decisions that satisfy the Government Accountability Office (GAO)⁶ and all the stakeholders. That is, the procurement decisions and methods must be based on prudent and sound business judgment, conform to other relevant procurement laws (e.g., Buying Green, Appropriations Law, Service Contract Labor Standards), and uphold fundamental fairness and transparency. The Gordian Knot of federal procurement is to discover unknown novel, cost-viable solutions that advance America's technological superiority and at the same time uphold the principles of transparency, efficiency, fundamental fairness, and due process.⁷ Simplified Acquisition Procedures are methods that can fulfill these requirements at the low risk, commercial edge of the best value continuum and are especially well-suited for high throughput contracting activities. A relevant, useful definition of comparative evaluation of offers should "promote efficiency and economy in

¹ FAR 2.101 DEFINITIONS OF WORDS AND TERMS contains no definition of *comparative evaluation*.

² The *FAR* is codified at 48 C.F.R. §§ 1 - 53.

³ Simplified Acquisition Procedures (SAP) are Codified in part at 41 U.S.C. §§1901-1906, 3101, 3105, 3305, et seq.. Section 1901(e)(1) contemplates "bid, proposal, or quotation" as permissible avenues to contract formation using SAP. A quote (quotation) generally creates no unilateral power of acceptance in the government, but a bid or proposal generally does. Both parts 12 and 13 of the *FAR* also use the generic term *offer*. The connotation of the term *offer* is discerned by the context. In the discussion, the illustration and definition that follow *quote* is interchangeable with the terms *offer* and *proposal*.

⁴ At the conclusion of this paper, *infra*, we offer a definition of *comparative evaluation* that is descriptive, not normative. The high operations tempo of simplified commercial acquisition calls for substantial judgment on the part of contracting officers. Senior Judge R. Gibson summarizes the deference and respect given to a contracting officer's judgment writing, "Under the simplified acquisition procedures, contracting officers are allowed great discretion in 'fashioning suitable evaluation procedures' 48 C.F.R. §13.106-2(b)(1)." *Forestry Surveys & Data v. United States*, 44 Fed. Cl. 493 (August 12, 1999).

⁵ 41 USC §3305 The entirety of Title 41 Public Contracts including section 3305 Simplified Procedures for Small Purchases has been enacted into positive law. PL 111-350, Jan 4, 2011, 124 Stat. 3752. Accordingly, all acquisitions that use SAP are *small purchases*. Later, the FAR 13.5 SAP Test Program was made permanent by section 815 of the 2015 National Defense Authorization Act. The Test Program was a success. FAR 13.5 is no longer subject to sunset provisions and is permanently ensconced in the *FAR*. The *FAR* Council implemented an inflation increase from \$6.5M to \$7M published at 80 *FAR* 38311 (July 2, 2015).

⁶ The Government Accountability Office is the watchdog of Congress.

⁷ Watson, K. 2015. *LPTA Versus Tradeoff: How Procurement Methods Can Impact Contract Performance*. Joint Applied Project Naval Postgraduate School. 10, 11, 22 *passim*. Providing a study of contract performance outcomes as a function of contract formation procedures with LPTA and trade-off as the independent variables.

contracting and ... avoid unnecessary burdens for agencies and contractors,”⁸ and do so with even-handed impartiality.

To carry out these goals, the *FAR* Council, comprised of GSA, NASA, and DOD, gave federal agencies a powerful tool in the reorganization of *FAR* part 13 Simplified Acquisition Procedures. In December of 1997, the *FAR* Council published a rewrite of *FAR* part 13.⁹

Section 13.106-2(b)(3) of the *FAR* rewrite reads:

If using price and other factors, ensure that quotations or offers can be evaluated in an efficient and minimally burdensome fashion. Formal evaluation plans and establishing a competitive range, conducting discussions, and scoring quotations or offers are not required. *Contracting officers may conduct comparative evaluations of offers. (emphasis added)*

Solutions and Implementation

The phrase *comparative evaluations of offers* is unique to *FAR* 13.106-2. Subsection 13.106-2 is composed of two complementary paragraphs. The first

paragraph articulates the overarching principles of *FAR* part 13 decision making, such as impartiality, fairness, transparency, and inclusiveness. These principles echo the guiding values of the *FAR*.¹⁰ The second paragraph, 13.106-2(b), encourages the contracting officer to innovate. In contrast to the detailed frameworks of *FAR* parts 14 and 15, *FAR* part 13 was purposefully sparsely written to invite innovation within the frontiers of the guiding principles. “...contracting officers shall...[u]se innovative approaches, to the maximum extent practicable, in awarding contracts using simplified acquisition procedures.”¹¹

However, neither the *FAR* nor any published rule-making comments provide a definition or process for comparative evaluation. Therefore, the goal is to present a novel approach and definition that is practical in application and consistent with overarching acquisition principles, and most importantly, consistent with the contracting officer’s discretion and judgment. Absent a regulatory definition and process for comparative evaluation, we turn to subject matter experts to provide a definition of comparative evaluation.¹²

⁸ 41 USC §3305(a). These principles are embedded in *FAR* 1.102-2 Performance Standards. Ralph C. Nash has remarked on the government need for contracting officers who possess astute business judgment in commercial acquisitions: “... a considerable amount of training is needed to create contracting personnel who are truly proficient in buying commercial items. And we would speculate that agencies ought to assign some of their most experienced employees to this task.” Commercial Item Procurement: The Recent Comptroller General Decisions COMMERCIAL ITEM PROCUREMENT: THE RECENT COMPTROLLER GENERAL DECISIONS 13 No. 7 N&CR 35 (July 1999).

⁹ Federal Acquisition Circular (FAC) 97-3 (*FAR* Case 94-770 and 94-772), 62 Fed. Reg. 64912 (Dec. 12, 1997). This effort was initiated because of public comments received during the comment period on *FAR* case 94-770, published in the Federal Register as an interim rule. 60 Fed. Reg. 34741 (July 3, 1995). A proposed rule was published in the Federal Register on September 13, 1996 (61 Fed. Reg. 48532). Thirteen public comments were received in response to the proposed rule. The comments were not published in the Federal Register, but the *FAR* Council reports that all comments were considered in the development of the final rule. The previous July 3, 1995, publication and the September 13, 1996, publication did not include the permissibility of comparative evaluation of offers.

¹⁰ “The Federal Acquisition System will conduct business with integrity, openness, and fairness” *FAR* 1.102(b)(3)

¹¹ *FAR* 13.003(h)(4) Policy. See also, *FAR* 1.102-4(e), “Contracting officers should take the lead in encouraging business process innovation....” For example, none of the following innovative procedures are expressly enumerated in the *FAR*, nonetheless, all of the following have been upheld as valid procurement methods: reverse auction [*MTB Group, Inc.* B-295463 (Feb. 23, 2005) and U.S. Government Accountability Off., GAO-18-446 Reverse Auctions, 10-11 (July, 2018)]; economically efficient LPTA [*Environmental Restoration, LLC*, B-413781 (Dec. 30, 2016)]; highest technically rated offeror at a fair and reasonable price [*Sevatec, Inc.* B-413559 (Jan. 11, 2017)]; Quality-Infused Price Methodology [*General Dynamics Information Technology, Inc.* B-414387 (May 30, 2017)].

¹² The term “comparative evaluation” is undefined and absent from these sources: Wankel, Charles. 2009. *Encyclopedia of Business in Today’s World*; Warner, Malcolm, ed. 1996. *International Encyclopedia of Business and Management*; Friedman, Jack P. 2007. *Dictionary of Business Terms*; Kaliski, Burton S., ed. 2001. *Encyclopedia of Business and Finance*. The term *comparative evaluation* is not defined in these accounting references: Siegel, Joel G. 2005. *Dictionary of Accounting Terms*; A. Rashad Abdel-Khalik, Blackwell Encyclopedic Dictionary of Accounting (1999); Accounting Desk Book (Lois Ruffner Plank, et al., eds., 2012); nor in Black’s Law Dictionary (Bryan A. Garner, ed., West, 2009).

A leading subject matter expert in the field of acquisitions combines the basic lexicon definitions of comparative and analysis to create a new phrase: *comparative analysis*.¹³ The conjoined terms “comparative analysis” are described as:

The item-by-item comparison of two or more comparable alternatives, processes, products, qualifications, sets of data, systems, or the like.¹⁴

However, a full definition of comparative evaluation remains elusive. A Veterans Health Administration SAP Work Group has constructed two working definitions of comparative evaluation as follows:

Comparative evaluation is the act of comparing two or more quotes, offers, or proposals in response to a Request for Quote (RFQ) or Request for Proposal (RFP). The item-by-item comparison is performed by comparing each quote, offer, or proposal to one another to determine which provides the best benefit to the government.

Comparative evaluation is a structured, qualitative, decision-making technique for determining the quote (or offer or proposal) that is the most advantageous to the government using side-by-side pairwise comparison of multiple (n >1) quotes based upon their relative merits expressed as value indicators and value-added features.¹⁵

Why it matters

A recent agency presentation reports that relatively high volume, low dollar, small purchases represent

99% of the agency’s commercial procurement acquisitions and could be carried out using FAR 13 Simplified Acquisition Procedures.¹⁶ In the federal government, the annual number of small purchases (less than \$7 million) is staggering, although relatively small dollar purchases are dwarfed in dollar magnitude by large-scale (system and enterprise) acquisitions. Nonetheless, commercial, open-market, small purchases account for a substantial commitment of agency and contracting officer time and resources and may comprise a disproportionate share of Government Accountability Office (GAO) protests. “The GAO has sustained an unusually high number of simplified purchase protests as compared with its decisions in other areas. The author’s assessment is that protesters have about a 33% sustainment rate.”¹⁷

1. The promise of Simplified Acquisition Procedures for commercial items cannot be fulfilled while agencies and the GAO labor without a definition and framework for comparative evaluation of offers. Experts in federal acquisitions lament the lack of understanding of both Contracting Officers and the GAO in the

¹⁶ Putting Simple Back into Source Selections Using Comparative Analysis, Prepared by NCO 18 PA, BJP, July 2017.

¹⁷ *Government Contract Awards Negotiations and Sealed Bidding*, 2018-2019, Steven W. Feldman, Thomson-Reuters. §21:1 p.851. In its annual report to Congress in 2016, GAO reported a sustainment rate of 22.56% (effectiveness rate 46%) of 2,789 protest cases filed. The GAO reports the top four grounds for sustainment or other relief as unreasonable technical evaluation, unreasonable past performance evaluation, unreasonable cost or price evaluation, and flawed selection. The *effectiveness* rate comprises other relief in the form of dismissal or withdrawal as a result of agency corrective action. U.S. Gov’t Accountability Office, B-158766, GAO Bid Protest Annual Report to Congress for Fiscal Year 2016 (Dec. 15, 2016). In the following fiscal year, approximately 77% of the VA’s obligations were for contracts using commercial procedures, which comprise \$15.5 billion of a \$20.1 billion in total obligations. pp. 43-44 CONTRACTING DATA ANALYSIS, Assessment of Government-wide Trends, GAO, March 2017 (GAO-17-244SP). “According to the Federal Procurement Data System, an average of 283,374 contracts per year resulted from FAR part 19 set-asides and sole source awards at or below the simplified acquisition threshold during fiscal years 2016-2018.” Federal Acquisition Regulation: Policy on Joint Ventures, 85 Fed. Reg. 34,561, 34,563 (Jun 5, 2020). FAR 13 Simplified Procedures are powerful tools to fulfill socio-economic goals and meet open market requirements

¹³ Source: *Comparative Evaluation in FAR 13*, Virtual Acquisition Office (VAO) Research Institute, May 2018 White Paper, page 3. The term *comparative analysis* is not used in FAR 13; the authors of this paper see no need to create new jargon and prefer to adhere to the nomenclature of FAR part 13. The VAO definition of comparative analysis is drawn from a web-based Business Dictionary (*infra* footnote 14).

¹⁴ A definition of the phrase *comparative analysis* is posted at: <http://www.busedictionary.com> WebFinance Inc., 2018. We view the phrase as unnecessary in FAR 13 SAP. We recommend avoiding the phrase and adhering to the standard nomenclature of FAR part 13.

¹⁵ Veteran Health Administration (VHA) 10NA2 SAP Work Group

implementation of *FAR* part 13 procedures.¹⁸ A discussion and illustration of a comparative evaluation method is posted at Where in Federal Contracting (WIFCON).¹⁹ Another variant method closely resembles the process of finding the greatest (maximum) element in an array.²⁰

2. GAO and Comparative Evaluations

The GAO has consistently stated in its protest decisions “... comparative evaluation means that competing proposals will be rated on a scale relative to each other....”²¹ The Contracting Officer’s decision methodology and outcome will be upheld provided that the Contracting Officer implements a fundamentally fair and impartial process. The U.S. Court of Federal Claims also acknowledges the use of comparative evaluation in *FAR* part 13 Simplified Acquisition Procedures.²²

The GAO referred to a *comparative analysis* decision process in a recent protest. The GAO described the competitive decision process as:

“... a streamlined, head-to-head comparative analysis of vendor’s responses ... the agency would evaluate the first two TOR [task order request] responses...against each other using the non-price worksheets to identify positive comparative aspects, *i.e.*, aspects of each worksheet response where one vendor offered a “comparatively better suited” solution to meeting the relevant agency requirement than the other vendor.”²³

More recently, the GAO denied a protest in which the Contracting Officer successfully deployed a direct side-by-side comparison of offers. The GAO described the methodology by quoting from the solicitation:

The solicitation further established that the agency would perform a *comparative evaluation* in accordance with FAR § 13.106-2(b)(3)1 “to determine which response represents the ‘best’ as a whole.”...

Quotes will be evaluated by performing a *direct comparison* of one offer with another in a uniform manner to determine which quote provides the government with its needs, as identified in the RFQ.²⁴

Both the GAO and the U.S. Court of Federal Claims acknowledge comparative evaluation as the side-by-side comparison of offers, however, neither offers a comprehensive definition of comparative evaluation or gives a complete road map to implement the comparative evaluation of offers. In public contracting, all stakeholders have an interest in fostering innovative and flexible approaches to the implementation of *FAR* part 13. This study offers a

¹⁸ COMMERCIAL ITEM PROCUREMENT: The Recent Comptroller General Decisions 13 N&CR ¶ 35 (Volume 13 Number 7, Date: July 1999 page 97-104); COMPLICATING SIMPLIFIED ACQUISITION PROCEDURES: A New Twist 16 N&CR ¶ 2 (Volume 16, Number 1, Date: January 2002 pages 3 – 5); A FOULED-UP PROCUREMENT: A Lesson in How Not to Buy 18 N&CR ¶ 5 (Volume 18 Number 2 Date: February 2004, pages 17-22); SIMPLIFIED ACQUISITION PROCEDURES: Why Can’t We Keep Them Simple? 21 N&CR ¶ 31 (Volume 21 Number 7 Date: July 2007, pages 86 – 89); SIMPLIFIED ACQUISITION: Avoiding the GAO’s Clarifications/Discussions Mess 26 N&CR ¶ 21 (Volume 26 Number 5 Date: May 2012, pages 65 – 68)

¹⁹ Comparative Evaluations of Offers Under FAR 13, March 16, 2017, WIFCON (<http://www.wifcon.com>)

²⁰ A trivial algorithm outputs the maximum value of an array of *n* elements by performing *n* – 1 comparisons.

²¹ Predating FASA: Docusort, Inc., B-254852 (Jan. 25, 1994); Nomura Enterprise, Inc. B-277768 (Nov. 19, 1997); Executive Security & Engineering Technologies, Inc. B-270518 (Mar. 15, 1996). Post-FASA: Quimba Software B-299000 (Jan. 18, 2007); Beck’s Spray Service, Inc. B-299599 (June 18, 2007); Zolon Tech, Inc. B-299904.2 (Sept. 18, 2007). In each case the solicitation provided for and GAO recognized *comparative evaluation* for the assessment of past performance.

²² *Forestry Surveys & Data v. United States*, 44 Fed. Cl. 493 (12 Aug. 1999) good discussion of FAR 13; *Dubinsky v. United States* 43 Fed. Cl. 243 (31 Mar. 1999) early leading case on FAR 13; *CC Distributors v. United States* 69 Fed Cl (19 Jan. 2006) comparative evaluation permissible. Price, whether granular or in aggregate, is a quantitative scalar attribute of a quote. The U.S. Court of Federal Claims cases cite the comparative evaluation language of FAR 13.106-2(b)(3), but do not elucidate a definition of comparative evaluation or a process.

²³ *AlliantCorps, LLC*, B-417126 (February, 27, 2019). [citations omitted] Although the GAO sustained the protest in part and denied the protest in part, the contracting officer’s *methodology* was not directly attacked by the protester and the decision methodology, direct comparison, survived the protest intact and unscathed.

²⁴ *DeWitt and Company, Inc.* B-417194 (March 25, 2019) *emphasis added, citations omitted*. The decision is a succinct tour of simplified acquisition procedures.

workable comparative evaluation definition and approach that fulfills the expectations of the GAO.

A Proposed Approach²⁵

We propose the application of a multi-criteria decision-making method called the Analytical Hierarchy Process (AHP) that was developed by Saaty (1980) to perform comparative evaluations that are consistent with FAR part 13 Simplified Acquisition Procedures.²⁶ Using pairwise comparisons, AHP can prioritize offers in a manner that is consistent with the principle of comparative evaluations. Next, AHP is illustrated in a basic acquisition example.

The AHP satisfies the definition of *comparative evaluation* and fundamental fairness because it is:

- Structured and orderly;
- Ensures that the selection criteria will be consistently applied;
- Allows criteria (merit) weights to be derived via pairwise comparisons;
- Affords a side by side-by-side pairwise comparison of alternatives (quotes) with respect to each criterion; and
- Allows the selection of the most suitable alternative based on the chosen criteria and their merits.

In summary, an understanding of AHP and adaptation of AHP to FAR part 13 commercial, competitive contract formation furthers a dialogue in fulfillment of the goals of FASA. A useful

definition of *comparative evaluation* emerges from AHP and is set forth below. The definition of *comparative evaluation* is both intuitive and rigorous, and has practical applications. AHP essentially ensures the direct, side-by-side comparison of offers that satisfies fundamental fairness and transparency.

An Acquisition Example

Let us assume that we plan to acquire Genomics Testing Services.²⁷ There are three criteria (value indicators) as follows: technical, past performance, and price. Also, for the purpose of this example, there are two alternatives (quotes) from two contractors, Alpha and Bravo. Let us assume that the contracting officer has accomplished a preliminary scan of each quote and has made a preliminary affirmative FAR 9 Contractor Qualification Assessment of each offeror.²⁸ Let us further assume that the scan shows that each offeror is within budget and that the resulting contract will be a firm-fixed price (FFP). Which quote should be selected as the most advantageous to the government? Let us use AHP for the evaluation!

First step: Build a hierarchy for the decision.

The decision is modeled as a hierarchy with the goal at the top, the decision criteria (value indicators) that will be used to make the decision in the second level, and the alternatives (quotations) in the third level as shown in Figure 1.

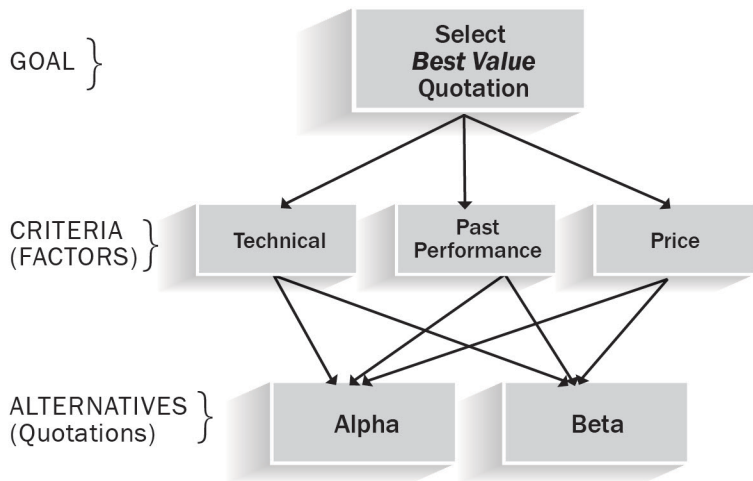
²⁵A technical note: Readers trained in marketing decision-making may recognize that this approach is similar to choice-based conjoint (CBC) analysis and may wonder why AHP is illustrated rather than CBC. A discussion and practical demonstration of CBC under the Quality-Infused Price© method is illustrated by D.J. Finkenstadt and T.G. Hawkins (2016) in “#eVALUate: Monetizing Service Acquisition Trade-offs Using the Quality-Infused Price© Methodology.” *Defense Acquisition Research Journal* (23) 2: 202. Also, it is important to note that this study does not advocate that AHP is the only possible approach, although we have chosen it because the method and the definition of *comparative evaluation* that emerges are intuitive and easy to understand.

²⁶ AHP has been widely used in many different types of decisions and evaluations as shown in the classic literature review by Vaidya and Kumar (2006). More recently, AHP has been used for the evaluation of important city services (Mu and Stern 2014) and even as a tool in fraud and forensic inquiries. (Mu and Carroll 2016).

²⁷ Some terminology: *Goal* is a contracting officer's decision for the quote that is most advantageous to the government and is synonymous with *best value*. FAR 13.104 and FAR 2.101. *Criteria* and *factors* are *value indicators*; these terms are synonymous. The term *value indicator* is unique to Simplified Acquisition Procedures. See FAR 13.106-2(b)(4)(i). *Alternatives* are quotes. *Weights* (importance) are *priorities*.

²⁸ See, FAR 9. We shall assume that all threshold conditions are met. (e.g., no apparent conflicts of interest, beta.SAM.gov completed, if a set-aside, FAR 19 compliance, etc.)

FIGURE 1: HIERARCHY FOR QUOTATION EVALUATION



Second step: Determine the relative importance of the criteria.²⁹

The criteria may or may not have the same importance for the decision maker. It is possible to derive their relative importance by performing a pairwise comparison (PWC) among the criteria to derive their relative importance (also called weights or priorities).

a) Perform pairwise comparison of the criteria importance.

For this purpose, a PWC matrix is built where the relative importance of each pair of criteria is recorded (the syntax is to always compare the row element with respect to the column element) as shown in Table 1a using Saaty (1980)'s intensity scale shown in Table 1b.

TABLE 1A: CRITERIA PAIRWISE COMPARISON (PWC) MATRIX

	C1 Technical	C2 Past Performance	C3 Price
C1 Technical	C1/C1	C1/C2	C1/C3
C2 Past Performance	C2/C1	C2/C2	C2/C3
C3 Price	C3/C1	C3/C2	C2/C3

TABLE 1B: SAATY (1980)'S PWC INTENSITY ORIGINAL CLASSIC SCALE

Comparison Verbal Judgment	Numeric Value
Extremely important	9
	8
Very strongly more important	7
	6
Strongly more important	5
	4
Moderately more important	3
	2
Equally important	1

²⁹ While this process may seem cumbersome the first time it is discussed, in reality it is very easy to set up a spreadsheet to automatically conduct the calculations.

Table 1b shows Saaty's (1980) original pairwise comparison intensity scale. This scale is based on sound mathematical and psychological concepts as

shown by Saaty and Vargas (1982) and Harker and Vargas (1987). The scale elements are used to compare how important each row element is to each column element in the pairwise comparison table. When comparing two factors we ask the question: “When comparing factor A (row) with respect to factor B (column), which factor is more important? and How much more important?” For example, if we believe that “technical” (1st row) is *very strongly more important* than “past performance” (2nd column), we can use the scale on the right to assign a numeric value of 7 (using Saaty’s scale from Table 1b)³⁰ to the corresponding comparison. Mathematically, we are stating that $C1/C2 = 7$.

When performing the comparison, $C2/C3$ or “past performance / price”, we will record the intensity of the relative importance as a fraction if price is more important than past performance. For example, if we consider that “price” is *moderately more important* than the second row “past performance”, the resulting comparison intensity value is $C2/C3 = 1/3$.

Another important observation from Table 1a is that the diagonal comparisons of $C1/C1$, $C2/C2$ and $C3/C3$ will always be 1 (from Saaty’s scale in Table 1b) because the relative importance of a factor with respect to itself is always equal. This suggests that out of the nine possible pairwise comparisons in Table 1a, we only need to perform six comparisons. However, the truth is that if we have the comparisons for $C1/C2 = 7$ and $C2/C3 = 1/3$, then the reciprocal comparisons $C2/C1$ and $C3/C2$ are automatically defined as $1/7$ and 3 , respectively. These values are tabulated in a PWC table (also called a PWC matrix) as shown in Table 2.

This means that, in principle, we only need to

perform three comparisons in our example³¹, the upper part of the diagonal in Table 1a, which corresponds to comparisons $C1/C2$, $C2/C3$ and $C1/C3$. However, the number of pairwise comparisons can be reduced even more if we assume (or enforce) mathematical consistency by only entering the judgments that correspond to the diagonal cells right above the main diagonal of identity values (1 is the identity element) as shown in Table 2. Notice that $(C1/C2) * (C2/C3) = C1/C3$. For our example, $(7/1) * (1/3) = 7/3$; that is, $C1/C3 = 7/3$.

In general, for any given PWC matrix, we only need to enter the judgments that correspond to the diagonal right above the main diagonal, and all of the other values can be calculated quickly as in the example shown in Table 2.³² This approach forces the decision maker to have perfect mathematical consistency, drastically reduces the number of pairwise comparisons, and greatly simplifies the process of calculating the overall relative weights and priorities (Mu and Pereyra-Rojas 2017).

TABLE 2: PAIRWISE COMPARISON MATRIX WITH MINIMUM NUMBER OF JUDGMENTS TO ENTER (ALL OTHER PAIRWISE COMPARISONS CAN BE CALCULATED)

	C1 Technical	C2 Past Performance	C3 Price
C1 Technical	1	7	C1/C3
C2 Past Performance	1/7	1	1/3
C3 Price	C3/C1	3	1

We only need to enter judgments above the diagonal of 1's

b) Calculate the total of each pairwise comparison (PWC) column.

Now that we have the PWC matrix with all the criteria comparisons, we can calculate the relative priorities. For this purpose, it is necessary to obtain the total sum of each column as shown in Table 3a.

³⁰ At first, the need to have intermediate values, such as “6” between “strongly more important” (5) and “very strongly more important” (7) does not seem obvious. However, these intermediate values offer the opportunity of adding more nuances to our judgments. For example, when we are undecided between one intensity or another. This situation arises even more frequently in group decision making. Also, the intensity scale is based on cognitive psychology, which suggests that human working memory can only entertain between 5 and 9 different elements at once (Miller 1956). This means that some decision makers will be comfortable using only the basic five points in the intensity scale while others will prefer the full nine-point scale.

³¹ The number of comparisons that need to be performed is $n*(n-1)/2$. Where n is the number of elements to be compared. In our case $n=3$ so the number of pairwise comparisons needed is: $3*(3-1)/2 = 3$.

³² A technical note: This approach is commonly used to minimize the number of pairwise comparisons from the original $n*(n-1)/2$ to only $n-1$. For this reason, for $n=3$ (our example), only $3-1 = 2$ actual comparisons are needed (Brunelli 2015, 37; Mu and Pereyra-Rojas 2017, 89).

TABLE 3A: PAIRWISE COMPARISON MATRIX WITH COLUMN TOTALS

Select Quote	Technical	Past Performance	Price
Technical	1	7	7/3
Past Performance	1/7	1	1/3
Price	3/7	3	1
SUM	1.57	11	3.67

c) Divide each cell value by its column total.

Next, each cell value is divided by its column total. This process is called normalization of the matrix and results in each column summing to 1 as shown in Table 3b.

TABLE 3B: PAIRWISE COMPARISON MATRIX WITH CELLS TO BE DIVIDED BY COLUMN TOTALS

Select Quote	Technical	Past Performance	Price
Technical	1/1.57	7/11	(7/3)/3.67
Past Performance	(1/7)/1.57	1/11	(1/3)/3.67
Price	(3/7)/1.57	3/11	1/3.67
SUM	1.00	1.00	1.00

TABLE 3C: PAIRWISE COMPARISON MATRIX WITH RESULTS OF CELLS DIVIDED BY COLUMN TOTALS

Select Quote	Technical	Past Performance	Price
Technical	$1/1.57 = 0.64$	$7/11 = 0.64$	$(7/3)/3.67 = 0.64$
Past Performance	$(1/7)/1.57 = 0.09$	$1/11 = 0.09$	$(1/3)/3.67 = 0.09$
Price	$(3/7)/1.57 = 0.27$	$3/11 = 0.27$	$1/3.67 = 0.27$
SUM	1.00	1.00	1.00

d) Calculate the row averages to obtain the priorities.

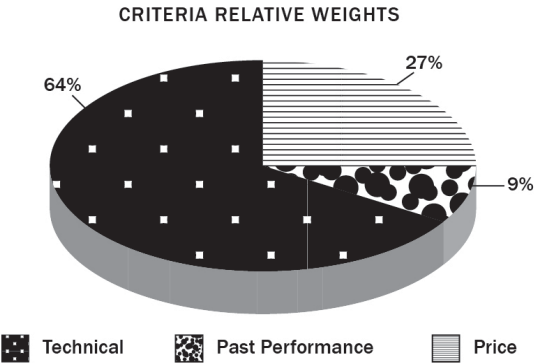
Because the matrix is mathematically consistent, all the column values are identical and, therefore, the calculation of the row average is trivial. Table 4 shows the results.

TABLE 4: PAIRWISE COMPARISON MATRIX WITH CRITERION PRIORITY (WEIGHT)

	Technical	Past Performance	Price	CRITERION PRIORITY
Technical	0.64	0.64	0.64	0.64
Past Performance	0.09	0.09	0.09	0.09
Price	0.27	0.27	0.27	0.27

Also, notice that the priorities (weights) sum to one because they are relative priorities, and, therefore, the results can be interpreted as follows: From the overall 100% importance of the combined criteria, 64% of the relative importance is allocated to the *technical* factor, 9% importance is allocated to *past performance*, and 27% importance allocated to *price*. This can be illustrated graphically as seen in Figure 2.

FIGURE 2: RELATIVE PRIORITY (WEIGHTS) OF EACH DECISION CRITERION (FACTOR)



Third step: Calculate the local priorities of the alternatives.

Next, we comparatively evaluate the alternatives, the quotes from the two competing contractors (Alpha and Beta), which are the AHP alternatives in Figure 1, with respect to each criterion. The intent is to pairwise compare the alternatives and obtain their priorities with respect to each criterion separately. The process is similar to the previous calculations. We fill in a PWC matrix of alternatives with respect to each criterion and calculate their respective priorities in each case as shown in Tables 5a-5c.

TABLE 5A: WITH RESPECT TO TECHNICAL FACTOR

Technical	Alpha	Beta	PRIORITY
Alpha	1	7	0.875
Beta	1/7	1	0.125

TABLE 5B: WITH RESPECT TO PAST PERFORMANCE

Past Performance	Alpha	Beta	PRIORITY
Alpha	1	1/5	0.167
Beta	5	1	0.833

TABLE 5C: WITH RESPECT TO PRICE

Price	Alpha	Beta	PRIORITY
Alpha	1	1/9	0.1
Beta	9	1	0.9

The question of the PWC in Table 5a would be: “With respect to the technical criterion, which is preferable of the two competing contractors, the Alpha or Beta solution?” In this example, the recorded value is 7 for the Alpha/Beta comparison, meaning that with respect to the technical factors, Alpha is *very strongly more preferred* (see Table 1b for Saaty’s intensity scale) than Beta. In Table 5b, Beta is *strongly more preferred* than Alpha, if only past performance is taken into consideration, and finally in Table 5c, Beta is *extremely more preferred* than Alpha with respect to price. These PWC judgments are recorded in their respective PWC tables.

Each matrix is normalized, and the row averages are calculated as before to obtain the priority column, which provides the local priorities of the alternatives with respect to each criterion separately, as shown in the rightmost column in Tables 5a-5c. From these priority columns, we can conclude that with respect to technical factors (Table 5a), Alpha is the best solution with 87.5% of the preference while with respect to past performance, Beta is the best solution with 83.3% of the preference. Finally, with respect to price, Beta has 90% of the preference.

Fourth step: Model synthesis (selecting the best value³³quote).

As before, the synthesis process involves the weighted sum of the local priorities of the alternatives taking into account each criterion weight as shown in Table 6.

³³ *Best Value* is defined at FAR 2.101 Definitions. As such, the phrase permeates the entire FAR and is not unique to FAR part 15. See also FAR 13.106-1(a)(2) and 13.106-2(b)(4)(ii). The emergent definition utilizes the phrase *most advantageous to the government* which is derived from FAR 13.104 Competition and 52.212-2(a) Evaluation – Commercial Items.

TABLE 6: MODEL SYNTHESIS - SELECTING THE BEST CONTRACTOR

	Technical	Past Performance	Price	OVERALL PRIORITY
Criteria Weights→	0.64	0.09	0.27	
Alpha	0.875	0.167	0.100	0.60
Beta	0.125	0.833	0.900	0.40

← **BEST CONTRACTOR:**
60% of the Overall Preference!

As can be seen in Table 6, Alpha with 60% of the overall preference and is the solution most advantageous to the government when considering the three different decision factors and their different relative importance.³⁴

Conclusion

This research provides a sound analytical foundation for direct, side-by-side comparisons of offers. Comparative evaluations of offers in *FAR* part 13 is in contrast to the procedures in *FAR* part 15 where the Source Selection Authority performs tradeoffs and rank ordering of proposals only after scoring the proposals against criteria.³⁵ Instead, *FAR* part 13 permits the side-by-side comparison of quotes *ab initio* and as a complete process. Comparative evaluation is fundamental to the tectonic shift to simplified commercial procedures as promised by

FASA. We posit that AHP constitutes a suitable methodology for the practical implementation of comparative evaluation as stated in *FAR* part 13 and based on this methodology the following definition emerges which is both intuitive and mathematically rigorous.

Comparative evaluation is a structured, ordered, pairwise comparison of quotes each with the other with respect to value indicators³⁶ that are consistently applied, and which results in a contract award decision³⁷ for the quote that is most advantageous to the government.³⁸

A practical example has been provided to demonstrate the use of the AHP methodology in *FAR* part 13 SAP. The definition is autonomous, scalable, and portable. In addition, the AHP approach is very intuitive and easy to learn (Saaty and Zoffer 2012); Mu and Pereyra-Rojas 2017). Finally, only basic arithmetic operations are required, as shown in the example, and the calculations can easily be made.

³⁴ An anonymous reviewer correctly emphasized an important assumption for the analysis presented here. Namely, that at the point that AHP is used, all of the other pre-AHP evaluation criteria have been satisfied (e.g. prices are within budget, past performance has already been determined to be recent and relevant, etc.), and therefore, the evaluator will choose an option. In other words, all of the offers have already successfully passed a pre-screening knock-out; Contracting officers have broad discretion to opt out (i.e., cancel and resolicit).

³⁵ *FAR* 15.308 and *FAR* 15.506(d)(3). *Trade-offs and rank ordering* occur in *FAR* 15 during the last stages of the *FAR* 15 source selections. In contrast, *FAR* 13 SAP *comparative evaluation* of quotes is its own stand-alone, complete process. Features of *FAR* part 13 SAP contrasted with *FAR* part 15 Contracting by Negotiation are described by Vernon J. Edwards in Source Selection Answer Book 37-39 (2nd ed. Management Concepts 2006). Additional contrasts between *FAR* part 13 and 15 abound; we focus solely on the intuitive definition, which is mathematically sound and descriptive of the decision process.

³⁶ *FAR* 13.106-1(b)(4)(1) *value indicator* is a technical term that is unique to *FAR* part 13

³⁷ *FAR* 13.106-3(b)(3)(ii), 13.106-3(d).

³⁸ *FAR* 13.104 Competition and 52.212-2(a) Evaluation – Commercial Items

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The Department of Defense's Guidance on the Commercial Product "Of a Type" Language is Problematic

BY JAMES GARTH DIMOCK

Abstract

Purpose: Cost recovery in commercial item contracts is difficult to calculate when contracts are terminated for convenience and contractors are seeking to recover the amount of costs to recover on the contract. Currently there is no method to determine with certainty the amount of costs to be recovered in commercial item contracts using present value. This article seeks to identify a way to calculate present value of commercial item contracts as well as to identify clauses for present value to insert into contracts.

Design/Methodology/Approach: This article is based on a review of literature, FASB Concepts Statement No. 7, and the *FAR* in order to identify a way to calculate present value of commercial item contracts and to identify present value clauses.

Findings: It is recommended that commercial items involving an uncertain degree of risk and dynamic costs use a fuzzy net cash flow methodology to calculate cash flow in order to account for risk and changing investment and other costs. This cash flow will form the basis on which to calculate net present value. Also, it is recommended that clauses be inserted into commercial item contracts to allow for greater clarity as to how present value is calculated with certainty.

Practical Implications: Contractors are entitled to recover the amount of cost of work performed prior to termination in contracts terminated for convenience. However, currently there is no method to calculate the present value (or the cost of work performed) in commercial item contracts, which makes it difficult to value commercial item contracts involving multiple components such as computer systems. The identification

of a present value method for commercial item contracts will allow contractors to say with certainty how much the contractor is entitled to recover. Additionally by inserting a present value clause in commercial item contracts, the government puts contractors on notice as to how present value will be calculated.

Originality/Value: Currently there are no clauses concerning the calculation of net present value in commercial item contracts and this article seeks to suggest two possible alternatives for contracting officers to use when terminating a contract for convenience. Also, there is no current methodology to calculate the present value of commercial item contracts. This article suggests using FASB Concepts Statement No. 7, present value, and fuzzy net cash flow to calculate present value of commercial items.

Keywords

present value, commercial item contracts, cost recovery

Contract Management Body of Knowledge[®] (CMBOK[®]) Competencies:

3.0 Guiding Principles

6.0 Post-Award

About the Author

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Introduction

DoD's goals of increasing competition, reducing cost, and shortening the acquisition cycle through increased use of commercial products is a valuable objective. One of the benefits of acquiring commercial products is that market forces drive the price. This allows a buyer, in DoD and industry, to determine price reasonableness without having to perform detailed reviews of the seller's cost that would otherwise be required under the Truthful Cost or Pricing Data Act.¹ The concept behind the exception from the Truthful Cost or Pricing Data Act for commercial products is that the price of the product is the result of supply and demand in a commercial marketplace where buyers and sellers compete; as such a buyer can rely on the prices set by the market as opposed to requiring a seller to submit certified cost or pricing data.²

If the definition of commerciality is stretched to the point to include products where there is no relevant commercial marketplace, then establishing a fair and reasonable price can be a challenge. Where the forces of supply and demand are absent, a buyer cannot assess a fair price based on market conditions; and where the commercial product exception applies, a buyer cannot obtain certified cost or pricing data. The result is a buyer has limited data and techniques to assess and negotiate a fair and reasonable price.

This article will argue two main points. First that DoD's published guidance on the "of a type" language for commercial products deviates from the *Federal Acquisition Regulations (FAR)*. Second, this deviation unnecessarily places a buyer at a disadvantage in negotiating the price of a product, and this disadvantaged position could likely result in the DoD overpaying for some products.

Concerning the first main point the arguments advanced will be: (i) paragraph (1) the commercial product definition sets out a two-part test—the

product is required to be "of a type" customarily used by the general public, and the same proposed product is required to be sold or offered, and (ii) DoD's position is that paragraph (1) of the definition sets forth a single test, that the only requirement is that a product "of a type" be sold or offered; there is no requirement for the same proposed product to be sold or offered; therefore, (iii) DoD's guidance deviates from the *FAR*.

On the second main point, this article will take the position that as a result of DoD's interpretation and guidance: (i) both the concept of pricing commercial products utilizing market forces and the Truthful Cost or Pricing Data Act are undermined, and (ii) as a result, a framework is created that places a buyer at a disadvantage when negotiating a price on single and sole source procurements.

Commercial Product Definition

The National Defense Authorization Act (NDAA) for Fiscal Year (FY) 2019 (Pub. L. 115-232) splits the definition of "commercial item" into the definitions of "commercial product" and "commercial service". Splitting the definition of "commercial item" into the definitions of "commercial product" and "commercial service" was a recommendation made by the independent panel created by section 809 of the NDAA for FY 2016 (Pub. L. 114-92).³

The proposed change to the *FAR* aligning the statutory and regulatory definitions states: "It is important to note, the amendment to separate "commercial item" with "commercial product" and "commercial service" does not expand or shrink the universe of products or services that the government may procure using *FAR* part 12, nor does it change the terms and conditions vendors must comply with."⁴

For the purposes of this article, the commercial product definition set forth in the proposed change

¹ 10 U.S. Code § 2306a - Cost or Pricing Data: Truth in Negotiations.

² Memorandum from the Office of Under Secretary of Defense, Acquisition, Technology and Logistics, Subject: Commercial Items and the Determination of Reasonableness of Price for Commercial Items, Dated February 4, 2015.

³ Section 809 Panel, *Report of the Advisory Panel on Streamlining and Codifying Acquisition Regulations*, Volume 1 of 3, Dated January 2018: 29 to 30.

⁴ Federal Register, Proposed Rule, *FAR* Case 2018-018; Docket No. *FAR*- 2018-0018, Sequence No. 1, Dated October 15, 2020.

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to the *FAR* will be used. The term "commercial product" will be used except where the article quotes or references a source that uses the historical term "commercial item". Where a source uses the historical term "commercial item" such term will be maintained for consistency with the source.

It is understood that the modifications to align the statutory and regulatory definitions proposed in the *FAR* have not as of the date of this article been finalized; however, it is believed that the arguments set forth herein are not affected by the changes in the definition. This article will only address paragraphs (1) and (3) of the commercial product definition, commercial products, and modifications thereof. It will not address products that have evolved from commercial products, nondevelopmental items, or commercial services.

A commercial product is defined as:⁵

Commercial product means—

(1) A product, other than real property, that is of a type customarily used by the general public or by nongovernmental entities for purposes other than governmental purposes, *AND* [emphasis added]—

- (i) Has been sold, leased, or licensed to the general public; or
- (ii) Has been offered for sale, lease, or license to the general public;

(2) A product that evolved from a product described in paragraph (1) of this definition through advances in technology or performance and that is not yet available in the commercial marketplace, but will be available in the commercial marketplace in time to satisfy the delivery requirements under a government solicitation;

(3) A product that would satisfy a criterion expressed in paragraphs (1) or (2) of this definition, except for—

- (i) Modifications of a type customarily available in the commercial marketplace; or
- (ii) Minor modifications of a type not customarily available in the commercial marketplace made to meet federal government requirements.

"Minor modifications" means modifications that do not significantly alter the nongovernmental function or essential physical characteristics of an item or component, or change the purpose of a process. Factors to be considered in determining whether a modification is minor include the value and size of the modification and the comparative value and size of the final product. Dollar values and percentages may be used as guideposts, but are not conclusive evidence that a modification is minor;

(4) Any combination of products meeting the requirements of paragraphs (1), (2), or (3) of this definition that are of a type customarily combined and sold in combination to the general public;

(5) A product, or combination of products, referred to in paragraphs (1) through (4) of this definition, even though the product, or combination of products, is transferred between or among separate divisions, subsidiaries, or affiliates of a contractor; or

(6) A nondevelopmental item, if the procuring agency determines the product was developed exclusively at private expense and sold in substantial quantities, on a competitive basis, to multiple State and local governments or to multiple foreign governments.

Paragraph (1) states: "A product, other than real property, that is of a type customarily used by the general public or by nongovernmental entities for purposes other than governmental purposes, *AND* [emphasis added] — (i) Has been sold, leased, or licensed to the general public; or (ii) Has been offered for sale, lease, or license to the general public." It appears clear that the commercial product definition sets out a two-part test. The product has to be "of a type" that is customarily used by the general public, and the product is required to be sold or offered for sale. Both conditions must be met for a product to be commercial.

In *Precision Lift, Inc. v. the United States*, 83 Fed. Cl. 661, 665–66 (2008), the United States Court of Federal Claim's ruling supports this reading. While the court stated the definition is broad, unclear, and

⁵ Federal Register, Proposed Rule, *FAR* Case 2018–018.

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will be interpreted as setting the "commercial item" standard very low, in arriving at its decision, it employed a two-part test:

In order to be considered "commercial items" under *FAR* 2.101(1), the court must first determine whether Spika's platforms are of a type customarily used by the general public. ...

Finding that the platforms are a type customarily used by the general public, the court must then determine under *FAR* 2.101(1)(ii) whether Spika's platforms have been "offered for sale to the general public". ...

DoD's Guidance

The *FAR* and the *Defense Federal Acquisition Regulation Supplement (DFARS)* apply to purchases and contracts by DoD contracting activities.⁶ The *DFARS* directs personnel to the *DFARS* Procedures, Guidance, and Information (PGI) for guidance on commercial products.⁷ The *DFARS* PGI directs personnel to the DoD *Guidebook for Acquiring Commercial Items* (Guidebook)⁸ for guidance on making determinations regarding commerciality⁹ and establishing price reasonableness.¹⁰

DoD's position in the definition sets forth a single test. The "of a type" language in paragraph (1) allows a product to be deemed commercial if the product is "similar to" a product that has been sold or offered commercially. DoD's guidance does not require the same proposed product to be sold or offered.

In comments published in a *DFARS* rule addressing price reasonableness determinations, consistency in making commercial item determinations, and expanding opportunities for nontraditional defense

contractors, responses to public comments state the definition does not require that the identical proposed item must be sold or offered for sale to the general public and permits items that are "of a type"—i.e., items that are similar to those customarily used by and sold or offered for sale.¹¹

Comment: One respondent questioned if there is no commercial marketplace to establish price reasonableness and the contractor only offers an item that is "of a type" customarily used by the general public for sale, is that sufficient for the contractor to escape the Truthful Cost or Pricing Data requirement?

Response: DoD considers commercial item determinations separately from price reasonableness determinations. Commercial item determinations are not dependent upon the offered price of an item. The *FAR* 2.101 definition of "commercial item" does not require that the identical proposed item must be sold or offered for sale to the general public. When deciding whether to grant a commercial item exception to the requirement for certified cost or pricing data, *FAR* 2.101 permits contracting officers to consider items that are "of a type"—i.e., items that are similar to those customarily used by and sold or offered for sale to the general public. While pricing based on market prices is the preferred method to establish a fair and reasonable price, a commercial marketplace is not required for the item to meet the definition of a commercial item. This embraces DoD's broader view of the types of items that may qualify as commercial items and gives consideration to products and services offered by both traditional and nontraditional defense contractors.

Comment: Another respondent suggested that the rule clarify that for an "of a type" item to meet the definition of a commercial item (excluding modifications and services) there should be a two prong test: (1) The item has to be of a type that is customarily used by the general public and (2) the item itself has to have

⁶ *DFARS* 201.104

⁷ *DFARS* 212.102(a)(i)(D).

⁸ Office of the Secretary of Defense Acquisition, Technology, and Logistics (Acquisition Initiatives), *Guidebook for Acquiring Commercial Items, Part A: Commercial Item Determination*. Dated January 2018, Revised July 2019, *Part B: Pricing Commercial Item*. Dated January 2018.

⁹ *DFARS* PGI 212.102(a)(iii)(1).

¹⁰ *DFARS* PGI 215.402(4).

¹¹ Federal Register, Final Rule, *DFARS* Case 2016-D006, *Procurement of Commercial Items*, Dated January 31, 2018.

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been sold (leased or licensed) or offered to the general public.

Response: The language of this rule does not revise the definition of "commercial item" in *FAR* part 2, nor alter the requirements for commercial item determinations for "of a type" items. As stated in the response to comment 6 herein, DoD considers commercial item determinations separately from price reasonableness determinations. However, offerors are still expected to provide adequate supporting data with their proposal submissions in order to avoid unnecessary delays in contract award. The *FAR* 2.101 definition of "commercial item" does not require that the identical proposed item must be sold or offered for sale to the general public.

The Guidebook provides similar guidance:

When deciding if a proposed item satisfies the definition to be deemed a commercial item, an evaluation of a similar (i.e., of a type) item is permitted. The definition does not require that the exact proposed item must be sold or offered for sale to non-government customers.¹²

The "of a type" language in the *FAR* definition provides broad latitude to contracting officers in arriving at their CIDs. This is meant to encourage acquisitions of commercial items by the Department that do not fulfill the well-defined commercial off the shelf (COTS) category yet are similar to items available commercially. The definition is applied when ascertaining whether items sold or offered for sale to the general public are present in the marketplace and are similar to those offered to fulfill the Government requirement.¹³

The Under Secretary of Defense, Acquisition and Technology in a memorandum on commercial acquisitions stated:¹⁴

¹² *Guidebook for Acquiring Commercial Items, Part A: Commercial Item Determination*, 21.

¹³ *Guidebook for Acquiring Commercial Items, Part A: Commercial Item Determination*, 22.

¹⁴ Memorandum for the Office of Under Secretary of Defense, Acquisition, Technology and Logistics, Subject:

"Of a Type": The phrase "of a type" is not intended to allow the use of *FAR* part 12 to acquire sole-source, military unique items that are not closely related to items already in the marketplace. Instead, "of a type" broadens the commercial item definition so that qualifying items do not have to be identical to those in the commercial marketplace.

The Defense Contract Management Agency (DCMA) Commercial Item Group (CIG) has various guidance documents posted on its website, such as the DCMA CIG Training 2018, Industry Day Slides 2020, and Industry Day Q&A, that provide guidance consistent with the Guidebook's position.¹⁵ As an example, in the Industry Day Q&A document, the following exchange is included:

Question: Single source procurements can be significantly more challenging to review than competitive solicitations. How does the CIG address single source requirements when market research does not result in adequate information?

Response: Most commercial parts we review are single or sole source. For any part that is commercial "of a type," there should be a similar part that is customarily used by the general public.

DoD's guidance, as set forth in multiple documents, consistently provides that the "of a type" language in paragraph (1) does not require the same, exact, or identical proposed product to be sold or offered in the commercial marketplace for it to be determined commercial. That the "of a type" language allows for a product to be deemed commercial if a "similar to" product has been sold or offered.

Commercial Acquisitions, Dated January 5, 2001.

¹⁵ "DCMA CIG Training 2018", Defense Contract Management Agency, <https://www.dcmamail.commercial-item-group/>. Accessed 10 May 2021.

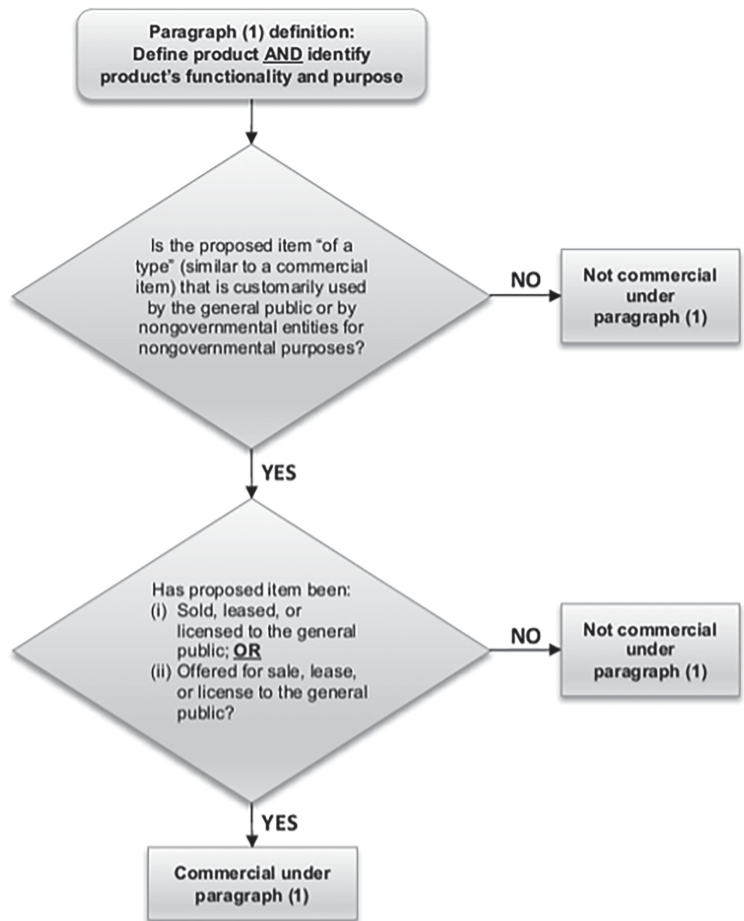
Rules of Interpretation

The Regulation Say What it Means and Means What it Says

Courts presume that drafters say what they mean and mean what they say.¹⁶ As previously stated, a close reading of paragraph (1) shows it sets out two criteria that must be met to qualify as a commercial product. The product: (1) must be "of a type" customarily used by the general public, and (2) must have been sold or offered. Contrary to DoD's guidance that the "of a type" language in paragraph (1) broadens the definition to allow for "similar to" products to be considered commercial; the "of a type" language in paragraph (1) instead places an additional condition that must be met. A product is not only required to be sold or offered for sale but the product is required to be "of a type" that is customarily used by the general public. It should be presumed that the regulation means what it says.

It is difficult to construct an argument that supports DoD's position. If DoD's reasoning is the term "product" in paragraph (1) includes "similar to" products, or "of a type" products, then substituting "similar to products" or "products of a type" for the term "product" in the definition reveals the interpretation is flawed. If the term product does not mean a product "of a type" or "similar to" but instead means the same product, then paragraph (1) of the definition seems clear. The product proposed has to be the same product sold or offered for sale. There does not appear to be a reasonable reading of the term "product" in the definition that supports DoD's guidance.

Notwithstanding DoD's guidance outlined above, that the commercial product definition does not require the same proposed product to be sold or offered, it includes a flowchart that conforms to the *FAR* commercial product definition setting out the two-part test.¹⁷ This flowchart provides a good representation of the decision process required by the *FAR*.



¹⁶ U.S. Supreme Court, *Conn. Nat'l Bank v. Germain*, 503 U.S. 249, 253-54 (1992).

¹⁷ *Guidebook for Acquiring Commercial Items, Part A: Commercial Item Determination*, 21.

If the Regulation Meant the Same Thing It Would Have Said the Same Thing

Where drafters include particular language in one section but omit it in another, it is generally presumed the drafter acts intentionally and purposely in the disparate inclusion or exclusion.¹⁸ The FAR commercial product and commercial service definitions use the "of a type" language in five places. In addition to paragraph (1), it is also included in paragraphs (2), (3)(i), and (3)(ii) of the definition of a commercial product, and paragraph (2) of the definition of commercial service. The construct of the language is different in each case.

The commercial service definition reads: "Services of a type offered and sold competitively in substantial quantities in the commercial marketplace based on established catalog or market prices for specific tasks performed or specific outcomes to be achieved and under standard commercial terms and conditions."¹⁹ Whereas the commercial product definition reads: "A product, other than real property, that is of a type customarily used by the general public ..., and — (i) Has been sold, leased, or licensed to the general public; or (ii) Has been offered for sale, lease, or license to the general public." The commercial service definition does not include a two-part test as does the commercial product definition. A reasonable reading of the commercial service definition is there is no requirement for the same proposed service to have been sold or offered, and the service definition allows for a service to be deemed commercial based on sales or offers of an "of a type," i.e., "similar" service. If the drafters had intended a similar construct for commercial products, they would have drafted the commercial product definition similarly. As the commercial product definition was drafted to include a two-part test it should be presumed the drafters acted intentionally and purposely.

No Part of the Regulation Should be Inoperative, Superfluous, or Void

Regulations should be construed so that effect is given to all its provisions so that no part will be

inoperative, superfluous, or void.²⁰ Every component is presumed to be of some effect and should not be treated as meaningless unless necessary. Therefore, paragraph (1) of the definition should be, to the extent possible, read to give meaning to the other parts of the definition. If there are multiple interpretations, then the reading that gives effect to the other parts is preferred.

DoD's guidance in the "of a type" language in paragraph (1) allows for a product to be considered commercial based on the commercial sales or offers of "similar to" products. If this interpretation renders other parts of the definition meaningless, while an alternate interpretation does not, then the DoD's interpretation is incorrect.

Paragraph (3) states that a product is to be considered commercial if it would satisfy the criteria outlined in paragraph (1) were it not for: (i) modifications of a type customarily available in the commercial marketplace; or (ii) minor modifications of a type not customarily available in the commercial marketplace made to meet federal government requirements.

A modification, per Merriam Webster, is the making of a limited change in something. It is, therefore, reasonable to conclude that a modified product is "similar to" the unmodified form of that product, as such similar products include modified products. DoD's interpretation of paragraph (1) allows for a product to be determined commercial based on a "similar to" product. As "similar to" products include modified products, DoD's interpretation of paragraph (1) makes paragraph (3) inoperative, superfluous, and void. Therefore, DoD's interpretation of paragraph (1) is not a sound reading of the definition.

Either: (i) a modified product is similar to the unmodified form of that product, in which case there is no need to address modifications in paragraph (3), or (ii) a modified product is not similar to the unmodified form of that product, in which case the concept of similarity has no operational value for establishing commerciality. Either option appears to invalidate DoD's interpretation.

¹⁸ U.S. Supreme Court, *Keene Corp. v. United States*, 508 U.S. 200 (1993)

¹⁹ Federal Register, Proposed Rule, *FAR Case 2018-018*.

²⁰ U.S. Supreme Court, *Hibbs v. Winn*, 542 U.S. 88, 101 (2004).

Holding to the language in the *FAR*, that paragraph (1) is a two-part test, gives effect to paragraph (3), and is, therefore, a better reading.

The *FAR* Allows for Non-COTS Commercial Products

Reading paragraph (1) of the commercial product definition as setting out a two-part test does not limit commercial products to only COTS products. Non-COTS products can be acquired as commercial under paragraph (3) of the commercial product definition. DoD's guidance and the *FAR* both allow for non-COTS products to be purchased as commercial. The difference is DoD's guidance allows for "similar to" products to form the basis for the determination under the "of a type" language in paragraph (1). In contrast, the *FAR* allows for a non-COTS item to be deemed commercial based on a modification as outlined in paragraph (3). The distinction is crucial as it has ramifications on a buyer's ability to determine price reasonableness. As will be addressed in more detail later in this article, the *FAR* has requirements around modifications that better position a buyer to negotiate a fair and reasonable price. In comparison, the data and techniques available to a buyer in assessing the reasonableness of a price based on a "similar to" product are less robust and less accurate.

In addition to placing a buyer at a disadvantage in negotiating the price of a product, DoD's guidance creates confusion for the practitioner. It introduces ambiguity around whether a determination should be supported as a similar product using the "of a type" language or a modification under paragraph (3). Borrowing from an example in the Guidebook—if the DoD buys a car that is a different color than is sold commercially, is it to be considered an "of a type" product or a modified product? Under both the *FAR* and DoD's guidance, the car can be considered commercial. Following the *FAR*, the different color car would be viewed as a modified commercial product. DoD's guidance on this seems conflicted. In the section of the Guidebook addressing paragraph (1) of the definition, the different color car is provided as an example of a product that should be considered commercial under the "of a type"

designation.²¹ However, the Guidebook also provides an example of a color change being a modified commercial product under paragraph (3).²² DoD's guidance that the same proposed product is not required to be sold or offered, and allowing for a product to be deemed commercial based on a similar product produces an ambiguity that even DoD seems unable to resolve.

Questions Around the "Of a Type" and "Similar To" Terminology

Two questions arise with the position presented herein. If the same product, or a modified version thereof, is required to be sold or offered for sale, then: (i) what is the meaning of the "of a type" language, and (ii) how is this reading consistent with other parts of the regulations allowing for the use of "similar to" products?

To the first question, if the requirement is that the same product, or a modified version thereof, be sold or offered for sale, then what is the meaning of the "of a type" language in paragraph (1)? An interpretation consistent with other parts of the definition is this language guards against deeming a product customarily used for governmental purposes, such as a fighter aircraft or armored fighting vehicle, as commercial based on one-off sales to the general public. For example, Lockheed Martin selling one F-16 fighter aircraft, without the weapons, to Jeff Bezos would not in and of itself be sufficient to qualify the F-16 as a commercial product. Under this scenario the F-16 would meet the second test—it has been sold to the general public; however, an argument could be made that it does not meet the first test—that the product is of a type customarily used by the general public.

As to the second question, if the requirement is the same proposed product, or a modified version thereof, be sold or offered for sale, how does one reconcile the allowance for the use of "similar to" products in other parts of the regulations? The acquisition of a commercial product requires two

²¹ *Guidebook for Acquiring Commercial Items, Part A: Commercial Item Determination*, 22.

²² *Guidebook for Acquiring Commercial Items, Part A: Commercial Item Determination*, 30.

separate determinations: a determination that the product meets the commercial product definition and a determination that the price is reasonable.²³ Notwithstanding that the *DFARS* requires the submission of information that is adequate for evaluating the reasonableness of the price, the two determinations are independent.²⁴

The determination as to if a product is commercial is a function of whether it meets the definition.²⁵ The references to prices for "similar to" products in the regulations are in the context of the price reasonableness determination, not the determination of commerciality.²⁶ A reasonable interpretation consistent with the definition is that: (i) where the term "similar to" is used, it is referring to services and modification "of a type" not an unmodified product, or (ii) given a product meets the definition, then one of the data points that can be used to establish price reasonableness is the prices paid for similar products. It is not reasonable to read the use of the "similar to" language in other parts of the *FAR* as rewriting the definition of a commercial product.

How DoD's Guidance Created a Price Reasonableness Challenge

DoD's guidance creates challenges on single and sole source procurements where a product is deemed commercial based on sales or offers of a "similar to" product. When a product has not been sold or offered, a functioning market's supply and demand dynamics are not present to set the price. And as DoD's guidance allow for products to be treated as commercial where only a similar product has been

sold or offered, such procurements qualify for the exception to certified cost or pricing data. Without a functioning commercial market or certified cost or pricing data, a buyer is at a disadvantage in negotiating a price.

Price Reasonableness

Contracting at a fair and reasonable price is a primary objective of DoD contracting.²⁷ The current regulatory framework in this area centers around the Truthful Cost or Pricing Data Act.²⁸ This law was passed in 1962 as a result of overpricing by federal contractors. The General Accounting Office (GAO) audits between 1957 and 1962 discovered significant overcharges resulting from contractors' failure to provide the government with accurate cost and pricing data.²⁹ A buyer's lack of knowledge of the latest cost data was considered a cause of the overpricing. As a result, Congress enacted the Truthful Cost or Pricing Data Act requiring contractors to submit cost or pricing data and certify that the data was accurate, complete, and current. The law also established remedies for when contractors' failure to comply resulted in overpayment by the government. The objective was to prohibit excessive profiteering by creating a level playing field that ensured a buyer had access to the same cost or pricing data as the seller. Exceptions to the law were made for competitive awards; prices set by law or regulations; or where the price negotiated was based on commercial products sold in substantial quantities to the general public.

There were subsequently other major acquisition reforms that emphasized competition³⁰ and

²³ FAR 15.403-1(C).

²⁴ Federal Register, Final Rule, *DFARS Case 2016-D006, Procurement of Commercial Items*, Dated January 31, 2018.

²⁵ FAR 15.403-1(C).

²⁶ FAR 15.404-1 Proposal Analysis Techniques, FAR 15.402 Pricing Policy, FAR 52.215-20 Requirements for Cost or Pricing Data or Information Other Than Cost or Pricing Data (OCT 2010), FAR 52.215-22 Requirements for Cost or Pricing Data or Information Other Than Cost or Pricing Data - Modifications (OCT 2010), *DFARS* 215.402 Pricing Policy, *DFARS* 215.404-1 Proposal Analysis Techniques, *DFARS* 234.7002 Acquisition of Major Weapon Systems as Commercial Items, and *DFARS* 252.215-7010 Requirements for Certified Cost or Pricing Data and Data Other Than Certified Cost or Pricing Data – Basic (Jul 2019).

²⁷ *DFARS* 201.101 (3).

²⁸ 10 U.S. Code § 2306a - Cost or Pricing Data: Truth in Negotiations.

²⁹ Roback, Herbert. 1968. "Truth in Negotiating: The Legislative Background of P.L. 87-653." *Public Contract Law Journal*, 1 (2): 3–29; and Hearings on Weapons System Management Before the Subcomm. for Special Investigations of The House Comm. on Armed Services, 86th Cong., 1st Sess. at 350 (1959); Hearings Pursuant to Section 4, Public Law 86-89 before the Special Subcomm. on Procurement Practices of Dep't of Defense of the House Comm. on Armed Services, 86th Cong., 2d Sess. at 64-70 (1960); and Hearings on Relation of Cost Data to Military Procurement Before the Subcomm. For Special Investigation of the House Comm. on Armed Services, 88th Cong., 1st Sess. at 6 (1963).

³⁰ The Competition in Contracting Act (CICA), 1984.

expanded the definition of commercial products and services.³¹ Still, the underlying principle of maintaining informational parity on procurements where prices are not set by law, competition, or market forces was arguably maintained.

Price Reasonableness Based on "Similar To" Products

DoD's guidance raises the similarity standard to a central role on single and sole source commercial acquisitions. Under the similarity standard, the types of products that can be argued commercial are significantly expanded. With little guidance around what constitutes a similar product, such arguments are hard to counter based on an appeal to any regulatory authority. For example, one can make a reasoned argument that the engines, radars, landing gears, wings, tails, fuselages, bulkheads, etc., on military aircraft are similar to the equivalent systems and structures on commercial aircraft. So most military aircraft, less the weapons, could be considered commercial. It is hard to argue these products are not similar; at best one can only offer an unsupportable position that they are not similar enough, in one's judgment, to warrant classification as a commercial product.

The use of similar products as the basis for determining whether a product is commercial opens the aperture to include products whose prices are not driven by market forces and where the link between the proposed product and the similar product is tenuous. The data and techniques necessary to bridge the gap between the proposed product and the similar product are inexact. As such establishing price reasonableness on single and sole source commercial products deemed commercial based on sales or offers of "similar to" products is problematic.

DFARS sets out the following hierarchy of techniques to establish price reasonableness in the absence of adequate price competition or prices set by law or regulation:³²

- (1) Conduct market research to determine the prices paid in the marketplace.

³¹ The Federal Acquisition Streamlining Act (FASA), 1994; and the Federal Acquisition Reform Act (FARA), 1996.

³² *DFARS* 215.404-1(b).

- (2) Obtain information from the seller on prices paid for the same or similar items under comparable terms and conditions.

- (3) Obtain information from the seller on:

- Prices paid for the same or similar items sold under different terms and conditions.
- Prices paid for similar levels of work or effort on related products or services.
- Prices paid for alternative solutions or approaches.
- Other relevant information that can serve as the basis for determining the reasonableness of price.

- (4) Obtain information from the seller regarding the basis for price or cost, including uncertified cost data.

For products deemed commercial based on similar product options, options one through three are not available for the same product, only similar products. Option four is available but is cost data for which the seller has no obligation to certify regarding its accuracy. The options available for arriving at a price for a commercial product based on similarity are either: (1) taking the price of a similar product and adjusting for the differences, or (2) obtaining uncertified cost data from the seller.

Under option one, a price is derived based on the price of a similar product. The differences to adjust for, other than economics, order quantity, and terms and conditions, are typically physical and performance characteristics. The approach commonly used is to assume that physical and performance differences explain the difference in price.³³ Using various statistical techniques, such as regression, cost estimating relationships (CERs) are developed by correlating the costs of a similar product with the product's physical and performance characteristics, such as weight, size, speed, power, etc. These CERs are then used to derive a price for the proposed product. These parametric estimating techniques of correlating cost to noncost variables have value in specific applications, such as in developing rough-order-of-magnitude estimates or evaluating alternatives for tradeoff, but not for predicting individual

³³ DCMA CIG Training 2018

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outcomes with the fidelity necessary to negotiate contracts. The RAND Corporation, which is often credited with pioneering parametric estimating, stated: "Nowhere in the RAND literature is this [the use of parametric estimating for contract negotiation] practice recommended, nor does anyone at RAND espouse such views. Parametric estimating at RAND was developed to provide rough order-of-magnitude estimates of weapon systems costs."³⁴

Several initiatives have attempted to promote parametric estimating techniques for generating predictive point estimates for contract negotiations. These initiatives have not proved successful.³⁵ Even when the challenges of: (i) obtaining a statistically significant sample, (ii) normalizing the data, (iii) identifying the technical factors that drive cost, (iv) developing statistically significant CERs, and (iv) ensuring those CERs are applied within the dataset's range used to generate the CERs, the approach provides at best a rough order of magnitude estimate. Even for the most sophisticated analyst, it is impractical to control for all pertinent variables and create CERs sensitive to confounding variables. One author who studied these initiatives provides a critical assessment that concludes that such approaches are "pseudo-mathematics."³⁶

The other option available to a buyer is having the seller provide cost data, a cost elemental breakdown of the cost incurred or projected to manufacture the product. This cost elemental breakdown would include such items as labor hours; material cost; labor and overhead rates; and profit. There are often challenges in obtaining this data; however, even when the data is provided, there is no requirement for the seller to certify that it is current, accurate, or complete. As a result, the data does not have the same reliability as the data a buyer would obtain if

the procurement were subject to the Truthful Cost or Pricing Data Act.

Under DoD's guidance, the government and industry are allowed to procure products as commercial without the benefit of either prices set by market forces or certified cost or pricing data. This approach undercuts the ability of a buyer to adequately assess price reasonableness on noncompetitive acquisitions.³⁷ For single and sole source acquisitions of products deemed commercial based on similarity, DoD's guidance re-creates the environment of the late 1950s and early 1960s, before the Truthful Cost or Pricing Data Act, where GAO audits found the DoD was significantly overpaying for many products.³⁸

Price Reasonableness Based on Modified Products

In contrast to the DoD's approach, when non-COTS products are reviewed for commerciality as modifications, while imperfect, the regulations provide a framework that better positions a buyer to negotiate a fair and reasonable price. If one adheres to the *FAR*, the determination of commerciality for non-COTS products would be reviewed as a modification.

Determining a fair price for modified products can be segregated into two parts: (1) the price of the unmodified product, and (2) the price of the modification. The unmodified product is by requirement

³⁴ Hough, Paul. 1989. *Birth of a Profession: Four Decades of Military Cost Analysis*. RAND Corporation, pp. 20-21.

³⁵ Fitzgerald, Ernest. 1972. *The High Priests of Waste*. Norton; RAND Corporation, 1989; and Killingsworth, Paul. 2013. "Pseudo-Mathematics: A Critical Reconsideration of Parametric Cost Estimating in Defense, Acquisition." Defense Acquisition University Sponsored Documents (September).

³⁶ Killingsworth, Paul. 2013. "Pseudo-Mathematics: A Critical Reconsideration of Parametric Cost Estimating in Defense, Acquisition." Defense Acquisition University Sponsored Documents (September).

³⁷ Department of Defense Inspector General, *Defense Logistics Agency Aviation Potentially Overpaid Bell Helicopter for Sole-Source Commercial Spare Parts*, Dated July 3, 2014; Department of Defense Inspector General Reports, *Review of Parts Purchased From TransDigm Group, Inc.*, Dated February 25, 2019; Department of Defense Inspector General Reports, *Followup Audit: Military Sealift Command Management of Spare Parts Inventory and Purchases for Lot 7 Program Roll-On/Roll-Off Ships*, Dated October 20, 2017; Department of Defense Inspector General Reports, *The Air Force Did Not Adequately Determine or Document Fair and Reasonable Prices for Lot 7 Sole Source Initial Spare Parts for the C-5 Aircraft*, Dated February 7, 2017; and Department of Defense Inspector General Reports, *U.S. Air Force Spent Billions on F117 Engine Sustainment Without Knowing What a Fair Price Was*, Dated March 11, 2016.

³⁸ Roback, Herbert. 1968. "Truth in Negotiating: The Legislative Background of P.L. 87-653." *Public Contract Law Journal*, 1 (2): 3-29.

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commercial; therefore, there is a functioning market where supply and demand set the price. Regarding the modification, the regulations outline two types: (1) modification of a type that are customarily available in the commercial marketplace, and (2) minor modifications of a type not customarily available in the commercial marketplace made to meet Federal government requirements. If the modification is a minor modification made to meet federal government requirements, and the value of the modification exceeds the greater of the threshold for obtaining certified cost or pricing data or five percent of the total price, then certified cost or pricing data is required for the modification.³⁹ If the modification is "of a type" that is customarily available in the commercial marketplace, then admittedly the same challenges exist for assessing the price of the modification based on similarity as they do in evaluating the price for the total product based on similarity; however, as here the assessment is limited to the price of the modification the impact is proportionately less.

In contrast to DoD's guidance of allowing "similar to" products to be used as the basis of classifying non-COTS products as commercial, the regulations have a process where non-COTS products can be acquired as modified commercial products, which provides a framework that better positions a buyer to be able to contract for the product at a fair and reasonable price.

Conclusion

The decades-long journey of expanding the acquisition of commercial products to improve the acquisition process and reduce overall cost is a laudable goal. However, a preference for acquiring commercial products should not be confused with a preference for classifying products as commercial.

DoD's attempts to increase the use of commercial products through a broad interpretation of the definition deviates from the regulations, introduces confusion, and creates a framework that often forces a buyer to rely on imprecise and unreliable tools to establish price reasonableness. DoD's guidance

places a buyer at a disadvantage in single and sole source procurements and recreates the environment that fostered overpricing and overpayment for products that existed before enacting the Truthful Cost or Pricing Data Act.

Acknowledging there have been previous studies and reports on the definition and the "of a type" terminology,⁴⁰ it is believed that the acquisition of commercial products would benefit from additional research and examination of the topic.

³⁹ FAR 15.403-1 (c) (3).

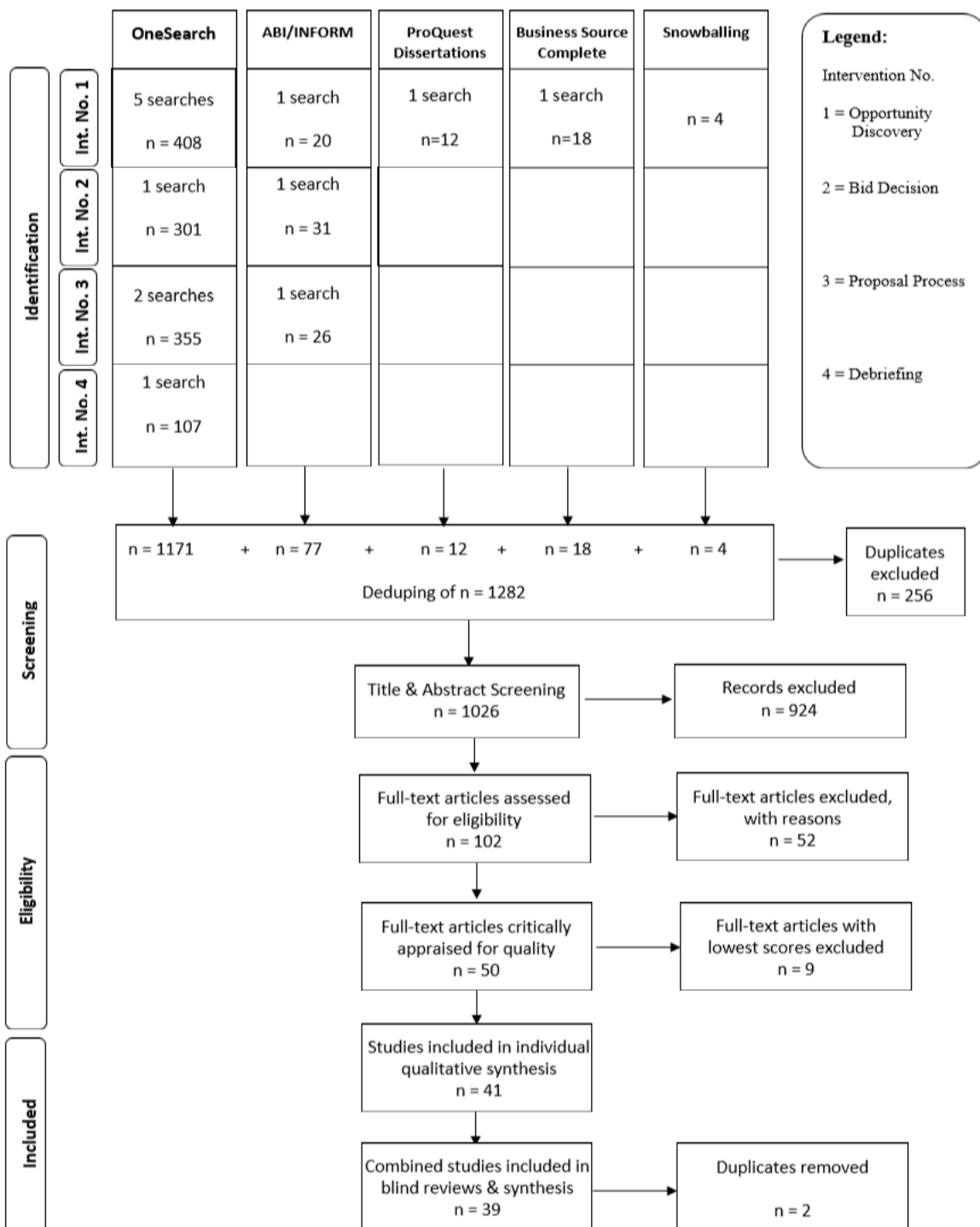
⁴⁰ Section 809 Panel, *Report of the Advisory Panel on Streamlining and Codifying Acquisition Regulations*, Volume 1 of 3, January 2018; and *Report of the Acquisition Advisory Panel to the Office of Federal Procurement Policy and the United States Congress*, January 2007.

The Department of Defense's Guidance on the Commercial Product "Of a Type" Language is Problematic: Appendices

Appendix A

PRISMA Chart and Search Strings

Figure B 1. PRISMA Chart



Appendix A

IMPROVING BUSINESS CAPTURE STRATEGIES: A CASE STUDY

Table A 1

Search strings

Search Strings	Database	Filters & Limiters	Results
SS1= (("business development" or "business capture" or (business n3 opportunit*) or (business n3 acquisition) or (business n3 pipeline)) not (airport* or clinic* or marin* or medic* or water or touris* or (oil n3 gas) or (metal* n10 mineral*) or farm* or agricult*))) AND SU (business or government)	OneSearch	US, 2005 & above, Peer reviewed, scholarly, English, Business & Management, Economics, Politics & Government	287
SS2= "proposal process"	OneSearch	US, 2005 and above, English, Peer-Reviewed	61
SS3= opportunit* n3 search*	OneSearch	US, 2005 & above, English, Peer Reviewed, Business & Management	16
SS4= noft("proposal process" or "proposal management" or (opportunit* N/3 search*))	ABI/Inform	US, Peer reviewed, scholarly, English	20
SS5= (pipeline n2 management) NOT (water or oil or gas or pharma* or subsea or river or "talent management" or CPU)	OneSearch	US, Peer-reviewed, scholarly, English	44
SS6= noft("proposal process")	ProQuest Dissertations/ Theses	Peer reviewed, 2005 & above, English	12
SS7= (government or federal) and procurement and opportunit* not ("energy efficiency" or "carbon offset" or medic* or greenhouse)	Business Source Complete	Peer reviewed, 2005 & above, US	18
SS8=Proposal Management	OneSource	Peer-reviewed, 2005 & above, US	178
SS9=Proposal Management	ABI/INFORM	Peer-reviewed, 2005 & above, US	26
SS10="business development" n10 (federal or government)	OneSource	Peer reviewed, 2005 & above, US	177
SS11="active listening" AND "business"	OneSource	Peer-reviewed, 2005 & above, US	107
SS12="business development" AND "decision" AND ("small business*" OR "small company*" OR "small firm*" OR "small organization*")	OneSource and ABI/INFORM	Peer-reviewed, 2005 & above, US	167
SS13="business development" n10 (federal OR government*) AND decision	OneSource and ABI/INFORM	Peer-reviewed, 2005 & above, US	39
SS14="decision making" OR "decision-making" OR "decision making process" OR "decision-making process" AND "contract bidding"	OneSource and ABI/INFORM	Peer-reviewed, 2005 & above, US	126
Snowballing	-	-	4
Total Articles Retrieved			1282
Duplicates removed			256
Total Remaining Articles at start of screening:			1026

Appendix B

Retained Articles' Data

Table C1

Retained articles' data

Author & Year	Type / Sample Size	Title	Journal	Main Findings	Limitations	Appraisal Score	Level
Abramowicz & Sparks 2007	Peer-reviewed report	The small business administration's 8(a) business development program	CPA Journal	SBA 8(a) program advantages & opportunities for small businesses dealing with government agencies. Strategies for securing 8(a) contracts. Eligibility criteria and application process	-	16.06	E
Almonaitiene & Zukauskas 2015	Survey, 42 employees	Managerial communication and related variables in a food retail chain	Social Sciences	Significant positive relationship between empathetic listening and trust in supervisor; a negative relationship between active listening and downward job and operational information	One organization, limitations on questionnaires	13.61	D
Bergeron & Laroche 2009	Survey, 787 questionnaires financial industry	The effects of perceived salesperson listening effectiveness in the financial industry	Journal of Financial Services Marketing	Listening consists of physical sensing, mental processing, and responding. Effective listeners fully sense the message. Listening is highly correlated with responding; listeners are better at satisfying customers	One industry, single-dimensional constructs, potential selection bias	16.50	D
Biruk, Jaśkowski & Czarnigowska 2017	The approach proposed in the paper promotes a systematic approach to real-life bidding problems.	Modeling contractor's bidding decision	Economics and Management	The authors aim to provide a set of tools to facilitate the main stages of the competitive bidding process for construction contractors. These involve: 1) deciding whether to bid, and 2) calculating the total price	Heavy math, learning curve	17.42	C
Bradshaw & Chang 2013	Literature Review	Past performance as an indicator of future performance: selecting an industry partner to maximize the probability of program success.	Defense A R Journal	The paper argues for government agencies to place a higher value on past performance for evaluation. It is based on court cases, the FAR, internal government studies, and a survey of handbooks used by government agencies. Its findings are presented as best practices.	Focus is on the government, not corporate perspective, relies on gray literature, no empirical evidence presented	13.47	E
Chou, Lin, Pham, & Shao 2015	This study investigated the efficacy of AI techniques in forecasting bid award amounts on the basis of limited available information to provide a baseline for vendors	Optimized artificial intelligence models for predicting project award price	Automation in Construction	The analytical results confirmed that the GA-ANN model exhibited optimal performance, indicating that ANNs are superior mathematical models for realistic simulations	Heavy math, learning curve	18.03	D

Retained Articles' Data (continued)

Table C1 | Retained articles' data

Author & Year	Type / Sample Size	Title	Journal	Main Findings	Limitations	Appraisal Score	Level
Chou, Pham, & Wang 2013	This study proposes a new bidding strategy to support decision making that is based on a combined framework of the Fuzzy Analytical Hierarchy Process (FAHP) and regression-based simulation	Bidding strategy to support decision-making by integrating fuzzy AHP and regression-based simulation	Automation in Construction	Construction companies can choose either to increase the bid amount to protect company profit or to refrain from submitting a bid at all. If bidders decide to make a bid, they can use the proposed method to obtain reference bid amounts in support of their bidding strategies.	Heavy math, learning curve.	18.33	D
Curasi, Boles, & Reynolds 2018	Mixed-Method/ Interviews with multiple executives from 20 Fortune 500 companies	Key account buying team members' emotional responses awarding multi-million-dollar sales contracts.	Industrial Marketing Management	An extensive literature review and an empirical study of interviews from purchasing professionals from 20 Fortune 500 companies, assessed using QS NVivo and statistically evaluated.	Focus is on how emotions play into decision making by large companies, not by government officials.	19.69	D
Drollinger, Comer, & Warrington 2006	Three studies consisting of surveys	Development and validation of the active, empathetic listening scale	Psychology & Marketing	Empathetic listening strongly related to responding, followed by processing, and negatively related to sensing	Studies conducted by mail, may not be generalizable	16.03	D
El-Mashaleh 2013	Mixed-Method/ government database of 16,000 SB transactions	Empirical Framework for Making the Bid/ No-Bid Decision	Journal of Management in Engineering	The decision-making process was concluded with a positive bidding decision for Bid 39 because it was part of the efficient frontier.	Heavy math, learning curve	18.03	C
Frey 2002	Case Study/ Single Case	Small business knowledge management success story—this stuff really works!	Knowledge and Process Management	This article is highly relevant because it examines a company similar in size and type to GC.	An executive wrote the article of the company examined. No empirical data is provided.	16.50	E
Gillies 2016	Overview of common practices	The request for proposal process: A brief overview for trainee medical writers.	Medical Writing	This article discusses four factors for successful proposal preparation for the medical industry.	Mostly editorial with only a single citation. The focus is on the medical industry.	10.92	E
Gruber 2011	Laddering interviews, 40 respondents	I want to believe they really care: How complaining customers want to be treated by frontline employees	Journal of Service Management	The most important attributes for complaining customers are contract employees' authenticity, competence, and active listening skills. These concepts are linked with justice, well-being, and security	Results may mirror the general public, but the study was focused on students	17.05	D

Retained Articles' Data (continued)

Table C1 | Retained articles' data

Author & Year	Type / Sample Size	Title	Journal	Main Findings	Limitations	Appraisal Score	Level
Gruber, Reppel, Szmigin, & Voss 2008	Laddering interview	Revealing the expectations and preferences of complaining customers by combining the laddering interviewing technique with the kano model of customer satisfaction	Qualitative Market Research: An International Journal	Being taken seriously in complaint encounters and employee friendliness, listening skills, and competence are important. Active listening is only must be requirement, while concepts of apology and respectful treatment are close to must be criteria	Small sample size, scope, and exploratory in nature	9.33	D
Hang & Wang 2012	Case-study research design	Strategic decision-making in small and medium-sized enterprises: Evidence from Australia	International Journal of Business Studies	It was found that a two-staged SDM process was used by many SME owners/managers and that rather than a problem-analysis-solution progression, SMEs engaged in a problem-solution-analysis process	New research area, more needed.	18.03	C
Jamalzadeh, Behravan, Espahbodi, & Masoudi 2012	Peer-reviewed primary study with a survey of n=150 managers and business owners	An empirical analysis of online social network determinants towards business prosperity	Business and Economics Journal	Social Networks and their determinants (Communication management, finding key users, Word of mouth, and advertising) have a strong positive relationship with business success and prosperity.	Data was collected for service businesses so may not generalize for other business categories. Since the questionnaire used, some data biases may exist.	18.47	D
Korenkova 2014	Survey, 285 respondents, Slovakia	Statistical evaluation of communication skills of customer care employees in banks	Business, Management and Education	Communication skills of customer care assistance are at a sufficient level.	None provided (sample, location, not generalizable)	11.50	D
Levasseur 2009	Case Study/ Single Case	People skills: Implementing strategic goals—A change management perspective.	Interfaces	This article proposes changes to how an industry organization proposes to find new customers.	Focus is mainly on change management and triggering change.	13.94	E
Lewis 2017	Mixed-Method/ government database of 16,000 SB transactions	Effects of federal socioeconomic contracting preferences	Small Business Economics	Includes extensive literature review and empirical analysis of SDVOSBs, SBs, and 8(a)s. It shows (1) SBs have a substantial advantage, (2) 8(a)s and SDVOSBs win about equal numbers of contracts, (3) SDVOSBs are more likely to survive and grow to large businesses.	Primarily focused on opportunity identification, not proposal improvement.	18.94	D

Retained Articles' Data (continued)

Table C1 | Retained articles' data

Author & Year	Type / Sample Size	Title	Journal	Main Findings	Limitations	Appraisal Score	Level
Longweni, & Kroon 2018	Survey, 420 respondents	The impact of salesperson perception of firm market orientation on behaviors and consulting effectiveness	Journal of Business-to-Business Marketing	Market orientation has an indirect influence on salesperson consulting through adaptive selling and active listening behaviors. Active listening mediates the relationship between customer orientation and salesperson consulting, while salesperson consulting mediates the relationship between active listening and consulting effectiveness	Model missing possible mediating influences, such as firm structure, strategy, sales management programs.	13.81	D
Martinette & Obenchain-Leeson 2009	Peer-reviewed primary study of n=66 small organizations and n=40 large organizations	A view based on organizational size: How competitive advantage moderates the Learning orientation/ business performance relationship	International Journal of Global Management Studies	The relationship between sales and profits is statistically significant in small and large organizations. The relationship between learning orientation and competitive advantage is statistically significant in small and large organizations.	Convenience sample was used. Sample represented a limited number of companies in limited industries. Large percentage of respondents were high executives.	18.78	D
Hang & Wang 2012	Case-study research design	Strategic Decision-Making In Small And Medium-Sized	International Journal of Business Studies	It was found that a two-staged SDM process was used by many SME owners/managers and that rather than a problem-	New research area, more needed.	18.03	C
Min-Yuan, Chia-Chi, Hsing-Chih & Hoang-Linh, 2011	This study proposes a Multi-Criteria Prospect Model for Bidding Decision (BD-MCPM) to assist contractors to make decisions on bid/no bid and markup scale	Bidding decision making for construction company using a multi-criteria prospect	Journal of Civil Engineering and Management	the Multi-Criteria Prospect Model (MCPM), which links Fuzzy Preference Relations (FPR) and Cumulative Prospect Theory (CPT), is deployed to determine the markup scale that best conforms to the primary decision-maker	Based on construction.	18.03	D
Frey 2002	Case Study/ Single Case	Small business knowledge management success story—this stuff really works!	Knowledge and Process Management	This article is highly relevant because it examines a company similar in size and type to GC.	An executive wrote the article of the company examined. No empirical data is provided.	16.50	E
Morrison, Breen, & Ali 2003	Peer-reviewed primary study with questionnaires to 3570 business, 409 valid responses.	Small business growth: Intention, ability, and opportunity	Journal of Small Business Management	Perception of owner/manager competence, proactive learning through social, informal networks, knowledge of different fields of business, are pro-growth factors in small organizations. Constrained managerial competencies, narrow skills base, lack of ambition and vision, are growth inhibitors.	Not explicitly stated	15.92	D

Retained Articles' Data (continued)

Table C1 | Retained articles' data

Author & Year	Type / Sample Size	Title	Journal	Main Findings	Limitations	Appraisal Score	Level
Nixon 2011	PhD dissertation involving a literature review	Decision perception in contract acquisition: Strategies in managing intellectual capital in successful DOD contract competitions.	Ph.D. dissertation in ProQuest	Knowledge management is changing the operational landscape. Companies that propose to government agencies should employ knowledge-based research, marketing, and program management.	Study focused primarily on DoD contractors. Lack of literature on this type of contractor led the study to rely on literature for other types of contractors. Focused primarily on large companies.	17.56	E
O'Quin & Besemer 2006	Peer-reviewed study involving traditional literature review	Using the creative product semantic scale as a metric for results-oriented business.	Creativity & Innovation Management	Creative Product Semantic Scale helps examine the effectiveness of advertisements and marketing, project management processes, identifying product strengths and weaknesses. Analysis of competitors' products can improve the identification of strategies for customer focus.	Not explicitly stated	17.11	E
Pelham 2010	Text analysis using iterative coding processes and constant comparison	Reclaiming rare listening as a means of organizational re-enchantment	Journal of Organizational Change Management	Multi-sensory conception of listening is reduced to instrumental tips and techniques that help the user gather data in the interest of obtaining goals on websites, and not following a conceptual idea	Small sample size	16.33	D
Peterson, Rodriguez, & Krishnan 2011	Peer-reviewed study involving a survey of n=14, 080 with n=1502 respondents	CRM and sales pipeline management: Empirical results for managing opportunities	Marketing Management Journal	CRM is positively related to sales opportunity management. CRM is positively related to collaboration across departments. CRM leads to higher accountability for lead closure.	Relied on several single-item measures without using triangulation. Difficulty in isolating and measuring CRM as it touches many relationships across firms and marketplaces.	18.47	D
Adel Rastkhiz, Mobini Dehkordi, Yadollahi Farsi & Azar 2019	This study is the first systematic review of opportunity evaluation criteria	A new approach to evaluating entrepreneurial opportunities	Journal of Small Business and Enterprise Development	According to these criteria and using fuzzy screening technique, a multi-expert multi-criteria decision-making (ME-MCDM) model has been suggested for evaluating and selecting opportunities	This review is based on published papers and may be exposed to publication bias	18.64	D

Retained Articles' Data (continued)

Table C1 | Retained articles' data

Author & Year	Type / Sample Size	Title	Journal	Main Findings	Limitations	Appraisal Score	Level
Rezvani, Lashgari, & Farsi 2018	Peer-reviewed study involving interviews of 30 managers from 30 companies	Organizational entrepreneurial alertness framework in opportunity discovery	Academy of Entrepreneurship Journal	Entrepreneurial alertness includes alert scanning and search/ Acquisition at individual level, Alert association and connections/ Transformation in group level and Evaluation and judgment/ Integration at an organizational level. Opportunity discovery includes preparation at the individual level, Incubation at the group level, and Insight at the organizational level. (cite)	Not explicitly stated	17.44	D
Smartt & Ferreira 2011	Literature Review	Advancing systems engineering in support of the bid and proposal process.	Systems Engineering	A detailed summary of procurement studies concerning largely government procurements. It includes efforts to find relevance for engaging systems engineering in proposal preparation, including research in systems engineering, bid management, economics, finance, game theory, and psychology.	While it proposes extensive opportunities for future research, the article does not discuss empirical data collection or analysis.	17.86	E
Smartt & Ferreira 2014	Peer-reviewed study involving survey n=62 companies	Exploring beliefs about using systems engineering to capture contracts	Procedia Computer Science	To improve contract award chances, organizations should: Keep face-to-face contact with customers (meetings & video conferences) throughout proposal process Invest sufficient resources on systems engineering during the proposal phase Keep existing customers for already captured contracts satisfied	The following limitations are stated however they are not very relevant to our purpose: The study only focuses on maximizing the probability of contract award and on the proposal phase.	18.03	D
Smartt, Ferreira, Rosenberger, & Corley 2014	Theoretical paper	A framework for optimizing the use of systems engineering on proposals	Procedia Computer Science	The article proposes a mathematical framework for decision-making regarding systems engineering input to proposal support.	As noted in the article, the framework does not take into account standard business practices but is focused on systems engineering.	14.67	E

Retained Articles' Data (continued)

Table C1 | Retained articles' data

Author & Year	Type / Sample Size	Title	Journal	Main Findings	Limitations	Appraisal Score	Level
Smartt & Ferreira 2015	Peer-review primary study involving a survey of n=68 persons, n=61 considered valid	Systems engineering success factors for capturing contracts	Systems Engineering	<p>The study reveals best practices for proposal preparation, both when using systems engineers and when not. Proposals prepared were for government contracts.</p> <p>The following factors are positively related to proposal success:</p> <ul style="list-style-type: none"> Increased face-to-face contact with the customer during the proposal process Increased professional labor on the proposal effort using systems engineering Increased focus on defining and validating the technical requirements. <p>It also describes the process for identifying candidate factors and a survey to collect data that is used to assess the relationships between the candidate factors and the probability of a contract award.</p>	An executive wrote the article of the company examined. No empirical data is provided.	16.50	E
Snider & Walkner 2001	Literature Review/ Federal Acquisition Regulations, General Accountability Office protest decisions, five agency best practice handbooks	Best practices and protests: Toward effective use of past performance as a criterion in source selections	Journal of Public Procurement	The article presents an assessment of the FAR, GAO decisions, and five agency handbooks to arrive at ten best practices for considering past performance in government procurements.	No statistical analysis, no surveys. While a good discussion of how agencies see and may want to see past performance evaluation, the article is from the government, not corporate perspective.	16.72	E
Sonmez & Sözen 2017	In this paper, a procedure based on support vector machines and backward elimination regression is presented for improving the existing bid decision making methods	A support vector machine method for bid/no bid decision making	Journal of Civil Engineering & Management	The results show that the support vector machine classifier outperforms existing methods significantly, and the proposed procedure provides a powerful tool for bid/no-bid decision making	Heavy math, learning curve	18.33	D

Retained Articles' Data (continued)

Table C1 | Retained articles' data

Author & Year	Type / Sample Size	Title	Journal	Main Findings	Limitations	Appraisal Score	Level
Tan, Shen Langston, & Liu 2010	Introduced a quantitative method for assisting contractors to select appropriate projects for bidding by considering multiple attributes and integrating decision group member opinions.	Construction project selection using fuzzy TOPSIS approach	Journal of Modelling in Management	The fuzzy TOPSIS approach can be used to simulate the decision process in project selection, and the results provide contractors with valuable insight into the project selection problem.	Heavy math, learning curve.	18.03	D
Tyler 2011	Survey, 420 panelist responding	Does salesperson perception of the firm-level of market orientation influence sales behavior and performance attributions?	Journal of Managerial Issues	Stronger sales orientation tied to higher performance	Common method bias, additional variables may have been unidentified	8.00	D
Werr & Stjernberg 2003	Mixed-Method/ Two global consulting companies	Exploring management consulting firms as knowledge systems	Organization Studies	This study assimilates a detailed discussion of knowledge management and research in that field with specific case studies and surveys of executives from two primary management consulting companies that have extensive knowledge management capability. The findings support that knowledge management is important to proposal and business decision-making.	The study was done in Sweden. The companies are well known in the United States, but the perspective was not U.S. government procurements.	16.50	D

Appendix C

Syntheses' Results
Table D1

Themes ¹	Codes Aggregated (# of Quotations)	# Articles/Author, Year	Critical Appraisal Score ²	Quality Level ³
Theme 1: Evolving Leadership Methods and Introducing Strategic Planning Will Improve BD Decision Making				
Multi-expert bid decision	Multi-expert (7)	1. Adel Rastkhiz et al., 2018 2. Chou, Pham, and Wang, 2013 3. Tan, Shen, Langston, and Liu, 2010 4. El-Mashaleh, 2013	16.06 18.33 18.03 18.03	D D D C
Strategic Planning	Strategic Planning/Change Management (8)	1. Levasseur, 2009 2. EurekaFacts, 2019 ⁴ 3. Nutt, 2018 ⁴	13.94 NA NA	E NA NA
Special Status Program	SDVOSB (7) Small Business Program (14)	1. Lewis, 2017 2. Abramowicz and Sparks, 2007	18.94 16.06	D E
Theme 2: Frequent Face-to-Face Interactions with Potential Clients and Active Listening Are Essential				
Relationship	CRM (22) Relationship (20) Social Networks (12)	1. Curasi, Boles, and Reynolds, 2018 2. Abramowicz and Sparks, 2007 3. Almonaitiene and Zukauskas, 2015 4. Bergeron and Laroche, 2009 5. Drollinger, Comer, and Warrington, 2006 6. Gruber, 2011 7. Korenkova, 2014 8. Pelham, 2010 9. Jamalzadeh, Behravan, Espahbodi, and Masoudi, 2012	19.69 16.06 18.17 20 18.17 20 20 12.67 20 18.47	D E D D D D D D D D
Communication	Recruit (5)	1. Bergeron and Laroche, 2009 2. Gruber, 2011 3. Shoemaker and Pelham, 2013	20 20 15.42	D D D
Communication	Skill (15) Professional Process (10)	1. Bergeron and Laroche, 2009 2. Gruber, 2011 3. Gruber et al. 2008 4. Korenkova, 2014 5. Longweni and Kroon, 2018 6. Tyler, 2011 7. Shoemaker and Pelham, 2013 8. Morrison et al., 2003 9. Nixon, 2011 10. Rezvani et al., 2018 11. Smartt and Ferreira, 2014 12. Smartt and Ferreira, 2015	20 20 12.67 16.83 11.33 15.42 10.92 15.92 17.56 17.44 18.03 18.17	D D D D D D D D E D E D
Communication	Competence (3)	1. Bergeron and Laroche, 2009 2. Gruber et al. 2008 3. Shoemaker and Pelham, 2013	20 20 15.42	D D D
Communication	Listening (38)	1. Bergeron and Laroche, 2009 2. Drollinger et al., 2006 3. Gruber, 2011 4. Gruber et al., 2008 5. Korenkova, 2014 6. Longweni and Kroon, 2018 7. Pelham, 2010 8. Tyler, 2011 9. Shoemaker and Pelham, 2013	20 18.17 20 12.67 15.92 16.83 20 11.33 15.42	D D D D D D D D D

Syntheses' Results (continued)

Table D1

Themes ¹	Codes Aggregated (# of Quotations)	# Articles/Author, Year	Critical Appraisal Score ²	Quality Level ³
Theme 2: Frequent Face-to-Face Interactions with Potential Clients and Active Listening Are Essential (cont.)				
Outcome	Outcome (14)	1. Bergeron and Laroche, 2009 2. Gruber, 2011 3. Korenkova, 2014 4. Pelham, 2010 5. Shoemaker and Pelham, 2013	20 20 12.67 20 15.42	D D D D D
Develop	Develop (7)	1. Bergeron and Laroche, 2009 2. Drollinger et al., 2006 3. Pelham, 2010	20 18.17 20	D D D
Theme 3: The Need for Infrastructure and Deliberate Proposal Processes				
Opportunity Identification	Entrepreneurial Alertness (11)	1. Abramowicz and Sparks, 2007 2. Martinette and Obenchain-Leeson, 2009 3. Morrison et al., 2003 4. Rezvani et al. 2018	16.06 18.78 15.92 17.44	E D D D
Proposal Process	Necessity of Proposals (2) Proposal Process (5)	1. Smartt and Ferreira, 2011 2. Smartt and Ferreira, 2015 3. Smartt et al., 2014 4. Bradshaw and Chang, 2013 5. EurekaFacts, 2019 ⁴ 6. Nutt, 2018 ⁴	17.86 19.69 14.67 13.47 NA NA	E D E E NA NA
Past Performance	Key Personnel (3) Past Performance Best Practices (2) Past Performance Protest Findings (2) Past Performance Requirements (6) Previous Satisfaction (2)	1. Bradshaw and Chang, 2013 2. Smartt and Ferreira, 2015 3. Snider and Walkner, 2001 4. Curasi, Boles, and Reynolds, 2018 5. Gillies, 2016 6. Smartt and Ferreira, 2014	13.47 19.69 16.72 19.69 10.92 18.03	E D E D E E
Knowledge Management	Knowledge Management (26)	1. Frey, 2001 2. Werr and Stjernberg, 2003 3. Nixon, D., 2011	16.50 16.50 17.56	E D E
Use of AI/model for bid decision	Use of Model (47)	1. Chou, Lin, Pham and Shao, 2015 2. Cheng et al., 2011 3. Sonmez and Sözgen, 2017 4. El-Mashaleh, 2013 5. Tan et al., 2010 6. Rastkhiz et al., 2018 7. Chou, Pham, and Wang, 2013	15.94 14.39 14.25 15.44 15.42 16.06 15.19	D D D D D D D

¹ In addition, three major themes other themes were identified for administrative purposes: Proposal Research Challenges, Information, and Other. Fifteen subthemes are shown below each of the three themes.

² The scoresheet allows scores from 0 to 20 with a higher number relating to better quality.

³ Levels, in alignment with Barends et al. (2017). The levels are based on the type of study ranging from AA to E. Those articles at levels D and E tended toward case studies, use of surveys, literature reviews, and theory development.

⁴ Gray literature, not peer-reviewed nor published by a scholarly journal. Used to demonstrate market use and understanding of the method shown. No level or quality assessment completed.



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