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ACQUISITION RESEARCH SPONSORED REPORT SERIES

**Integrating Electronic Reverse Auctions into Defense
Procurement: Exploratory Research on Opportunities, Issues,
Processes, Risks, and Cultural Implications**

18 December 2009

by

**Capt. Adam V. Coyne, USAF, and
LTJG Michael J. Collins, USN**

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Abstract

This case study explores the first and only electronic reverse auction (e-RA) conducted by the United States Air Force (USAF) in Kuwait and addresses both theoretical gaps in e-RA knowledge and practitioner gaps within the Department of Defense (DoD). Qualitative research based on a single case study explored 1) cultural implications of conducting an e-RA in the Middle East and 2) procedures DoD contracting officers could follow to use e-RAs for stateside and contingency procurements—and expected savings from doing so. Findings suggest that Middle Eastern sellers with a cultural disposition to avoid risky technology-based acquisition participated in the USAF auction because they trusted the USAF more than buyers in the local market. Sellers also felt increased satisfaction with the e-RA even when they did not win because the process increased fairness, transparency and reduced the negative effects of *wasta* (i.e., using connections or influence) and the general Arab business climate of distrust, unfairness, and favoritism. Secondly, a detailed spend analysis of FY07–08 USAF spend data, extrapolated across the DoD, suggests the DoD is leaving billions of dollars on the table by not using e-RAs. Drawing on the results, implications for theory and practice are explicated. Finally, study limitations are disclosed, and opportunities for future research are identified.

Keywords: Electronic Reverse Auctions, e-RA, National Culture, Technology Adoption, Procurement Policy, Strategic Sourcing Strategy



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List of Acronyms and Abbreviations

AFCENT	United States Air Forces Central
AFFARS	<i>Air Force Federal Acquisition Regulation Supplement</i>
B2B	Business-to-business
B2C	Business-to-consumer
CECOM	United States Army Communications and Electronics Command
CO	Contracting Officer
CONS	Contracting Squadron
CONUS	Continental United States
CTT	Commitment-trust Theory
DFAR	<i>Defense Federal Acquisition Regulations</i>
DoD	Department of Defense
DSCP	Defense Supply Center Philadelphia
EAM	e-RA Appropriateness Model
ECES	Expeditionary Civil Engineering Squadron
ECONS	Expeditionary Contracting Squadron
e-RA	Electronic Reverse Auction
FAR	<i>Federal Acquisition Regulation</i>
FY	Fiscal Year
GAO	Government Accountability Office (previously General Accounting Office)
GSA	General Services Agency



IRB	Institutional Review Board
MCI	Monterey Consultants Incorporated
NAVICP	Naval Inventory Control Point
OCONUS	Outside the Continental United States
OFPP	Office of Federal Procurement Policy
OMB	Office of Management and Budget
PD	Power Distance
PEOU	Perceived Ease of Use
PU	Perceived Usefulness
RFP	Request for Proposal
SAF/AQC	Secretary of the Air Force for Acquisition
TAM	Technology Adoption Model
UA	Uncertainty Avoidance
USAAVE	United States Army Auction and Valuation Engine
USAF	United States Air Force
USD(AT&L)	Undersecretary of Defense/Acquisition, Technology & Logistics



I. Introduction

A. Background

Over the past decade, the growth of information technology—specifically the internet—has fundamentally changed how consumers communicate and conduct business on a global scale (Friedman, 2005). Some historians believe the spread of e-commerce is comparable to innovation along the lines of the steam engine, telephone, and television (Turley, 2002). Moreover, while this shift to e-commerce continues to spread to undeveloped areas of the world, the impact of technology’s footprint remains unclear. What we do know is that e-commerce has changed and will continue to change business-to-business (B2B) and business-to-consumer (B2C) interactions fundamentally. Perhaps nowhere is this transformation more pronounced than in the manufacturing industry, where companies like General Electric have turned to innovative e-commerce strategies to reduce the cost of goods and services they procure (Trent & Monczka, 2003). One such strategy involves using online sourcing tools such as electronic reverse auctions (e-RA) to maximize supplier competition. Over the past decade, e-RAs have received both academic and practitioner attention.

B. How e-RAs Work and Why They Matter

Generally defined, an e-RA is “an online, real-time dynamic auction between a [single] buying organization and a group of suppliers who compete against each other to win the [buyer’s] business” (Beall et al., 2003, p. 8). E-RA essentially works “like eBay in reverse” (FedBid, 2009, January, p. 2), with multiple suppliers simultaneously bidding down the amount they will charge a buyer for providing a good or service. This differs from the traditional “forward” auction, like eBay, in which multiple buyers bid the price up until a winner is determined. E-RAs differ from traditional auctions because they allow “immediate bidder feedback and enable geographic and temporal conveniences” (Jap, 2002, p. 512). In layman’s terms, this means that e-RAs allow bidders the convenience



of placing orders over the internet from anywhere in the world, with added benefits of immediate feedback through real-time, transparent bidding. For a discussion on formats, types, and differences between e-RAs and theoretical auctions, see Jap (2002).

The business case for e-RAs is compelling. Studies show buyers can typically save 5%-40% (Tully, 2000)—with an average of 20% (Cohn, 2000)—on the cost of goods and services they procure by allowing multiple bids per offeror, versus the typical one-proposal (or limited exchanges) currently used in government contracting. This mechanism creates significant savings because vendors are able to respond with successive downward bids until the lowest-cost vendor prevails. Other benefits include the reduction of award cycle-time by up to 40% (Beall et al., 2003), increased bidding transparency, and higher price visibility (Kaufman & Carter, 2004; Schrader, Schrader & Eller, 2004; Smart & Harrison, 2002). Given these savings, it is no surprise that 31% of firms reported using e-RAs as one tool in their mix of strategic sourcing strategies¹ (Amelinckx, Muylle & Lievens, 2008), and the trend is growing (Sorcity, personal communication, March 26, 2009; Hawkins, Gravier & Wittmann, forthcoming). The data in Table 1 indicates a recent growth trend in the e-RA industry.²

Table 1. 2009 e-RA Growth Trends
(Sorcity, personal communication, March 26, 2009)

CATEGORY	CHANGE
Unsolicited Interest in E-bidding from Organizations	Up 440%
Change in Average e-RFQ Dollar Value	Up 150%
Solicited Interest in E-bidding from Organizations	Up 20%
Change in Average Savings Achieved to 23%	Up 5%

¹ Data current as of 2006.

² Details of the growth data did not include market segments or areas of growth.



Some researchers, however, suggest e-RAs might damage the buyer-supplier relationship (Jap, 2002; 2003; 2007; Jap & Haruvy, 2008; Emiliani, 2004; Carter et al., 2004). This could include the erosion of trust through perceived opportunistic buying behavior (Smeltzer & Carr, 2002; Jap, 2002; 2003; Nair, 2005; Gattiker, Huang & Schwarz, 2006; Tassabehji, Taylor, Beach & Wood, 2006). Such erosion of trust may outweigh the monetary benefits associated with e-RAs and invite retaliatory pricing or poor supplier performance (Jap, 2002; Carter et al., 2004). These criticisms, to an extent, remain largely speculative because researchers who have studied relational impact have not found supporting evidence that e-RAs negatively impact the buyer-supplier relationship (Jap & Haruvy, 2008). Other researchers point out that not all transactions are suitable, desirable, or efficient for establishing relational exchange (Kraljic, 1983; Smart & Harrison, 2002). Companies often employ a portfolio approach towards strategic sourcing in which companies adjust their procurement strategy based on the criticality of the item or service and its supply risk (e.g., availability of suppliers). Under Kraljic's framework (1983), companies' relational exchange becomes more important as the criticality of the item increases and the availability of capable suppliers decreases. When the end item is of low value and when many capable suppliers are willing to compete, efficient, non-relational mechanisms are appropriate (Kraljic, 1983). Regardless of their stance on e-RAs, many academicians feel e-RAs are here to stay (Jap, 2002; Sashi & O'Leary, 2002; Schoenherr & Mabert, 2007).

C. Federal Application of e-RAs

In early 2000, the DoD took note of e-RA savings and conducted research and pilot programs to determine whether e-RAs conflict with the regulations and laws governing Federal acquisitions (SAF/AQC, 2001; Turley, 2002; Brown & Ray, 2007). Initial success prompted the Navy and Army to develop e-RA applications and policy in order to leverage industry for commercially available, low-dollar commodities. The Air Force, however, took a different approach in



2001 by 1) acknowledging e-RAs as a pricing tool and 2) decentralizing the USAF's use of e-RA use as a judgment call by individual contracting officers (COs) in the field without providing training (SAF/AQC, 2001; Turley, 2002). As a result, United States Air Force (USAF) COs, already burdened by the operational tempo in Iraq and Afghanistan and downsizing (Commission, 2007), rarely used e-RAs in procurements, while other Federal agencies more readily employed e-RAs, saving millions and exceeding socioeconomic goals (FedBid, 2009, January). One exception involves the USAF's use of an e-RA to procure generators in Kuwait.

On March 17, 2008, members of a USAF expeditionary contracting unit (ECONS) stationed in Kuwait ventured into uncharted territory by being the first military unit to conduct an e-RA in the Middle East. Using a two-step, lowest-priced, technically acceptable (LPTA) source-selection methodology, local firms were first prequalified based on technical acceptability, then were invited to compete based on price during an e-RA to determine the winner. The result was a 19.9% savings, totaling \$395,000. Subsequently, contracting personnel were praised by the media for their innovative approach (McCree, 2008)³ and by their military commanders in performance reports.

D. Purpose of Research

The purpose of this work is twofold. First, the research addresses a gap in the knowledge base centered on the cultural implications associated with e-RA usage (Jap, 2002) in the Middle East, specifically in Kuwait. This is an important area of e-RA research because "as business markets become more global, procurement strategies will also become more global" (Jap, 2002, p. 521). Furthermore, researchers point to the rapid diffusion of e-RA use through Europe, Asia, and Latin America as an important trend (Jap, 2002); e-RA

³ To our knowledge, a B2B e-RA has not been attempted yet, which indicates a void in both practitioner data and academic application to this region.



managers need to better understand sourcing across a variety of cultural contexts (Jap, 2003). According to Jap (2003), each country brings its own set of unique (national) characteristics that affect how an event should be managed. Since an increasing rate of internet diffusion and Western influence is spreading across the Middle East, an e-RA held in Kuwait brings myriad cultural, political, technical, and economic implications to the table. Furthermore, the success of this event—given Kuwait’s high uncertainty avoidance (UA) and high power distance (PD)—suggests an innovative technology-based procurement (a risky venture) should not have been possible (Parboteeah, Parboteeah, Cullen & Basu, 2005). Yet for some reason, in this particular event, the Kuwaiti vendors overcame their natural aversion to risk and participated. Armed with insight from this study, more buying activities across the DoD may be able to reproduce the 19.9% savings obtained during the focal e-RA of this case study.

The second purpose of this study addresses a practical need centering on e-RA use within the DoD as a strategic sourcing tool. We use the USAF’s application of an e-RA to procure generators as a case (i.e., the unit of analysis) to explore how the DoD can incorporate e-RAs into its increasing efforts to strategically source goods and services as a matter of policy, thereby (1) easing the learning curve for individual COs, (2) maximizing e-RA use where it is appropriate and (3) saving substantial taxpayer dollars. In recent years, congressional and executive agencies criticized the DoD for failing to take a strategic approach to improve DoD acquisition (GAO, 2002). In 2003, the General Accounting Office (GAO) called for high-level attention to transform the DoD’s acquisition of commercial goods and services. According to the report, the broad scope of this effort should reduce purchasing costs through a more strategic approach using commercial best practices (GAO, 2003). The Office of Federal Procurement Policy (OFPP) also weighed in, citing e-RAs as an industry *best practice* that maximizes competition and serves as a model to maximize the DoD’s return on investment (OFPP, 2008). This call for reform echoed earlier guidance from the Office of the Under Secretary of Defense, Acquisition,



Technology and Logistics (USD(AT&L)) (2006), to improve acquisition by instituting commercial best practices, the use of appropriate contracting techniques and approaches, and enhanced training in order to improve the effectiveness of DoD contract management (USD/AT&L, 2006). Given the backdrop of business transformation and strategic sourcing, the memo suggests e-RA is one “commercial best practice” that can answer these calls for action (USD(AT&L), 2006, p.2). This research facilitates agencies meeting these calls for action by providing the following:

- A *Federal Acquisition Regulation (FAR)*-compliant process explaining how to integrate e-RAs into source selections—both globally and domestically.
- A spend analysis of USAF FY07-08 data that highlights potential savings from e-RA use—both domestically and globally.
- A comprehensive model for contracting officers to use as a decision-making tool for developing an acquisition strategy.

E. Problem Statements and Research Questions

The internet is changing how companies and Federal entities source goods and services. Even with new e-commerce tools like e-RAs producing substantial price savings and process-efficiency improvements, a better understanding of the long-term impact and ability of these e-commerce tools to deliver these savings in emerging markets is needed. This work centers on the following six research questions:

- RQ1: What are the cultural implications of e-RA use in the Middle East?
- RQ2: How should contracting officers identify and implement potential e-RA candidates? What process would they use?
- RQ3: How can contracting officers identify and mitigate procurement risks specific to e-RAs?
- RQ4: How can contracting officers identify and overcome structural barriers to effect successful e-RA implementation?
- RQ5: What are the potential cost savings of using e-RAs domestically and in the Middle East?



- RQ6: How do subcontractors in the Middle East perceive e-RAs, and what are the possible long-term repercussions for use?

F. Methodology

We chose to use several qualitative methods to investigate the research questions because of the diverse applied and theoretical elements of this research. Understanding and explaining the cultural phenomenon necessitated the development of grounded theory (Glaser & Strauss, 1967; Charmaz, 2006). Given only one known case of e-RA use in the Middle East, we blended the grounded theory method with Yin's (2009) case study methodology. The remaining, more applied research questions were addressed using spend analysis (Pandit & Marmanis, 2008) and the case study method. The theoretical portion of our research addresses the knowledge gap surrounding research question number one: "What are the cultural implications of e-RA use in the Middle East?" According to Yin (2009), a qualitative, case-study methodology is appropriate when three conditions exist: (1) The research question is exploratory in nature and takes the form of a "what" question; (2) the researcher has no control over the behavioral events being researched (i.e., cannot manipulate behaviors then measure results as in a controlled experiment), and (3) the focus is on contemporary events (p. 8). Our research met all three of these criteria because first, the research question attempts to explain the cultural phenomenon of e-RAs using "what" terminology. Second, we had no influence over the behavior of e-RA participants or the outcome of the event. And finally, an e-RA is a contemporary tool used in B2B transactions. Furthermore, case-study research is particularly useful when researchers need to provide insight and depth to a "unique phenomenon" (Ellram, 1996, p. 98; Yin, 2009). To our knowledge, the USAF procurement for generators was unique because it was the only e-RA conducted in the Middle East by a DoD buying activity.

To add support to our claims of new knowledge surrounding national culture and e-RA use, we followed field-tested procedures for developing grounded theory (Glaser & Strauss, 1967; Corbin & Strauss, 1998; Charmaz,



2006). Theories explain why a certain phenomenon occurs. “Theory emphasizes the nature of causal relationships, identifying what comes first” (Sutton & Staw, 1995, p. 378). “Strong theory [...] delves into underlying processes so as to understand the systematic reasons for a particular occurrence or nonoccurrence” (1995, p. 378). Simply stated, “a good theory explains, predicts, and delights” (1995, p. 378).

The case study and grounded-theory methodologies may use a combination of direct and indirect observation, as well as interviews, to collect data (Glaser & Strauss, 1967; Ellram, 1996). Typical examples cited in methodology literature include semi-structured interviews, structured surveys with scales, audio recordings, and content analysis of historical documents (Miles & Huberman, 1994). One of the strengths of case-study research is that researchers can examine multiple sources of evidence as a “converging line of inquiry” to corroborate stories of participants, ultimately leading to more accurate findings (Yin, 2009, p. 116). Yin refers to this process as “triangulation from multiple sources of data,” such as observations, transcribed interviews, and archival data (e.g., e-mail correspondence, contractual documents, letters) (p. 116). Triangulation is particularly helpful when only a single case is used in order to maintain construct validity because researchers are limited to opposing viewpoints (Yin, 2009). To address this, we collected interview data from the entire logistic chain involved in the e-RA. This included the e-RA service provider, the USAF buyer, Kuwaiti sellers, a first-tier subcontractor, the end-user, and Air Force Central Command (AFCENT) leadership. Semi-structured, open-ended questions were developed and approved by the NPS Institutional Review Board (IRB) to ensure compliance with laws regarding the protection of human subjects.

To aid data analysis, we used a combination of open and axial coding to organize and understand qualitative, textual data collected during face-to-face interviews while “safeguarding against tunnel vision, bias, and self delusion”



(Miles & Huberman, 1994, p. 56). The use of qualitative, data-analysis software is recommended by leading case-study researchers (Yin, 2009); therefore, we used MAXQDA version 2007 R200809-ENG. The MAXQDA software is a qualitative data analysis tool that enables researchers to combine all interview and archival data within one master file, then analyze the data with built-in coding and pattern-matching tools designed to help uncover causal relationships.

In addressing the applied research questions, we first reviewed relevant Federal rules, policy, history and guidance regarding source selection, strategic sourcing, and e-RAs in order to better understand the dynamics at play within the Federal Government. Next, we gathered and analyzed Air Force FY08 spend data and that of AFCENT in order to determine how much spend is appropriate for e-RA sourcing. Using commercial benchmarking and DoD spend data as a guide, we then estimated potential savings and created a *FAR*-compliant process for contracting officers to use both for simplified (i.e., *FAR* Part 13) and formal procurements (*FAR* Part 15). We also examined prescribed source-selection processes, industry best practices surrounding e-RA use, and bid protest decisions in order to address the applied research questions.

G. Theoretical Implications

Most of what we know about e-RAs comes from qualitative and quantitative research based on transactions in the US, Europe, Asia, or Latin America (Jap, 2002). Therefore, we do not fully understand how e-RA adoption, use, and outcomes are affected by national culture in regions with high cultural differences from Western cultures such as the United States. Our goal is to provide insight into cultural implications of e-RA by refining e-RA and technology-adoption theories in (1) explaining idiosyncratic cultural differences and (2) facilitating wise decisions regarding e-RA application. Therefore, this study will advance the frontier of knowledge regarding the e-RA phenomenon. Ultimately, we enhance existing e-RA theory—specifically with respect to the effects of national culture on e-RA use.



H. Management Implications

As industry members and Federal agencies expand their sourcing efforts globally, success will likely depend on how well firms recognize, identify, and execute appropriate sourcing strategies. What works in one country may not work well in another due to cultural differences. For example, when exchange partners come from countries with a national culture that values group behavior (or collective behavior) and has a low risk tolerance, relationship-building is crucial (Elahee, Kirby & Nasif, 2002). Managers who fail to recognize these dynamics may raise levels of distrust and suspicion of opportunism, ultimately souring the buyer-supplier relationship.

From a practitioner's perspective, in order to capitalize on potential savings and efficiencies, the DoD will need to create policy and guidance that supports the use of e-RA as part of both simplified and formal, negotiated procurements. Focus areas should include the following: (1) a pre-award process, (2) identification of e-RA service providers and their business models, (3) development of sample instructions to offerors and evaluation criteria provisions, (4) identification of e-RA-peculiar protest risks, and (5) hands-on training for contract specialists and contingency contracting officers.

The USAF and the DoD clearly need to provide leadership and training in order to maximize e-RA usage given appropriate circumstances. A failure to implement the reforms listed above will result in contract awards that continue to exceed true market prices for goods and services (a particularly acute problem in contingency operations, in which supporting market research, procurement lead time, and buyer competence are limited). Given that e-RA-derived prices substantially beat those resulting from traditional procurement processes (McCree, 2008), the fairness and reasonableness of non-e-RA-derived prices to the buyer must be called into question.



I. Scope and Limitations

The scope of this effort was limited to the breadth and substance of data available to the members of the Federal Government. Hence, commercial applications of e-RAs were not explored; therefore, the cultural considerations and practical guidance for use revealed by this research may be limited to governmental use of e-RAs. Furthermore, although every effort was taken not to advertise our military association, the suppliers we interviewed were aware of our status as military members and were, therefore, less likely to provide completely unguarded answers to our questions. To counter this conundrum, we interviewed multiple sources across a broad social, political, and economic spectrum. When possible, we also conducted face-to-face interviews to systematically observe non-verbal cues that otherwise would have gone unnoticed. Furthermore, because conclusions are derived from a single case, further research is needed to validate the findings across a spectrum of transactions of varying dollar values, goods and services, complexities, procurement risks, buyer-supplier relationships, and balances of bargaining power.

Finally, we recognize that Kuwait is a melting pot of cultures; a Kuwaiti company representative who is a third-country national may not represent Kuwaiti national values. We addressed this problem by interviewing a cross-section of both Kuwaiti-owned and multi-national corporations and collected demographic information on participants (Table 5, Chapter III).

This work is organized in accordance with standard academic thesis structure but adds practitioner elements addressed in the research questions and objectives. The literature review covers relevant academic and practitioner sources, to include DoD and Air Force procurement, legal, strategic sourcing, and contract management policy. Chapter V incorporates a practitioner guide and decision-making tools and includes a discussion of relevant military contracting issues facing contracting officers. Finally, Chapter VI provides answers to our research questions as well as the theoretical and managerial



implications of increased e-RA use in the DoD and Middle East. Areas for future research are identified, and limitations of our research are addressed. In the next chapter, we explore what is known about auction theory, e-RAs, national culture, and technology adoption and discuss the government rules and regulations surrounding Federal procurement.



II. Literature Review

A. Introduction

This section provides background information pertinent to both the academic and practitioner research questions listed in Chapter I. Accordingly, we have structured this section along those lines. We start with a discussion of auction theory and e-RA appropriateness, then move to a broader discussion of national culture, social norms, technology acceptance, and relational exchange—all relevant theories that are key to understanding the e-RA phenomenon. Together, this spectrum allows us to see a holistic picture of the issues surrounding e-RA use both at home and abroad.

The second half of this chapter discusses the DoD's use of e-RAs and includes the regulatory, structural, policy, training, and legal issues impacting the government's policies toward e-RA use. We also include a review and discussion of GAO protests and USAF lessons learned in source selection that, together, help identify known issues and flag potential issues peculiar to e-RA use in Federal procurement. Finally, this section helps identify the gaps in practitioner knowledge and barriers to implementation within the DoD. We start with an overview of what e-RAs are and why they continue to receive attention.

B. Auction Theory

Reverse auctions have taken off because of internet connectivity, the availability of user-friendly e-RA software, their track record of substantial savings, and their ability to “level the playing field” through real-time, open bidding events (Beall et al., 2003). In addition, while e-RAs are—by name and function—a type of auction, they differ from traditional *forward* auctions in a number of ways from both a practitioner's and an economic theorist's perspective (Jap, 2002).



The difference between forward auctions and reverse auctions is the relationship between buyers and sellers. In theory, an auction is defined as “a market institution with an explicit set of rules determining resource allocation and prices on the basis of bids from market participants” (Jap, 2002, p. 507). In a forward auction, multiple bidders (buyers) place consecutive bids for a good or service offered by a single seller. An example of an online forward auction is eBay, in which a bidder wins by placing the highest bid in a set amount of time. A reverse auction, in contrast, differs in that bidders (suppliers) compete to win a contract to provide a good or service to a single buyer—in this case, the government. Since all participants can see each other’s bid in an online e-RA,⁴ fierce competition results in a downward bidding frenzy; suppliers lower their costs and profit margins in order to beat their competitor’s bid prices.

Auction types vary both in theory and practice. For an overview of the most common types found in economic literature (English/Japanese, Dutch, first-price sealed bid, second-price sealed bid, etc.), see Kaufman and Carter (2004), Milgrom (1989), McAfee and McMillan (1987), Kagel (1995) and Brown and Ray (2007). Unlike physical auctions, e-RAs are unique because they (1) allow bidding from geographically separate locations—a benefit referred to by Jap (2002, p. 512) as “geographic and temporal conveniences,” and (2) they provide immediate bidder feedback, all over the medium of the internet (Jap, 2002). This difference implies that traditional auction theories may not apply generally to e-RA and that more exploratory research is needed (Jap, 2002).

Some researchers limit the use of e-RAs to commodities and commodity-like items—suggesting that e-RAs are limited and should be used sparingly, if at all, due to their coercive nature and long-term relational impacts (Emiliani & Giampetro, 2007). Others, however, point to the supply complexity and criticality of the item or service itself and suggest using e-RAs for items whose supply

⁴ Also referred to as “ORA” in e-RA Literature.



complexity is low (i.e., ample supply) and whose criticality (i.e., dollar value or importance to organizational performance) is either low or high, such as leverage spend (Beall et al., 2003). They also point out that some companies who used e-RAs initially for direct and indirect goods later expanded their use to professional services, capital goods, and even construction. Other empirical research of 146 *Fortune* 500 firms' use of e-RAs (Hawkins, Randall & Wittmann, 2009) showed a wide variety of goods and services sourced via e-RA (Table 2).

Table 2. Variety of Products and Services Procured with e-RAs
(Hawkins et al., forthcoming)

Description	Description
Magnetic stripe readers	Ingredients
4-oz developer bottles	Janitorial paper supplies
Airbag	Leasing equipment
Aircraft batteries	Life insurance/accidental death
Armored car services	Macromedia software
Autos	Meeting and events
Beef	Multifunction devices – managed print
Blisters	Office supplies
Cable assemblies	Personal computers
Cafeteria/employee breakroom equipment	Plastic credit cards
Casework/built-ins for store	Plastic cups
Chemicals - caustic	Plastic injection molding
Collections agencies	Plastic resins
Compact V2 out door cabinet	Point of sale authorization terminals
Corrugate packaging	Printing paper
Corrugate shippers	Professional services
Cut-sheet paper	Retail air conditioners
Data processing	Retail boxes
Direct mail components (envelopes, etc.)	Security guard services
Direct services to meet customer needs	Security guards
Displays	Server tapes
Drilling service	Sheetmetal chasis
Electricity meters	Soft packaging
Energy - electricity	Software upgrade
Frozen strage	Specialty millwork
Gasoline	Supermarket shelving system
Harnessing	Temp labor, recruitment, etc
HDPE pipe	Trade show services
IBM P. series servers	Transportation

C. Use and Appropriateness of e-RAs

The appropriateness of e-RA use is defined as “the degree to which a sourcing professional views the use of an e-RA as a fit between the attributes of



the tool, the specific requirement being sourced, and the supply market” (Hawkins et al., 2009, p. 56). Increasingly, both academicians and practitioners across a diverse section of international markets (to include the Federal Government) have focused on e-RA appropriateness because not all studied e-RAs achieved desired results. Thus, by assessing e-RA appropriateness, researchers can identify the contextual circumstances in which e-RA use is more likely to lead to success of the auction (increased total savings and procurement lead-time reduction) (Hawkins et al., 2009).

A review of 27 peer-reviewed publications on e-RAs identified 48 different antecedents (or motivational factors) for e-RA use (Hawkins et al., forthcoming). Through empirical testing, research has shown statistical significance in how procurement managers decide which requirements are appropriate for sourcing via e-RA. The antecedents were identified as follows (Hawkins et al., 2009):

- The *specifiability* of the requirement (meaning how concretely that requirement can be specified in writing for suppliers during the RFQ process),
- The expected level of competition,
- Leadership influence, and
- A price-based selection criteria.

Regarding price-based selection criteria, other researchers point out that while price is an important factor in e-RA appropriateness, buyers who feel that non-price factors (e.g., delivery lead-time, quality, and warranty) are also important can include non-price evaluation factors into what academicians refer to as a multi-attribute auction (Hawkins et al., 2009). The ability to use both price-only and multi-attribute evaluation strategies allows firms to use e-RA for three of four types of spend (Kraljic, 1983)—excluding *strategic* spend, in which the high value and high complexity of the requirement make partnerships and alliances more appropriate (Beall et al., 2003). The other three spend categories that are appropriate for e-RA use include *non-critical* (low spend, low criticality), *leverage*



(high spend, low criticality), and *bottleneck* (low spend, high complexity) (Kraljic, 1983). Beall et al. concluded that:

For a growing number of buying firms, e-RAs have found an appropriate niche in their strategic sourcing toolkit, allowing them to efficiently source goods and services that are highly standardized, have sufficient spend volume, can be replicated by a reasonable number of qualified competitors, and have insignificant switching costs. In contrast, the research indicates that those suppliers of strategic items, where alliance-level supplier relationships are critical, are usually not subjected to e-RA sourcing. (2003, p. 60)

Another reason for the recent interest in e-RA appropriateness is that academicians disagree on when e-RA use is appropriate and on how improper e-RA use may impact the buyer-seller relationship. The concern is whether short-term savings outweigh potential long-term consequences. Some view e-RAs as technology-assisted “power-based bargaining” techniques that create distrust and invite retaliatory pricing or fail to account for the total ownership cost (Emiliani, 2004). Others fear long-term supplier-buyer relationship erosion (Jap, 2002; 2003; 2007; Jap & Haruvy, 2008) because regardless of design and execution, some suppliers feel buyers use the tool opportunistically (Jap, 2003) to squeeze supplier profit margins and overhead to a breaking point (Wagner & Schwab, 2004). Regardless of their stance, most researchers agree that e-RAs will remain as one tool in a strategic sourcing toolbox (Jap, 2002; Kaufman & Carter, 2004; Sashi & O’Leary, 2002) but disagree on how and to what extent e-RAs should be used. And while pro and con arguments are compelling, it is worth noting that very little empirical research finds evidence to support a causal link to relationship degradation (Jap, 2007).

Regardless, a well-planned and executed event that meets the criteria above can return costs savings of 5%-40% (Tully, 2000) and can reduce cycle-time up to 40% by eliminating time-consuming marketing efforts, time in negotiations, and processing time for proposals (Beall et al., 2003; Smeltzer & Carr, 2002). This is important because, on average, manufacturing firms spend



55% of their revenue on goods and services (Monczka, Trent & Handfield, 2002). Double-digit, bottom-line cost savings suggest that a properly structured and executed e-RA may help a company gain a competitive advantage over competitors who use traditional procurement strategies (Mabert & Skeels, 2002). Because of these savings and efficiencies, e-RAs have begun to replace traditional procurements for some goods and services (See Appendix A).

D. National Culture

Academics disagree on the definition of national culture (Srite, 2000). In fact, Kroeber and Kluckhohn (1952) found over 150 different definitions during a classic study of culture. For the purpose of this study, we use a basic definition derived from Hofstede's (1980) famous cross-cultural study because it is 1) relevant to the e-RA discussion, and 2) widely cited by academics (Srite, 2000). According to Hofstede, culture is "the programming of the mind which distinguishes the members of one human group from another" (1980, p. 43). Culture is further broken down into four distinct dimensions: individualism/collectivism, power distance, uncertainty avoidance, and masculinity/femininity (1980). Much of our research incorporates these dimensions; thus, a brief description of each is warranted.

Individualism/collectivism (IC) describes how individuals in a society define themselves (Hofstede, 1980). Kuwait scored low, with a score of 38 in individualism (Hofstede, 1980; At-Twajiri & Al-Muhaiza, 1996), suggesting that an individual's ability to succeed on merit is less important than succeeding as a collective unit, team or group. It also means that individuals (or cultures) who value collectivism, value the relationship-building aspect of succeeding as a group (Elahee et al., 2002). One downside of this collective trait is that collective groups are trusting and empathetic to each other, but they will do whatever they can get away with to outsiders (Triandis & Vassiliou, 1972).



Power distance (PD) is “the extent that large differentials of power, and therefore inequity, are accepted in a culture” (Srite, 2000, p. 34) and can be due, in part, to birthright. In some cultures, men are entitled to more power than women. Kuwait’s score of 80 was high in this category, which implies that employees will follow a supervisor’s directive simply because he or she is the boss (Hofstede, 1980; At-Twajiri & Al-Muhaiza, 1996). As with collective societies, relationship-building is also important because high-PD cultures often have higher rates of coercion and opportunism than countries with small PD (Elahee et al., 2002).

Uncertainty avoidance (UA) is defined as “the level of risk accepted by a culture, which can be gleaned by emphasis on rule obedience, ritual behavior, and labor mobility” (Srite, 2000). With a score of 68, Kuwait ranks relatively high in UA (Hofstede, 1980; At-Twajiri & Al-Muhaiza, 1996; Parboteeah et al., 2005), suggesting that Kuwaiti businessmen place a high value on formal rules to overcome risk. Since e-RA sourcing is new, uncertainty surrounds its use. Specifically, some studies point to both buyer and seller uncertainty about procedures, technology, identity protection, and process integrity—to include procedural fairness (Beall, 2003; Carter et al., 2004). Since Kuwait scores high in uncertainty avoidance, we would expect Kuwaiti businessman to reject e-RA adoption in favor of more traditional negotiations.

Masculinity/femininity (MF) “refers to culture differentiation on the basis of gender and activity” (Srite, 2000, p. 34). Kuwait scores in the middle of this category, with a score of 52 (Hofstede, 1980; At-Twajiri & Al-Muhaiza, 1996), suggesting that men and women are equally likely to share similar categories of employment (Srite, 2000). According to Srite, low-masculinity (high-femininity) cultures value a pleasant, non-threatening work environment.

In 1996, a second study of Gulf Coast countries was conducted to test (and update) Hofstede’s findings (At-Twajiri & Al-Muhaiza, 1996). A side-by-side comparison of scores (see Table 3) indicates that UA has increased significantly,



while PD, MF, and IC all decreased. Implications of these findings are discussed under Section E.

Table 3. Cross-cultural Comparison of National Culture Dimensions
(After At-Twajiri & Al-Muhaiza, 1996 ; Hofstede, 1980; 2009)

Dimension	Hofstede, 1980 (Arab World)	At-Twajiri & Al- Muhaiza, 1996 (Kuwait)	Hofstede, 2009 (USA)
UA	68	103	46
PD	80	51	40
IC	38	31	91
MF	53	43	62

Given the cultural distance between the US and Kuwait, one would expect to encounter difficulties implementing e-RAs where the buyer is from the former and the suppliers are from the latter. Some researchers believe that greater cultural difference increases opportunism from the trading partner (Lee, 1998), which, in turn, decreases the level of trust and relational exchange between partners (Jap, 2003; Morgan & Hunt, 1994). In research centering on international negotiations, researchers found that managers who deal with high-PD and high-UA cultures need to pay attention to culture and engage in trust-building measures (Volkema, 1997; 1999) and build relationships (Volkema, 1997; 1999; Elahee et al., 2002).

The research cited above suggests that Arabs would choose not to participate in an e-RA, but—in at least in one case—they did. Clearly, more research is required, and academics agree that theoretical models are needed that include national culture variables to explain technology adoption (Parboteeah et al., 2005).



E. Technology Adoption Model (TAM)

Over the past 25 years, numerous models and theories have been widely used to study and explain technology adoption across a variety of different national cultures. Three of the most-cited theories include the Technology Adoption Model (TAM) (Davis, 1989), the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980), and the Theory of Planned Behavior (TPB) (Ajzen, 1991). Of the three, TAM is cited over 1,500 times by researchers because of its flexibility, reliability, and proven validity (McCoy, Galleta & King, 2007). We elected to use TAM for two reasons. First, TAM is an “adaption” of the TRA that focuses on information technology (IT) adoption to the user level (Davis, Bagozzi & Warshaw, 1989). Secondly, a growing number of researchers have already used TAM in conjunction with Hofstede’s dimensions to explore cross-cultural IT adoption. Figure 1 is a snapshot of this model and is followed by a discussion describing its central tenets and e-RA applicability.

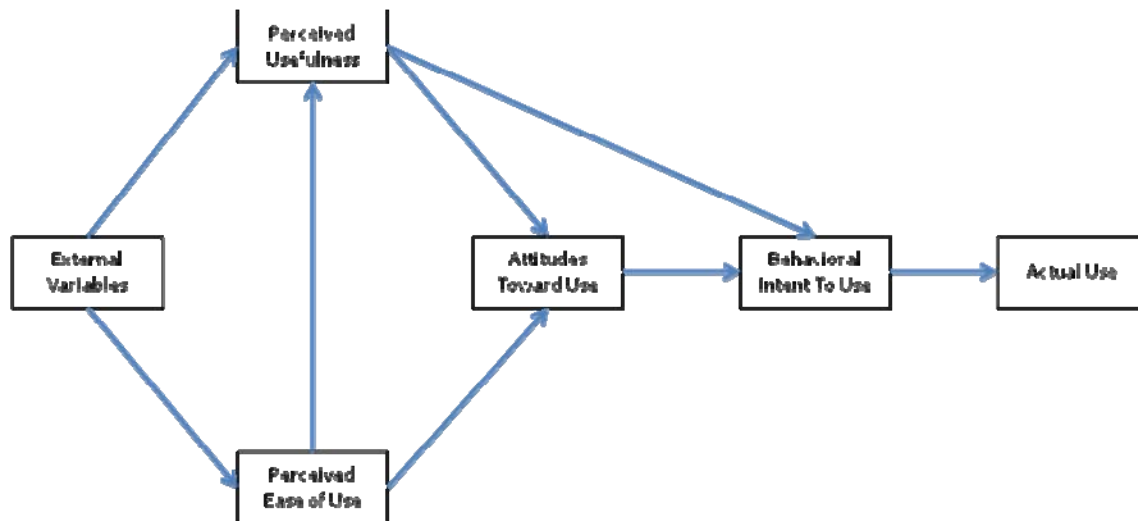


Figure 1. Technology Adoption Model (TAM)
(Based on Davis et al., 1989)

TAM centers on two constructs: (1) perceived usefulness (PU) and (2) perceived ease of use (PEOU). Davis et al. (1989) define PU as “the prospective user’s subjective probability that using a specific application [like e-RA] will



increase his or her job performance within an organizational context” (p. 320). PEOU, on the other hand, is defined as “the degree to which the prospective user expects the target system to be free of effort” (Davis et al., 1989, p. 320). As depicted above, external variables affect both PU and PEOU. In turn, PEOU influences an individual’s expectation of implementation effort. Together, PU and PEOU affect an individual’s attitude toward technology adoption and, ultimately, his/her behavior and actual use (Ajzen & Fishbein, 1980). With e-RA use in the Middle East lagging the US, Europe, and Asia (Jap, 2003) and a current internet diffusion rate of 30% (Business Monitor International, 2008), we wonder just how feasible e-commerce is in the Middle East.

Over the years, a number of studies have incorporated elements of TAM and Hofstede’s national culture components to try to understand e-commerce/technology diffusion in the Middle East. A discussion of key study findings in three noteworthy studies is provided in Figure 2 and is presented visually for a clearer picture of the points of each model.

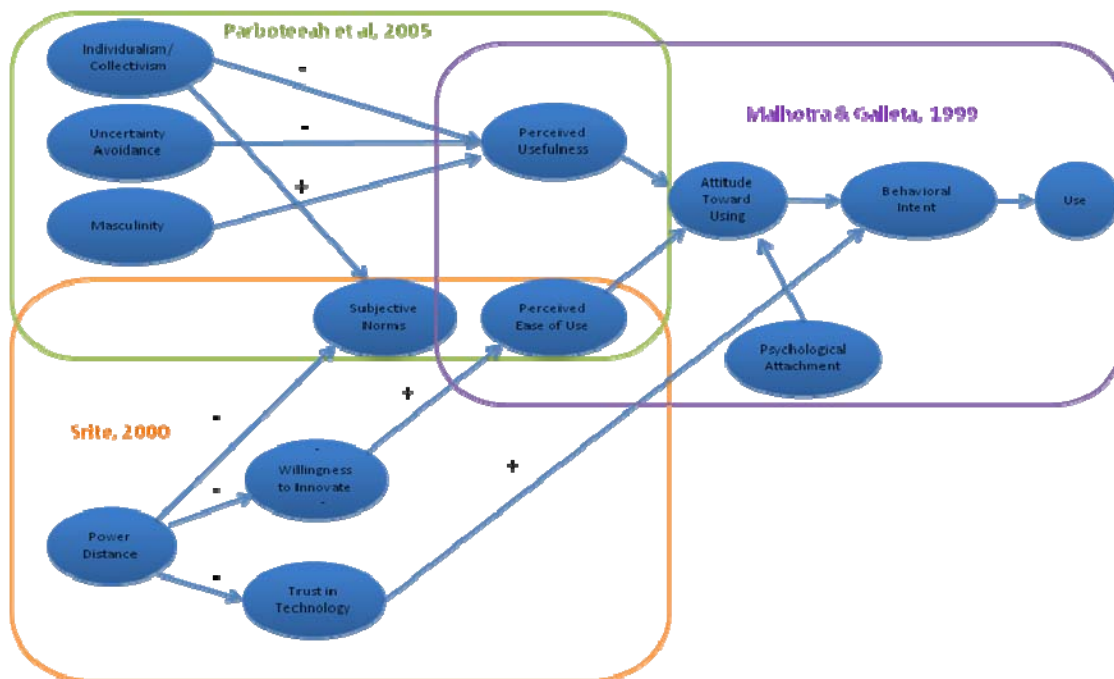


Figure 2. Cross-model Comparison



In 2000, in his empirical study of the influence of national culture on the acceptance and use of information technologies, Srite discovered that as PD increases, an individual's willingness to innovate and trust in technology decreases. Using the TAM framework, Srite also found that a high willingness to innovate increased PEOU and that a high trust in technology increased an individual's behavioral intent to use technology. These findings suggest that nations with high PD will resist innovative technology because they do not trust it and because, intrinsically, they are not willing to innovate. However, Srite (2000) found a positive relationship between trust in technology and an individual's behavioral intent to use technology. Finally, Srite found that high PD negatively impacted an individual's subjective norms, which directly impacts how that individual perceives the usefulness of new technology.

Other studies illustrated in Figure 2 found that high UA scores decrease how individuals perceive the usefulness of technology (Parboteeah et al, 2005). Since Kuwait scored high in UA, we would expect suppliers to perceive e-RA as a risky venture and avoid it in favor of traditional procurement processes. Parboteeah et al. (2005) also found that 1) countries with high individualism scores also were likely to not perceive innovative technology as useful, and (2) high *masculinity* scores increased PU. Since Kuwait scored low in individualism (31 points) and average in masculinity (43 points), we would expect Arab suppliers not to view e-RA as useful.

In 1999, researchers again added an additional construct, psychological attachment, in order to try to explain how a person's psychological connection to technology would affect his/her attitude towards use. Their results indicate a negative relationship between forced compliance and an individual's attitude towards using technology. This suggests that forcing Kuwaitis into an e-RA could negatively impact their attitude towards participation in the future (Galleta & Malhotra, 1999). Taken one step further, a negative attitude could then discourage behavioral intent to use and prevent actual use.



F. Relational Exchange

In 1980, MacNeil introduced Relational Contract Theory (RCT), which highlights a need for relationship-building as a matter of contracting methodology. At the center of his theory are 10 norms, which help define business contracts in terms of solidarity (trust), reciprocity, and cooperation (MacNeil, 1980). Berry (1983) expanded on RCT by introducing relationship marketing, which he defined as attracting, maintaining, and enhancing customer relationships.

In 1994, a new relational theory—the Commitment-trust Theory (CTT)—was introduced. This model placed “commitment” and “trust” as key mediator variables for relationship-building (Morgan & Hunt, 1994). Trust was defined as “when one party has confidence in an exchange partner’s reliability and integrity” and commitment as “an enduring desire to maintain a valued relationship” (Morgan & Hunt, 1994, p. 23). The CTT acknowledges the role of power as a moderating factor, but its theorists claim that successful relationships hinge on the basic desire for businesses to reduce vulnerability by seeking out trustworthy partners (1994). Some academics argue that e-RAs deteriorate the level of trust between partners; such trust acts as a non-contractual governance mechanism against nefarious or opportunistic behavior (Jap & Haruvy, 2008). Opportunistic behavior, according to Jap (2003), is defined as “self-interest seeking with guile [...] and is synonymous with misrepresentation, cheating, and deception and subsumes a range of misbehavior, such as adverse selection, moral hazard, shirking, sub goal pursuit, agency costs, and free riding” (p. 98). According to Jap (2003), e-RA use results in the supplier’s perception of increased buyer opportunism and, therefore, may poison the buyer-seller relationship (p. 105).

Given the emphasis relationship marketing places on trust and commitment, it is no wonder that e-RA research identifies the potential deterioration of the buyer-seller relationship (due to the transactional nature of the e-RA) as a significant barrier to use (Beall et al., 2003; Carter et al., 2004;



Smeltzer & Carr, 2003; Jap, 2003; Emiliani, 2004; 2005). Some studies suggest that sellers automatically view a buyer's decision to use an e-RA as opportunistic, which leads to distrust and relationship deterioration (Jap, 2003; Emiliani, 2004; Carter & Stevens, 2007). If the supplier's relationship orientation is long-term and if they expect commitment and trust, then use of an e-RA most certainly sends mixed messages to vendors.

Academics disagree on just how much e-RAs impact the buyer-seller relationship. Emiliani and Stec (2005) argue that e-RAs are incompatible with objectives of improving long-term aspects of trade. Emiliani and Stec also call for e-RA codes of conduct to stem opportunistic buyer behavior. E-RA proponents disagree and suggest that close, collaborative relationships are not always needed—especially when there are a high number of competitors and the complexity of the product or service is low (Smart & Harrison, 2002). Increasingly, academicians and practitioners see ways to find a middle ground through more complex multi-attribute auctions that allow buyers to evaluate non-price factors, such as delivery time and warranty (Talluri & Ragatz, 2004; Hawkins et al., forthcoming). These auctions allow suppliers to offer a variety of possible bid combinations within a predetermined, acceptable range (Bichler & Kalagnanam, 2005).

G. DoD's Use of e-RAs

1. History

Attracted by success in the commercial sector, in May 2000, the US Navy launched the first Federal e-RA with the assistance of a third-party, commercial e-RA provider. That same month, the Army's Communication-electronics Command (CECOM) launched two e-RA events of its own. The results were compelling. The Navy saved 28%, totaling \$830,000, while CECOM netted savings of 20% and 50%, respectively (DAU, 2009).



In September 2000, the General Service Agency (GSA) launched an e-RA platform of its own called Buyers.gov. While only 212 events were held over the following three months, one buy saved \$2.2 million on a procurement valued at \$10 million (based on an independent government cost estimate) (Turley, 2002). Impressed, officials decided to cancel Buyers.gov in lieu of long-term e-RA service contracts to commercial providers.

Around this same time period, the Defense Supply Center–Columbus launched its own e-RA application called DIBBS to target acquisitions less than \$25,000. Besides the typical 10%-15% (Cohn, 2000) cost savings, DSCC officials observed an 84% lead-time reduction—from 87 days to just 14 (Turley, 2002). By August 2000, DIBBS awards exceeded 4,500 contracts (Turley, 2002). Currently, both CECOM and the Navy offer e-RA services to their commands.

CECOM uses a web-based, self-service application called the US Army Auction and Valuation Engine, or USAAVE. The reverse auctioning tool developed at CECOM provides three formats: simple, multiple-line item and best-value reverse auctions.

The simple format is most commonly used and allows the contractor to submit one contract price, with the lowest overall bid winning the award. Another technique, the multiple-line-item format allows for multiple awards based on the lowest price per line item (also known as cherry picking). The third format, and the least used, is the best-value format, in which non-price parameters are created and given a value and weight. According to the CECOM's e-RA program management, their application, regardless of format, allows DoD buyers to save the 1%-3% service fee charged to the winning bidder by full-service providers. This service is now available to other DoD buyers for no fee through a memorandum of understanding (M. Meinert, personal communication, July 14, 2009). Tutorials and information regarding the CECOM platform are available at CECOM's website (<https://abop.monmouth.army.mil/>).



The Navy also offers a self-serve desktop application created and maintained by Procuri of Atlanta. Like the Army, the Navy's use of e-RA is limited to commercial commodities under *FAR* Part 13 procedures, but no regulations mandate use. Non-Navy members may use the software for a negotiated fee, and the auctioning application is managed by the Defense Supply Center, Philadelphia (DSCP).

In addition to these services, two companies who contributed to this project also provide full-service e-RA support. FedBid, Inc., provides full service e-RA capability for Federal agencies on a fee-for-service model in which the winning supplier pays FedBid's fee. Awards cover 661 different Federal Product Codes (FSC) and Supply Service Codes (PSCs) (Appendix A), mostly covering simple, low-value commercial commodities and services (FedBid, 2009, November). Sorcity, Inc., the e-RA service provider for the Air Force's procurement of generators in Kuwait, also provides full-service support and specializes in deep commodity expertise across many business sectors and across global supply channels. Sorcity, Inc., can support complex procurements and also employs a business model in which the successful offeror pays Sorcity's fee—typically between 0.5%-1.95% of the sale (Sorcity, personal communication, November 21, 2009).

Despite cost and cycle-time savings available from e-RAs, the DoD has failed to set uniform e-RA policy, goals, or metrics, despite pressure from executive and congressional leadership to reduce costs through strategic-sourcing commercial best practices (OMB, 2009; OFPP, 2008). This slow adoption/usage rate remains unexplained, but may be due to a lack of leadership, a lack of training, a lack of e-RA awareness, structural barriers—such as a lack of or unknown access to e-RA service providers and their e-RA software applications—and the DoD's lack of accountability for minimizing total ownership costs (GAO, 2000).



2. Legality

E-RA use is not contrary to Federal procurement statute and public policy (SAF/AQC, 2001; Turley, 2002); however, contracting officers need to be aware of critical arguments. All Federal acquisitions are governed by the *Federal Acquisition Regulation (FAR)*, *FAR* supplements, statutes, and case law. In 1997, the *FAR* (Chapter 15–Negotiate Procurements) was re-written, and language forbidding auctions as a pricing tool were removed from *FAR* 15.602(e)(2). While the re-write did not specifically mention reverse auctions as an accepted contracting method, language in section *FAR* 1.102(d) gave contracting officers more latitude to use emerging technology. It states:

The role of each member of the Acquisition Team is to exercise personal initiative and sound business judgment in providing the best value product or service to meet the customer’s needs. In exercising initiative, government members of the Acquisition Team may assume if a specific strategy, practice, policy or procedure is in the best interests of the government and is not addressed in the *FAR*, nor prohibited by law (statute or case law), Executive order or other regulation, that the strategy, practice, policy or procedure is a permissible exercise of authority. (General Services Administration, 2005)

While this section certainly gives contracting officers broad discretion, military legal reviews point to *FAR* section 14 (sealed bidding) as a problematic area in regards to e-RAs. According to Turley, the current language regarding bids describes a one-bid-per-offeror format. Because e-RA involves multiple successive bids, an e-RA issued under sealed bidding rules could be considered illegal. For that reason, FedBid and the CECOM follow *FAR* 13 and *FAR* 15 rules for procurement (discussed below in Section D).

Other skeptics point to language in the *Procurement Integrity Act (PIA)*, which “prohibits anyone acting on behalf of the government from knowingly disclosing a contractor’s bid or proposal before the contract award” (Turley, 2002, p. 16). In order to address this issue, Army contracting officers and third-party e-RA providers require prospective bidders to enter a disclosure agreement as part of a pre-qualification process. And while this step seems prudent, case law



discussed below suggests that the contractor's decision to participate is, in itself, an implied agreement to disclose information. Thus, according to case law, a written agreement might not actually be necessary in terms of protest mitigation (Brown & Ray, 2007).

In closing, while e-RA does not directly violate any Federal procurement regulations or statutes, critics raise valid concerns of which contracting officers need to be aware when contemplating e-RA use, if they are to mitigate the risk of a protest. One way to gauge relevant legal concerns is a historical review of protest literature.

3. Regulations

According to the Defense Acquisition University (2009), other significant FAR changes also encourage e-RA use within the defense acquisition framework. A summary of these sections and their implications are listed below in Table 4.

Table 4. FAR Rules with e-RA Implications

FAR Section	Language	e-RA Implication
FAR 1.102 (d)	"The role of each member of the Acquisition Team is to exercise personal initiative and sound business judgment in providing the best value product or service to meet the customer's needs. In exercising initiative, government members of the Acquisition Team may assume if a specific strategy, practice, policy or procedure is in the best interests of the government and is not addressed in the FAR, nor prohibited by law (statute or case law), Executive order or other regulation, that the strategy, practice, policy or procedure is a permissible exercise of authority."	The FAR does not explicitly prohibit the use of e-RAs; thus, contracting officers are urged to seek out procurement strategies (including e-RAs) that are in the best interest of the government.
FAR 4.5(2)(a)	"The Federal Government shall use electronic commerce whenever practicable or cost-effective. The use of terms commonly associated with paper transactions (e.g., 'copy,' 'document,' 'page,' 'printed,' 'sealed envelope,' and 'stamped') shall not be interpreted to restrict the use of electronic commerce. Contracting Officers may supplement electronic	e-RA falls under the broad category of e-commerce and should be used if the contracting officer determines its use will



FAR Section	Language	e-RA Implication
	transactions by using other media to meet the requirements of any contract action governed by the FAR.”	result in net savings.
FAR 15.002(b)	“ <i>Competitive acquisitions.</i> When contracting in a competitive environment, the procedures of this part are intended to minimize the complexity of the solicitation, the evaluation, and the source selection decision, while maintaining a process designed to foster an impartial and comprehensive evaluation of offerors’ proposals, leading to selection of the proposal representing the best value to the government.”	<p>1.) Simple and multi-attribute e-RAs provide transparent and objective evaluation criteria. COs award contracts quickly and maintain an electronic record of bids maintained as part of the contract file.</p> <p>2) E-RA minimizes complexity in price evaluation by allowing offerors to determine the lowest acceptable price in a minimal amount of time.</p>
FAR 15.306(e)(3);	[The Contracting Officer shall not] “Reveal an offeror’s price without that offeror’s permission. However, the Contracting Officer may inform an offeror that its price is considered by the government to be too high, or too low, and reveal the results of the analysis supporting that conclusion. It is also permissible, at the government’s discretion, to indicate to all offerors the cost or price that the government’s price analysis, market research, and other reviews have identified as reasonable”	<p>1.) If not using rank-order bidding, offerors must willingly disclose their prices in an e-RA, and 2) the e-RA format must not disclose the offeror’s business name.</p> <p>3.) e-RA minimizes complexity in price evaluation by allowing offerors to determine the lowest acceptable price in a minimal amount of time.</p>

In February 2001, the Secretary of the Air Force/Acquisition and Contracting (SAF/AQC) conducted a detailed analysis of e-RA use and found that 17 sections of the FAR (including those listed above) did not conflict with e-



RA use as a “viable pricing tool” to reach “fair and reasonable” pricing in accordance with *FAR* 15.402. Furthermore, SAF/AQC also noted that no *FAR* or statutory changes were needed but that a “rethinking” of *FAR* 14 (sealed bidding) was in order to address the need for consecutive sealed bids (SAF/AQC, 2001, p. 17).

In November 2002, a military law review came to many of the same conclusions. This review cited an October 2000 *Defense Acquisition Regulation (DAR)* council decision not to add e-RA-specific language, based on the following determinations (Turley, 2002):

- *FAR* 1.102(d) (discussed in Table 4) implies e-RA acceptability.
- Agencies should be allowed to set their own e-RA policies and guidance.
- e-RAs were too new to make sweeping *FAR* guidance.

In 2001, the *DAR* Council reviewed 38 requests to incorporate e-RA language and decided to “do nothing” because incorporating *FAR* guidance was 1) still not needed and 2) would inhibit agency-specific guidance and policy already in place (Turley, 2002, p. 22).

Statutory guidance to include (but not limited to) the *Small Business Act*, *Procurement Integrity Act*, *Competition in Contracting Act*, and *Buy American Act* applies to reverse auctions in the same manner as other procurements under the *Federal Acquisition Regulation* and supplements.

4. Structural Barriers to e-RA Use

Since 2000, the US Army has conducted 10,913 auctions, with a total savings of \$100.7 million dollars. In comparison, data from FedBid and Sorcity indicates the US Air Force has conducted 315,⁵ with a total savings of \$5.4

⁵ This figure is based on data from FedBid and the generator case. Additional auctions, unavailable to researchers, may exist.



million. These numbers suggest the USAF is leaving considerable money on the table by not using more e-RAs (FedBid, 2009, June; M. Meinert, personal communication, July 14, 2009; McCree, 2008). Furthermore, most of the 315 transactions were initiated and conducted by the GSA on behalf the USAF. In addition, while the scope of this research does not include an explanation of the seemingly low diffusion rate, it is worth pointing out some of the probable barriers to implementation.

a. Operational Tempo

Air Force contracting officers (both civilian and military) are now considered one of the Service’s most stressed group of employees, with a 43% manning vacancy rate and an unusually high deployment tempo (Rolfsen, 2009). In 2008, the “dwell time” for contracting personnel (i.e., time at home station between deployments) decreased from 12 months to six—a 1:1 ratio of time deployed to time at home station (Rolfsen, 2009). This policy shift further stressed the career field—focusing critical resources towards mission requirements in lieu of adopting innovative practices. Given the Air Force’s high priorities of deployment force management and concentration on implementing and organizing for strategic sourcing, it is no surprise that innovative best practices, such as e-RAs, have taken a back seat. However, attention to e-RAs is necessary to overcome some structural hurdles such as a lack of guiding policies, a lack of training on appropriate e-RA use, and the presumed lack of an e-RA software application. Each of these hurdles is expounded upon below.

b. Policy Guidance/Leadership Support

One reason for the Army’s success is a top-down push to use e-RAs for commercial items under the simplified acquisition threshold (SAT). In 2007, the Army issued a command-wide policy requiring contracting officers to use e-RAs to source requirements valued under the SAT, or, alternatively, to place a determination and finding (D&F) in the contract file, justifying why e-RA use was not appropriate (HQ/ACA, 2007). In contrast, the Air Force leadership issued



initial guidance regarding e-RAs in 2001 and left implementation to individual contracting officers' discretion. Since that time, the USAF has not published additional e-RA policy or guidance—despite the OMB's repeated call for the use of commercial practices, electronic commerce, increased competition, and cost savings (OFPP, 2004; 2008; OMB, 2009; USD(AT&L), 2006). With such a significant focus on cost savings, it is puzzling why a commercially mature capability like e-RA, with such a substantial potential for tangible results, has not been pushed harder at the agency level. One reason, perhaps, is a significant amount of institutional barriers—including training employees, funding software and/or acquiring a third-party e-RA service provider, and creating an organization to manage e-RA bidding events. Another possible reason is a lack of accountability for financial performance in regard to reducing total ownership costs. For example, the current 25-page *Unit Compliance Checklist* from SAF/AQC makes no mention of e-RA or auctions in general, which seems confusing given such a strong push by the OMB for innovation and cost savings (SAF/AQC, 2009). Regardless of the reason for this disconnect, without a top-down push for use, contracting officers have elected to use more traditional procurement methods, and the Air Force has ignored and foregone opportunities for significant savings (Turley, 2002).

c. Federal Acquisition Framework

Industrial procurement managers use e-RAs as part of a larger strategic purchasing portfolio without having to fully compete each procurement or having to technically qualify contractors for each acquisition. Federal contracting officers are, on the other hand, required to compete all procurements (some exceptions in *FAR* Part 6) and comply with multiple sources of statutory, regulatory, and agency requirements as well as various Federal socioeconomic goals. Given the rigidity of Federal acquisition, an attempt to employ an innovative procurement technique, such as e-RA, comes with perceived added protest risk, additional effort and acquisition lead-time, and little reward for taking such risks in a compliance-based culture. Some feel a re-write of the *FAR* specifically



authorizing e-RA and successive bidding would help motivate cautious COs (SAF/AQC, 2001; Turley, 2002).

d. Training

Currently, USAF contracting officers do not receive on-the-job or formal e-RA training as a part of their certification process. The DAU offers one continuous learning course (CLC 034), which serves as a good initial introduction to e-RA, but enrollment is voluntary. Despite a recommendation from some researchers for a single, web-based e-RA training site and decision-making tool, most of the e-RA knowledge remains disparate across agencies (Turley, 2002). Additional information users need in order to reap the substantial, potential benefits of e-RAs include the following: 1) an understanding of situations conducive to the appropriate application of e-RAs, 2) e-RA software and service-provider availability, 3) a process to follow to integrate e-RAs into *FAR* Part 13 and *FAR* Part 15 source selections, 4) details for the development crafting of instructions to offerors and evaluation factors for award, and 5) advice on how to avoid protestable events. All of these are incorporated into this research to address this gap.

This chapter addressed what is known about national culture, technology adoption, relational exchange, e-RA structural barriers and the extent of e-RA use in the government. Next, we will examine the techniques used to accomplish our research and provide the methods utilized to answer our research questions.



III. Methodology

A. Introduction and Overview

The purpose of this section is to provide an overview of how we conducted our research. In the following sub-sections, we discuss why the nature of our research questions led us to use qualitative methodologies, such as case study and grounded theory, to expand upon e-RA, TAM, and national culture theories. We then describe the research processes in detail. The latter parts describe our spend analysis and efforts made to ensure academic rigor.

Researchers use a variety of techniques to better understand and explain unique events. Given only one known case of e-RA use in the Middle East, we blended the grounded theory method with Yin's (2009) case-study methodology. The remaining, more applied research questions were addressed using spend analysis (Pandit & Marmanis, 2008) and the case-study method. The theoretical portion of our research addresses the knowledge gap surrounding research question number one: "What are the cultural implications of e-RA use in the Middle East?" According to Yin (2009), a qualitative, case-study methodology is appropriate when three conditions exist: (1) The type of research question is exploratory in nature and takes the form of a "what" question, (2) the researcher has no control over the behavioral events being researched (i.e., cannot manipulate behaviors then measure results as in a controlled experiment), and (3) the focus is on contemporary events (p. 8). Our research met all three of these criteria. Furthermore, case-study research is particularly useful when researchers need to provide insight and depth to a "unique phenomenon" (Ellram, 1996, p. 98; Yin, 2009).

We followed procedures for developing grounded theory in order to add credibility to our claims of new knowledge surrounding national culture and e-RA use (Glaser & Strauss, 1967; Corbin & Strauss, 1998; Charmaz, 2006).

Theories explain why a certain phenomenon occurs. "Theory emphasizes the



nature of causal relationships, identifying what comes first” (Sutton & Staw, 1995, p. 378). “Strong theory [...] delves into underlying processes so as to understand the systematic reasons for a particular occurrence or nonoccurrence” (1995, p. 378). Simply stated, “a good theory explains, predicts, and delights” (1995, p. 378).

This project, therefore, combines elements of case-study methodology, adopted from the likes of Miles and Huberman (1994), Yin (2009), Eisenhardt (1989), and Ellram (1996), with procedures for developing grounded theory (Glaser & Strauss, 1967; Corbin & Strauss, 1998; Charmaz, 2006) in order gain insight and help explain the success of the USAF’s use of an e-RA to procure generators in Kuwait. More specifically, a qualitative research design best answers how dynamics of national culture affect e-RA use and what lessons from this case may be leveraged for further e-RA use by the DoD. The generator e-RA case was ideal because it was (1) the only known case of e-RA use in the Middle East, and (2) it entailed an unexplained phenomenon (Ellram, 1996; Yin, 2009).

Researching two diverse gaps—national culture and DoD implementation issues—required the researchers to take two slightly different approaches. The theoretical portion investigating the effects of national culture follows the case study and grounded theory methodologies, in which we used a constant comparison of participants within one unique event to add to existing e-RA, TAM, and national culture theory. The practitioner portion, however, required us to conduct interviews with USAF and Army procurement officials outside the event, gather and analyze spend data from the Middle East and CONUS operations, and gather regulatory, policy, and procedural information surrounding Federal procurement and e-RA use and training throughout the DoD. Section B below details the step-by-step methodology we used in order to answer all research questions with the utmost rigor and validity.



B. Methods of Answering Research Questions

According to case-study experts, researchers must find sources of evidence to support the overall case study (Eisenhardt, 1989). Usually, quality qualitative research combines a number of different data-collection methods—including archives, interviews, questionnaires, and surveys (1989). In the tradition of classic case-study methodology, our research employed three tests to reduce bias and maintain the highest levels of objectivity (Yin, 2009).

1. Test #1: Construct Validity

This requires “identifying correct operational measures for the concepts being studied” and is important to address because researchers use subjective judgments during analysis (Yin, 2009, pp. 40-41). In order to maintain construct validity, we used multiple sources: interviews, surveys, and an analysis of archival data. During composition, we allowed key informants to review interview transcripts prior to analysis (Yin, 2009). Miles and Huberman (1994) describe this process as using “member checks” to maintain accuracy (p. 48).

2. Test #2: Internal Validity

Internal validity is defined as “establish[ing] a causal relationship, whereby certain conditions are believed to lead to other conditions, as distinguished from spurious relationships” (Yin, 2009, p. 40). In keeping with Yin’s research (2009), we triangulated data from interviews, surveys, correspondence and archival data to minimize bias and explore the different perspectives surrounding the e-RA event. Additionally, this research employed a constant comparison methodology within a single case to (1) identify concepts (codes), (2) discover patterns between concepts, (3) address rival explanations, and (4) generate logic models that fully explain the phenomenon. These processes are discussed step-by-step as findings are explained in the Results and Findings section, Chapter IV.



3. Test #3: Reliability

Reliability is defined as “demonstrating that the operations of a study, such as the data collection procedures, can be repeated, with the same result” (Yin, 2009, p. 40). We used a number of techniques to maintain reliability. First, we built a Sharepoint site (referred to by Yin (2009) as database development) to collect all relevant literature, source documents, transcripts, and interviews. This allowed us to store, share, and track key data with all project members, and it reduced the chance of losing or misplacing files. Secondly, we built a database using MAXQDA software to manage and analyze all case documentation. MAXQDA, a qualitative software package, was used to assist with data management and analysis. Using the software, the data collected through interviews, surveys, and archives was coded into manageable categories. The software made it possible to extract possible relationships developed through the created codes, which allowed the researchers insight into previously unknown causal linkages among constructs (categories).

C. Case Description

On March 17, 2008, members of an Expeditionary Contracting Squadron (ECONS) in Kuwait conducted an e-RA for the procurement and installation of 29 standby power generators at a forward operating location in Kuwait. Over the course of 278 bids, five vendors competed for nearly four hours before the final price of \$1,588,000 was reached. Shortly thereafter, the offeror who submitted the lowest-priced, technically acceptable (LPTA) offer received the award in accordance with streamlined LPTA procedures pursuant to *FAR* Parts 12 and 13 and the stated evaluation criteria in the request for quotation (RFQ). Savings totaled \$395,000—a 19.9% savings from the lowest-proposed price received prior to the start of the auction.

The decision to use an e-RA came from the ECONS squadron commander after a review of the requirement, initial market research, and numerous discussions with the civil engineering customer (referred to as ECES).



Essentially, the requirement met the following criteria (outlined in the e-RA Appropriateness Model, Figure 11, Chapter V). First, the number of generators (29) and initial government estimate (over \$3 million) made the tender attractive to suppliers. A sufficient number of attracted suppliers ensured adequate competition—a necessity for a successful e-RA. Second, only five brands were determined to meet the government’s requirements, which made the requirement highly specifiable. Finally, a review of early market research indicated a high level of interest within the Kuwaiti market (adequate competition). On February 10, 2008, the ECONS squadron commander sent a notification of the impending e-RA event to 13 potential suppliers, along with a description of the e-RA process as a condition of participation. Ten vendors responded with an interest to participate, with nine ultimately submitting initial proposals to the government. Once the requirement passed initial appropriateness checks, the ECONS commander engaged a third-party e-RA provider, Sorcity, Inc., to facilitate the e-RA for a flat fee of approximately 3% of the pre-bid estimate—to be paid by the successful offeror after contract award. Sorcity, Inc., provided the web-based auctioning software application, auctioning expertise, and commodity and market expertise to help craft the optimal e-RA event.

Proposals (technically, quotes), in accordance with the instructions to offerors and evaluation criteria of the solicitation, had to first meet “acceptable” technical standards defined as “passes (or meets) minimum standard requirements” in order to compete in the pricing event (e-RA) (Gambrel, 2008, p. 31). In order for an offeror to get an overall “acceptable” rating, it had to meet the minimum standards of each subfactor below.

- Technical Approach
- Management/Technical Support
- Contractor’s Quality Control
- Project Schedule
- Past Performance



The second factor, total price, was defined as “the overall price to the government and determines if the proposed price is reasonable and complete” (Gambrel, 2008, p. 33).

After final proposal evaluation, the award would go to the lowest-priced, technically acceptable offer whose price was determined to be reasonable and complete, based on the above criteria, and would be determined the best value to the government for award (Gambrel, 2008, p. 33).

On March 5, 2008, the contingency contracting officer determined five offerors to be technically acceptable and, therefore, eligible to participate in the auction. On March 17, 2008, the five offerors deemed technically acceptable competed in the e-RA. The lowest price received with initial proposals (outside of and prior to the e-RA) was approximately \$2 million, and the final bid placed during the e-RA was \$1,588,000. The contract was awarded on March 18, and notices to unsuccessful offerors were subsequently issued. Debriefings were held with all participants.

On April 5, 2008, the contractor, engineers, and contracting officer held a pre-construction meeting and a site visit to discuss the timeline and logistics of the installation. On April 22, the government accepted the first delivery of initial generators, accepting all but one, which had minor damage to an exterior panel. On May 18, the contracting officer held a meeting to discuss progress. During the course of this meeting, a number of problems were identified to include government delays surrounding the contractor’s access to the air base, numerous changes to generator locations, and additional trenching and cabling needed. Additionally, the government felt that a previously agreed upon price of 1,750 KD to remove an existing generator was unreasonably low; thus, the installation was suspended until the government could find a vendor willing to pay at least 3,000 KD. As a result of these delays, modification P00001 was executed, extending the completion date from July 18, 2008, to August 20, 2008.



On May 29, 2008, the last generator was delivered and accepted by the government. Due to a number of generator location changes and site coordination issues, the government issued a second modification, P00002, on August 20, 2008, to extend the period of performance from August 20, 2008, to November 6, 2008. This modification, unlike the first, de-scoped some concrete pads, switches and a fuel tank. It also added additional switches, cables, trenching, and weatherproof enclosures. These changes were signed as a bilateral, no-cost modification.

On November 17, 2008, the contractor officially completed the project, signing a release of claims for 447,180.80 KD—the exact amount of the original e-RA award price. Subsequent interviews with the contracting officer and ECES customers indicated that, overall, the contractor’s performance was satisfactory.

D. Data Collection

1. Interviews

Interviews provide a valuable source of data for case-study research (Yin, 2009). Typically, researchers use in-depth interviews (crossing multiple sessions), focused interviews (lasting a short period), and/or surveys (Yin, 2009). Given time and travel constraints, focused interviews were most appropriate and effective for this research study. We used semi-structured, open-ended questions in an interview protocol—a structured questionnaire that bolsters reliability by using the same questions (in sequential order)(Yin, 2009)—to guide each interview (See Appendix E). From April 12-16, 2009, in-person interviews with Kuwaiti vendors were conducted in Kuwait in order to (1) observe non-verbal cues, (2) maintain a conversational tone, and (3) probe deeper into answers requiring more detail. Due to the relational nature of Middle Eastern businessmen, in-person interviews were most appropriate in order to build the relations and trust necessary to permit open dialogue required by research of a sensitive nature (e.g., ethics). A second round of questions designed to clarify emergent themes was also conducted by telephone in mid-October 2009.



Interviews of military members, the end-users, and the third-party e-RA provider were also conducted by phone. Regardless of media, every effort was made to avoid leading questions so as to avoid bias (Yin, 2009). Finally, all interviews were transcribed verbatim and sent back to subjects for an accuracy check. Each informant verified the accuracy of the transcribed interviews, thereby enhancing construct validity (Yin, 2009).

As a condition for participation, we promised research participants anonymity to 1) obtain complete and uncensored data and 2) to protect their business identity from those who might not appreciate their candor. Table 5 provides basic demographic information about research participants who participated in the study.



Table 5. Informant Demographics

Company	Company description	Full-time employees	HQ location	Yrs w/ USAF Tenders	Yrs providing power gen service	e-RA experience (# of events)
A	Construction/General Trading—interested bidder but did not participate in auction.	25	Kuwait	9	6	0
B	Design and Construction w/ Construction indicated as overall classification— auction participant.	45	Kuwait	4	5	1
C	General Trading company with 22 years of construction/power generation experience. Participated in e-RA event.	150	Saudi Arabia	20	20	4
D	General Trading and Construction—Participated in e-RA event. Note: Procurement Manager has 23 yrs of Construction Experience.	200-250	Kuwait	4	3	1
E	Power generation supplier. Did not compete in e-RA but was interested in the tender.	48	Saudi Arabia	25-30	20	0
Sorcity, Inc.	Full-service reverse auction service provider. Supported the event.		USA		N/A	N/A
USAF	Contingency Contracting Officer responsible for the e-RA Procurement.	N/A	USA	N/A	N/A	0
USAF	Civil Engineer #1. Developed and coordinated the power generator requirement. Was involved with site visits, acquisition strategy, the e-RA event and initial performance.	N/A	USA	N/A	N/A	0
USAF	Civil Engineer #2. Provided oversight of contractor performance after the e-RA was concluded.	N/A	USA	N/A	N/A	0



2. Surveys

The second interview technique we used was survey deployment (Yin, 2009). A survey (Appendix F) was created and was delivered to the Kuwaiti contractors in person during the interview sessions so we could triangulate written answers to specific moderating effects that emerged during our literature review. Surveys added value to our research by (1) adding an additional source of data for analysis to triangulate effects, (2) enabling us to hone in on specific themes that might not emerge from the interviews, and (3) providing us numeric scores based on Likert-type scales to measure latent constructs (e.g., trust). The survey focused on the following three key areas:

- Antecedents for supplier participation—recent research regarding antecedents for e-RA use suggested 48 different motivating factors for supplier participation (Hawkins et al., forthcoming). We used the survey to efficiently investigate whether the antecedent conditions for use were the same or different in a Middle Eastern culture.
- The survey was used to determine whether—and if so, how—trust in the CCO, the buying organization, and/or trust in the e-RA service provider affected the suppliers' decision to participate in the e-RA. To ensure reliability, we used an existing scale for *trust* derived from Crosby, Evans, and Cowles (1990) due to its demonstrated reliability (Chronbach Alpha of 0.89). The scale was Likert-type, ranging from one (strongly agree) to seven (strongly disagree). Answers to survey questions were verified with the informants, and clarifications and explanations were captured in field notes for later analysis.
- There has not been a substantiated effect between e-RA use and decreased long-term relational exchange (Jap, 2007). Therefore, the survey was used to explore whether this also held true in a Middle Eastern culture by assessing levels of relational exchange before and after the e-RA. Again, concerned with reliability, we used an existing scale for *relational exchange* (Chronbach Alpha of 0.91) derived from Lee (1998, p. 22). The scale was Likert-type, ranging from one (strongly agree) to seven (strongly disagree).

Glaser and Strauss (1967) note that during theoretical sampling and/or constant comparison, the data may warrant a return to the field for additional data collection. In mid-October, we deployed a second questionnaire (Appendix G) and conducted additional interviews with the same informants to explore



emergent themes derived from the initial data analysis. This technique gave us a second source of data to pursue emergent themes from the first interviews.

3. Identification and Selection of Informants

Since our unit of analysis was the single e-RA bidding event, we broadened our selection of informants to include all parties (i.e., roles) involved in the tender. All participants in the e-RA were extended an invitation to participate; however, some offerors chose not to participate in the research for unknown reasons. Nevertheless, our sample included three of the six bidding companies, one interested offeror who elected not to compete, and one subcontractor. Additional participants included the US government buying activity, the end-users (civil engineers), and the e-RA service provider who hosted the event. Informants included managers from three of the e-RA competitors (vendors), one subcontractor (first-tier), the USAF contracting officer, two end-users, AFCENT leadership, and a Sorcity (e-RA service provider) executive (see Table 5 for demographic information). By selecting data from numerous informants within the entire logistic chain, the researchers were better able to understand the event from a holistic perspective through a triangulation of data sources (Corbin & Strauss, 1998; Glasser & Strauss, 1967).

4. Institutional Review Board (IRB)

Corbin and Strauss (1998) recommended that researchers begin grounded theory research with initial questions derived during the literature review. These questions should be approved by an IRB committee and will serve as a theoretical framework under which the study will fall. Accordingly, interview questions were reviewed and approved by the Naval Postgraduate School IRB in order to ensure the protection of human subjects and to ensure compliance with institutional protocol surrounding interviews with subjects located outside the United States.



5. Archival Data Collection

Archival data is one source of valuable information researchers use because it helps to corroborate other forms of data, to include surveys and interviews (Yin, 2009). This data typically consists of “memos, e-mail correspondence, notes, letters, internal records, proposals, [and] news clippings” (p. 103).

During our research, we collected archival data to include e-mail correspondence, contractual documents, AFCENT FY08 spend data, detailed USAF FY07-08 spend data, top-level USAF FY01-06 spend data, policy memos, Army, Navy and USAF e-RA spend data and relevant e-RA provider trend data on e-RA use. All data was filed in our Sharepoint database to maintain construct validity and reliability (Yin, 2009). All of these sources were imported and stored in MAXQDA for consolidation and analysis, pattern matching, coding, and memo writing.

E. Data Analysis

1. Coding and Pattern Matching

Once interviews were conducted and recorded, we transcribed the data and imported it into MAXQDA for data analysis—including the techniques of coding. In general, coding involves naming the segments of data with a label that simultaneously categorizes, summarizes, and accounts for each piece of data (Charmaz, 2006). Another technique, called memo writing, allows the researcher to document comparisons and connections discovered during data analysis. This process helps define questions and provide research direction (Charmaz, 2006). Finally, pattern matching (Yin, 2009; Corbin & Strauss, 1998) in MAXQDA was helpful because it provided us the ability to analyze large amounts of textual data by coding and creating memos captured and organized within a single case file. Figure 3 shows how MAXQDA enabled us to create a master code list and shows the master file list of interviews, correspondence, and archival data. The right-hand side of the figure shows a sample of coded



incidents within the interview and memos created to highlight important points that tie constructs together.

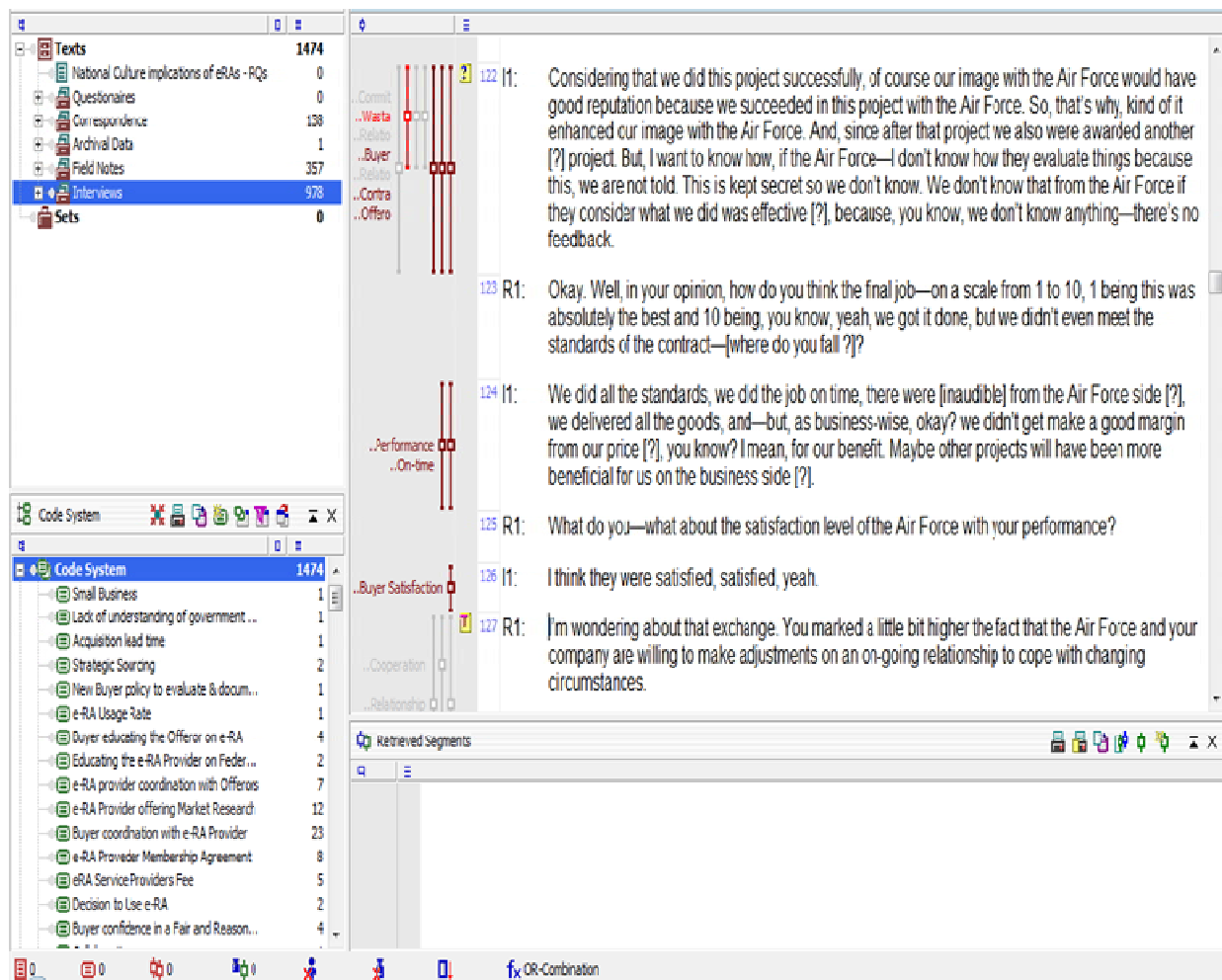


Figure 3. MAXQDA Screenshot

Throughout data analysis, we used a technique grounded theorists call constant comparison. “At first, you compare data with data to find similarities [...] [then] compare interview statements within the same interview and compare statements and incidents in different interviews [then] compare data in earlier and later interviews of the same individual” (Charmaz, 2006, p. 54). We did this in a number of ways using MAXQDA. First, we coded all interview and correspondence to highlight emergent constructs. We then compared interview transcripts to the informants’ responses to the surveys. Finally, we used the



lexical search engine in Figure 4 to cross reference codes from multiple interviews with the same informant. In the example below, we keyed in on the constructs of *wasta* and *transparency* to find relationships in the data.

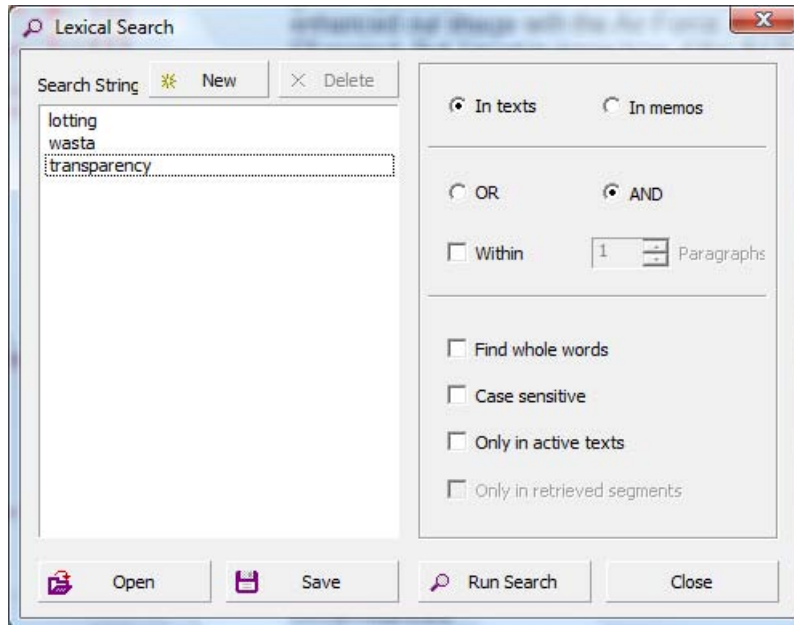


Figure 4. Lexical Search Engine Snapshot

2. Addressing Rival Theories

While attempting to explain our case study, we noted the value of examining rival theories in relation to what we observed at each stage of analysis. Yin (2009) recommends addressing rival theories as a necessary step to eliminate explanations that we may have not considered. During the analysis section (Chapter IV), we discuss findings through a process of identifying a new theory, interpreting its significance, discussing potential rival theories, then summarizing the impact to academic theory.

3. Spend Analysis

Research question #5 asks: “What are the potential cost savings of using e-RAs domestically and in the Middle East?” This question required us to use a



separate methodology to gather spend data, filter out spend incompatible with e-RAs, then analyze the remaining spend data for e-RA implications.

The DoD is the world's largest purchasing agency, spending over \$500 billion for goods and services in 2008 (OMB, 2009). Recently, the Office of Management and Budget released guidance requiring all Federal agencies to increase the use of strategic sourcing and re-engineer ineffective business practices to reduce spending by 7% in the next two years (OMB, 2009). Following industry's phenomenal success in strategic sourcing (Pandit & Marmanis, 2008), the GAO identified spend analysis as one tool to identify categories of spend in which the DoD can better leverage its procurements (GAO, 2004).

The next step is to conduct a spend analysis to identify areas of spend that are appropriate for sourcing via e-RA, then to forecast potential savings based on current, average e-RA savings rates. Our methodology is presented in the steps below.

- Obtained USAF and AFCENT transaction-level spend data for Fiscal Years 2007-2008 (FY07/08).
- Conducted a literature review to determine average savings through e-RAs and appropriate categories of spend for e-RA use.
- Sorted USAF spend data to remove categories that were not appropriate for e-RA use. These included all research and development efforts; all contract types other than firm fixed-price, fixed-price with economic price adjustment, and fixed-price award fee; construction; and all contracts not awarded under full and open competition.
- Applied an average 20% e-RA savings (Cohn, 2000) to the remaining, "auctionable" USAF spend. We then estimated the percentage of total spend that was appropriate for e-RA sourcing and projected it to spend data obtained (described below).
- Applied an average 20% savings to the same percentage of e-RA appropriate AFCENT spend, based on USAF analysis in step #4. Note: AFCENT spend was rolled up, so we were unable to delete all of the categories in paragraph four. However, contingency contracting rarely involves research and development requirements



cost-type contracts due to the type combat environment. The percentage of AFCENT OCONUS was available, as was the percentage spent on construction and services. Since we assumed construction was not appropriate for e-RA sourcing, we looked only at services and commodity spend OCONUS.

- Obtained FY01-09 USAF and DoD procurement spend from FPDS-NG with the help of Monterey Consultants Incorporated (MCI).
- Applied an average 20% savings to the e-RA-appropriate portion of FY01-09 USAF spend data.
- Applied an average 20% savings (Cohn, 2000) to “auctionable spend” each year to obtain estimated savings using both method 1 and method 2.

In order to be as objective as possible, we used two very different approaches to identify a range of potential savings the DoD could expect. Method 1 (above) uses a theoretical approach by filtering out inappropriate e-RA requirements, and method 2 involved applying an industry benchmark of total spend that is typically sourced via e-RA (Monczka, Peterson & Kenneth, 2008). According to Monzcka et al. (2008), industry sources 2.58% of its total purchases using e-RAs. A weakness of this report, however, is that it is based on a small sample size of 17 firms. Given the 4% response rate to their survey, its external validity—or generalizability—is questionable. Using the two methods, the DoD’s probable usage of e-RAs can be expected to fall within our estimated range.

By taking a strategic approach using spend analysis, the DoD is able to gain knowledge of how much is being spent for what goods and services, who the buyers are, and who the suppliers are, thereby identifying opportunities to leverage buying, save money, and improve performance (GAO, 2002; 2004; Pandit & Marmanis, 2008). Not only is it important to conduct the spend analysis, but the DoD should be comparing itself to industry to understand where money may be saved and where savings opportunities are being ceded.



4. Protest Risk Analysis

While e-RAs are not new to the DoD, using them in the contingency environment or as a pricing component of *FAR* Part 15 full-trade-off procurements is novel and, therefore, a potential added protest risk. Contracting officers who elect to use e-RAs in either of these capacities must understand what the risks are and how to plan accordingly to mitigate those risks. Research question #3 asks, “How can contracting officers identify and mitigate procurement risks specific to e-RAs?” This section addresses the methodology we used to find answers.

First, we reviewed relevant legal, regulatory, and policy literature regarding Federal procurement and auctions (see Chapter II). From these documents, we looked for common themes among sustained GAO protests as well as e-RA-specific cases. Additionally, we incorporated questions about protests into each of our interviews with DoD leaders, e-RA providers, and government contracting personnel to capture their perspectives. Secondly, from these findings, we identified additional steps necessary for incorporating e-RAs into source selections. We then mapped them out in five process flowcharts for contracting officers to use during a variety of different acquisition methods, including *FAR* Part 15 trade-offs. Finally, we conducted an analysis of interview responses, case law, and e-RA literature to identify areas of high risk in order to develop strategies to avoid protests. These strategies are explicated in Chapter V.



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IV. Findings—National Culture

A. Introduction

The purpose of this section is to report findings associated with research question #1, which investigates the cultural implications of e-RA use in the Middle East. We used techniques for developing grounded theory, such as theoretical sampling and constant comparison of participants within a single case study (Yin, 2009). The purpose was to explore and explain the unique business environment in Kuwait and, more importantly, how the e-RA affected offerors' decisions to participate in the tender and how the e-RA helped offerors cope with the Middle Eastern business climate (Glaser & Strauss, 1967; Charmaz, 2006).

Section B begins with a general description of the Middle Eastern business climate, based on interviews with five local contractors who were directly or indirectly involved with the e-RA event. It is important to frame the environment in which the event occurred because our findings indicate that the USAF is uniquely positioned to leverage e-RAs based on the high level of trust vendors place in the USAF and in the processes and rules governing USAF acquisitions. In short, the trust, fairness, and transparency that form the foundation for US Federal acquisition, are missing in the Arab market. Instead, themes of favoritism, distrust, corruption, collusion and wasta result in a business climate that favors companies with powerful owners and well-connected managers. These themes emerged from our initial interviews and were explored more fully during a second round of interviews (see Appendix G).

As is customary with theory-building research, research question #1 was necessarily broad. As relationships within the data became apparent during our literature review, field work, and initial data analysis, we developed additional, specific questions surrounding national culture and e-RA use.



- Why do firms in an Arab country favor competing in e-RAs—even when they “lost” the tender?
- How does *wasta* affect e-RA usage?
- How does e-RA use affect *wasta* usage?
- Why are e-RAs peculiarly useful in an Arab business climate of power, *wasta*, favoritism, collusion, corruption, opportunism, and distrust?
- For B2B exchange, how can the transparency and fairness of e-RAs substitute for *wasta* (influence and work-arounds) in achieving desired outcomes (fair competition, odds of winning a tender, offeror satisfaction)?
- Why do firms operating in an Arab country decide to compete in e-RAs? Do the reasons differ from those of US-based businesses? Hence, is perceived usefulness determined by the same or different factors?
- Why are e-RAs not practical among some Arab business buyers but are practical for US Government buyers?
- How do e-RAs uniquely affect the offeror’s bidding strategy in Middle Eastern firms?
- Why does e-RA use increase the buyer’s confidence in achieving a fair and reasonable price in the Middle Eastern market?

In order to answer these questions, we used the systematic approach described below. First, upon reading (and re-reading) 14 transcribed interviews, 17 contractual documents, and 58 e-mails, we identified 178 distinct codes representing concepts (i.e., constructs). (For more detailed information regarding our data attributes, refer to Appendix H). While this may seem like excessive rigor, we followed Whetten’s (1989) guidance, which states, “When [researchers] begin to map out the conceptual landscape of a topic they should err in favor of including too many factors, recognizing that over time their ideas will be refined” (p. 490). Accordingly, we then coded 1,633 different occurrences of emergent and relevant constructs within the text of the documents. Finally, using the memo feature in MAXQDA, we created 183 memos to capture what Corbin and Strauss (1998) call “aha moments, or sudden insights into the possible meaning of the data” (p. 109).



Secondly, we used the code-relations browser and lexical search engine functions of MAXQDA to find co-occurrences of codes within five lines of text. This allowed us to identify patterns among codes within hundreds of pages of transcript, memos, correspondence, and archival data for reoccurring themes. Coding every relationship—while interesting and helpful—created a massive matrix of coded events. We solved this problem by filtering the matrix to sieve out codes co-occurring 10 times or more by using a color-coded scheme to identify frequent intersections of codes quickly (see Table 6). Instances where codes co-occurred suggested that the two concepts might be causally related. The cluster chart in Appendix I is a tool we used to analyze our data and show relationships between codes (Charmaz, 2006). This process was iterative and evolving and resulted in numerous revisions. Arrows indicate a relationship between codes and are marked as either positive or negative, meaning that as one construct increased (the originating construct), it caused the other construct to increase or decrease, respectively. For example, an arrow from e-RA use to transparency with a positive sign means that increased e-RA use increases transparency. We used propositions (labeled P1, P2, etc.) to show relationships in the conceptual model (Figure 9) at the end of this chapter.

Throughout the following discussion, we refer to two separate instances of coding. The first instance is the number of times a concept (i.e., construct) occurred during interviews and data analysis. Appendix J (Frequency of Codes) displays all codes that occurred five times or more. These codes are shown as a code name with the number of coded events next to it inside of parentheses (e.g., competition (17)) in the following sections. Constructs coded less than five times were excluded from Appendix J in order to highlight the most relevant constructs and to reduce the table's size from 16 to 2 pages.

The other set of coded incidents referred to in this section comes from the code-relations browser function in MAXQDA. This tool shows a co-occurrence between two codes and is depicted as two codes followed by the number of co-



occurrences within a bolded bracket (e.g., transparency/fairness **[20]** or transparency and fairness co-occurring twenty times **[20]**). A summary of the most relevant co-occurrences of codes is shown in Table 5 at the end of this chapter. Finally, we address rival theories at the end of each set of sub-research questions and include a break-out section of the conceptual model to illustrate each.

B. The Middle Eastern Business Climate

In mid-April 2009, after conducting our literature review, we traveled to Kuwait to interview local contractors involved, either directly or indirectly, with the generator e-RA. Our intent was to explore research question #1—the cultural considerations of e-RA in the Middle East. We sought to gain as much information about business in Kuwait as possible by conducting face-to-face interviews at the offerors' establishments. This initial fieldwork enabled us to 1) focus on responses by observing non-verbal cues, and 2) experience first-hand the offerors' physical environments. This approach helped us achieve an “intimate familiarity” (Charmaz, 2006, p. 182) with the local business climate.

The first stage for many grounded theorists is a line-by-line coding in which researchers categorize words or sentences to capture important elements within the data (Charmaz, 2006). Since our research question dealt with e-RAs and Middle Eastern culture, we created an overarching category of Middle Eastern business climate (to describe how contractors perceived their local business climate aside from contracts with the US DoD). Our data pointed to five major themes (followed by number of coded occurrences): *wasta* (56), collusion (39), corruption (21), technologically immature (9) and distrust (8) (Appendix J). Of these five categories listed previous, only *wasta* emerged as an unfamiliar concept; thus, we returned to the literature to understand previous research and compare our findings.



According to researchers, the term *wasta* literally means “to employ a middle man, a broker, a go-between or an intermediary—usually a person of high social status and accepted rank—to achieve one’s ends” (Fathi, 1993, p. 61). “In modern language, *wasta* means a connection or influence” (El-Said & Harrigan, 2008 p.1238). However, among scholars, the definition is not so clear; therefore, we compiled potential meanings into the following three groups. *Wasta* is:

- Influence, power, favoritism (sometimes corruption), and reciprocity or self-gain (Hutchings & Weir, 2006; El-Said & Harrigan, 2008);
- A cultural social norm: solidarity, mutuality, loyalty, and allegiance (Loewe, Blume & Speer, 2008); and
- Self worth: status, reputation, and respect (Hutchings & Weir, 2006; Palmer, El Sayeed & Leila, 1985)

One explanation for the variety of definitions is a lack of empirical research on the subject of *wasta* (Whiteoak, Crawford & Mapstone, 2006; Hutchings & Weir, 2006). Given the lack of clarity, we created a second interview protocol, which specifically asked how our participants viewed or defined *wasta*. All three of the managers who participated in the interviews identified influence, power, favoritism, corruption, allegiance to friends and family, and status as elements of *wasta*. Two of the managers also considered respect and reputation as elements of *wasta*, noting that when *wasta* is used as a social norm to show loyalty, allegiance and mutuality, it may serve a good purpose. When used to influence business unduly, it is also seen as bad. Regardless of good or bad intent, all three managers agreed that *wasta* is common in Kuwait. When asked if *wasta* use was common in Kuwait, one manager replied, “Oh yeah, big time!”

The concept of *wasta* is a significant factor in all business transactions in the Middle East and touches every aspect of Arab life (Cunningham & Sarayrah, 1993). Given its influence and negative association with collusion and corruption (Hutchings & Weir, 2006), *wasta* has the potential to impact e-RA use, as well as DoD contracting in general. As one author puts it, “In the Arab World, *wasta* has also effectively been used to override established laws and traditions where they



existed and are used in place of relevant regulations and standards” (Hutchings & Weir, 2006, p. 148). The next section addresses the first seven sub-research questions related to e-RA use and how e-RA impacts the Middle Eastern business environment.

C. How e-RA Works within the Middle Eastern Business Climate

During data analysis, we found it necessary to group our codes into what Charmaz (2006) refers to as theoretical categories in order to explain more abstract ideas that emerged from our data. Our cluster chart (See Appendix I) shows these constructs as procurement integrity, market dynamics, Arab business climate, buyer antecedents to e-RA use, and supplier motivational factors. Each is labeled and grouped to explain a set of related codes for different areas impacted by or influencing e-RA use. Research questions 1-5 and 7 all fall within the broad scope of procurement integrity and the Middle Eastern business climate; thus, we grouped all the questions below and address them with propositions represented in Figure 3. Research questions 1-5 and 7 are as follows.

- Why do firms in an Arab country favor competing in e-RAs—even when they “lost” the tender?
- How does *wasta* affect e-RA usage?
- How does e-RA affect *wasta* usage?
- Why are e-RAs peculiarly useful in an Arab business climate of power, *wasta*, favoritism, collusion, corruption, opportunism, and distrust?
- For B2B exchange, how can the transparency and fairness of e-RAs substitute for *wasta* (influence and work-arounds) in achieving desired outcomes (fair competition, odds of winning a tender, offeror satisfaction)?
- Why are e-RAs not practical among some Arab business buyers but are practical for US Government buyers?
- How do e-RAs uniquely affect the offeror’s bidding strategy in Middle Eastern firms?



Each of the sub-research questions listed above is explained by a complicated interconnection of constructs represented in Figure 3. Central constructs to our theory—including perceived usefulness, decision to participate in the e-RA and actual e-RA use (see Figure 9)—were not coded because we assumed a relational connection based on existing theories, which explain technology acceptance. Underlying, established theories include the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980), Technology Adoption Model (TAM) (Davis, 1989), and the Theory of Planned Behavior (TPB) (Ajzen, 1991). Together, these theories suggest that perceived usefulness affects an individual's attitude toward technology and, ultimately, his/her behavior and actual use (Ajzen & Fishbein, 1980). Furthermore, other studies exploring the effects of national culture on technology adoption (Parboteeah et al., 2005; Srite, 2000) support the idea that Hofstede's (1980) elements of national culture impact perceived usefulness and behavioral intent to use as well as subjective norms and cultural nuances we explore in this study. For more information regarding these theories, see Chapter II, section E, or any of the aforementioned studies.

Our theory, and a significant contribution to e-RA theory, is that e-RA use in the Middle East increases procurement integrity, which we define as a higher order construct encompassing two dimensions: procedural fairness (72) and transparency (63). In turn, Middle Eastern offerors perceive e-RAs as useful (46), because increased procurement integrity reduces the effect of *wasta*. Hence, decreased *wasta* might enable competing firms to enact strategies that can affect the outcome of the competition rather than the outcome being determined by factors beyond their control (e.g., *wasta*). These relationships are supported as follows.

During our initial coding, constructs of transparency (63), procedural fairness (72), *wasta* (56), and offeror satisfaction (42) emerged as high-coded occurrences with numerous memos. This caused us to dig deeper to look for causal relationships using a systemic approach, which we used for the remaining



cultural questions. First, we attempted to find co-occurrences of codes using the code-relations browser and lexical search engine functions of MAXQDA. We first found that procedural fairness/transparency co-occurred 89 times, which turned out to be the most strongly supported relationship we discovered during the project. Unfortunately, the constructs of e-RA use and perceived usefulness (central to our theory) were coded as overarching category headings (with many individually coded sub-constructs) rather than as individually coded constructs. To overcome this weakness, we triangulated our coding occurrences with direct questions from the initial interview questions (Appendix E) and survey (Appendix F). Question #4 on part A of the initial survey indicated that the transparency of the e-RA bidding process “strongly motivated” all three managers’ decisions to participate in the e-RA. During the follow-up interview, we directly asked whether e-RA use increased transparency and fairness. Each informant answered “yes,” showing a direct causal association between their e-RA use, transparency, and procedural fairness. One manager told us regarding e-RA, “That’s even more fair. I mean, that’s even more fair and transparent at the same time. I mean, because the e-RA—you can see the bidders, what they are bidding, [and] so there’s no cheating—it’s very transparent.” Given this data, we posit that:

- P1: There is a positive relationship between transparency and procedural fairness.

We were surprised to learn how using wasta to gain business can impact a company’s bottom line. During one interview, a manager told us, “My company made 3.2 million KD [Kuwaiti dinar] last year...Using wasta, we could have easily increased that to 200 million KD.” Given the demonstrated lucrative potential of wasta, it is easy to understand why companies who rely on wasta will not find e-RAs attractive.

Two managers who competed during the e-RA were asked to confirm our initial findings of increased perceptions of fairness and transparency as a result of the e-RA. Both managers indicated that they felt the process was more fair and transparent than the DoD’s normal contracting process, which typically



entails a one-shot proposal submission. Both indicated increased satisfaction as a result of the e-RA, which we verified using MAXQDA's code-relations browser. As a result, offeror satisfaction and transparency emerged 43 times. Similarly, offeror satisfaction and formal rules and procedural fairness co-occurred 37 times. As an example, consider the response provided by a manager from Company "B."

That's right, because we knew exactly what went down. Once we qualified, you knew that you were qualified or not. Once you knew that round two of the process—of the bidding process—we know if we're the lowest bidder, we got the job. At least that's the way I see it.

Interestingly, manager "B" was more satisfied because he appreciated the objectivity of the process. His comment regarding qualification dealt with pre-qualification during step one of a two-step LPTA procurement. While this objectivity is not unique to e-RA, he found the ability to see competitors bidding and flexibility to change his bid in real-time unique and attractive. In sum, we posit:

- P2: There is a positive relationship between e-RA use and procedural fairness.
- P3: There is a positive relationship between e-RA use and transparency.

As a follow-on question, we wondered how the relationships above impacted the manager's sense of satisfaction, even if they didn't win the bid. Again, we started with the lexical search and code-relations browser, which showed significant co-occurrences between procedural fairness and offeror satisfaction [37]. Both techniques also showed many co-occurrences between transparency and offeror satisfaction [43]. Realizing that some researchers might question whether co-occurrences substantiate a relationship between constructs, we again turned to the follow-up interviews and found that all three managers replied "yes" when asked if increased procurement integrity (transparency and procedural fairness) increased their level of satisfaction, even if they lost the event. This data supports the following propositions.



- P4: There is a positive relationship between transparency and offeror satisfaction, even when the offeror loses the bidding event.
- P5: There is a positive relationship between procedural fairness and offeror satisfaction, even when the offeror loses the bidding event.

Next, we wanted to understand how e-RA use could impact unique cultural dynamics of the Middle Eastern business climate (34), specifically *wasta* (56). However, first, we confirmed what literature suggests about the Middle Eastern business climate—that it includes the elements of *wasta*, collusion, corruption, distrust, and favoritism. Using the code-relations browser, we found the following co-occurrences of constructs associated with the Middle Eastern business climate:

- Middle Eastern business climate/*Wasta* **[50]**
- Middle Eastern business climate/*Collusion* **[25]**
- Middle Eastern business climate/*Corruption* **[12]**
- Middle Eastern business climate/*Favoritism* **[6]**
- Middle Eastern business climate/*Distrust* **[4]**

Once the elements of the Middle Eastern business climate were established, we returned to the data to look for relationships between *wasta* and e-RA use. Again, because we did not have a stand-alone code for e-RA use, we turned to survey responses to support any relationships. According to all three of the managers, the transparency and procedural fairness of e-RA could be used as a substitute for *wasta* (Appendix G, question 28) to reduce the effect of work-arounds and undue influence inherent with the use of *wasta*. While their answers do not suggest that e-RA use can actually decrease the use of *wasta*, the data suggests that e-RAs can help firms cope with a business climate of *wasta* by increasing transparency. Thus, firms that rely on *wasta* as a source of competitive advantage to win tenders will find e-RAs unattractive and elect not to compete. The overall effect is that e-RA use can decrease the utility of *wasta* for firms who rely on it. According to one study in Jordan, “tenders are often ‘window dressing.’ Decisions are taken before [the publication of the tender] following



informal criteria” (Loewe et al., 2008, p. 266). On the other hand, our findings suggest that e-RAs could provide a coping mechanism for companies who either do not have wasta or do not want to use wasta to compete for tenders by providing a transparent and fair bidding process to qualified bidders, regardless of status or reputation. Thus, we posit that:

- P6: e-RAs enable firms not desiring or unable to compete using wasta to be successful in competitive tenders.
- P7: The utility of wasta for those firms that rely on it for a competitive advantage will be reduced in tenders using e-RAs.

Next, we noted that the use of wasta had the potential to impact a number of related constructs to include offeror satisfaction, procedural fairness, and transparency. Using the code-relations browser, we discovered co-occurrences of wasta and transparency [21], of wasta and procedural fairness [28] and of wasta and offeror satisfaction [15]. Next, we looked at specific co-occurrences within the interviews and surveys to understand the direction and strength of these relationships. Although the matrix (Table 6) showed a large number of co-occurrences of codes between wasta/transparency and wasta/offeror satisfaction, a closer analysis of the intersecting segments of text showed that the focus of the offerors was on procedural fairness. We found that offerors felt strongly that the use of wasta decreased their perception of procedural fairness. Question number 24 on the follow-up survey (Appendix G) asked, “In your opinion, does wasta decrease fairness?” We asked two managers; one said “yes” and the other said, “Of course, 100%!” Clearly, in the e-RA transaction, the managers perceived an increase in transparency and procedural fairness that were missing from the traditional, wasta-based system. Thus,

- P8: There is a negative relationship between wasta and procedural fairness.

The previous findings and propositions help to explain how e-RA use increases procedural fairness and decreases some of the influences of wasta within the Middle Eastern business climate. Later in this chapter, we address why



e-RA use is particularly useful for US DoD buyers, but may not be suited for Middle Eastern buyers. To start, we first address why our participants decided to participate in an e-RA event that, in theory, should have been unattractive due to high power distance and uncertainty avoidance scores associated with Kuwait's culture (At-Twajiri & Al-Muhaiza, 1996).

By coding the interview, correspondence, and contractual data, we revealed a number of constructs, which could explain why our participants elected to participate in the USAF auction. These constructs included trust in the buyer (USAF) (36), trust in the e-RA service provider (26), trust in the process (28), and the e-RA service provider's membership agreement (4)—all of which were addressed in part "C" of the initial survey. Using the code-relations browser, we found a number of co-occurrences between these constructs and other highly coded constructs, such as transparency and procedural fairness. The following scores indicate that these constructs are related:

- Transparency/trust in the buyer **[43]**
- Transparency/trust in the process **[28]**
- Procedural fairness/trust in the process **[37]**
- Procedural fairness/trust in the buyer **[36]**
- Trust in the process/trust in the buyer **[18]**

P1, P2, and P3 propose positive relationships between procurement integrity (i.e., transparency and fairness) and e-RA usage. The co-occurrences above suggest a relationship between procurement integrity and the amount of trust an offeror places in the buyer. This is particularly relevant to e-RA use in the Middle East because high levels of trust in the USAF might explain why offerors chose to participate in the e-RA, whereas they would not participate with B2B buyers in the Kuwaiti commercial sector. When we asked why the managers felt high levels of trust toward the USAF, we were told it had to do with the *FAR*'s rules and procedures. This higher level of trust explains why e-RAs could be effective sourcing venues for DoD buyers but would make a local, B2B e-RA a



tough sell unless a trustworthy agent (like the DoD or Sorcity) were to host the event. Based on the findings, we suggest the following propositions:

- P9: There is a positive relationship between transparency and trust in the buyer.
- P10: There is a positive relationship between transparency and trust in the process.
- P11: There is a positive relationship between trust in the process and trust in the buyer.
- P12: There is a positive relationship between procedural fairness and trust in the process.
- P13: There is a positive relationship between procedural fairness and trust in the buyer.

Using the initial survey (Appendix F, sub-section C), we asked managers under what conditions they would participate in a future e-RA as a seller if the buyer were a Kuwaiti-based firm B2B. Informants were first asked to identify three Kuwaiti firms—one they could trust, one they could not trust, and one they were uncertain of trust-wise. Two informants completed this portion of the survey. One manager indicated a strong desire to participate when the informant (seller) trust with the buying firm was high, but would not participate with the firm if the trust was low. The other informant indicated a weak effect. He was inclined to participate in an e-RA offered by both trustworthy and untrustworthy firms, although to a lesser degree with the untrustworthy firm.

Informants were also asked whether they would participate in another e-RA given differing levels of reliability in the (1) sourcing process, (2) the buyer (as an individual), and (3) the e-RA service provider. In general, informants agreed that they would participate in an e-RA if they could rely on the process to be fair but, otherwise, would not participate. However, whether or not informants could rely on the buyer (individual) showed mixed results; some informants would participate in an e-RA, whereas others would not. Finally, all informants strongly agreed that they would not participate if they could not rely on the e-RA service provider. Given these findings, we posit that:



- P14: Trust in the process moderates the relationship between perceived usefulness and a decision to participate such that greater trust increases the strength of the relationship.
- P15: Trust in the e-RA service provider moderates the relationship between perceived usefulness and a decision to participate such that greater trust increases the strength of the relationship.

Finally, since responses to sections D of the initial survey indicated trust as a moderating factor between perceived usefulness and a decision to participate, we wanted to see if there was a direct relationship between trust in the buyer, trust in the process, and trust in the provider and a firm's decision to participate. Because we did not code "decision to participate" as a stand-alone construct, lexical search and the code-relations browser in MAXQDA were of no help. Furthermore, questions concerning trust in section D of the initial survey were designed to reveal a moderating versus direct effect of trust. However, our field notes and memos in MAXQDA indicated that offerors did discuss trust as an important construct during interviews. For example, during interviews, trust in the buyer (36), trust in the process (28), and trust in the provider (26) emerged as reoccurring themes. To discover a relationship, we turned to the transcripts for specific examples.

One interesting line of questioning revealed a higher level of trust for the USAF definitely influenced at least one manager's decision to participate. When asked, "Do you suspect, or did you suspect, any nefarious behavior by the United States Air Force [in the e-RA]?" One manager answered, "No. With the USAF, no." When asked if a Kuwaiti business would act nefariously, he replied, "Yes, definitely. I think 110% they would do that. Because, you see, what I'm trying to say is that e-RA—and I'm very strong in saying that because I'm being in this market for the last 20 years—I am considered the eyes and years of the market, and that is like USAF as an organization everybody trusts. USAF was a different involvement. [...] USAF employees would definitely have all the reflections and policies of the USAF." Another manager said, "[The] e-RA was owned by USAF, you know what I mean. It was run by USAF. I could never even think that a third



party would conduct that!” Both of these examples show that the level of trust for the USAF as an organization weighed on the each of the manager’s decision to participate in the e-RA. We also found that managers extended trust to the e-RA process because the USAF sponsored it. When asked about the importance of procurement integrity and the use of e-RA, one manager responded as follows:

Manager: Yeah, I said our relationship and our interest with the Air Force—I trust the procedures; I trust the Air Force. So, I thought it of the Air Force a very reliable client that I can rely on when I give my bid, I rely to get a fair evaluation of our bid.

Researcher: And then, by extension—the e-RA process?

Manager: That’s even more fair. I mean, that’s more even fair and transparent at the same time. I mean, because the e-RA—you can see the bidders, what they are bidding, so there’s no—it’s very transparent.

This exchange shows both a trust in the USAF and, by extension, trust in the process. What is not as clear is why the offerors trusted Sorcity enough to participate. Perhaps the dollar value was so high that offerors just did not care. Perhaps Sorcity benefited from the same extended trust. During our interviews, we found two examples that help add insight. First, one manager stated that “a company that’s coming from overseas...usually I would trust them more because they are doing normal business so this organization must be organized and well-established. This would be the reason why I would trust them more.” Here, the manager seems to imply that a large international company (outside the Middle Eastern business climate) would likely be more reliable. Since Sorcity conducted this auction and provided e-RA services globally, we asked them if they felt trust in the provider influenced participation. The CEO replied as follows:

We didn’t ask them this question directly, so on a scale from 1-10, we don’t know if they trusted us a 5, a 2, or a 10, but we do know that they participated. All suppliers who were invited participated, and so we apparently did an effective job in at least giving them enough of a comfort level to trust us and the process enough to engage and follow through. Numerous conversations happened with these suppliers. Questions that came up we provided the appropriate, ethical, honest answers, and that



built trust and credibility. Everything was as it was stated, and that builds confidence, trust, and credibility.

According to the contracting officer responsible for the event, one reason that could explain why these managers trusted a third-party e-RA service provider was that

The Air Force was kind of sponsoring the company, so there was a level of trust with them because of their association with the Air Force. If they didn't trust the bidding company, then I don't think they would have a good chance in the event if, you know, they wouldn't have taken the time and the energy to submit a proposal if they didn't trust Sorcity.

Finally, such a high value placed on trust led us to question if there was a relationship between trust in the process and offeror satisfaction. Since both of these constructs were coded in MAXQDA, we again turned to the code relations browser and found co-occurrences of the codes trust in the process and offeror satisfaction **[10]**. These co-occurrences, combined with all the previous testimony and support for P4 and P5, suggest that managers value a trustworthy process and consider the trustworthiness of the buyer, their processes and the third-party provider when deciding to participate in a new and potentially risky acquisition tool. Thus,

- P16: There is a positive relationship between trust in the buyer and the offeror's decision to participate in an e-RA.
- P17: There is a positive relationship between trust in the process and an offeror's decision to participate in an e-RA.
- P18: There is a positive relationship between the offeror's trust in the provider and their decision to participate.
- P19: There is a positive relationship between trust in the process and offeror satisfaction.

In section D of the survey, we asked managers to rank the level of trust for the USAF, trust in the e-RA service provider, and trust in the individual buyer. Results of the code relations browser indicated that trust in the buyer/trust in the provider [10] were related. A deeper look into survey questions revealed two important findings. First, all three managers "mostly agreed" (average score of 2)



that they could rely on the e-RA service provider before the event. They also “strongly agreed” that they could rely on the USAF. When asked whether their reliability changed after the e-RA, all managers agreed the e-RA did not change their level of trust for either the e-RA service provider or the USAF. Additionally, all informants strongly agreed that they would not participate in an e-RA if they did not trust the e-RA service provider. Thus,

- P20: There is a positive relationship between the offeror’s trust in the buyer and trust in the provider.

Another dynamic that emerged was the use of a membership agreement by Sorcity, Inc., to establish trust between the e-RA service provider and each offeror. During initial coding, we found that managers also mentioned membership agreement (8) when describing why they trusted Sorcity from the start. Table 6 shows seven co-occurrences of membership agreement/trust in the provider, suggesting a relationship between these two constructs:

- P21: There is a positive relationship between the e-RA membership agreements and trust in the provider.

Rival Theory: Some may argue that trust has little to do with a firm’s decision to participate, pointing to volume of the purchase as the force driving participation. At an estimated \$2 million, we would have to agree that participation reservations tied to national culture (i.e., a high UA score) might be trumped by an attractive requirement. However, our survey results combined with interviews suggest that some Kuwaiti managers simply would not participate in an auction if it were for a non-DoD buyer—due, in part, to the Middle Eastern business climate of distrust, corruption, favoritism and wasta.

Aside from trust, we also wanted to see if e-RA participation impacted the buyer-seller relationship, so we created separate sections of the initial survey (sections B and E) to compare relational exchange attitudes prior to and just after the e-RA event. Managers were asked to respond to statements about their relationship with the USAF using a seven-point scale ranging from strongly agree



(1) to strongly disagree (7). Figure 5 shows the complex web of interactions resulting from P1 thru P21.

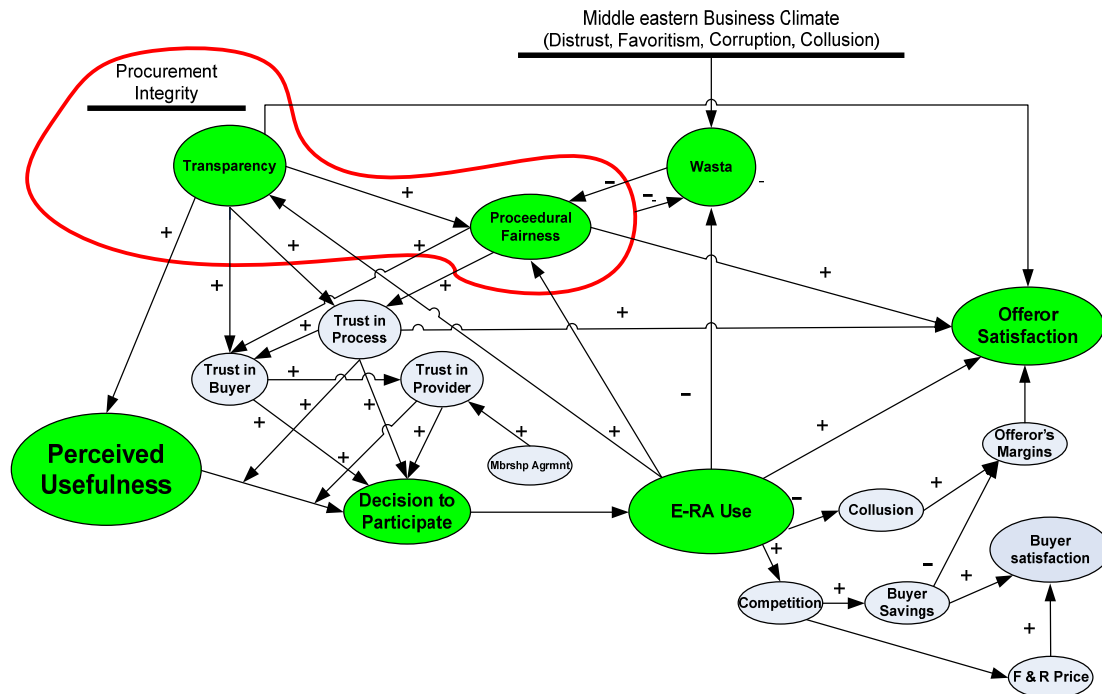


Figure 5. Procurement Integrity Model (Constructs for Questions 1- 5 and 7)

One interesting finding we discovered during an interview indicated that the normal way that prime offerors and their prospective suppliers negotiate changed solely due to the e-RA. According to one manager, normally a supplier and a prime offeror negotiate a price prior to the prime’s submission of a proposal to the buyer. Later, if successful in winning the tender, the prime and its subcontractor re-negotiate the subcontractor’s prices lower—to the benefit of the prime. In interviews with one offeror and its supplier, we found that one of the primary reasons they selected each other was that the prime offeror was able to explain the concept of e-RA, negotiate the best price possible upfront, and lower the price during the actual bidding event. The example below illustrates how the e-RA changed the bidding process between the supplier and the prime offeror.



I was telling them...for you, since you are suppliers of the generators, which are the biggest portion of this contract, you have to reduce your number up to this if you want us to win this project. And they were like, "okay, we'll call you back after 10 minutes." So they were arguing and then calling me back, "No, no, we can't go, can't work, only up to this much." So, by this bargaining process that took place ahead of time, I think this is the key for winning the reverse auction, is the bargaining during the bidding stage. Because the normal practice in this part of the world the main bargaining takes place after winning the contract because the supplier gets requests all the time from maybe 10 major contractors, so he will give all of them the same price and usually they try to keep some sort of a list on the actual [cost].

In addition to changing how the prime and supplier negotiate, the e-RA also caused managers to interact with their ownership to change bidding strategies (52), change profit margins (5), negotiate payment terms (2) and reach back to the manufacturer (5) during a bidding event. In the case of Manager "C", this resulted in a profit margin reduction from 10% down to 2% during the course of the auction. The below testimony is an insightful quote from one manager describing his interaction with the business owner during the event.

So my strategy changed completely. I would say that because in any big strategy—and I think our strategy is quite good. I've been in business for 25 years in the DOD, around 22 years as a company with big business for big oil companies, big companies, which use our bidding process around the world. [The] strategy completely changed because I never use the Board of Directors—In this case, [I] called back more times to the Board of Directors. Normally, I don't need to do this because I know what the Board of Directors want. Then the price reached a 7% margin, I called [my company owner]. He said loudly, "I cannot talk." And I woke him up because his wife picked up the cell phone and I said, "Ma'am, I'm sorry, but you need to wake up the boss." She said, "Everything is okay? Because you don't call when he is asleep." I said, "Ma'am, I have to because it's something." So he said, "[Manager 'C'] what happened?" I said, "Sir, I've come down to 7%." He said, "Why would you do that?" I said, "Sir, don't talk about it now. Levels are higher, price changed like that. This is very big owner sitting in front of the laptop; you don't have time to ask your boss's advice." He said, "Okay, how much more do you want to go down?" I said, "It's not me. I'm not controlling it. I am just telling you this is what happened and what should I do?" Then he told me, "[Manager 'C']", do not go below 5%!" Then he asked me, is it still going down?



One of our key findings came from an interview with a highly competitive manager who felt that his ability to communicate how e-RA works to a supplier allowed him to negotiate a lower cost prior to the auction. This is important because, according to multiple managers, in Middle Eastern B2B transactions suppliers typically give prime offerors a high price upfront, then negotiate downward after the offeror wins the award. In this event, managers who used a more traditional approach were at a competitive disadvantage in the bidding event because they had to secure discounts from the supplier in real-time. As the competitive manager put it:

There have to be a good relationship between the main contractor and the supply partner or subcontractors. That working relationship—this is what, this is what enables the contractor to give a low price or a competitive price.

The importance of explaining the e-RA event to the prospective supplier, having a good working relationship with the supplier, and negotiating the best possible price upfront were all confirmed in separate interviews with the supplier referenced above. Additionally, the supplier mentioned that part of the negotiation included a promise from the offeror to purchase additional generators (at the quoted price) in the future.

The examples above indicate the power of e-RAs to change market dynamics. When examining the literature, we have found that market impact is not uncommon; however, the fact that this e-RA changed the prices secured from subcontractors prior to proposal submission is 1) uniquely caused by e-RAs, and 2) a change in bidding strategy unique to the Middle Eastern business customs. Over the course of our study, we coded market changing implications 13 times, suggesting that savvy DoD buyers who can select appropriate and attractive e-RA requirements have the potential to directly impact the supply chain in ways conventional procurement techniques cannot. Figure 6 shows a visual representation of P22, P23, and additional construct referenced in this section.



- P22: E-RA use is positively related to an offeror changing its bidding strategy.
- P23: Altering the market dynamics gave the winning offeror a competitive advantage in the event.

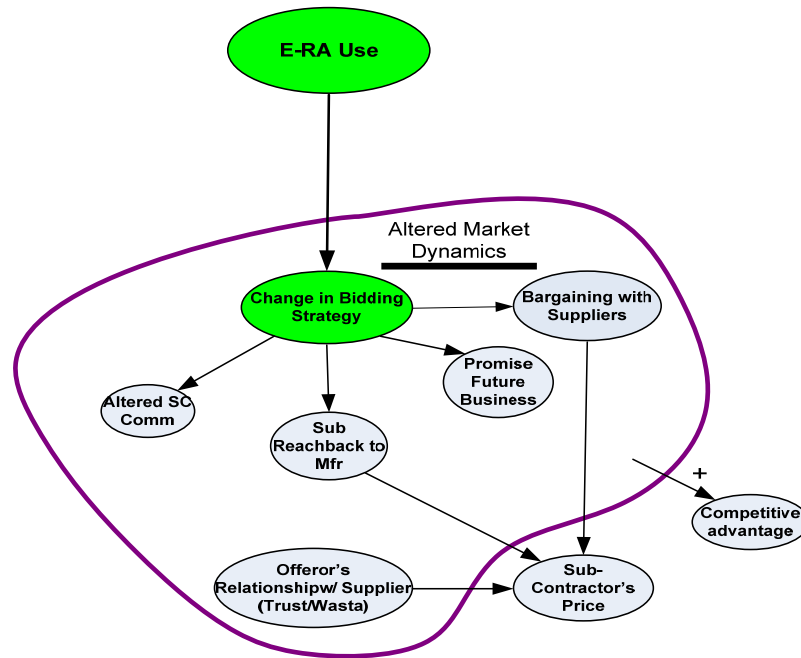


Figure 6. Market Dynamics Altered by e-RA (Question 7a)

D. Antecedents for Supplier Use

- Sub-research question #6: Why do firms operating in an Arab country decide to compete in e-RAs? Do the reasons differ from those of US-based businesses? Hence, is perceived usefulness determined by the same or different factors?

In Chapter II, we identified that previous studies rate Kuwait high in the following categories of Hofstede's dimensions of national culture: power distance (PD), uncertainty avoidance (UA) and collectivism (C). Given their high scores, we would expect that each of the managers would have chosen not to compete in the e-RA. The fact that they did caused us to ask why.



We began by including 17 common motivational factors, or antecedents, for use (Hawkins et al., forthcoming) in section one of our initial survey (Appendix F). Of the 17 factors, all three of the managers indicated the following as motivational factors (shown below and in Figure 4):

- Motivational Factors
 - To gain insight into the competitive market,
 - To gain access to buyers,
 - To decrease time to contract award,
 - To receive feedback from buyers on the event,
 - To increase transparency in the bidding event,
 - To increase reliability with the buyer/seller relationship,
 - To penetrate or access new markets,
 - To increase sales,
 - To make them more efficient and effective for future business, and
 - To learn a new sourcing technology.

Going back to our cluster chart at Appendix I, we found that purchase volume (25) and the desire for suppliers to reduce excess inventory (5) also contributed to the attractiveness of the procurement for the supplier. To gain a better understanding of what constituted each of these constructs, we looked for answers given during the initial interviews. Responses for a sufficiently attractive purchase volume ranged between \$200,000 and \$1 million. Manager “D” identified purchases less than \$200,000 as “small dollar” procurements in which the 19.9% savings the USAF received would not have been realized. Manager “C” explained that at roughly the \$500,000 mark, the procurement became more attractive because he had more leverage to negotiate margins with suppliers. From the supplier perspective, Manager “E” verified that he was more motivated to reduce his price when the volume was large and he had inventory on-hand. Both of these findings are consistent with existing e-RA theory (Hawkins et al., forthcoming). Figure 7 shows the relationship resulting from P24 thru P26.



- P24: There is a positive relationship between purchase volume and attractiveness.
- P25: There is a positive relationship between excess inventory and attractiveness.
- P26: The same antecedents that motivate Western companies to use e-RA also motivate Middle Eastern companies.

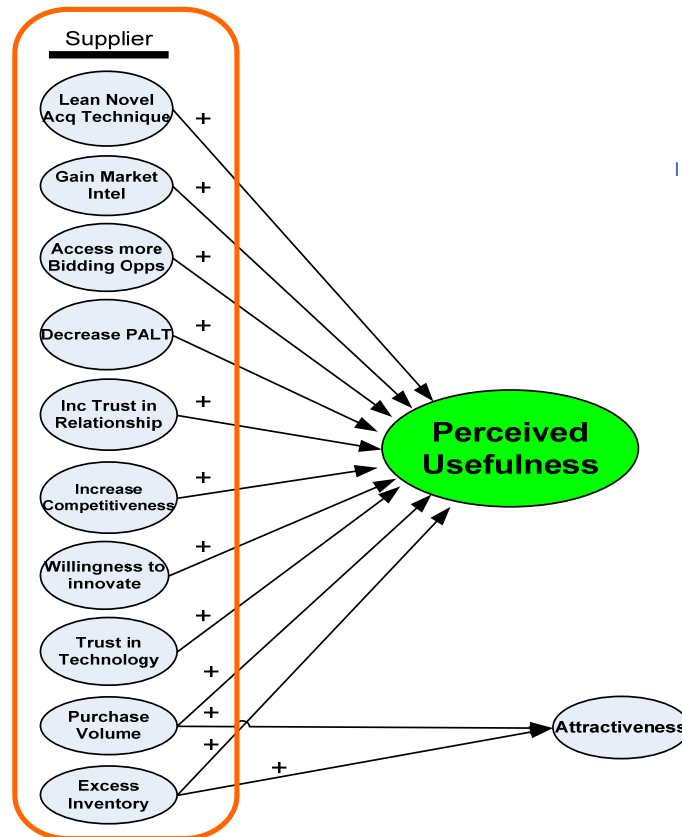


Figure 7. Supplier Antecedents to Supplier Use (Question 6)

E. Obtaining a Fair and Reasonable Price

- Sub-research question #8: Why does e-RA use increase the buyer's confidence in achieving a fair and reasonable price in a Middle Eastern market?

FAR Part 3 requires contracting officers, through full and open competition, to make a fair and reasonable price determination for every award



unless certain exceptions apply. In a truly competitive market, which Manager “C” believes Kuwait is not, competition between two or more independent vendors usually satisfies this requirement. However, the 19.9% savings achieved by the focal e-RA of this case study, combined with vivid examples of price gouging and collusion gathered during our fieldwork, indicate that standard methods of competition may not achieve fair and reasonable prices in Middle Eastern markets. During an interview, a manager from company “A” provided an example of how collusion occurs and how it impacts price both in the private sector and between DoD and local businesses. He stated:

Can you imagine coming to [a USAF contracting officer] with an example like this? We have 4 companies here, one is mine and 3 belong to the same owner. One example could be I wouldn't bid on this particular job... The other 3 companies are aware of it. They can just jack up a price, a job that could cost you 1,000 KD could end up at 6,000 KD, and you guys would have to give it to the lowest bidder. And then what happened in other places ... same thing. There are posing as three companies or four companies or whatever, they are quoting for a particular item or something equal will do [brand name equivalent]. Let's say that 3 companies are giving the same specification and the fourth company is giving something a little bit different. The three companies say this is good and the fourth company doesn't know what he is talking about. I say this item is equal and they say I don't know what I'm talking about and the fourth guy is cut out.

Over the course of our research, we coded supplier price gouging (20) times, indicating a problem area worth investigating further. In one interview, Manager “A” provided a story of an actual encounter with a USAF contracting officer in which he tried to explain how contractors are inflating prices.

We started talking to ECES [Civil Engineering] about how much to do a [barrier] relocation, they just had to pick it up on one site drop it to another site. So they called this so-called big company to do the job. They [the winner] charged a price 7,000 or 9,000 KDs to do the whole thing. It's a one day job, 24 hours. I know that, since it's in my field also. I know that it does not cost more than 1,500 or 2,000 KD. It told them and asked why I was not invited [to bid]. I did a calculation of approximately how many vehicles and people it would require [inaudible] that's because of the relocation... Maybe we charge for each of the vehicles and a labor charge.



I told them this is how much it is going to cost. His eyes lit up [and he] said whoa! I said what happened and he said 9,000 KD. And I was like, “Oh my god, you’ve paid 4 or 3 times the actual price!” He’s like yeah, [but] they did an amazing job and they finished in one day. I told him, anyone who knows a crane and three drives can get the job done [in one day]. Because the people who handle the crane and trailers are professionals. All I need to do is tell them where to show up and they will do it. He was shocked!

This example was one of many similar stories shared with us regarding instances in which the US Government is being gouged on price in the Middle East. Manager “C” added that in certain areas like Iraq and Afghanistan, an e-RA could be “an effective tool” because many contractors inflate prices 30%-50%. In areas like that, according to him, e-RAs could also reduce the time contracting officers spend negotiating procurements and bring down the margins up to 30% for larger acquisitions. Discussions with an ECES officer revealed similar thoughts on e-RA use as a deterrent to price gouging:

I think that the e-RA basically showed them that they can’t gouge us. I think it was a very positive thing. It was a true competitive environment that caused them to realize that we have to pay rate and they can’t charge more than fair price. I think that was a wakeup call for them.

Figure 9 illustrates how our unique finding of overpaying for goods and services fits into what is already known from appropriateness literature. These additional constructs are discussed fully in Chapter II, section C but are not further discussed here because they are outside the scope of this project. For additional information, see Hawkins et al. (2009), Hawkins et al. (forthcoming), Carter et al. (2004), and Beall et al. (2003).

Rival Theory: One manager felt concern of collusion, price gouging, and corruption are exaggerated in the Middle East. As an example, he made a comparison between large business owners who own many companies in Kuwait to Warren Buffet. His point was that critics look at multiple Kuwaiti businesses with the same owner and think automatically that owners encourage and allow collusion between companies, which in reality is far from the truth. Middle



Eastern owners, like Warren Buffet, are far too concerned with bigger problems than to manage the day-to-day activities of each company. This is a valid point, but the problem with collusion, according to that same manager, is that it happens at the manager level—particularly with supply-type contracts. The example above, coupled with the 19.9% savings achieved on the procurement of generators, suggests that many Kuwaiti companies (with or without collusion) are gouging US contracting officers on price. Figure 8 shows P27, as well as additional constructs addressed in e-RA-appropriateness literature.

- P27: There is a positive relationship between the amount a buyer overpays for e-RA goods/services and e-RA appropriateness.

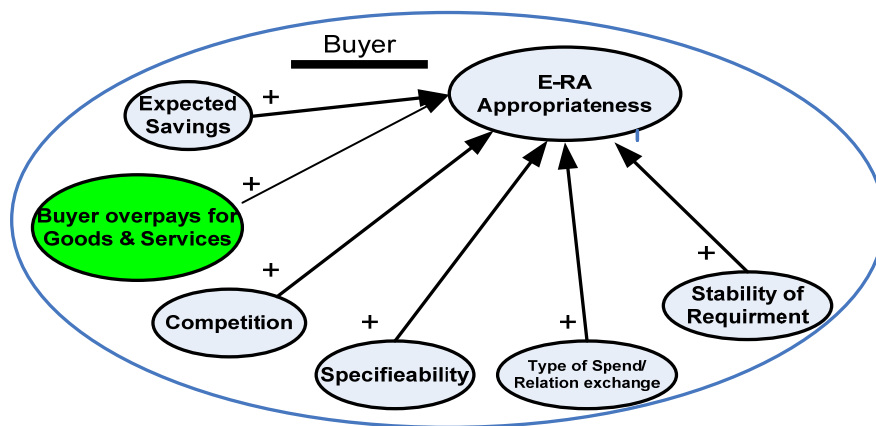


Figure 8. Buyer Appropriateness Model (Question 8)

The examples above create a dilemma for contracting officers who are required by the *FAR* to determine prices to be fair and reasonable prior to awarding a contract. E-RAs provide contracting officers a mechanism to increase competition through real-time competitive bidding, and (more importantly) to obtain a price that is closer to the real market price. During our initial coding phase, we noted competition (11), buyer savings (14), buyer satisfaction (14), collusion (39), offeror’s margins (19), and offeror satisfaction (42). To discern meaning, we again turned to the lexical search and code relations browser tools and found key relationships/co-occurrences between buyer savings/buyer

satisfaction [5]. While the idea that saving money increases buyer satisfaction is not new, a correlation between e-RA competition/fair and reasonable price [5] is important since the FAR requires contracts to be awarded for fair and reasonable prices. Furthermore, we found a co-occurrence of codes between competition/buyer savings [24] and between fair and reasonable/buyer satisfaction [27]. Figure 9 shows P28 thru P31.

- P28: There is a positive relationship between competition and buyer savings.
- P29: There is a positive relationship between buyer savings and buyer satisfaction.
- P30: There is a positive relationship between a buyer receiving a fair and reasonable price and buyer satisfaction.
- P31: There is a positive relationship between competition and a buyer receiving a fair and reasonable price.

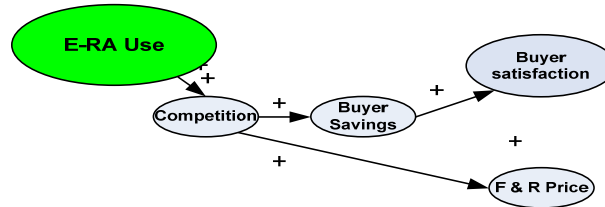


Figure 9. e-RA Competition Model (Question 8)

Each of the previous models is consolidated into Figure 10 to provide a snapshot of the complex dynamics at work. Table 6 shows the co-occurrence of codes generated from the MAXQDA code relational browser.

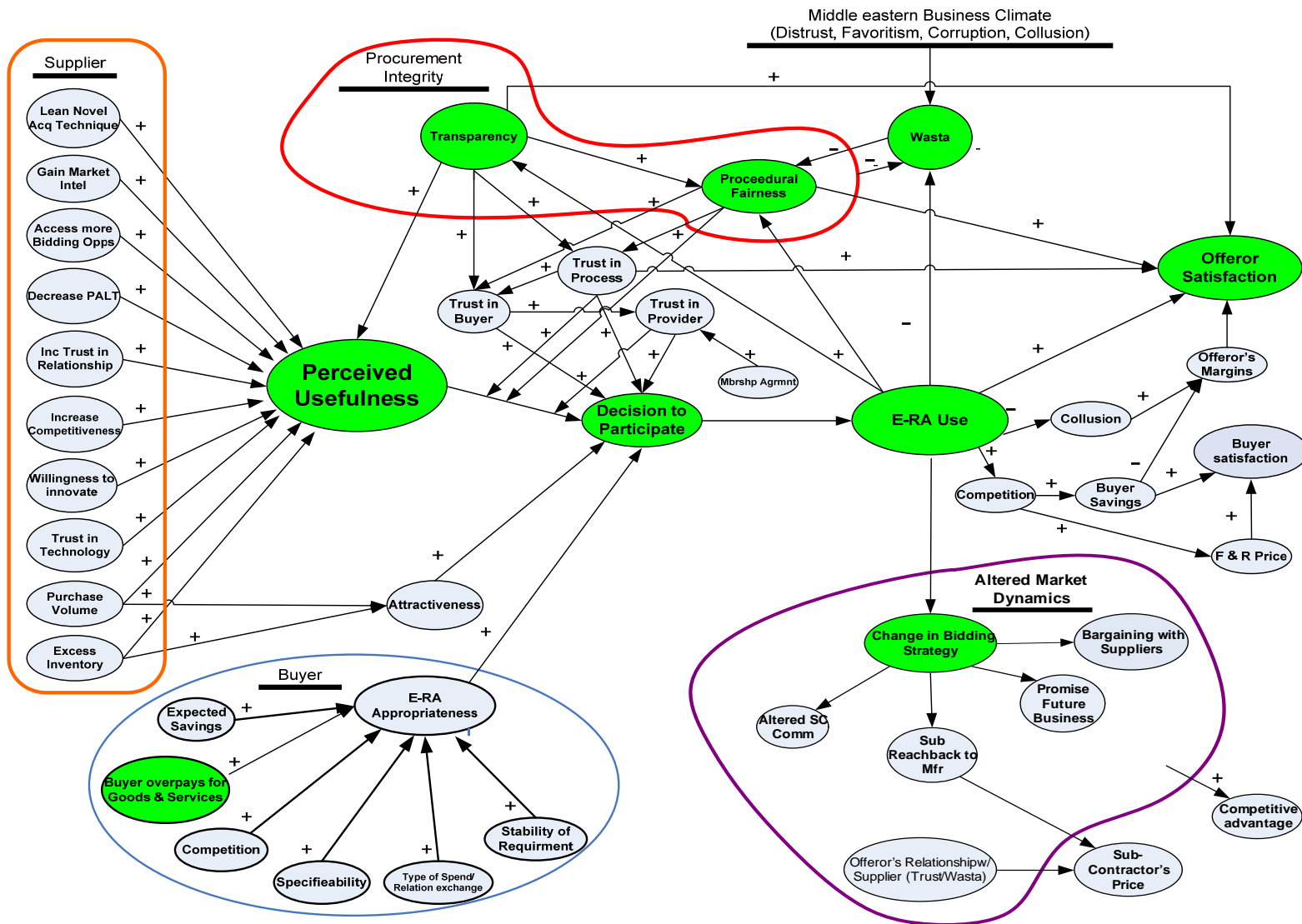


Figure 10. Complete Conceptual Model

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V. Findings—Application of e-RAs

A. Introduction and Overview

This chapter is designed to answer research questions 2, 3, 4 and 5—all of which pertain to applied elements of e-RA use within the Federal acquisition framework. We do this in two major sections, outlined in the following paragraphs.

First, we conducted a detailed spend analysis of USAF FY07 and FY08 contract data, obtained from Monterey Consultants Incorporated (MCI), in order to determine how much of Air Force’s spend was appropriate for e-RA sourcing. This involved a step-by-step process of analyzing and filtering spend that is not suited for e-RA, which we describe fully in section B (below). In addition to conducting a spend analysis, we then applied a second method—a benchmarking—to determine how much money the USAF could have saved by using e-RAs for requirements conducive to e-RA sourcing (i.e., e-RA-appropriate spend or “auctionable” spend). Finally, we took the auctionable spend from USAF FY07 and FY08 contract actions and projected potential savings to top-line FY01-06 spend for each branch of the DoD and to AFCENT (for USAF contingency operations). At each step, we explain our methodology in order to demonstrate 1) procedural rigor, and 2) a repeatable process for subsequent research efforts and use by practitioners.

The second part of this chapter is geared toward the DoD practitioner. We begin by building an e-RA Appropriateness Model (EAM) for contracting professionals to use in evaluating requirements based on relevant literature, success stories, and interviews with industry and DoD experts from Defense Supply Center Philadelphia (DSCP) and CECOM. By using the EAM, contracting professionals will be able to discriminate between requirements that are appropriate for sourcing via e-RA and those that are not.



Finally, we present five *FAR*-compliant process flowcharts showing how to incorporate e-RAs into the following source-selection methodologies: 1) simplified acquisition procedures (SAP) using price only, 2) SAP with trade off, 3) SAP using LPTA 4) *FAR* Part 15 using LPTA and 5) *FAR* Part 15 using full-trade-off. For brevity, we only discuss each step of the SAP using the LPTA model within this section while leaving the other models for reference in Appendices K-N. The remainder of this chapter addresses strategies to mitigate protests and examines structural barriers to e-RA use.

B. Spend Analysis Results

1. Current e-RA Use

The first step in our analysis was to gather information from each DoD branch in order to determine current levels of e-RA use and savings. Following the footsteps of Brown and Ray (2007), we requested spend data from the three primary sources of e-RA capability: FedBid, CECOM (USAAVE), and Procuri/Ariba (Navy).

Since 2000, CECOM has conducted 178 reverse auctions for commercial commodities under SAP. Since its inception, the USAAVE platform has delivered total savings of \$44 million, or 31% below the independent government estimate (IGE) (M. Meinert, personal communication, July 14, 2009).

Since 2000, the Navy (NAVCIP) has conducted 126 auctions using the Procuri/Ariba platform. Like the Army, the Navy has saved over \$75 million, with an average savings of 18%. The Navy's use of e-RAs is targeted to commodities, although higher-dollar procurements are recommended to entice bidders and increase savings.

Figure 10 represents a broad snapshot of e-RA savings provided by FedBid. One number that stood out was the small number of auctions conducted by the USAF in comparison to sister branches and the DoD as a whole. While we



were surprised with the disparity between branches, we were not surprised with the lack of official e-RA guidance and direction from the USAF. Still, 384 e-RAs indicated at least some offices were using e-RAs, so we asked FedBid to provide a spend break out by USAF office. What we found surprised us. According to FedBid, 381 of the 384 e-RAs shown in the USAF column were actually conducted by the GSA on behalf of the Air Force (J. Lee, personal communication, June 25, 2009). This means the USAF placed an order with the GSA who, in turn, used an e-RA to source the requirement. The other branches, in conjunction with their software platforms, are using the e-RAs significantly more often and are saving more money. Table 7 provides a snapshot of e-RA spend by each branch of the military while using FedBid auction services.

Table 7. FedBid Spend Data through June 2009 (Fedbid, 2009, June)

	USA	USAF	USN	DOD	Total
Number of Buys	10,735	341	2,127	846	14,049
Independent Estimate	\$450,908,616	\$67,637,304	\$81,378,928	\$79,520,496	\$679,445,344
Final Awarded Price	Not Provided	Not Provided	Not Provided	Not Provided	Not Provided
Agency Contracting Office	\$335,399,025	\$14,313	\$15,719,188	\$2,996,312	\$354,128,838
GSA-assisted Acquisition Service	\$56,282,701	\$62,182,727	\$58,215,926	\$65,854,800	\$242,536,155
Net Savings in Dollars	\$59,226,890	\$5,440,264	\$7,443,814	\$10,669,383	\$82,780,351
Net Savings by Percentage	13.1%	8.0%	9.1%	13.4%	12.2%
Average No. of Sellers Bidding	5.5	3.7	6.3	4.6	5.5
Average No. of Bids per Buy	13.6	8.9	13.6	11.3	13.3
Average No. of "No Bids"	71.9	61.0	56.1	61.6	68.7
Average No. of Sellers Notified	1,442	1,075	1,214	1,132	1,380
% of Dollars to Small Businesses	79.9%	81.3%	72.8%	77.0%	78.8%



2. Obtaining and Filtering Data

The second step of our analysis involved gathering, sorting, categorizing and analyzing USAF FY07 and FY08 transaction data provided by MCI. MCI provided two reports, a CLIN-level contract action report (CAR) and a contract-level CAR from the Federal Procurement Data System—Next Generation (FPDS-NG) database. To maximize accuracy, we attempted to conduct the spend analysis at the CLIN level since different types of goods and services are commonly combined on single contracts. However, we found Product Service Codes (PSCs) and Federal Supply Codes (FSCs) at the CLIN level were inconsistently entered and sometimes missing altogether. Contract-level FSCs/PSCs information contained a much higher level of fidelity; therefore, we based our unit of analysis on contract-level data. The weakness of this approach was twofold: First, it compromised accuracy by potentially eliminating e-RA-suitable CLINS included in a contract classified with an inappropriate overall PSC. For example, a base contract coded with a PSC for research and development (R&D) may have included sub-line items for test equipment that was suitable for sourcing via e-RA. However, all of such a contract would be coded as R&D. The second weakness was that we had to accept the accuracy of contracting officers' PSC/FSC designations on face value without looking at the individual contract.

Our third step was to filter out transactions from the CAR that were inappropriate for e-RA use. In order to do this, we first calculated the percentage of spend in which e-RAs could have been appropriately used. We called this e-RA appropriate spend and used two methods to calculate it: (1) We filtered out non-appropriate spend from the total spend by removing inappropriate contracts (i.e., the spend analysis approach), and (2) we applied the average percentage of total procurement dollars that industry typically spends using e-RAs (i.e., the benchmarking approach). Table 8 shows the results of both methods.



a. Method 1

The total spend column represents the total amount the USAF spent each year. For our baseline, we selected FY07 and FY08 data because prior to FY07, the USAF did not use FPDS-NG. According to Monterey Consultants, Inc., FY01-06 data was incomplete because the Air Force switched to FPDS-NG in 2006, with full conversion as of the start of FY 2007. Furthermore, previous data was from DD350 reporting only and did not include small purchases under \$2,500. Additionally, it may or may not have included classified acquisitions and did not include foreign military sales. Finally, only years 1998-2006 have been audited. Earlier data is reasonably close but may not match official Air Force acquisition data.

Using the e-RA appropriateness antecedents described in Chapter II, we filtered out the following contract actions in order to determine the total spend that was appropriate for e-RA sourcing antecedents—including specificity, competition, stable requirements, high-criticality/high-supply complexity, and the need for relational exchange (trust, cooperation, collaboration, etc.).

- All research and development (R&D) contracts: Rationale: R&D is not a stable requirement, nor is it easily specifiable. Depending on the type of research and development needed, typical R&D requires a collaborative effort in order to develop cutting-edge technology to support major defense weapon systems.
- Construction contracts: Rationale: While construction materials could be considered auctionable spend, we had no way of sorting out materials from actual building. Furthermore, construction rarely goes as planned, due to unforeseen factors that evolve during the course of the project. Thus, modifications that impact costs and schedule are common. Without a stable and specifiable requirement, the government runs the risk of post-award modifications, giving the contractor an incentive to seek renegotiations.
- Contracts awarded under other-than-full and open competition: Rationale: Non-competitive procurements will not work in an e-RA sourcing event. Competition is a key component that must be present.



- All contract types other than firm fixed-price (FFP), fixed-price economic price adjustment (FP-EPA), and fixed-price award fee (FPAF) contracts: Rationale: Contract types other than fixed price, by design, are intended to accommodate situations in which exact requirements are uncertain. Hence, specifiability is low. High specifiability is essential for e-RA use, and contracts that lack this are destined for post hoc changes, which ultimately add costs and detract from savings in price and total ownership costs (Beall et al., 2003; Hawkins et al., 2009). Since e-RA bidding is based on prices and since the resulting prices are typically bid to low levels that force the supplier to economize on costs (and often profit), inviting changes after bidding is ill-advised.

Removing the contracts described above reduced FY07 spend from \$70.2 billion to \$17.7 billion, leaving 25.22% of total spend being deemed appropriate for e-RA sourcing. Applying the same methodology, we reduced the FY08 spend from \$63.6 billion to \$16.9 billion, or 25.13% total spend being deemed appropriate for e-RA sourcing. We then averaged both percentages to reach a two-year average, e-RA-appropriate spend as a percentage of total spend (25.15%). According to this method, on average, 25.15% of the total USAF spend could be awarded using e-RAs. We then applied the two-year average to FY01-07 and FY09 to calculate a total e-RA-appropriate amount of spend for each year. Finally, we applied an industry average savings of 20% (Cohn, 2000) to the e-RA-appropriate total for each year, leaving a potential USAF savings of \$25.35 billion between FY01-09. These savings are roughly 126 times the combined Army, Navy, and FedBid savings of \$201 million. Given the staggering amount of total potential savings, we feel it is important to disclose the weaknesses with this approach of figuring e-RA-appropriate spend.

First, not all FFP, FP-EPA, and FPAF contracts are appropriate for sourcing via e-RA. Yet, using this method, they are assumed to be. For example, some FFP, FP-EPA, or FPAF requirements may not be sufficiently specifiable or may be highly relational. Some requirements experience significant post-award changes. It is ill-advised to use e-RAs in such situations if the buying activity doesn't have the time or resources to prevent the contractor from attempting to regain profit margin lost due to the e-RA. Additionally, certain items or services



may require greater relational (versus transactional) exchange (Webster, 1992). For example, using Kraljic's (1983) framework, not all of the remaining spend will fall into non-critical and leverage categories of spend; some could be critical/strategic or bottleneck. For those procurements, different acquisition- and supplier-management strategies should be considered. Critical/strategic and bottleneck spend categories usually entail the availability of few suppliers, which may limit the number of alternative, qualified suppliers capable of satisfying the procurement. Thus, buyer dependence on the supplier may be high. Additionally, critical spend ideally uses a partnership-type relationship between the buyer and supplier; this is arguably in contrast to the transactional nature of an e-RA. For these reasons, critical spend usually does not lend itself to an e-RA procurement. Also, we could not achieve a high degree of fidelity in the data because we could not see down to the CLIN level. This could lead to misclassification of dollars—classified as FFP, FP-EPA, or FPAF when actually they are not. Finally, since this method is grounded in USAF spend, it assumes that USA and USN spend is comparable to that of USAF spend. In other words, the auctionable spend percentage determined using USAF spend is assumed to apply to the other military branches' spend.

b. Method 2

According to a recent industry study conducted by CAPS, companies spend 2.58% of their total spend using e-RAs (Monzecka et al., 2008). Using the CAPS benchmarks, we multiplied the total spend for each year by 2.58% to determine an e-RA-appropriate amount, which we label as method 2, e-RA appropriate spend. Finally, we applied the industry average savings of 20% to the CAPS benchmark to determine a potential savings for the DoD, USAF, USN and USA from FY01-09 (Table 12). Taking the USAF as an example, although this total is considerably lower than method 1, the \$2.59 billion savings is 12.88 times the combined Army, Navy, and FedBid savings of \$201 million. While this number is impressive, it is important to keep in mind that this method 2, similar to method 1, is fallible; thus, practitioners should consider its limitations.



First, the CAPS benchmarking approach assumes that USAF spend resembles industry spend. Firms participating in the CAPS study most likely already rationalized their supply bases, creating a higher number of strategic supply partners. The USAF has a much higher proportion of transactional (arms-length) buyer-seller relations. In industry, many suppliers are rewarded with more business for performing well. The *Competition in Contracting Act* largely precludes the USAF from this practice. These two points, taken together, suggest that the USAF's auctionable spend will be higher than that found in industry. However, USAF spend differs from industry spend in that the USAF buys much fewer commercial items and services than does industry, conducts much more sole-source procurements, and procures more research and development. These three factors could significantly reduce USAF auctionable spend because (1) commercial products typically have more suppliers (i.e., more competition exists), (2) sole-source requirements are not appropriate for e-RAs, and (3) research and development typically is too relational for e-RA sourcing. While e-RAs and buyer-seller relationships are not mutually exclusive (Hawkins et al., 2009), e-RAs are not recommended for critical/strategic (Kraljic, 1983) items and services (Beall et al., 2003). Finally, weaknesses of the CAPS benchmark (2.58% of total spend is auctionable) must be considered. This report is based on a small sample size of 17 firms, and the study achieved only a 4% response rate to the survey—hardly representative of its population. Nonetheless, taking the two methods together, we can conservatively conclude that the potential savings for the USAF from FY01 to FY09 was between \$2.59 billion and \$25.35 billion, or between \$288 million and \$2.82 billion per year. Table 8 provides a summary of our results.



Table 8. USAF Spend Analysis Results

USAF Spend from FY01-FY09					
Fiscal Year	Contract Dollar Pool Available	Potential e-RA Appropriate Procurements (\$ billions)	Potential Annual Savings @ 20%	Potential e-RA-appropriate Procurements (\$ billions) Using CAPS Study Method	Potential Annual Savings @ 20%
FY01	\$40,658,636,487	\$10,235,811,735.60	\$2,047,162,347	\$1,048,992,821	\$209,798,564
FY02	\$47,398,465,802	\$11,932,563,765.65	\$2,386,512,753	\$1,222,880,418	\$244,576,084
FY03	\$55,554,711,050	\$13,985,898,506.84	\$2,797,179,701	\$1,433,311,545	\$286,662,309
FY04	\$55,047,330,757	\$13,858,165,518.07	\$2,771,633,104	\$1,420,221,134	\$284,044,227
FY05	\$55,581,405,190	\$13,992,618,756.58	\$2,798,523,751	\$1,434,000,254	\$286,800,051
FY06	\$62,656,276,631	\$15,773,717,641.85	\$3,154,743,528	\$1,616,531,937	\$323,306,387
FY07	\$70,210,415,739	\$17,707,066,849.38	\$3,541,413,370	\$1,811,428,726	\$362,285,745
FY08	\$63,636,840,892	\$15,991,938,116.16	\$3,198,387,623	\$1,641,830,495	\$328,366,099
FY09	\$52,746,175,463	\$13,278,849,672.81	\$2,655,769,935	\$1,360,851,327	\$272,170,265
	Total \$ Available for e-RA use (from FY01-FY09)	\$126,756,630,563	\$25,351,326,113		\$2,598,009,731
		FY07 e-RA Appropriate %	25.22%		
		FY08 e-RA Appropriate %	25.13%		
		AVG FY07/FY08 Appropriate %	25.18%		

D. Spend Analysis Results for DoD and AFCENT

In addition to the analysis of USAF spend above, we projected potential savings across AFCENT contingency spend (includes Kuwait) and to operational spend for each military service and the DoD as a whole.⁶ Like the analysis above, we began with spend-data gathering.

⁶ AFCENT spend included the units involved in the e-RA; therefore, we elected to analyze AFCENT spend instead of CENTCOM data (not available).



First, we pulled data from FPDS-NG for each branch of the Armed Services (see Table 9). This provided the total spend for each year but did not yield the contract-level data we would need in order to calculate e-RA-appropriate spend using Method 1. For AFCENT spend, we obtained FY08 spend data directly from AFCENT. This data lacked contract-level visibility but did sort procurements into three categories of spend: (1) commodities, (2) construction, and (3) services.

Next, we applied a methodology consistent with both methods used in the USAF analysis in section C. For each military branch, we first added FY01-09 spend data and placed the total in the total spend column. Next, we multiplied total spend by the e-RA two-year average of 25% and 18% to get an e-RA appropriate total, spanning nine years. Finally, we used both methods in section C to calculate potential savings. For the DoD, the total savings using method 1 resulted in \$117 billion and \$11.9 billion for method 2. This method has all of the same weaknesses identified in the USAF spend analysis but adds a loss in fidelity because we were unable to break down spend to the contract or CLIN level. Undoubtedly, each branch awards contracts differently and has a different percentage of construction, R&D, and non-fixed-price contracts. However, by providing a range from maximum auctionable spend (using spend analysis) to a conservative estimate (using an industry benchmark), the estimates sufficiently demonstrate a significant potential for savings using e-RAs.

To analyze AFCENT spend, we had to modify our approach for a number of reasons. First, the data provided was not directly pulled from FPDS-NG and did not have contract-level data. Secondly, AFCENT data is broken down into CONUS and OCONUS spend, and for the purpose of this study, our intent was to focus only on OCONUS savings. AFCENT OCONUS spend includes dollar values from FPDS-NG; thus, to avoid double counting, we excluded CONUS (AFCENT) spend because this dollar value was already included under USAF spend. Finally, the type of spend for OCONUS differs from CONUS based on the



warfighter's mission, making it necessary for us to exclude R&D as a filtering factor.

To address these issues, we adjusted method 1 slightly. First, we only considered OCUNUS spend, which according to AFCENT, was 85% of its total spend. Next, we had to take out construction spend, which left 78% of the OCONUS, consisting of commodity and service-type spend. Savings were then calculated by multiplying the e-RA appropriate spend by 20%. Using our two methodologies, this left a range of potential savings between \$3 million and \$23.4 million. As with previous methods, we attach a caveat because of certain weaknesses.

First, the type and mix of commodities and services that are bought overseas is different from CONUS operations because the living conditions, infrastructure, and missions differ, depending on the location of the contracting office and the phase of operations. For example, a unit at an austere location during build-up will primarily buy security items, concrete, gravel, and building materials. In this phase, contracts are more likely to be awarded sole source due to urgent and compelling circumstances. Conversely, a more established location during a sustainment phase may shift spending to morale, welfare, and recreation (MWR) requirements. Another weakness is an assumption that the number of qualified and interested vendors overseas is similar to that of US markets and that internet access and use is not an impediment. In reality, contingency contracting officers (CCOs) are often limited to a small pool of vendors who can meet their time, performance, and schedule needs. Finally, as with the DoD in general, we were unable to sort data at the contract or CLIN level, which means we had to assume everything was classified correctly. Table 9 summarizes our findings.



Table 9. DoD and AFCENT Spend Analysis Results

Organization	Total Spend (from FY01-FY09)	e-RA Appropriate Spend (from FY01-FY09)	Potential Savings (Method 1)	Potential Savings (Method 2)
CONUS Agency Level				
USAF	\$503,490,258,011	\$126,756,630,562	\$25,351,326,113	\$2,598,009,731
USA	\$788,479,482,606	\$197,030,573,008	\$35,279,475,857	\$3,645,645,373
USN	\$600,671,375,441	\$151,219,018,767	\$26,660,817,006	\$2,732,270,422
DoD	\$2,324,437,837,203	\$585,177,225,516	\$117,035,445,103	\$11,994,099,240
OCONUS Contingency Level				
Organization	Total AFCENT	e-RA Appropriate	Potential	Potential
AFCENT (only FY08)	\$177,182,849	\$117,472,229	\$23,494,446	\$3,030,783

E. Identifying Good e-RA Candidates (EAM Model)

During our literature review, we identified a “lack of training” as a significant structural barrier to e-RA use. The goal of this section then, is to reduce the learning curve for contracting officers who want to use e-RAs but do not know where to start. The acquisition process starts with a strategy based on requirements and market research. Thus, we developed a model that helps identify requirements that will (1) produce significant savings, and (2) reduce the risk of a bid protest. The e-RA Appropriateness Model (EAM) is broken down into three distinct phases, as shown in Figure 11.



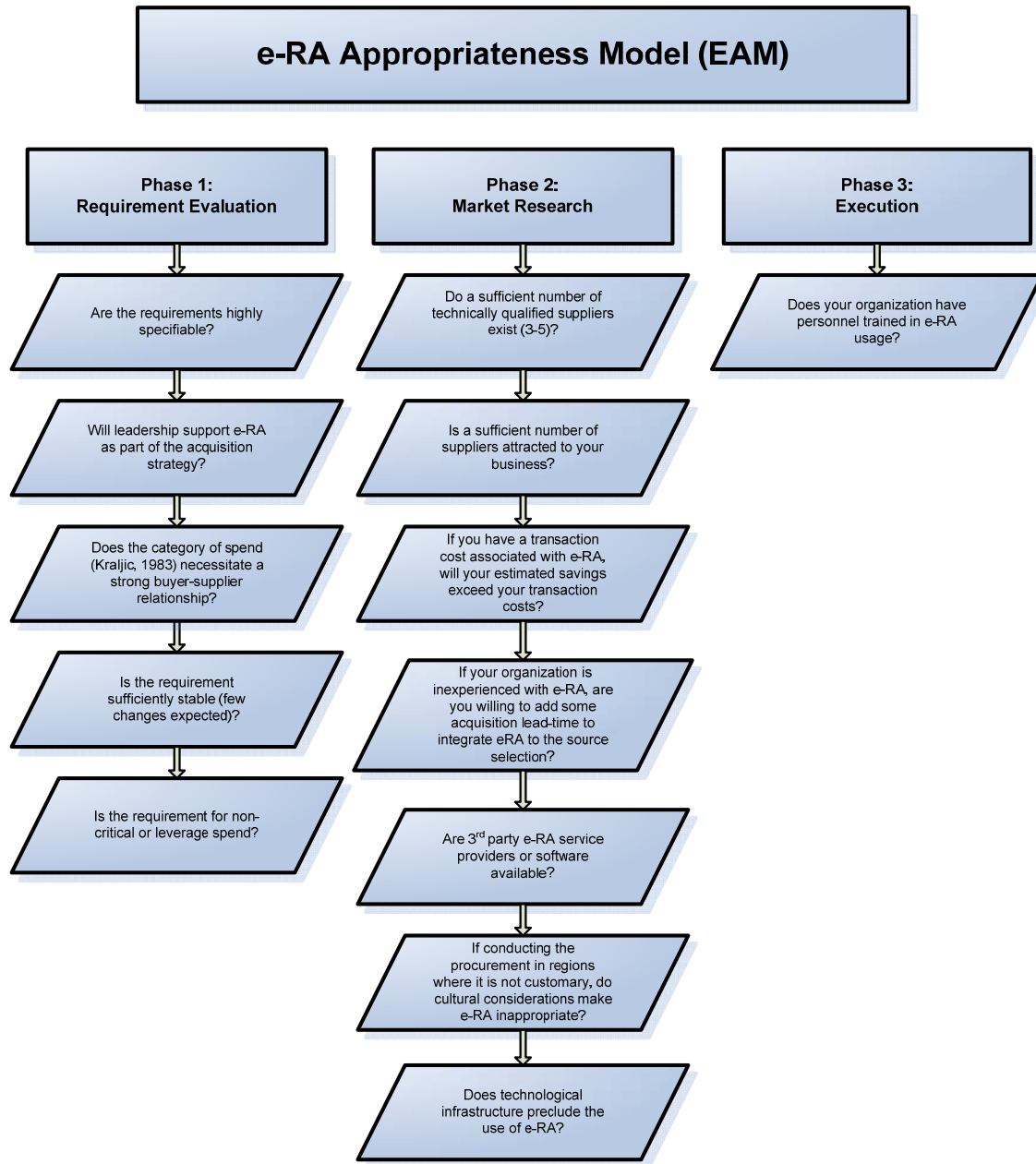


Figure 11. e-RA Appropriateness Model (EAM)

- 1. Phase 1: Requirement Evaluation**
 - a. Step 1—Are the Requirements Highly Specifiable?**

Recent studies indicate that requirements for e-RAs must be highly specifiable, meaning the product has clearly defined attributes that the supplier can translate into unambiguous specifications (Beall et al., 2003; Carter et al.,



2004; Hawkins et al., 2009). According to some research, a well-defined requirement and competition among suppliers increases the perception of e-RA appropriateness, which, in turn, will attract more potential bidders (Hawkins et al., 2009). Without solidity in requirement definition, the procurement official increases procurement risk by allowing offerors to bid on items that may vary in quality or function. Beall et al. (2003) explain that “inadequate up-front event planning” can ruin an auction (p. 9).

b. Step 2—Will Leadership Support e-RA as Part of the Acquisition Strategy?

Contracting officers who elect to use an e-RA as part of their acquisition strategy will have to convince their policy departments, legal counsel, commanders, and, perhaps, higher headquarters that (1) an e-RA is appropriate; (2) it will generate savings; (3) it is worth the effort, and (4) it will not result in a protest. Given the general lack of guidance surrounding Federal Government use of e-RAs coupled with gaps in practitioner knowledge, contracting officers must have the support of leadership, particularly if their strategy involves incorporating an e-RA into an LPTA or full trade-off source selection under *FAR* Part 15— procurements that are typically at higher risk for bid protests. Top management support for e-RAs is not uncommon. “As a result of this [increased] transparency, most top managements not only embrace the use of e-RA tools, but in some cases, seeing the impressive results of early e-RAs, set aggressive goals for e-RA use in annual sourcing requirements” (Beall et al., 2003, p. 8).

c. Step 3: Does the Category of Spend Necessitate a Strong Buyer-seller Relationship?

Suppliers, in some cases, resent being evaluated solely on price, so requirements that require a high degree of collaboration and partnering might not be good candidates. Still, e-RAs and evaluating non-price factors are not mutually exclusive—meaning that savvy buyers can evaluate non-price factors in a full trade-off, best-value acquisition. In section G, we demonstrate how this is possible.



Some researchers found that e-RAs increase the supplier's suspicion of buyer opportunism (Jap, 2003), which, in turn, decreases trust and (ultimately) deteriorates commitment—both central constructs to relational exchange (Morgan & Hunt, 1994). While studies have sought a link between e-RA use and damaged buyer-seller relationships, none has found an effect. However, buyers cannot ignore the evidence presented above that e-RAs could decrease trust, but they should consider that that trust is not paramount in all contracts—particularly non-critical and leverage spend (Beall et al., 2003).

d. Step 4: Is the Requirement Sufficiently Stable? (Few Changes Expected)?

Requirements that are expected to have a significant number of future changes or modifications may negate the savings gained from an e-RA procurement. The CO should ensure that the requirement is stable with tight specifications to guarantee the low probability of costly modifications.

e. Step 5—Is the Requirement for Non-critical or Leverage Spend?

E-RAs are not appropriate for all requirements, and (as described in step 3) they may lower trust and commitment levels of suppliers who offer critical services and supplies and value a close partnership. An e-RA is more transactional and suited to “non-critical” and “leverage” requirements offered by many suppliers.

2. Phase 2: Market Research

The market-research phase involves making an assessment of the supplier base, e-RA providers, and the organic capabilities and competencies of the buying organizations. Contracting officers who are unfamiliar with e-RAs should build in extra lead-time to ensure each of the steps below is addressed before moving ahead with an auction. Failure to conduct thorough market research—as in any procurement—increases the risk of buying an inferior product or service. With e-RA, poor market research could result in an event with



no bidders. The steps below explain how to determine whether the market meets the buyer's needs.

a. Step 1—Does a Sufficient Number of Technically Qualified Offerors Exist?

FAR Part 15 requires the solicitation of at least two qualified offerors to satisfy competition requirements. E-RA research, however, indicates at least three or more are needed to generate substantial savings (Beall et al., 2003). Wagner and Schwab (2004) indicate that adequate competition is key for e-RA success and is often a crucial driver in the amount of savings obtained.

b. Step 2—Is a Sufficient Number of Suppliers Attracted to Your Business?

Note the slight difference between finding capable suppliers and having suppliers who are attracted to your business. As mentioned previously, some suppliers prefer to compete by traditional methods or simply dislike the e-RA process. In the generator procurement, the ECONS commander and the e-RA service provider conducted extensive market research to find qualified and interested vendors prior to deciding to use an e-RA.

c. Step 3(a)—If You Have a Transaction Cost Associated with e-RA Use, Will Your Estimated Savings Exceed Your Transaction Costs?

Using a potential 20% savings, estimate how much savings your organization stands to achieve by using an e-RA. In general, larger volumes increase attractiveness, which leads to increased competition and higher savings. Finally, many e-RA service providers charge a fee ranging from 1% to 10%, depending on the level of service needed and their business model. Typical business models of e-RA service providers include the following:

- Seller pays a per-transaction fee: (% of pre-auction estimated value of procurement)—winning seller pays fee, and e-RA service provider assists with market research, builds the e-RA in the software application, trains bidders, and runs the e-RA bidding event (full-service option).



- Buyer pays a per-transaction fee: (% of pre-auction estimated value of procurement)—e-RA service provider helps with market research, builds the e-RA, trains bidders, and runs the e-RA (full-service option).
- Software-only option: Buyer acquires a license to use e-RA software, builds each auction, and conducts e-RAs in-house. Here, the buyer must provide training to bidders.
- Outsourced option: The buyer contracts with an e-RA service provider for a fixed price per period of time (and/or for an estimated number of e-RA events), and the e-RA service provider helps with market research, builds the e-RAs, trains bidders, and runs the e-RA bidding events.

In determining whether the e-RA will be cost effective, the buyer should consider any transaction fees, per the business models above, for using e-RA applications and/or support services.

d. Step 3(b)—If Your Organization Is Inexperienced with e-RAs, Are You Willing to Add Some Acquisition Lead-time to Integrate e-RA into the Source Selection?

Equally important is the amount of time your organization has to conduct market research and build a solid requirement. Initially, an organization may have to expend more time to increase the specificity of the requirement. This entails writing instructions to offerors and evaluation criteria for award that adequately describe how the e-RA will be integrated into the procurement and mitigate the possibility of protests.

e. Step 4—Are Third-party e-RA Service Providers Available?

We recognize this step as potentially frustrating and time-consuming for contracting officers with little-to-no e-RA experience; thus, we offer the following list of e-RA providers. One point worth highlighting is that providers offer varying levels of service, ranging from software only to full service. A unit with a complex requirement and limited time or resources to conduct market research could benefit from the assistance of a full-service provider. For more seasoned e-RA contracting personnel, CECOM's no-cost software might suit their needs better because experienced, available, in-house COs will have the requisite knowledge



to build the e-RA, conduct market research to find and build interest in the supply base, train offerors on use of the tool, and conduct the bidding event. Table 10 provides contracting officers with initial points of contact.

Table 10. e-RA Providers Contact List

E-RA Service Provider Information				
<u>Provider</u>	<u>Email</u>	<u>Phone #</u>	<u>Website</u>	<u>Level of Service</u>
Ariba	Contact-Us-Form	1-650-390-1000	www.ariba.com	Full Service
ChemConnect	Customer-service@chemconnect.com	1-832-789-9619	www.chemconnect.com	Full Service
Exostar	Saleslead@exostar.com	1-703-561-0500	www.exostar.com	Full Service
FedBid	ClientServices@FedBid.com	1-877-933-3243	www.FedBid.com	Full Service
HedgeHog	sales@hedgehog.com	1-800-208-2335	www.hegdehog.com	Full Service
iASTA	support@iasta.com	1-317-594-8600	www.iasta.com	Full Service
OnDemand Sourcing	sales@ondemandsourcing.com	1-412-454-5550	www.ondemand sourcing.com	Full Service
Perfect Commerce	insight@perfect.com	1-877-871-3788	www.perfect.com	Full Service
Sorcity	ContactUs@sorcity.com	1-800-525-2401	www.sorcity.com	Full Service
USAAVE (US Army)	Links to help desk are on website	1-732-427-1633	https://usave.monmouth.army.mil	Software Only

f. Step 5 and 6: Cultural Considerations and Technology

Our research indicates that e-RAs work well in Kuwait because the transparency of the process coupled with the high level of trust in the USAF (Federal) acquisition process motivated contractors to overcome their natural resistance to technology. While this held true in Kuwait for this one case study, research on the cultural impact on e-RA (and vice versa) is still nascent. Contracting officers must be sensitive to the cultures of their host nations and be aware of technological barriers, to include low internet/computer usage.



Additionally, e-RAs may be welcomed in certain business environments in which a high potential for ethical improprieties exists due to collusion, corruption, or favoritism. In this circumstance, the buyer and the supply base both reap the benefits of an e-RA by increasing transparency, fairness, offeror satisfaction, and overall competition.

3. Phase 3: Execution

a. Step 1: Does Your Organization Have Personnel Trained in e-RA Usage?

According to feedback we received from AFCENT, a lack of familiarity with the e-RA process is a major deterrent for use. Given the lack of guidance and high operational tempo, it is no wonder contracting officers are not using e-RAs—they are too busy and not otherwise incentivized to do so. One of the major reasons the Kuwait generator procurement was successful was the experience the squadron commander brought to the table from an education with industry internship and from doctoral studies. Inexperienced personnel may “risk many problems and may contribute to the negativity in that they may not adhere to sound guidelines or follow through with an award, making it distasteful for suppliers” (Sorcity, personal communication, March 26, 2009). The EAM and process models should give contracting officers a head start, but a certain amount of experiential learning should be incorporated into the acquisition plan. Notably, the learning curve for integrating e-RA use into Federal procurements should level off quickly—to the point at which e-RAs may save acquisition lead-time, as is common in industry (Beall et al., 2003).

F. Building a FAR-Compliant e-RA

e-RAs are being used mostly by the Army and Navy, with the majority of auctions focusing on simple commodity buys pursuant to FAR Part 13. The Army’s policy requires e-RA use below the SAT (\$100,000). Additionally, FedBid, an e-RA service provider commonly used by DoD agencies, prefers transactions below the SAT threshold. Appendix A provides a snapshot of items (primarily



commodities) procured through FedBid. While this strategy has generated over \$201 million in savings in the past nine years, in the same time period, the DoD has ceded a potential of \$12 billion to \$117 billion by not including e-RAs as a pricing tool for many of its e-RA-appropriate requirements (see method 1, part C).

According to CECOM, there are several reasons contracting officers are not using e-RAs for more complex, best-value acquisitions pursuant to *FAR* Part 15. First, simple auctions are easiest to set up and execute. CECOM's software allows contracting officers to build and execute their own auctions; however, "for some reason, contracting officers prefer to have a helpdesk control this function" (M. Meinert, personal communication, July 14, 2009). Another reason is complexity, both on the side of the buyer and supplier. CECOM's USAAVE platform has the capability to conduct multi-line auctions as well as full trade-off auctions with non-price factors, such as delivery schedule, warranty, quality, etc. To date, contracting officers have steered away from the tool because it may be perceived that adding non-price factors into an auction may increase the chance of protest through the use of a computer-based formula to determine the winner. Finally, the lack of best-value e-RA experience among practitioners has resulted in a natural barrier to implementation. Contracting officers who want to incorporate e-RAs into best-value acquisitions face a learning curve, increased protest risk, and—at least initially—added procurement lead-time.

Therefore, we provide contracting officers *FAR*-compliant process flows for most types of source selections, ranging from simplified acquisitions to full trade-off procurements pursuant to *FAR* Part 15. These flowcharts should help reduce their learning curve, minimize protest risk, and provide guidance for implementation by explaining the e-RA-specific tasks and how they integrate into a Federal source selection. Rather than address each model separately, we focus only on the SAP: LPTA model because it (1) has the greatest propensity for use, (2) entails the assessment of non-price factors, (3) can be used with



minimal additional steps, and (4) uses streamlined procedures in accordance with *FAR* Part 13. Sample SAP—LPTA instructions to offerors and evaluation factors for award—are attached in Appendices B, C, and D. Additional process models for SAP using price only, SAP using trade off, *FAR* Part 15 using LPTA, and *FAR* Part 15 using full trade-off are included in Appendices K, L, M and N. Figure 12 highlights extra steps contracting officers will need to include in their acquisitions. Boxes shaded or partially shaded in orange are specific to e-RA and are discussed below in more detail.



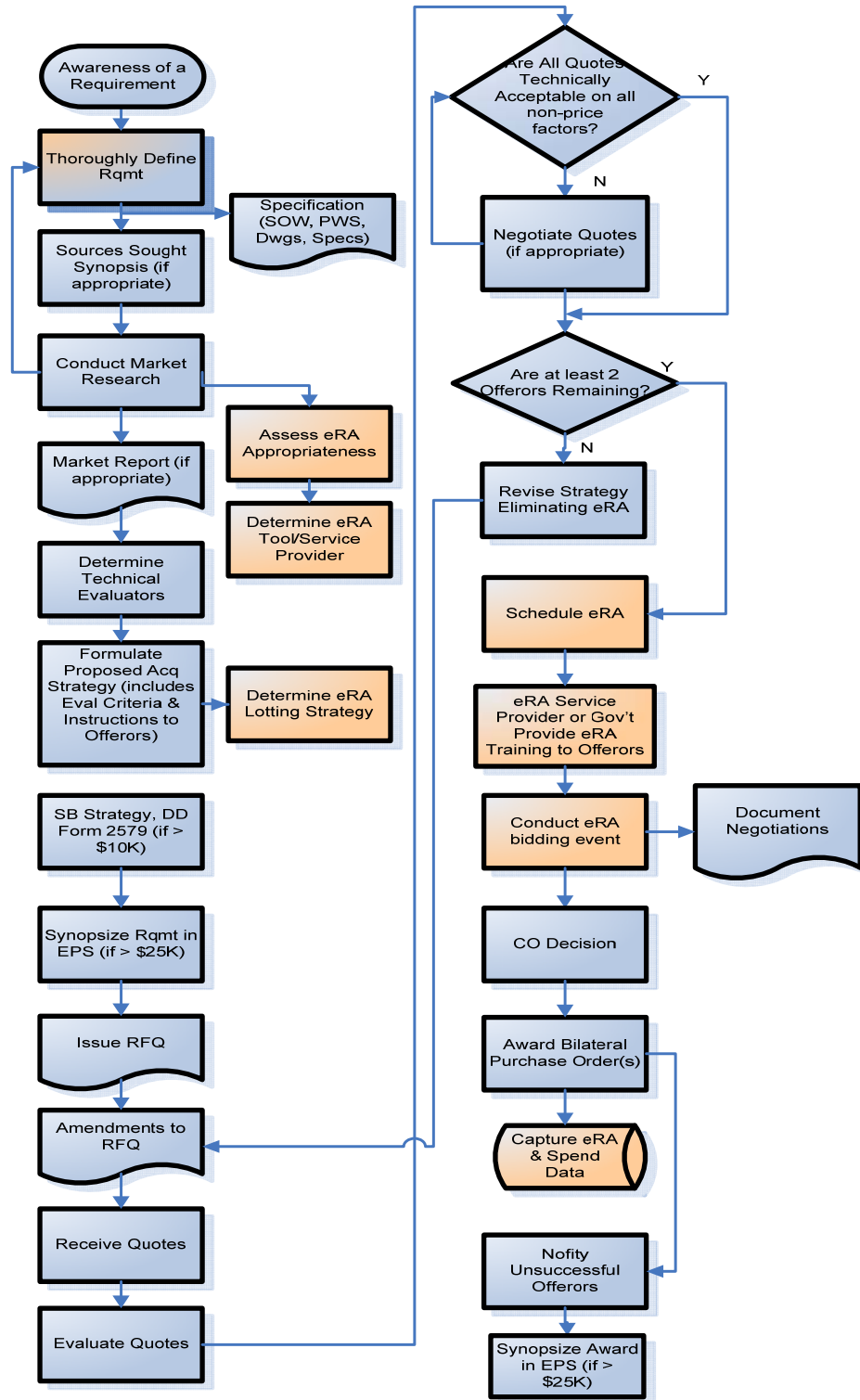


Figure 12. SAP Using LPTA Model



1. Step 1: Thoroughly Define Requirement

Block one is partially shaded, which indicates the *FAR* already requires contracting officers to conduct market research and thoroughly define their requirements in terms of specifications, drawings, and statements of work. Simply put, the e-RA event adds value only when offerors clearly understand and are bidding on equivalent supplies and services. Contracting officers who provide poor, vague specifications run the risk of assuming increased cost because winning contractors may look to increase their profit margins by decreasing quality or seeking changes after award in order to “get well.” The EAM Model (Figure 11 provides additional insight in terms of “specifiability.”

2. Steps 2 and 3: Assess e-RA Appropriateness and Select e-RA Provider

Contracting officers must consider a variety of factors that will determine the appropriateness of an e-RA. After the CO determines appropriateness, selecting an e-RA service provider or platform that best meets the CO’s program needs is next. Both of these steps are described in detail in the EAM (Figure 7).

4. Step 4: Determine e-RA Lotting Strategy

A lotting strategy, in general, allows a buyer to structure the e-RA in a manner for suppliers to efficiently bid on the requirement (Sorcicity, personal correspondence, March 26, 2009). It resembles a contract line item (CLIN) structure commonly found in the bid schedule of solicitations and contracts. For example, a buyer may have 500 line items of supplies to place on contract and, after market research, may determine that he or she can get maximum bidding at a better price if he or she divides them into five separate groups (CLINs—or bid lots). This allows suppliers to bid in subcategories that are more suited to their market niche or area of expertise while not having to bid on all CLINs/lots. Sometimes, awarding multiple contracts will allow the buyer to achieve the lowest total price by “cherry picking” the lowest bid from each lot. The key, according to Sorcicity, is to balance the buyer’s needs to the supplier’s capabilities and conduct



a market check. Third-party providers, like Sorcity, can help identify what the optimal lotting strategies are based on their experience with e-RAs and their knowledge of cost drivers of the requirement and cost structures of the market. All of this knowledge enables buyers to have successful e-RA events. In the generator e-RA, the squadron commander conducted initial market research and determined to use a single lot because there were sufficient distributors or resellers that could provide the entire lot, and multiple awards were not desired or practical.

5. Step 5: Schedule e-RA

Contracting officers should schedule the date for the e-RA after negotiations on non-price factors have concluded because negotiation time is highly variable. Scheduling entails coordinating the date of the e-RA with all participants: offerors, the buyer, internal customers, and the e-RA service provider.

6. Step 6: e-RA Service Provider or Government Provide Training to Offerors

It is a good idea to provide offerors training on using the bidding software prior to the event. Most providers offer some level of training either through a tutorial, which can run mock auctions for practice, or provide hands-on training. While this step seems straightforward, buyers need to ensure that each of the suppliers understands the timeline for the e-RA, the auctioning software, the auction duration, rules regarding overtime, and how to handle contingencies during the bidding. Levels of support vary; therefore, buyers who are new to e-RAs will need to either develop their own training or ensure the e-RA provider is willing to provide training. Special attention should be given to offerors in OCONUS locations who may be unfamiliar with commerce in English or the speed of e-commerce. One manager stated that he spent over a week and a half trying to find information on e-RAs and was unprepared to place bids when the pace of the auction increased during the overtime period. For buyers who



incorporate non-price factors, the increased complexity has the potential to confuse offerors and negatively impact their bidding strategy. Additionally, researchers also stress the importance of training the buyer as a key enabler for e-RA success and stress the added value of hands-on versus video training techniques (Beall et al., 2003).

7. Step 7: Conduct e-RA Bidding Event

During the actual event, buyers need to keep in mind that computers crash, the internet may go down, and confusion may leave offerors in need of real-time help. All of these contingencies should be considered during solicitation planning and be addressed in the instructions to offerors so offerors know the procedure for contingency situations during the event. Simple mechanisms such as having the provider and buyer on telephone standby to be able to place and receive manual bids, pausing the auction, and providing real-time assistance can help overcome these hurdles. Improper handling of the auction itself could result in a protest, so buyers need to plan for the unexpected.

8. Step 8: Capture e-RA and Spend Data

An e-RA, if used properly, is a tool often used as part of a strategic sourcing approach toward leveraging the DoD's massive spending power. As such, organizations should incorporate spend goals and create control mechanisms (e.g., metrics) to measure whether savings and efficiency goals are met. Capturing spend data helps provide buyers an accurate, historical database of market prices for goods and services (compared to non-e-RA prices), and it provides data to senior strategic-sourcing planners for analysis, reporting, planning, goal-setting, and organizational improvement.



G. Safe Guarding Against Protests

A review of bid protest decisions associated with e-RAs is marginally helpfully because only three cases have reached the GAO in the past 10 years.⁷ All of these involved simplified acquisition procedures, and all were denied (Brown & Ray, 2007). The findings are helpful, however, because they indicate large, overarching issues associated with e-RA use in the DoD, but are limited because they do not include potential issues associated with e-RA use as part of larger, more complex (*FAR* Part 15) acquisition strategies. In larger acquisitions, the stakes for losing are substantially higher, and typically non-price factors, such as past performance, management, technical capability, and delivery time, are evaluated. Since we posit that the latter is appropriate in certain circumstances, we will discuss both scenarios starting with existing, overarching case law.

On July 19, 2001, the GAO denied a protest from the Pacific Island Movers Co. against the Department of the Navy due to the Navy's decision to request final pricing proposals *after* the conclusion of an e-RA event. Pacific, the lowest-priced vendor at the end of the auction, protested on two primary grounds: (1) Pacific's e-RA price was made available to other competitors, creating an unfair pricing advantage for final proposals and (2) Pacific had the low price at the end of the auction and, according to the (revised) evaluation criteria, should have won the award. The GAO denied Pacific's requests to overturn the award based on case law suggesting the Navy appropriately used its discretion to resolve an ambiguous situation caused by multiple solicitation amendments. In its decision, the GAO also felt that Pacific's decision to participate implied consent to disclose their prices and, since their competitors voluntarily disclosed pricing as well, no competitive advantage was gained (Brown & Ray, 2007).

⁷ Agency-level protest information, not available to researchers, might identify additional vendor concerns. Agencies were contacted but did not have a mechanism to track and record protests across contracting activities.



On October 31, 2001, the GAO denied a protest from Royal Hawaiian Movers against the Department of the Navy. Similar to the Pacific case, Royal Hawaiian felt the Navy should have awarded the contract based on its low bid during the auction. Instead, the Navy (again) decided to request final proposals after the conclusion of the event in order to clear up ambiguity caused by incorrect auction instructions in the RFP. Based on the precedent set by Pacific's previous protest, the GAO denied Royal Hawaiian's protest, citing that the Navy acted properly in order to "ensure the offerors were competing on an equal basis" (Brown & Ray, 2007, p. 31). It is worth noting (as a point of reference for more complex acquisitions) that the Navy included e-RA language in the instructions to offerors that stated, "conduct of the reverse auction constituted discussions with the offerors" (Brown & Ray, 2007, p. 30).

The third and final DoD e-RA protest case, B-295463, was submitted by the MTB Group against the Department of Housing and Urban Development (HUD) on February 23, 2005 (GAO, 2005). After losing an LPTA source selection involving an e-RA for housing inspection services, MTB protested on the basis that the e-RA violated OFPP Act 41 USC 423 (a), FAR 3.104-3 and 3.104-4 because it was inappropriate for the government to disclose its pricing. In this case, the GAO ruled that e-RA is appropriate because, in accordance with FAR 1.102(d), e-RA is not "expressly forbidden"; therefore, it is appropriate (Brown & Ray, 2007, p. 29). Furthermore, the GAO found (again) that e-RA price disclosure was appropriate but added:

Even if the price disclosure was considered by the government officials, due to its nature as a precondition to a vendor's competing, the disclosure is pursuant, and integral, to the reverse auction procurement procedures established by the agency; we thus would view the disclosure as being to persons authorized by agency procedures to receive the information, consistent with exceptional language. (GAO, 2005, p. 3)

These findings indicate important precedents for future acquisitions. First, the GAO considers e-RA as a process in which offerors willingly disclose their prices by electing to participate. Second, the government may request final



proposals *after* the e-RA has concluded, so long as the decision to re-open the competition is done to clarify ambiguity or level the playing field for participants. While this case supports the appropriateness of final proposal revisions after the e-RA has concluded, it may not be inclusive of all the cases in which final proposal revisions are appropriate. Finally, e-RAs are appropriate for government acquisition. Now, we turn to e-RA implications specific to *FAR* 15 procurements.

A review of 50 sustained GAO decisions, a GAO summary of significant cases, and USAF source-selection evaluation lessons learned, revealed additional hazards contracting officers should avoid when using e-RAs in a lowest priced, technically acceptable (LPTA) or full trade-off (best-value) source selection with non-price factors. In the latter, price and non-price factors are evaluated in terms of the overall best value provided to the government in accordance with the relative weighting of each evaluation factor. We identify these overarching areas below.

1. Non-priced Evaluation Factors in a Full Trade-off with e-RA

The award decision must be consistent with the evaluation factors listed in criteria for evaluation of the solicitation (GAO, 2009). CECOM's e-RA application has a built-in capability to evaluate dynamically and to trade-off non-priced factors with price, but contracting officers currently are not using this capability due to the perceived complexity it adds by assigning quantitative, weighted values to non-priced factors. Additionally, many agencies' source-selection regulations and guidance prohibit numerical ratings and weightings and mathematically derived evaluation-scoring schemes. Although discouraged in all source selections, these prohibitions typically do not apply to acquisitions using simplified acquisition procedures. Specific guidance regarding how to build and use non-priced factors within an e-RA platform is necessary and, therefore, provided in Chapter V, Section H.



2. Submission, Modification, Revision and Withdrawal of Proposals

FAR 15.208 identifies the procedures for accepting/rejecting late proposals. E-RAs clearly fall within the guidelines of Section 15.208(1)(i) as an “electronic commerce method authorized by the solicitation,” but contracting officers will need to address a mitigation plan for system glitches to include power outages, software problems, and internet connectivity by all parties. In the event of a power failure or offeror connectivity issues, contracting officers can plan for such mishaps by having real-time phone-in bid accessibility or temporarily suspend the e-RA until the problem is fixed; these procedures must be clearly identified in the instructions to offerors to alleviate any confusion on the part of participants.

3. Mistakes in Bids

FAR 15.508 and 14.407-3 suggest that because an e-RA involves real-time bidding in which prices are changed in real-time, it is possible for vendors to make a mistake in real-time without a mechanism to correct their mistake (Turley, 2002). Examples specific to e-RA include entering an incorrect bid amount during the auction or placing unintentional bids due to confusion or technical difficulties during the auction.

4. Unrealistic Pricing

In a commercial e-RA, our research revealed that one auction award was overturned when a losing vendor brought forward evidence that the winning price was not possible within industry standards (FedBid, personal communication, June 15, 2009). E-RAs do not replace prudent price analysis. Contracting officers must be aware of and prevent buying-in with the intent of suppliers getting well later though post-award changes (Cibinic, Nash & Nagle, 2006).

5. Collusion

While collusion has not been protested to date, some critics feel that a vendor’s auction behavior can “highlight collusion by exhibiting bidding patterns



that seem to send signals, or by a lack of bids indicating a vendor has conceded a contract” (Turley, 2002, p. 27). An offeror with evidence of collusion might protest an award.

6. Exclusion from Competitive Range

When hosting using a third-party e-RA service provider that is unfamiliar with Federal procurement regulations, contracting officers may have to make an extra effort to ensure suppliers are not weeded out of the competition unfairly. Commercial rules allow purchasing managers more flexibility to handpick suppliers. Simply put, contracting officers need to keep in mind that e-RAs must be used within the confines of the *FAR*, regardless of the advice provided by third-party providers. In some cases, contracting officers may elect to use third-party providers to host an event because doing so adds market knowledge and expertise. However, doing so comes with risk for contracting officers because commercial rules for usage do not entail the same detailed selection, documentation, and approval processes as those mandated by public purchasers. Instead, commercial procurement managers can select top performers based on reputation, capabilities, experience, and past performance alone. By allowing a third-party provider to conduct an auction without cognizance of *FAR*-compliant processes, a contracting officer increases protest risk.

7. Unbalanced Prices

FAR 15.404-1(g)(1) identifies a situation in which an exceptionally high or low price of one or more contract line items adds unacceptable risk to the overall procurement. Accordingly, if the contracting officer determines an offer as materially unbalanced, he/she may eliminate the offeror from the competitive range or elect to reject the offer outright (*FAR* 15.404-1(g)(2)(i); *FAR* 15.404-1(g)(3)). In three GAO cases we reviewed regarding unbalanced prices, the GAO ruled on the side of the contracting officer—as long as clause 52.217-5 was included in the solicitation (GAO, 1985), the contracting officer used unbalanced



pricing as the basis for a non-responsibility determination (GAO, 1987), and the structure of the evaluation factors did not force contractors to bid unevenly (GAO, 1991). This is applicable to e-RAs because offerors typically bid on the total contract price, but contracts are often structured with multiple contract line item numbers (CLINs) and subordinate CLINs. Contracting Officers conducting e-RAs with multiple CLINs should evaluate the price of each CLIN to ensure one low price does not add risk to the procurement as a whole. In a two-step procurement, this could be done by evaluating initial proposals or after the auction, just prior to the award determination.

8. Evaluation in Accordance with Stated RFP Evaluation Factors

Among the four top reasons for GAO protests was a failure to award based on the evaluation factors (CRS, 2009; GAO, 2009). Since we are proposing e-RA use as part of a FAR 15 full trade-off and adding non-price evaluation factors adds complexity (and potential supplier confusion) to the procurement, contracting officers will need to ensure that auction procedures and evaluation criteria established in the solicitation are followed precisely.

9. Elimination of Internal Inconsistencies in the RFP

In the case of Pacific Island Movers (discussed above), unclear language in Section “L” regarding the auction end time confused Pacific (Brown & Ray, 2007). As a result, the company protested because its bid was the lowest at the end of the auction (per solicitation instructions) and because they thought overtime bids should not count. The lesson learned here is that to avoid a protest, contracting officers must ensure that the instructions to offerors are clear and consistent regarding how the auction will end.

10. For Part 15 Full Trade-off Source Selections, Keeping it Simple

A review of USAF protests indicated that complicated source selections increase the chance of protests due to potential disconnects between source-selection evaluation methodology and evaluation criteria (SAF/AQC, 2001). The



same holds true for e-RA use, particularly in a full trade-off procurement in which multiple lots and/or objective scoring of non-price factors—which is possible with CECOM’s e-RA software—could potentially confuse an offeror during a real-time bidding event. That said, the technology does exist to support full trade-off acquisitions, and savvy government buyers could easily incorporate simple multi-attribute actions with minimal guidance and support. The next section explains why and how.

H. Integrating e-RAs into Full Trade-off Source Selections

E-RAs can be integrated into full trade-off source selections—either using SAP or formal procurements under *FAR* Part 15. There are three different means by which to do this. First, different e-RA service provider’s auctioning applications provide different functionality. Generally, many offer multi-attribute bidding in which certain factors, such as price, delivery, and quality, are assigned weights. These three factors can be dynamically bid in real-time where a composite score indicates the best value. Since these scores are mathematically derived, they violate some agencies’ procurement policies (e.g., those that require qualitative ratings, such as color codes or adjectival ratings). Therefore, while this method could be used with SAP, it is not further discussed within the scope of this research.

The second method entails the trade-off of predetermined levels of objective non-price factors and allows these varying performance levels during dynamic e-RA bidding. For example, you may need to evaluate the value of taking faster delivery or of acquiring higher quality. To do so would require a special construction of bid lots shown in Figure 13. Essentially, the contracting officer would need to build a bid lot (resembles a contract line item) for each possible combination of levels of non-price factors—in this case, delivery and quality. In the evaluation factors for award, the solicitation would need to state the relative importance of price and non-price factors. Assume that, taken together, non-price factors are as important as price. With the following lowest-



bids-per-offeror-per-bid-lot taken from the e-RA, the Source Selection Authority's (SSA) integrated assessment must consider these prices and performance levels. Figure 13 is an example of special bid lots that incorporate non-price factors.

ITEM*	SUPPLIES/SERVICES	QTY	UNIT	UNIT PRICE	TOTAL AMT
0001	Firm-Fixed Price. Deliver and install standby generators in accordance with the attached Statement of Work. FOB: Destination Delivery: 60 Days ARO. Warranty: 1 Yr	10	EA	\$ _____	\$ _____
0002	Firm-Fixed Price. Deliver and install standby generators in accordance with the attached Statement of Work. FOB: Destination Delivery: 90 Days ARO. Warranty: 1 Yr	10	EA	\$ _____	\$ _____
0003	Firm-Fixed Price. Deliver and install standby generators in accordance with the attached Statement of Work. FOB: Destination Delivery: 120 Days ARO. Warranty: 1 Yr	10	EA	\$ _____	\$ _____
0004	Firm-Fixed Price. Deliver and install standby generators in accordance with the attached Statement of Work. FOB: Destination Delivery: 60 Days ARO. Warranty: 2 Yrs	10	EA	\$ _____	\$ _____
0005	Firm-Fixed Price. Deliver and install standby generators in accordance with the attached Statement of Work. FOB: Destination Delivery: 90 Days ARO. Warranty: 2 Yrs	10	EA	\$ _____	\$ _____
0006	Firm-Fixed Price. Deliver and install standby generators in accordance with the attached Statement of Work. FOB: Destination Delivery: 120 Days ARO. Warranty: 2 Yrs	10	EA	\$ _____	\$ _____

***Note: The government will award only one of the bid lots above in accordance with the best-value evaluation criteria stated in the solicitation.**

Figure 13. Bid Lots

This bid scenario from an e-RA-enhanced procurement poses no different challenge or process for the SSA than any other full trade-off source selection.



The SSA must assess the value of higher performance levels traded-off against price differentials. Here, the SSA may choose to go with basic performance levels and award to offeror D for \$415,000, or award to offeror D for \$518,000 and take delivery 60 days sooner. Alternatively, if the benefit of an extra year of warranty coverage exceeds the added cost, the SSA may elect to pay a quality premium of \$81,000 and award to offeror C for \$496,000. If delivery and quality are valuable, the SSA may deem the best value is provided by offeror C, who is the lowest with a 60-day delivery and two-year warranty. As usual, the SSA would be constrained by the language of the solicitation as to the relative importance of price and non-price factors and would need to justify the trade-offs in writing. The benefit of executing this trade-off via an e-RA is (1) the efficiency (speed and minimum effort) of negotiations in each lot (i.e., in each possible combination of performance levels), and (2) the benefit from the hyper-competition offered by e-RAs in each lot.

Using a third method, a contracting officer could integrate an e-RA into a full trade-off source selection in which objective performance levels and ratings are not possible. For example, if the government must, in order to manage risk, evaluate the offeror's experience or technical approach, subjective ratings are necessary. In this case, the source-selection process would be nearly identical to that of a source selection not involving an e-RA. The only difference would be that after conducting all of the discussions necessary to allow offerors remaining in the competitive range to address weaknesses, risks, and deficiencies, the CO would then schedule and conduct the e-RA. It is important to note that by using an e-RA in this manner, the contracting officer may not award without discussions. Successive bids in an e-RA held after receipt of proposals would constitute proposal revisions. Also, after the close of the e-RA, the contracting officer must request and evaluate final proposal revisions (FPR), wherein the offeror could again alter its price—upward or downward. If, in its FPR, the offeror makes no change to its price, the offeror's last bid price(s) in the e-RA would be the evaluated price(s) that would be traded-off with non-price factors in



accordance with the best-value provisions of the solicitation. Figure 14 illustrates the results of the hypothetical multi-attribute auction just described.

Bid Lot 0001 Del. 60 / Warr 1 Yr		Bid Lot 0002 Del. 90 / Warr 1 Yr		Bid Lot 0003 Del. 120 / Warr 1 Yr	
Offeror	Price	Offeror	Price	Offeror	Price
D	\$518,000	D	\$423,000	D	\$415,000
B	\$526,000	B	\$441,000	B	\$441,000
A	\$533,000	C	\$452,000	C	\$452,000
C	\$534,100	A	\$455,000	A	\$453,000

Bid Lot 0004 Del. 60 / Warr 2 Yr		Bid Lot 0005 Del. 90 / Warr 2 Yr		Bid Lot 0006 Del. 120 / Warr 2 Yr	
Offeror	Price	Offeror	Price	Offeror	Price
C	\$589,400	C	\$496,000	C	\$496,000
D	\$602,300	D	\$513,000	D	\$525,000
B	\$610,000	A	\$527,000	A	\$539,000
A	\$619,000	B	\$540,000	B	\$540,000

Figure 14. e-RA Results

I. Overcoming Barriers to e-RA Use

Contracting officers and sourcing professionals must be aware of the challenges and barriers presented when attempting to implement an e-RA event. These challenges include (but are not limited to) assumptions made in Chapter II, based on our literature review. These initial assumptions included a high operational tempo, a lack of published guidance from leadership, difficulties with the Federal acquisition framework, and training concerns. This section discusses techniques for overcoming barriers in each of those original areas and



incorporates a new barrier—local market development—that emerged from interviews with AFCENT leadership.

1. High Operational Tempo

All branches of the DoD are under tight timelines for accomplishing missions. As the acquisition workforce declines, increased acquisition lead-time becomes a constant concern since sourcing professionals must fill their requirements in an expeditious manner with fewer and fewer procurement resources available. To combat this, sourcing professionals must use their acquired knowledge of e-RAs and procedures to analyze whether the procurement is suitable for an e-RA. The EAM can guide a CO to determine appropriateness quickly. Once the determination of appropriateness is made, the CO should follow normal sourcing procedures coupled with the additional e-RA necessary practices to begin the e-RA event. Commands can establish an e-RA checklist to include the added e-RA procedural steps needed in order to expedite the procurement process.

2. Guidance and Leadership Support

FAR Part 1.102-1(d) implores the acquisition team (e.g., CO) to seek sourcing strategies that are in the best interest of the government. One such strategy is the use of electronic reverse auctions. As with any strategy, guidance via policy or directive is an effective way to influence behavior. Policies either stressing or mandating the use of e-RAs will not only increase usage but also induce leadership to support such sourcing strategies and encourage their future implementation. The lack of current guidance, experience, knowledge and expertise by sourcing professionals deters leadership from pursuing e-RAs in many instances (J. Swall, personal communication, March 22, 2009). Leadership must put into action local guidance enforcing the use of e-RAs whenever practical in order to reap the cost-reducing benefits e-RAs can provide.



3. Federal Acquisition Framework

Contracting officers are bound to adhere to numerous statutory, regulatory, and agency-level mandates in every procurement. An e-RA event is no different and can increase complexity in the sourcing environment. COs cannot circumvent the system but must understand the nuances and procurement risks e-RA can exhibit. An extensive knowledge and understanding of potential problematic areas can save not only acquisition lead-time but also prevent future protests. As mentioned in Chapter II, an amendment to the *FAR* could authorize e-RAs as a legitimate sourcing tool, which might prompt more ubiquitous use (SAF/AQC, 2001; Turley, 2002).

4. Local Market Concerns

E-RAs are not without their limitations, and use in foreign markets may prove to be difficult. COs must examine the business environment and capability of the local market to support an e-RA sourcing event. One interviewee remarked that the Middle Eastern market is not fully developed and B2B does not occur. This undeveloped market will require time to foster a business environment that is capable of supporting an e-RA. Another informant mentioned the way of doing business is still “old school,” with owners that are reluctant to change their habits to adapt to the new modern business environment. Contracting officers have to be cognizant of their surroundings and skillfully understand the business climate, to include possible cultural barriers.

5. Training

Although e-RAs have been instituted and employed in industry and in the military, relatively few people have an adequate understanding of the e-RA process and its execution. The DoD can invest in establishing training centers to include e-RA help-desks (both web-based and in-person hotlines) to educate the acquisition workforce and provide real-time assistance to sourcing professionals (J. Swall, personal communication, March 22, 2009). Creating and mandating a Defense Acquisition University (DAU) e-RA web-based course would provide



COs with, at a minimum, a baseline for understanding e-RAs and their capabilities. COs must escape from their “zone of familiarity” and seek out help from functional experts in the field. These subject-matter experts (SMEs) could be deployed to the field to teach the workforce the advantages and proper implementation of e-RAs (J. Swall, personal communication, March 22, 2009).

J. Summary

This chapter provided the DoD practitioner with the tools and knowledge to adequately understand and utilize an e-RA in the field. It also gave procurement leadership an idea of how much money the DoD, USAF, and AFCENT are leaving on the table by not using e-RAs more. Specifically, we developed an e-RA Appropriateness Model to help contracting officers identify and execute requirements that will lead to increased competition, savings, and successful e-RA events. An e-RA provider POC list is included, as well as an LPTA model and a best-value, trade-off guide for COs who want to use e-RA to source more complicated requirements. Next, we close with a discussion of managerial implications and recommendations/conclusions.



VI. Conclusion and Recommendations

A. Introduction

Our research provides both academic and practitioner utility regarding the use of e-RAs in both CONUS and OCONUS. From an academic perspective, we used the case-study and grounded-theory methodologies to develop a new mid-range theory that enhances “received theories” (Glaser & Strauss, 1967) such as TAM, e-RA, and national cultural. We developed a conceptual model, which explains how national culture affects and is affected by e-RA use from buyer, seller, subcontractor and end-user, and e-RA service provider perspectives. By theoretical sampling, coding, pattern-matching, and constant comparison, we identified the theme of *wasta* as a culturally unique phenomenon that, in addition to the Middle Eastern business climate, decreases procurement integrity and indirectly reduces the contractor’s level of trust in the buyer and the acquisition process. More importantly, we found that offerors perceived an e-RA as a tool that could be used to increase fairness in the acquisition process by increasing transparency and overall procurement integrity. Consequently, the informants in this case study felt higher levels of satisfaction with the e-RA process than they did with the standard procurement process—even though they did not win the contract. Greater satisfaction with the process indicates that offerors will continue to participate in future e-RAs; thus, its use is sustainable in the Middle Eastern culture.

In addition to building new e-RA theory, we provided tools and data to help DoD contracting officers integrate e-RAs into their source selections. First, we identified a potentially significant cost savings that the USAF and (DoD as a whole) could obtain using e-RAs. Secondly, we presented an e-RA Appropriateness Model (EAM) to assist contracting officers in identifying requirements appropriate for e-RA sourcing. Finally, we provided five *FAR*-compliant process flow charts, which show how to incorporate e-RA into Federal



procurements. Our models indicate where e-RA-specific steps are needed and the elements in each step necessary to reduce protest risk, increase transparency, and increase the effectiveness of the e-RA.

B. Answers to Research Questions

- RQ1: What are the cultural implications of e-RA use in the Middle East?

Our findings indicate that a nation's business climate is complex and is influenced by many factors outside the constructs of uncertainty avoidance, power distance, masculinity/femininity, and individualism/collectivism proposed by Hofstede (1980). For example, one major factor that influences the Middle Eastern business climate is the construct *wasta*. In Chapter IV, we discussed 31 propositions that explain how *wasta* impacts e-RA implementation and vice versa, but the overarching contribution is twofold. First, e-RA increases procurement integrity, which, in turn, increases offerors' satisfaction regardless of whether the offeror wins the tender. This means a segment of the Kuwaiti market values procurement integrity and could be open to e-RA use. Hence, an e-RA is a sustainable acquisition strategy in this culture. Secondly, due to the extraordinary trust local Kuwaiti contractors place in the Federal acquisition system, the DoD is uniquely positioned to use e-RAs as a tool to combat the price gouging that plagues DoD contracting in Kuwait. Thus, buying firms who are considering using e-RAs in a Middle Eastern culture must establish an unwavering trust in their employed sourcing processes and buyers from the local supply base. This finding is quite paradoxical—that a central tenet of relational exchange would be the key enabler to the use of a supposed transactional procurement venue (e-RA).

- RQ2: How should contracting officers in the Middle East identify and implement potential e-RA candidates? What process would they use?

A significant contribution of this research is the e-RA Appropriateness Model (EAM). The EAM outlines in three phases of the acquisition process a set



of go/no-go questions to address in order to identify requirements appropriate for e-RA sourcing. As appropriateness increases, so will the effectiveness (savings and lead-time reduction) of the e-RA (Hawkins et al., 2009). The result will be that more of the DoD's scarce budget will be available to fund other mission priorities. The EAM also addresses key issues, such as conducting market research, selecting an e-RA service provider, and assessing the competency level of the acquisition team, in order to set realistic expectations. In short, the EAM provides a foundation for identifying and selecting requirements and for executing e-RAs.

- RQ3: How can contracting officers identify and mitigate procurement risks specific to e-RAs?

In Chapter V, we addressed 10 regulatory issues that have consistently triggered protests to the GAO. These issues include the following:

- Non-priced evaluation factors in a full trade-off with e-RA,
- Submission, modification, revision and withdrawal of proposals,
- Mistakes in bids,
- Unrealistic pricing,
- Collusion,
- Exclusion from competitive range,
- Unbalanced prices,
- Evaluation in accordance with evaluation factors stated in the RFP
- Elimination of internal inconsistencies in the RFP, and
- For Part 15 full trade-off source selections, keeping it simple.

Although only three cases involving e-RAs have been decided by the GAO, there is still a chance that contracting professionals who elect to use e-RA may increase protest risk by inadvertently neglecting nuances peculiar to e-RAs. Eliminating inconsistencies in the RFP (protest issue #9) include having a plan in place to pause the event due to technical problems and including clear "instructions to offeror" in RFPs or RFQs, which outline bidding guidelines and overtime rules. To avoid unbalanced pricing (protest issue #7), contracting



officers conducting e-RAs with multiple line items should evaluate the price of each to ensure one unrealistically low price doesn't add risk to the procurement as a whole. In a two-step procurement, this could be done by evaluating initial proposals or by evaluating them after the auction, just prior to the award determination. Finally, as with any procurement, COs should be cognizant of unusual bidding behavior exhibited by offerors, possibly indicating collusion.

- RQ4: How can contracting officers identify and overcome structural barriers to effect successful e-RA implementation?

Contracting officers have been encouraged since 2001 to use e-RAs as a pricing tool. Unfortunately, since SAF/AQC's guidance letter first went out, over-tasked and understaffed contracting offices have put e-RA implementation on a back burner. This thesis outlines the historical issues associated with e-RAs and makes recommendations to address and fix disconnects between leaders who like the idea of using an e-RA but have not taken the time to incorporate use, metrics, and goal-setting into an overall savings strategy. This research, by identifying e-RA service providers and their business models, by providing five processes showing how to integrate e-RAs into Federal source selections, by providing a framework from which to identify requirements appropriate for e-RA sourcing, and by identifying protest risks, reduces many of the structural barriers that have hindered e-RA implementation. Therefore, the substantial savings foregone by the DoD in the past should be achieved in the future.

- RQ5: What are the potential cost savings of using e-RAs domestically and in the Middle East?

According to our data analysis, the USAF and the DoD are leaving billions of dollars worth of savings on the table each year by not using e-RAs strategically. In order to estimate potential savings, we used a combination of methods. First, using spend analysis, we filtered inappropriate types of requirements out of the pool of potential spend suitable for e-RA sourcing. This method removed R&D, non-fixed-price contracts, construction, and any award not awarded under full and open competition. This gave us a percentage of total



spend that we then applied to total spend from FY01-06 and FY09, yielding auctionable spend for a nine-year period. The second method used a more conservative industry benchmark of total spend (2.58%) (Monczka, Peterson & Kenneth, 2008) in order to estimate auctionable spend. Running the analysis with both methods provides a range of potential savings of \$2.59 billion to \$25.35 billion for USAF spend and \$11.9 billion to \$117 billion for the DoD CONUS spend. For the USAF's expenditures supporting contingency operations (excluding spend of JCC I/A, with which e-RAs use is not as practical), foregone savings are estimated from \$3 million to \$25.3 million. Using the more conservative benchmark, the DoD and its agencies are clearly underutilizing e-RAs. Thus, paradoxically, the government is opting out of opportunities for substantial savings at the same time it is seeking contract spend reductions of 7% (OMB, 2009).

- RQ6: How do subcontractors in the Middle East perceive e-RAs, and what are the possible long-term repercussions for use?

We examined how e-RA use, in the one particular case study, changed the market place in Kuwait. Evidence suggested that Kuwaiti contractors essentially altered their routine method of negotiating with suppliers due to the fast-paced, real-time bidding. Long-term repercussions for subcontractors include lower margins, pressure to become more efficient, and bottom-line pricing prior to the tender rather than renegotiations afterward. Additionally, as is common in e-RA use, suppliers used creative strategies to remain competitive. Strategies included securing future price discounts from manufacturers, adjusting payment terms, and altered communications during the bidding event among key leaders from many members of the supply chain. If e-RA use proliferates, suppliers will likely have to continue to react with creative strategies in order to achieve and maintain a competitive advantage.



C. Theoretical Implications

This research enhances our understanding of e-RA use by combining theories of e-RAs, technology adoption, and national culture. Using grounded theory development, we extend e-RA theory in Middle Eastern cultures by unveiling and then explaining interesting and useful dynamics pertaining to procurement integrity, supplier pricing, and e-RA appropriateness. First, our research indicates that e-RA use can help reduce the negative effects of the Middle Eastern business climate (including *wasta*) in the private and public sectors by increasing transparency in an environment of distrust, favoritism, and collusion. In this particular study, Kuwaiti business managers overcame their natural aversion to technology and innovation (Parboteeah et al, 2005) in order to participate in an e-RA because of high levels of trust in the USAF and its procurement system. Taken a step further, the data suggests that e-RAs can be used as a tool to build trust between buyers and sellers in regions of the world with similar ethical norms.

The *World Development Report 2005* (World Bank, 2005) cites three techniques to deal with corruption.

- Increase competition whenever possible, and reduce government interventions that lack policy justification (p. 42);
- Reduce unnecessary ambiguity or vagueness of policies and regulations (p. 42); and
- Enhance transparency. (p. 43)

Of the three methods listed above, transparency is cited as “one of the most promising strategies [...] to address corruption world-wide” (2005, p. 42). One technique referred to in the report is the use of computerization (and internet) to increase transparency, reduce corruption and, therefore, improve the investment climate (World Bank, 2005, p. 114). According to Transparency International (2009), auctions may serve as a good method to increase competition and reduce the likelihood of corrupt dealings (p. 80). Robust competition, information flow, and simple sales contracts are important to



improve capital markets. Simply put, a trend toward acquisition reform may favor the use of e-RA as a tool to achieve transparency and competition policy goals for developing nations.

Since 2006, 181 international economies have passed reforms strengthening acquisition reform to improve their business climate (World Bank Group, 2009, p. 37). Areas covered included Eastern and Central Europe, OECD high-income-earning countries (30 countries, US included, of which 20 countries originally signed the Convention on the Organization for Economic Co-operation and Development on December 14, 1960), East Asia and Pacifica, Latin America and the Caribbean, Sub-Saharan Africa, and South Asia (2009, p. 37). Additionally, the *Global Corruption Report* (Transparency International, 2009) uses a corruption perceptions index (CPI) to rank countries in terms of the degree to which business people and country analysts perceive corruption to exist among public officials and politicians. Of 180 countries participating in the survey, Kuwait ranked 65th (p. 399), which means 115 countries have higher levels of perceived corruption. Some of these countries, such as China/Mexico (which tied for 72nd), Brazil (80th), India (85th) and Egypt (115th), are major trading partners with the US. We suggest these countries, like Kuwait, could use e-RAs as part of a strategy to increase transparency and reduce corruption. Given the large number of global economies struggling with corruption, there are many opportunities for e-RAs to make a global impact on procurement integrity.

Second, data suggests that e-RA use in Middle Eastern markets alters the supplier's bidding process. Rather than obtaining prices from prospective subcontractors and then renegotiating better prices after winning a competitive tender, suppliers worked with prospective subcontractors upfront to secure more competitive pricing in advance of the auction because they knew only a true market price could win.

Finally, the enhanced theory adds one more antecedent to e-RA appropriateness unique to Middle Eastern markets and situations prioritizing



procurement lead-time over best prices. In situations in which buyers are overpaying for goods and services, e-RAs are appropriate tools to efficiently lower purchase costs by relying on their inherent hyper-competition.

D. Managerial implications

E-RAs are certainly not new to the DoD. The US Army and the US Navy have software contracts in place with differing levels of technical support available to contracting officers who wish to (or are required to) conduct an auction. However, our research indicates myriad issues the DoD must acknowledge and address in order to expand e-RA use.

First, the DoD is failing to achieve maximum savings by limiting e-RA use to simplified, low-dollar acquisitions. Real savings, we argue, are obtainable through strategically identifying goods or services in large volume in order to maximize economies of scale. While focusing on simple commodities saves cycle-time, our research indicates that contractors have more room to bargain with larger volumes.

Second, fair and reasonable prices, in many cases, are not being obtained where e-RAs are appropriate but not being used—by an average margin of 20% (Cohn, 2000). While fair to the seller, prices obtained without an e-RA are hardly fair to the buyer and are certainly not reasonable. For example, by obtaining at least two offers/quotes, COs declare their prices to be Fair and Reasonable (F&R), whereas, in reality, they may not be. According to researchers, “the mere presence of competition is inadequate to assure that the prices proposed are fair and reasonable” (Cibinic & Nash, 1998, p. 1313). Additionally, COs and buying activities are not held accountable for obtaining the best price/cost. While acquisition professionals must secure the best value (*FAR* 1.102-1), this is a nebulous term. It is true that more goes into value than price/cost alone. However, when industry procures the same or similar commercial items and



services for much lower prices/costs using e-RAs, the government's best-value determinations are, at best, suspect and, at worst, irresponsibly erroneous.

Government buying activities are principally assessed by three metrics: contract award dollars, number of contracts awarded, and procurement lead-time (Cavadias, 2004). The *Government Performance Results Act of 1993* requires that organizations measure themselves against desired outcomes. On researcher explains:

Apparently, price/cost performance is not a desirable outcome since metrics to this effect are not used. Research of the many studies conducted by the Navy indicates that the hierarchy may not be interested in how efficiently a contracting office performs. Instead, it appears that they are more interested in appeasing the interests of their many stakeholders. (O'Sullivan, 2003, p. 67)

Third, in contrast, industry procurement activities are brutally held accountable for price/cost. Common metrics include the following: "1. Target prices—based on cost reduction goals, product/service budgets, and/or competitor prices; 2. Cost reduction (comparing actual prices paid in a current period to actual prices paid in a prior period); 3. Rate of actual price change to market index rate of change; [and] 4. Cost avoidance" (Carter, Monczka & Mosconi, 2005). In this context, cost avoidance refers to the amount of money that would have been spent if purchasing and supply had not taken appropriate action. According to Carter et al. (2005), "There is enormous waste in government procurements [...] [and] the problem is not the people, it is the processes being used" (p. 15). As one former Undersecretary of Defense for Acquisition, Technology & Logistics put it, "The last of the major changes that needs to be made [...] is a shift toward e-business" (Gansler, 2002, p. 15).

Finally, the Federal Government has a mandate from the OMB to reduce contract spend by 7% by FY2011 (OMB, 2009). Further, the OMB mandated that agencies must negotiate more favorably priced contracts—insinuating that the government is nowhere close to F&R prices/costs. E-RAs generate, on average,



20% savings (Cohn, 2000). What if an agency could say: I take your 7% and raise you 13%?

Based on our research, we offer the following recommendations as a way forward for e-RA implementation in the DoD:

- **Recommendation #1:** Add e-RA data collection to CARs and to FPDS-NG. Capture that an e-RA was used, whether it encompassed an evaluation of non-price factors, and savings from the IGE.

Rationale: Our data suggests the DoD could potentially save billions of dollars using e-RA strategically. CAR fields designed to track e-RA-specific data will assist leadership in assessing e-RA use for goal-setting, reporting, and planning purposes.

- **Recommendation #2:** The USAF should set goals for e-RA use and routinely track progress toward goals.

Rationale: CAPS research indicates a “top-down implementation approach to e-RAs is more effective than a bottom-up approach in minimizing resistance from other functional areas in the organization” (Beall et al., 2003, p. 42). Top-down goals and progress checks will help planners set new goals while keeping pressure on subordinate units to perform and be accountable for operating costs.

- **Recommendation #3:** E-RA use should be evaluated by the Defense Contracting Management Agency (DCMA) when conducting contractor-purchasing system reviews to ensure contractors are securing F&R prices from subcontractors.

Rationale: Firms outsource most of their revenue to suppliers. If prime contractors are not maximizing e-RA use, then prices (that are ultimately passed on to the US Government) are likely higher than they could be. While e-RAs force contractors to squeeze profit margins, they also force suppliers to become more efficient—to reduce their costs of operating.

- **Recommendation #4:** Each military department (and possibly the DoD) and each civilian agency should build the supporting structure to support e-RA use. This includes the following:

- Establishing a center of excellence: As part of the ongoing strategic sourcing effort, we also recommend that the USAF (or the DoD as a joint



effort) set up an e-RA center of excellence embedded within the Installation Acquisition Transformation leadership (IAT) at Wright-Patterson AFB.

- Rationale #1: An e-RA is a tool ideally suited for highly specifiable goods and services in which at least 3-5 capable vendors are interested in competing. Although e-RAs can be used for small procurements, strategically consolidating requirements can increase the attractiveness of the tender and give prime contractors more leverage to negotiate price reductions with suppliers. Strategically buying items like furniture, computers, and medical supplies could result in savings of 15%-20% (Cohn, 2000). These types of procurements generally fall under the purview of commodity-council sourcing.
- Rationale #2: The USAF lacks corporate knowledge on e-RA use. A centralized (and deployable) team could help identify suitable requirements and provide hands-on guidance and support to CONS/ECONS commanders who want to push e-RA use in their units both CONUS and OCONUS.
- Rationale #3: IAT leadership has spend-data analysis support available to assist the e-RA team identify potential candidates across the USAF and root out potential problems with data accuracy.
- Rationale #4: e-RAs are best used as part of a strategic purchasing portfolio. It is not appropriate for all transactions; thus, leadership will need to work closely with commodity council leaders to set goals, track spend and savings, and develop strategies to incorporate e-RAs into SAP, full trade-off, and LPTA source selections.
- Rationale #5: Experts on e-RA software and provider solutions can greatly reduce the learning curve for contracting officers who lack e-RA experience but desire to incorporate auctions into their acquisition plans.
- Rationale #6: A common industry practice is to staff an e-sourcing manager whose role it is to help orchestrate e-RAs.
- Developing and deploying e-RA training—including a DoD-level e-RA guide:

Rationale: The USAF is behind the curve regarding e-RA use. The other branches are saving millions of dollars annually for the procurement of similar products and services. Like the other branches, we recommend the USAF develop new guidance to contracting officers, which pushes e-RA use for appropriate requirements. Given the high operational tempo, it is unlikely that contracting officers will take the additional time necessary to learn the nuances of e-RA use. To that end, we have provided tools, templates, and guidance to help give them a head start.



- Source an e-RA service provider based on expected annual volume of e-RAs in order to avoid the approximate 3% fee for each e-RA transaction.

Rationale: E-RA use makes sense when the savings outweigh the costs of setting up the auction. Hiring a provider at a cost lower than the expected 3% of annual volume sourced via e-RA could increase the government's savings. For example, if projected annual spend using e-RAs is \$20 billion, then the expected fee paid to providers would total \$600 million. Contracting a provider for \$2 million could net the DoD \$598 million on top of the savings from each e-RA.⁸

- Incorporate e-RA training through the *DAWIA* certification process.

Rationale: The DAU, CECOM and NAVICP all offer user guides, which combined with elements of this project could quickly be combined into a user guide for contracting officers. Some software solutions, such as that of CECOM's USAAV, offer hands-on training through mock auctions to augment written content. Regardless, incentivizing e-RA use, either through a top-down push or career incentives, such as dedicated e-RA performance awards for individuals and units and stratification in performance reports, is the next logical step towards increasing the scope and breadth of use.

E. Areas for Future Research

During our research, a number of potential areas for additional research evolved that, because of time and resource constraints, were outside of our scope. The following areas could provide added value to the DoD as a buying activity or to e-RA theory in general.

- Explore why the USAF has lagged other Services in e-RA use.

Our research indicates that SAF/AQC invested a substantial effort researching the appropriateness of e-RA within USAF acquisition. As a result, guidance in 2001 supported the use of e-RAs but left the decision to contracting officers on a case-by-case basis. Since that time, very few e-RAs have been conducted by the USAF while the other branches have conducted hundreds, saving over \$100 million from 2000-2009. Was operational tempo too high after 9/11? Were there competing objectives? Was the ball dropped? Researchers

⁸ CECOM's USAAVE tool is already in place and free of charge for Federal agencies, provided they agree to build the support structure needed to sustain agency use.



should explore the slow diffusion to understand better the structural barriers in place.

- Conduct other e-RAs in the Middle East to validate/test our findings.

One limitation of this effort was that we were restricted to one event between the USAF and Kuwaiti vendors. In order to test our findings, researchers should conduct case studies of additional e-RAs within the Middle East in both the private sector and between the DoD and industry. Questions to consider include the following: Does *wasta* affect e-RA participation or use in other countries within the Middle East? Do e-RAs reduce the effects of collusion and corruption found in similar areas of the world? Are there additional cultural considerations impacting the use of e-RA that we did not discover? All of these questions require additional, empirical research.

- Explore the variances in contracting systems that cause inaccurate spend data.

During our CLIN-level analysis of FY07 and FY08 USAF spend data, we discovered that it was not possible to accurately categorize and sort transactions into strategic “buckets” because the PSC/FSC data was either not entered at the CLIN level or contract writing systems are not capturing and importing the data into FPDS and CBIS. Additional research into the causes of low data fidelity could help strategic sourcing leadership conduct more accurate spend analyses and increase the effectiveness of their strategic-planning efforts.

- Based on the findings of this research, explore other nationalities to determine which cultures present the best opportunities for e-RA use.

Our findings indicate that Hofstede’s (1980) dimensions of national cultural theory, combined with specific cultural phenomenon, such as *wasta*, create an environment that is appropriate for e-RA use. Because our case study was limited to Kuwait, other researchers should conduct similar studies in other



developing countries to explore whether similar or other novel phenomenon affect e-RA use and outcomes.

- Conduct an industry study to determine the amount of e-RA usage, what is currently being bought, how it is being bought, and how buys are managed (metrics, management, reporting, systems, etc.), percentage of total transactions, percentage of total contract spend, outcomes, and trends of use.

During this project, we struggled to find recent e-RA industry spend data. One study, conducted by CAPS in 2008 (Monczka et al., 2008), showed a decrease of industry spend from 3.6% of total procurement dollars to 2.58%. However, given the 4% response rate, the recent 400% increase in interest in Sorcity, and the global economic crisis, actual use may be higher.

F. Limitations of Research

This research was not without limitations. First, the theory surrounding e-RA use and national culture was developed from a single case study. Ideally, we would have preferred to compare responses from informants across multiple bidding events in order “to increase the range, number, and depth of observations contained in the data” that help build credibility (Charmaz, 2006, p. 182); limiting our findings to interviews, data, and surveys of participants in one event restricted our constant comparison methodology. Discovering additional phenomenological nuances in our resulting theory of e-RA use and national culture may have been stymied by a lack of exposure to more cases. Still, we made every effort to increase credibility by triangulating data (Yin, 2009) and by including interviews of the entire logistic chain from end-users to a second-tier supplier. We also applied constant comparisons across informants by repeatedly engaging the different offerors who competed in the e-RA.

A second limitation was resources. Due to funding and time constraints associated with our MBA program, we were unable to return to the field to conduct follow-up interviews in person. Face-to-face interviews could have provided subtle body-language cues as we discussed sensitive issues, such as



procurement ethics and waste. Instead, we conducted follow-up interviews over the phone after we received written responses to questionnaires.

A final limitation was the methodology we used to conduct the spend analysis. Each method had inherent weaknesses based on the fidelity of data and time/resource constraints. For example, due to the inaccuracy of CLIN-level data from FPDS-NG, we had to conduct our data analysis at the contract level. This essentially means that large, cost-type contracts may have included smaller fixed-price CLINS that were appropriate for e-RA use, but would be excluded from our analysis since it was all coded as cost reimbursement. Additionally, FY2001-2006 FPDS-NG data pulls were limited to total spend because contract-level data for the USAF, Navy, and Army was not available or accurate prior to FY07. According to Monterey Consultants, Inc., earlier data was collected from numerous contract writing systems, which had conflicting fields and failed to include spend under \$25,000. To overcome these limitations, we conducted a thorough and repeatable spend analysis for FY07 and FY08, then applied our percentage of e-RA-appropriate spend to top-level spend from AFCENT, the Navy, and the Army.

G. Summary

While the e-RA is not appropriate for every transaction, our analysis indicates the DoD is leaving billions of dollars on the table by not incorporating them into larger acquisitions involving non-critical- and leverage-types of spend (Kraljic, 1983). Put into perspective, the potential savings generated by e-RA use over the past nine years could have been used to buy the following high-priority platforms, using the most conservative method of analysis (CAPS #2 methodology).

- USAF: 65 RQ-1 Predators. Price: \$40 million each (Air Force Fact Sheet, 2009)
- US NAVY: 78 F-18 E/F. Price: \$35 million each (US Navy, 2009)



- USA: 2,800 MRAPS II: RG-33s. Price: \$1,301,974 each (Army Guide, 2009)

Our analysis sends an important message: An e-RA is a powerful tool that, if used appropriately, has the potential to increase transparency, competition, efficiency, and taxpayer savings. The tools we provide are a step in the right direction, designed specifically to help contracting officers overcome structural barriers including training, operational tempo, and a lack of e-RA policy/guidance.

Specifically, our processes and models should help contracting officers select appropriate e-RA requirements, contact e-RA service providers for assistance if necessary, and appropriately structure e-RAs for optimal savings, compliance with the *FAR*, and minimal risk.

The savings generated by this case study were impressive but not unique. Since mid-2000, the Army and Navy have used e-RAs to save over \$100 million while increasing awards to small business and decreasing their lead-time for simplified acquisitions (Fedbid, 2009, June; M. Meinert, personal communication, July 14, 2009). Given the current push to leverage the DoD's spending power through strategic sourcing, e-RAs offer the DoD leadership a proven, transparent, and readily available mechanism to create value through substantial cost savings and process efficiencies. This study also shows that an e-RA is one tool that the DoD is uniquely positioned to use in the Middle East because of the levels of trust and perceived fairness local vendors place on the Federal acquisition system. To them, e-RAs provide an opportunity to compete on an equal playing field outside the reach of corrupt influences, *wasta*, and collusion that plague the Middle Eastern business climate. Key contributions include (1) an e-RA Appropriateness Model, (2) five source-selection flowcharts designed to integrate e-RAs into a variety of Federal source selections, (3) spend analyses identifying levels of spend appropriate for e-RA sourcing by each military branch, and (4) a new mid-range theory of e-RA use and national culture identifying *wasta* and trust in the buyer as significant additions to e-RA theory.



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Appendix A. Top 50 FSC/PSC Categories

TOP 50 PRODUCT AND SERVICE CODES (PSC)	
* Results are based on accepted FedBid Buys as of September 30, 2009	
7030 --	IT Software
7035 --	IT Support Equipment
7050 --	IT Components
7010 --	IT System Configuration
7045 --	IT Supplies
7025 --	IT Input/Output and Storage Devices
7021 --	IT Central Processing Unit (CPU, Computer), Digital
7110 --	Office Furniture
2330 --	Trailers
7042 --	IT Mini and Micro Computer Control Devices
5820 --	Radio and Television Communication Equipment, Except Airborne
1367 --	Tactical Sets, Kits, and Outfits
6640 --	Laboratory Equipment and Supplies
7510 --	Office Supplies
8465 --	Individual Equipment
6350 --	Miscellaneous Alarm, Signal, and Security Detection Systems
4130 --	Refrigeration and Air Conditioning Components
5855 --	Night Vision Equipment, Emitted and Reflected Radiation
6630 --	Chemical Analysis Instruments
5805 --	Telephone and Telegraph Equipment
5810 --	Communications Security Equipment and Components
2320 --	Trucks and Truck Tractors, Wheeled
6515 --	Medical and Surgical Instruments, Equipment, and Supplies
5410 --	Prefabricated and Portable Buildings
5836 --	Video Recording and Reproducing Equipment
7125 --	Cabinets, Lockers, Bins, and Shelving
7020 --	IT Central Processing Unit (CPU, Computer), Analog
6665 --	Hazard-Detecting Instruments and Apparatus
5895 --	Miscellaneous Communication Equipment
9999 --	Miscellaneous Items
5450 --	Miscellaneous Prefabricated Structures
D399 --	Other IT and Telecommunications Services (includes data storage on tapes, compact disks, etc.)
3930 --	Warehouse Trucks and Tractors, Self-Propelled
4210 --	Fire Fighting Equipment
7490 --	Miscellaneous Office Machines
8145 --	Specialized Shipping and Storage Containers
4240 --	Safety and Rescue Equipment
3805 --	Earth Moving and Excavating Equipment
8470 --	Armor, Personal
7460 --	Visible Record Equipment
2310 --	Passenger Motor Vehicles
8340 --	Tents and Tarpaulins
5830 --	Intercommunication and Public Address Systems, Except Airborne
6910 --	Training Aids
2340 --	Motorcycles, Motor Scooters, and Bicycles
7810 --	Athletic and Sporting Equipment
7195 --	Miscellaneous Furniture and Fixtures
2590 --	Miscellaneous Vehicular Components
J070 --	Maintenance, Repair, and Rebuilding of Information Technology (IT) Equipment (Including Firmware)
8415 --	Clothing, Special Purpose



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Appendix B. Sample Contingency: Instructions to Offerors

(Streamlined LPTA under FAR Part 13)

ADDENDUM TO FAR 52.212-1

Instructions to Offerors:

L-5 REVERSE AUCTION (RA)

a) The U.S. Air Force has retained fill in provider name, to assist in this Internet-based Pricing Proposal Event—termed a reverse auction (RA). Fill in provider name is an online bid service that serves over XXX clients who make purchases like this. Those offerors who wish to submit responses to the solicitation shall register with fill in in provider name and contact information and become a member.

b) Registered suppliers who are invited to participate in the RA will be notified by Sorcity.com prior to the activation of the event and given a code in order to place bids and provide pricing proposals using a secure Internet-based tool by Sorcity.com.

c) Offerors can have access to this tool from anywhere in the world as long as they have access to the Internet using Internet Explorer. Offerors will be given a website address, and a secure User ID and a password they select when they register.

d) For further information or clarification about this event and fill in provider name, direct all communication to the Contracting Officer.

e) Queries Concerning Solicitation. All questions regarding the technical aspects (system software) of the RA must be directed to fill in provider name using either the above e-mail address or by posting questions through the provider's web-hosted event. All questions regarding the content of the solicitation will be answered by the USAF Contracting Officer insert name and e-mail address and provided to all offerors. Any solicitation amendments will be provided electronically to participating offerors.

f) Key Dates. The following dates are to be determined, but this outline should give offerors an idea of what to expect in the solicitation process. The date of the RA bidding event will be published via amendment to the RFQ; this amendment will only be issued to those determined technically acceptable.



INITIAL DATE: Send out the Solicitation posting to offerors via e-mail. The initial date is fill in date.

QUALIFICATION DATE: All offerors must complete the registration process by this date, fill in date.

INVITATION DATE: All registered and qualified offerors will be sent an e-mail requesting their participation in the reverse auction for this solicitation in this manner: USAF/e-RA Provider notifies offerors they have been invited to participate in the Internet-Based Reverse Auction Event. Each offeror will be given a specific link and Private Access Code to the event. Only through this invitation may an offeror compete for this requirement. The offeror agrees to keep this Private Access Code confidential.

REVERSE AUCTION EVENT DATE: The listing of the date during which time the offerors may make pricing proposals on provider's website. Following the ending of the Reverse Auction Event, all qualified offerors must send by electronic media the schedule of supplies/services, page fill-in-the-page number of this solicitation, within 2 hours of the ending of the event. This date is fill-in date.

AWARD DATE: The date by which it is anticipated that the Contracting Officer will make an award to the Offeror who is most responsive to the RFQ and provides the best value to the government under this RFQ.

g) Submission of Pricing

1. Once the e-RA bidding event commences on fill in date, offerors shall only submit pricing only through the event at fill in providers website. Offerors' initial bid in the RA bidding event shall be the total price offered in the Schedule of Supplies or Services, page 2-3 of this solicitation.

2. This electronic Internet-based pricing proposal (e-RA) will consist of one lot entitled "Purchase/Install Generators." In this lot, offerors shall provide price proposals to satisfy all requirements outlined in this RFQ and its attached Statement of Work dated fill in date. All prices quoted during the bidding event (e-RA) shall be in USD. If converting fill in local currency to USD, please use the exchange rate of XXX local currency per USD.

3. At the completion of the Internet-based Pricing Proposal Event, Offerors shall submit the Schedule of Supplies/Services, the completed pages fill-in-the-page number of this solicitation, if the unit prices have adjusted from the initial offer due date of fill in date. The Total Price in the offeror's Schedule of Supplies/Services, completed schedule, page fill-in-the-page number of this solicitation, shall match the lowest pricing proposal that offerors have entered during the online pricing proposal event (RA).

4. Your completed Schedule of Supplies/Services, fill-in-the-page number of this solicitation, is due via e-mail WITHIN TWO (2) HOURS after the Internet-based Pricing Proposal Event (RA) to the U.S. Air Force Contracting Officer and must be sent to fill in provider name. You are also required to print out and sign the first page of the Schedule of Supplies/Services, completed fill-in-the-page



number of this solicitation, and scan/e-mail a hard copy to the Contracting Officer.

5. The successful offeror shall pay a Seller's fee to fill in provider name. Offerors must enter into a membership agreement with fill in provider name prior to the RA bidding event. The Seller's fee will be stated in the membership agreement. The Seller's fee will be the same for all offerors.



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Appendix C. Sample Contingency: Evaluation Factors for Award

(Streamlined LPTA Under FAR Part 13)

ADDENDUM TO

52.212-2—Evaluation—Commercial Items (Jan 1999)

The government will award a contract resulting from this solicitation to the responsible offeror whose offer conforming to the solicitation will be most advantageous to the government, price and other factors considered.

(b) A written notice of award or acceptance of an offer, mailed or otherwise furnished to the successful offeror within the time for acceptance specified in the offer, shall result in a binding contract without further action by either party. Before the offer's specified expiration time, the government may accept an offer (or part of an offer), whether or not there are negotiations after its receipt, unless a written notice of withdrawal is received before award.

M-1 BASIS FOR AWARD

1. This source selection will be conducted using simplified acquisition procedures (as specified herein) contained in Subpart 13.5 of the *Federal Acquisition Regulation (FAR)*. The approach is a streamlined Lowest Price Technically Acceptable (LPTA) source selection. Award will be made to the Offeror who is deemed responsible and responsive that reflects a complete understanding of the specifications and drawings for the Request for Quotation and is judged to represent the Best Value to the government based on selection of the technically acceptable offer with the lowest evaluated price. The government reserves the right to refrain from awarding to any offeror in the event that all offerors progressing beyond the technically acceptable evaluation are determined to have offered pricing that is not considered reasonable or complete. The Best Value is represented by the lowest priced technically acceptable offer. To arrive at a best-value decision, the Source Selection Authority (SSA) will integrate the source selection team's evaluations of the factors and subfactors described in the paragraphs that follow. The factors and subfactors are the uniform baseline against which each offeror's proposal is compared to determine the confidence the government has that the offeror will be able to satisfactorily accomplish all work required. They establish the level an offeror's proposal must meet in any area, factor, subfactor, or element in order to be judged acceptable. To be



eligible for award, a proposal must meet all technical requirements, conform to all required terms and conditions, and include all information required.

2. The proposals will be evaluated on the basis of the evaluation factors listed below. The technical area will be evaluated on an “acceptable” or “unacceptable” basis. Only those contractors determined to be technically acceptable will be evaluated on price. The following areas will be evaluated:

- (a) Technical
 - (1)—Technical Approach
 - (2)—Management/Technical Support
 - (3)—Contractor’s Quality Control
 - (4)—Project Schedule
 - (5)—Past Performance
- (b) Price
 - Total price reasonableness, and completeness.

M-1(a) TECHNICAL EVALUATION

The Technical area will be evaluated on a pass or fail basis. If the proposal received is determined to be unacceptable, the Offeror will be excluded from competition, and they will not progress to the next round of evaluations. Each proposal achieving an acceptable rating will enter the second tier of evaluations—Price. The Technical Evaluation Team will rate the technical proposals according to the chart listed:

DEFINITION	RATING
Passes (or meets) minimum standard requirements	Acceptable
Fails to meet minimum standard requirements	Unacceptable

TECHNICAL STANDARDS:

(1) Technical Approach: A technical description of the items being offered in sufficient detail to evaluate compliance with the requirements in the solicitation. This should include product literature, or other documents, if necessary. The



offeror shall affirmatively state the country in which the equipment was manufactured. Products proposed shall be either Cummins/Onan, Caterpillar/Olympian, Kohler, F.G. Wilson, or Marapco brands. All 29 generators offered shall be the same brand. The government will not “cherry-pick” brands. Offerors must provide the manufacturer’s technical information of equipment offered and return it with their offer. Terms of any express warranty will be evaluated in the technical acceptability.

(2) Key Project Management/Technical Support: The Contractor will be required to provide their approach to hiring qualified key project and support staff. The standard is met when the proposal:

- (i) Provides an organizational diagram showing clear, logical lines of authority from the Project Manager to Subcontracting Management, including Site Superintendence and Quality Control.
- (ii) Identifies the dedicated on-site staff by job title.
- (iii) Provides a brief job description and the qualifications required of each staff member (e.g., any education, training, professional qualifications, licenses, and experience relative to the tasks he/she will perform if awarded the contract). The Contractor performing the work shall be qualified and experienced in generator installation, generator facilities construction, diesel generator installation and testing, synchronization systems testing and commissioning.
- (iv) Identifies the relationships between and authority delegated to management personnel.
- (v) Identifies the level of decision-making authority delegated to staff members (as a minimum, Program Manager shall have on-site decision making authority).

(3) Contractor Quality Control (CQC): The contractor will be required to provide an overview of their approach to quality control. The standard is met when the proposal:

- (i) Reflects how quality problems will be logically, effectively, and expediently documented and resolved.
- (ii) Adequately identifies how trend analysis will be accomplished to identify poor performing subcontractors, including appropriate corrective action, management tools, methods, and documentation.
- (iii) Identifies experienced, dedicated quality control personnel (with no overlapping duties and responsibilities that would supersede this role) and the extent of their authority.
- (iv) Identifies how often work will be inspected (frequency of at least once per day per job).
- (v) Meets and fulfills all content requirements of the Technical Specifications.



(4) Project Schedule: The offeror is required to provide an AF Form 3064, Construction Progress Schedule, that is complete, proper and accurate in strict adherence to the “Instructions to Contractors” on the reverse of the AF Form 3064. The standard is met if the contractor completes the form properly, properly breaks out appropriate major elements of work, describes work elements in sufficient detail, accurately reflects a reasonable timeline (task duration) that satisfies the required delivery time per the Scope of Work para. 1.6.3, logically sequences major work elements reflecting a sound project approach and understanding of major project tasks, and if work element percentages of work values are accurate, reasonable and balanced, and overall project duration is within the specified maximum performance period or sooner.

(5) Past Performance: The offeror’s past performance will be evaluated on an acceptable/unacceptable basis. Past performance information must be recent (within previous 3 years) and relevant. Relevant experience will be limited to performance of projects similar in size, scope, and complexity to those under this RFQ. In order to be eligible for award an offeror must have a satisfactory performance record. For any adverse past performance information collected, the contractor will be given the opportunity to explain the circumstances for clarification.

M-1(b) PRICE

Total Price: This criterion evaluates the overall price to the government and determines if the proposed price is reasonable and complete. The Price Proposal will be evaluated to determine the offeror's understanding of contract requirements as expressed by the solicitation. Any inconsistencies between proposed performance and price must clearly be justified. For example, if unique and innovative approaches are the basis for an abnormally low proposed price, the nature of these approaches and their impact to the proposed price must be completely documented. The burden of credibility of price rests solely with the offeror. The following evaluation criteria shall apply:

Reasonableness: The offeror's proposal will be reviewed to determine if the proposed price is reasonable. The evaluated price will be the offeror’s final bid price in the RA bidding event. Price analysis techniques may include: (1) comparison of proposed prices received in response to the solicitation, (2) comparison of previously paid prices for the same or similar item and (3) comparison of proposed prices with the independent government cost estimate.

Completeness: Price Proposals will be evaluated to determine whether the offeror provided sufficient data as required by the solicitation and the Contracting Officer during the evaluation.

The lowest priced technically acceptable offer whose price is determined to be reasonable and complete, based on the above criteria, will be determined the best value to the government for award.



Appendix D. CECOM Two-step Section L (Sample)

REVERSE AUCTION INSTRUCTIONS AND AGREEMENT

INSTRUCTIONS:

The United States Electronics and Communications Command (CECOM) will conduct a limited competition (NOTE: THIS IS A TWO-STEP REVERSE AUCTION ONLY. THOSE CONTRACTORS IN THE COMPETITIVE RANGE WILL BE INVITED TO PARTICIPATE IN THE anonymous, on-line reverse auction for the requirements specified in Section B of this solicitation. The web address to gain access to the auction is <http://usave.monmouth.army.mil>. The specific time for this reverse auction will be TBD at TBD AM, Eastern Standard Time. Delivery will be in accordance with the specified delivery schedule in Section B of this solicitation. The contractors shall sign and return this agreement to the Contracting Officer at CECOM to receive a user name and password for the reverse auction by COB, TBD. Point of contact for this requirement is Contract Specialist _____ and can be reached at _____ or via e-mail _____. The Bidders agree to meet each requirement specified and only offer items that meet these requirements.

During the reverse auction, Bidders/Offerors may revise their initial pricing bid through submission of electronic offers. Bidders, however, are not required to revise their initial pricing bid during the reverse auction. By participating in this reverse auction you grant the government the right to disclose your price; however, your name will be kept anonymous. The Contracting Officer also reverses the right to suspend or cancel the reverse auction at any time. If the Contracting Officer cancels the reverse auction, the solicitation may be processed following normal Sealed Bid procedures.

It is anticipated that a Firm Fixed Price, (5) FIVE YEAR, INDEFINITE DELIVERY, INDEFINITE QUANTITY (IDIQ) Contract will be executed for this requirement. THOSE Bidders/Offerors IN THE COMPETITIVE RANGE must propose on the full quantity only. The price entered on the web site during the reverse auction shall be the TOTAL PRICE FOR ALL SLINS. TOTAL PRICE = (0001AA + 0002AA + 0003AA + 0004AA + 0005AA + 0006AA + 0006AB + 0006AC). A Bidder shall not be permitted to submit any revised pricing other than the final price submitted during the reverse auction. Once the reverse auction is complete, the contractors shall submit a signed copy of their final bid price to the point of contact above. (NOTE: AT THIS TIME THE APPARENT LOW BIDDER WILL SUPPLY THE PRICE BREAKDOWN FOR SLINS(0001AA + 0002AA + 0003AA + 0004AA + 0005AA + 0006AA + 0006AB + 0006AC). The Representations and certifications Section K of the solicitation must also be filled in and returned to the Contracting Officer. BIDDERS/OFFERORS HAVE UNTIL 24 HOURS FROM



THE TIME THE REVERSE AUCTION ENDS TO SUBMIT A COMPLETE BREAKOUT OF SLINS PRICES. **CAUTION: UNBALANCED BIDS WILL CAUSE BIDDERS/OFFERS TO BE ELIMINATED/FOUND NONRESPONSIVE (SEE FAR 14.404-2(g), 14.405.)**

The reverse auction will be conducted on TBD (Date) at TBD (Time) . Time of the event is Eastern Standard Time. The Starting Price and Bid Decrement for this requirement will be TBD . If a Bid is submitted within the last five minutes, as indicated by the Army web site server clock, of the time period specified for the reverse auction, the final bid will be the determining factor in closing the reverse auction. When no Bids are submitted during the extension period then the auction will close. A Bid during the reverse auction must differ from the market-leading offer by at least the decrement stated above.

By participating in the reverse auction, contractors certify they will not knowingly disclose their price to any other bidder except anonymously during the reverse auction. The contractors further certify that anonymous disclosure of its price during the reverse auction shall not be for the purpose of restricting competition.

BASIS FOR AWARD:

At the conclusion of the reverse auction, the government intends to make an award to the Contractor who submits the lowest price, and is deemed acceptable and responsible by the Contracting Officer. The Bidders must bid on the full quantity identified on Line Item 0001AA, 0002AA, 0003AA, 0004AA, 0005AA, 0006AA, 0006AB AND 0006AC. The Contracting Officer reserves the right to make no award under this procedure.



Appendix E. E-RA QUESTIONNAIRE (Initial)

Research Questionnaire/Interview Guide
Electronic Reverse Auction (e-RA) Case Study
USAF Procurement of 23 Standby Generators
Solicitation F38604-08-R-S014

Researchers: Adam Coyne, Michael Collins

Thank you for your time, effort, and willingness to assist in this important research project. The purpose is to document several aspects of the e-RA that the U.S. Air Force recently used to procure 23 standby generators for Ali Al Salem Air Base, Kuwait. The goal is to help others better understand the use of the e- RAs as an e-commerce tool, including its advantages, disadvantages, limitations, antecedents, and outcomes for buyers and suppliers (including subcontractors). Ultimately, we intend to publish the results of the research in a peer-reviewed academic journal; we will provide you a copy.

Your identity, including your company's identity, will be kept confidential (unless you specifically grant permission to use your company's name). Additionally, your input will not be provided to the 386th Expeditionary Contracting Squadron (ECONS). Our sole purpose is research-related, with no intent to impact or otherwise influence any transaction—past, present, or future—between your company and the U.S. Air Force. This project does not involve greater than minimal risk and involves no known reasonably foreseeable risks or hazards greater than those encountered in everyday life. No tangible compensation will be given for your participation.

Confidentiality: All records of this study will be kept confidential, and your privacy will be safeguarded. No information will be publicly accessible that could identify you as a participant without your express authority to do so. Your input will be identified only as a code number on all research forms/data bases. Your name on any signed document will not be paired with your code number in order to protect your identity. Records of your participation will be maintained by NPS for three years, after which they will be destroyed. Any audio recordings will be destroyed within six months of project completion.

Your participation is strictly voluntary, and if you agree to participate, you are free to withdraw at any time without prejudice.

Should you have any questions or comments regarding this project upon the completion of your participation, you should contact the Principal Investigator, Capt Adam V. Coyne. Any other questions or concerns may be addressed to the Institutional Review Board (IRB) Chair, Background and Business Practices.



1. How do you normally procure supplies? Please describe, for example, how you would normally go about buying and installing generators for a non-USAF customer. From what supplier(s) would you buy?
2. Please describe how conducting business with the USAF for generators was similar/different than with Kuwaiti Companies? Other foreign companies? For the USAF's generator procurement, did you do anything out of the ordinary in preparing for the tender? Did you contact suppliers that you would not normally have contacted?
3. Prior to this acquisition, what was your knowledge of Electronic Reverse Auctions? Auctions in general? Had you ever participated in one? Have you since?
4. Why did you decide to participate/bid in the E-RA? Top reasons?
5. If another non-U.S. Government customer asked you to compete in an E-RA, would you do it? What reservations would you have? If the answer "depends," what factors would influence your decision?
6. At the time of this event, describe your dealings with the Contracting Officer. Did you interact with her often? Did that interaction impact your decision to compete?
7. Was Sorcity.com helpful in preparing for the E-RA? In what ways did Sorcity.com help you prepare for the E-RA bidding event?
8. Do you continue to receive RFPs from the 386 ECONS since the RFP for the generators?
9. If so, did you continue to bid?
10. The pre-bid strategy process:
11. How, if at all, did the E-RA alter your normal bidding strategy? Would it have been different if the buyer were a Kuwaiti company?
12. Did the USAF's use of an E-RA influence you to alter your normal supply chain (i.e., your suppliers, or the brand of generators you chose to bid)? If so, how?
13. How did the e-RA impact your initial proposal price? Was it higher or lower than a normal LPTA procurement? Would your initial proposed price have been higher or lower if the tender did not involve an E-RA?
14. What strategies do your suppliers/subcontractors usually use when competing for your contracts? Do they typically submit inflated prices, then do you negotiate them down later? Or, do they submit the lowest possible offer the first time?
15. After selecting a subcontractor for a tender and winning the contract, do you further bargain a lower price with the selected subcontractor?



16. Prior to the bidding event, did you establish an absolute lowest bid that your company would/could bid? Did you stick to it during the E-RA bidding?
17. Since you moved a large quantity (i.e., lots of inventory) of generators in this sale, did you secure future discounts or other benefits from your supplier(s) (e.g., discounts on future inventory replenishment order)?
18. Of the 23 generators ordered by the USAF, how many were in stock within Kuwait on the day of the bidding event? _____
19. Do you believe that your supplier's need to offload surplus inventory enabled you and your supplier to bid as low as you did?
20. Why did you choose the supplier you did?
21. Do you believe the USAF's technical proposal submission and evaluation sufficiently weeded out companies that were not qualified to perform the project to the technical specifications and schedule?
22. About how many hours did you spend learning how to participate in the auction? Was your time/effort well spent?
23. Prior to the bidding event, did you know the identity of any other companies you would be competing against?
24. Were you reluctant to compete in the e-RA? If so, why?
25. At the time you received the RFP for generators, can you characterize your company's financial condition—considering cash flow, profitability, market share, revenue, and owner's equity? Would you rate your company's financial condition as: very poor, poor, somewhat poor, neither poor nor strong, somewhat strong, strong, or very strong?
26. Did your firm's financial condition impact your decision to compete in the e-RA? Did the Kuwaiti economic condition impact your decision to compete in any way? If so, how?
27. Do you believe that by not using an e-RA, the USAF probably overpays for some supplies/services?
28. In general, do you believe the USAF gets as good a price when not using an e-RA? Do you believe the USAF gets an overall good value on its purchases when not using an e-RA? Do you believe the USAF gets a fair and reasonable price when not using an e-RA? Why or why not?
29. Do you believe that using an e-RA, in concert with a technical proposal evaluation, was appropriate for buying the generators? Why or why not?
30. Do you believe that using an e-RA without requesting and evaluating any technical proposals for the generators would have been prudent (i.e., selecting the "winner" solely on price)? Why or why not?



31. In general, do you see e-RAs more as an opportunity or as a threat? Would you use them to purchase supplies or services for your firm? Do you think your competitors would use e-RAs?
32. Did you believe the specifications/statement of work (as amended) was very clear (unambiguous) and thorough?
33. Did you believe the solicitation (RFP) clearly stated the basis for contract award?
34. Do you believe the solicitation completely and clearly stated the requirements for proposal submissions?
35. Do you believe the solicitation clearly explained the e-RA bidding process? How could it have been made clearer?
36. Prior to the bidding event, what did you perceive to be the greatest risks to your company in participating in the e-RA?
37. Had you won the e-RA bid, would you have “talked it up” with your peers, friends, business associates, or family? If so, why?
38. Do you think that by winning the e-RA bid, your firm’s reputation might have been improved? Your personal reputation might have improved? If so, why?
39. If you had won, would you have marketed this to other customers, competitors, or suppliers? If so, why?
40. Did you believe your firm could earn some clout by winning the USAF’s e-RA tender? If so, why?
41. To what extent did you participate in the e-RA because it was something new, and you wanted to experience it or learn about it?
42. In general, how would you characterize your firm’s relationship with the USAF? Choose one of the following: strictly transactional, a series of discrete transactions/contracts, a long-term relationship with some mutual dependence, a long-term partnership with mutual and total dependence, or a strategic alliance?
43. Prior to the RFP for the generators, had you done business/contracted directly with the 386 ECONS? If not, did you participate in order to get in the door (i.e., the prospect of additional future business)?
44. When you bid for the generators, how badly did you or your chosen subcontractor/supplier need to sell off inventory?
45. When you decided to submit a proposal in response to the RFP, how would you characterize your competitive positioning/competitive advantage? Much stronger than the competition? Weaker? Same?



46. When you decided to submit a proposal in response to the RFP, please describe what you thought were your chances of ultimately winning the tender/contract?
47. In preparation for the e-RA, did you have any dialogue with an e-RA distributor or manufacturer? If so, what was the nature of the discussions?
48. Did any generator supplier (distributor or manufacturer) influence you to participate in the e-RA?
49. How badly did your firm need to win the tender in order to gain the revenue and/or profits from the sale?
50. Similarly, how badly did your firm want to win the tender in order to gain the revenue and/or profits from the sale?
51. Prior to submitting a proposal, did you believe the CO would do what she said she would in the RFP? Did you believe the CO would follow the evaluation process stated in the RFP? Do you feel the CO followed the procedure stated in the RFP? Do you believe the evaluation process was fair? Do you believe the evaluation process was biased toward any particular bidder?
52. By using the e-RA, did you think Maj. Gambrel was taking advantage of your firm? Behaving opportunistically? Trying to achieve a lower price for the USAF's while deliberately and knowingly harming your firm?

The bidding event:

53. During the bidding event, how did you manage the bidding? How did you communicate with your suppliers to react in real-time to competing price drops?
54. Did you remain in contact with your supplier(s) during the bidding event?
55. Who did your bidding? Was there collaboration prior to each bid or was the decision autonomous?
56. During the bidding event, did you obtain further price concessions from your supplier?
57. Did you suspect any nefarious behavior by the USAF? (For example, some suppliers are suspicious that the buyer will create "phantom bidders" to fraudulently act as one of the bidding suppliers in order to bid the price down lower.) Did you suspect the USAF of partaking in such behavior? Why or why not?

Business Culture:

58. Prior to the generator's procurement, had you or your company ever participated in a reverse auction in the Middle East? How was it similar or different to your USAF e-RA experience?



59. Is e-RA a sourcing tool used in the Middle East? If not, why do you think this is so? Why should Middle Eastern companies use e-RAs? Why do you believe it has/has not been widely adopted in the Middle East?
60. In the Middle East, how would you characterize business transactions and pricing (e.g., transparent, open, honest, absence of deceit, absence of withholding information, some deceit, some withholding of information)?
61. In the Middle East, is it common for competing suppliers to discuss business opportunities prior to the tender? If so, do they disclose or share bidding strategies? Do they disclose teaming arrangements? Do they share prices prior to the tender?
62. If some “sharing” of information among competing suppliers occurs (as referenced in Question #59 above), do you think the buyer’s use of e-RAs would reduce, limit, or prevent such pre-bid discussions? If yes, how would an e-RA curtail pre-bid communication?
63. How does your company feel about e-Commerce? Any barriers in the Middle East?
64. Is friendship or a personal relationship important in your business strategy? Is it important to have a friendly relationship?
65. In your opinion, could religion impact e-RA use?

Outcome(s):

66. Overall, was the E-RA a positive or negative experience? Why?
67. At project completion (all units delivered and installed), did your firm perform to the USAF’s expectation? Do you believe the USAF is pleased with your company’s performance? On a scale of 1–10, with 10 being completely satisfied and 1 being completely dissatisfied, how do you believe the USAF would rate your company’s performance on the generator project?
68. Do you believe that the USAF’s use of an e-RA impacted your relationship with the USAF in any way? If so, how?
69. During the bidding event, at the time you bid your lowest bid (final bid) did you anticipate being able to make a profit on the project? If so, how much %? _____% (voluntary disclosure if you’re comfortable)
70. Do you anticipate bidding in an E-RA in the future if your client/customer requests or requires it and if the business is otherwise sufficiently attractive? Does it depend on who the company is? If so, why?
71. What did you like the least (resent the most) about the entire experience?
72. If you won the contract, did you deliberately alter the level of quality of your company’s performance in order to recoup profit? If you did not win the contract, is this a practice that you would have considered?



73. Do you feel that your commitment to the USAF is altered in any way by the USAF's use of an e-RA? If so, why?
74. Do you feel that your loyalty to the USAF is altered in any way by the USAF's use of an e-RA? If so, why?
75. Do you believe the bidding event made the transaction appear more transparent (open, honest, trustworthy)?
76. Was technology an issue for you? Do you think it was for your competitors or would be if incorporated into the Kuwait commercial marketplace?
77. Do you think this e-RA bidding event altered the market—at least for this transaction? Hence, did the suppliers who customarily bid on generator projects in Kuwait change for this tender?
78. If you won the e-RA, do you believe this resulted in increased clout or an enhanced reputation for you or your firm? If so, how?

Demographics

The purpose for the information requested below is to provide a context of the experience level and background of the company/individuals interviewed. Providing background information of research subjects helps establish credibility and ultimately strengthens research findings.

Company/individual names *will not* be disclosed in any publication resulting from this interview without your expressed written consent.

You and Your Company:

Name: _____

Company: _____

Division: _____

Industry: _____

Is your company publicly traded or private? _____

How many years has your company been doing business with the USAF?

How many years have you personally been doing business with the USAF—regardless of which company you work for? _____

What is your company's approximate annual revenue (in KWD)?

_____ KWD

Approximately how many people does your company employ full-time?

In what country is your company headquartered? _____

In what country is your office? _____

In how many e-RAs has your company competed? _____

In how many e-RAs have you personally been involved—regardless of which company you work for? _____



What is your position/duty title?

What is your role in your company?

For how many years have you been involved in construction tenders?

For how many years have you been involved in tenders involving generators?



Appendix F. Initial Survey

ELECTRONIC REVERSE AUCTION (E-RA) SURVEY

E-RA Survey Section A (Participation Factors)									
On a scale of 1 - 7 (1 = Strongly Agree, 7 = Strongly Disagree), please rate how heavily each of the factors below affected your decision to participate in the Electronic Reverse Auction									
Factors	Strongly Agree	Mostly Agree	Slightly Agree	Agree	Slightly Disagree	Mostly Disagree	Strongly Disagree	N/A	
Gained valuable insight into competitive environment	1	2	3	4	5	6	7		
Gained new access to buyers through E-RA participation	1	2	3	4	5	6	7		
Observed resource savings on manpower	1	2	3	4	5	6	7		
Gained time savings on negotiations	1	2	3	4	5	6	7		
Lowered Marketing or Sales Costs	1	2	3	4	5	6	7		
Observed a quick award cycle time	1	2	3	4	5	6	7		
Received feedback from buyers on the event	1	2	3	4	5	6	7		
Observed clear levels of transparency on the supply process	1	2	3	4	5	6	7		
Gained trust in the buyer / seller relationship	1	2	3	4	5	6	7		
Observed a reduction in Lead-Time by eliminating waste	1	2	3	4	5	6	7		
Penetrated or accessed new markets	1	2	3	4	5	6	7		
Competed on a level playing field with other suppliers	1	2	3	4	5	6	7		
Observed increased sales	1	2	3	4	5	6	7		
Made the supplier more efficient and more effective for future business opportunities	1	2	3	4	5	6	7		
Reduced supplier inventory levels	1	2	3	4	5	6	7		
Winning the E-RA improved the reputation and thus boosted the prestige of the company	1	2	3	4	5	6	7		
Newness of E-RA technology enticed suppliers to participate	1	2	3	4	5	6	7		
E-RA Survey Section B (Relational Exchange, prior to the E-RA)									
The USAF and my company think it is important to continue our relationship	1	2	3	4	5	6	7		
The USAF and my company want to cultivate a good working relationship	1	2	3	4	5	6	7		
the USAF and my company are generally able to resolve disagreements to both parties' satisfaction	1	2	3	4	5	6	7		
The USAF and my company are very conscious about maintaining a cooperative relationship	1	2	3	4	5	6	7		
There is a high level of trust between the USAF and my company	1	2	3	4	5	6	7		



ELECTRONIC REVERSE AUCTION (E-RA) SURVEY

The USAF and my company are willing to make adjustments in the ongoing relationship to cope with changing circumstances	1	2	3	4	5	6	7	
E-RA Survey Section C (Industrial Norms)								
Please list 3 companies that you sell to (do business with) that you trust to different degrees. Hence, name a company that you trust completely (firm A). Now, name a company that you are not sure whether to trust or distrust (firm B). Then, name a company that you completely distrust (firm C). The names/identities of these businesses will remain confidential and will NOT be released.								
I would participate in an E-RA if I <u>completely</u> trusted the buyer (as an individual, not their employer/organization)	Firm A	1	2	3	4	5	6	7
	Firm B	1	2	3	4	5	6	7
	Firm C	1	2	3	4	5	6	7
I would participate in an E-RA if I <u>somewhat</u> trusted the buyer (as an individual, not their employer/organization)	Firm A	1	2	3	4	5	6	7
	Firm B	1	2	3	4	5	6	7
	Firm C	1	2	3	4	5	6	7
I would participate in an E-RA if I were <u>unsure</u> I could trust the buyer (as an individual, not their employer/organization)	Firm A	1	2	3	4	5	6	7
	Firm B	1	2	3	4	5	6	7
	Firm C	1	2	3	4	5	6	7
I would participate in an E-RA if I <u>completely distrusted</u> the buyer (as an individual, not their employer/organization)	Firm A	1	2	3	4	5	6	7
	Firm B	1	2	3	4	5	6	7
	Firm C	1	2	3	4	5	6	7
I would participate in an E-RA if I believed the E-RA bidding & selection process would be <u>completely</u> unfair and/or biased.	Firm A	1	2	3	4	5	6	7
	Firm B	1	2	3	4	5	6	7
	Firm C	1	2	3	4	5	6	7
I would participate in an E-RA if I believed the E-RA bidding & selection process would be <u>somewhat</u> unfair and/or biased.	Firm A	1	2	3	4	5	6	7
	Firm B	1	2	3	4	5	6	7
	Firm C	1	2	3	4	5	6	7
I would participate in an E-RA if I were <u>unsure</u> whether the E-RA bidding & selection process would be <u>fair and/or unbiased</u>	Firm A	1	2	3	4	5	6	7
	Firm B	1	2	3	4	5	6	7
	Firm C	1	2	3	4	5	6	7
I would participate in an E-RA if I believed the E-RA bidding & selection process would be <u>completely</u> fair and/or unbiased	Firm A	1	2	3	4	5	6	7
	Firm B	1	2	3	4	5	6	7
	Firm C	1	2	3	4	5	6	7



ELECTRONIC REVERSE AUCTION (E-RA) SURVEY

E-RA Survey Section D (USAF E-RA Event)							
I trusted the 3rd party E-RA service provider (Sorcity.com) <u>prior</u> to the bidding event	1	2	3	4	5	6	7
My level of trust for the E-RA service provider changed <u>after</u> the event	1	2	3	4	5	6	7
I trusted the USAF <u>prior</u> to the E-RA	1	2	3	4	5	6	7
My level of trust in the USAF changed <u>after</u> the E-RA	1	2	3	4	5	6	7
I trusted the CO, Maj Gambrel, <u>prior</u> to the E-RA	1	2	3	4	5	6	7
My level of trust in the CO, Maj Gambrel, changed <u>after</u> the E-RA	1	2	3	4	5	6	7
I trusted the USAF/386 ECONS contracting/bidding process <u>prior</u> to the E-RA - that it would be fair, impartial, and that the contract would eventually be awarded to a firm	1	2	3	4	5	6	7
My level of trust in the USAF/386 ECONS contracting/bidding process changed <u>after</u> the E-RA - that it would be fair, impartial, and the the contract would eventually be awarded to a firm	1	2	3	4	5	6	7
I trusted the prime contractor to the USAF (subcontractor only)	1	2	3	4	5	6	7
I would have participated in the E-RA if I did not trust the 3rd party E-RA service provider	1	2	3	4	5	6	7
E-RA Survey Section E (Relational Exchange, <u>after</u> the E-RA)							
The USAF and my company thinks it is important to continue our relationship	1	2	3	4	5	6	7
The USAF and my company wants to cultivate a good working relationship	1	2	3	4	5	6	7
The USAF and my company are generally able to resolve disagreements to both parties' satisfaction	1	2	3	4	5	6	7
The USAF and my company are very conscious about maintaining a cooperative relationship	1	2	3	4	5	6	7
There is a high level of trust between the USAF and my company	1	2	3	4	5	6	7
The USAF and my company are willing to make adjustments in the ongoing relationship to cope with changing circumstances	1	2	3	4	5	6	7



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Appendix G. WASTA Follow-up Survey/Questionnaire

e-RA Research: Follow-up questions.

Part of the research effort is to explore any effects of national culture on e-RA use. In other words, does national culture in any way change any aspect of e-RA use, such as e-RA outcomes, e-RA usefulness, and the process of preparing to compete and the process of competing in e-RAs?

From our initial interviews, the concepts of fairness, transparency, trust in the procurement process and trust in the buying organization emerged as a dominant themes. In order to complete the research, we need to understand how fairness and e-RA use might be related; thus, we have a few additional questions.

Several of our informants suggested a lack of fairness in the Middle East due to personal relationships. Our questions will explore this idea.

1. What is wasta?
2. How does wasta affect business deals?
3. Does wasta mean having influence? [Y/N]
4. Does wasta mean having connections? [Y/N]
5. Does wasta mean having power (the ability to get someone to do something they otherwise would not have done)? [Y/N]
6. Does wasta mean favoritism? [Y/N]
7. Is there a cultural norm of wasta in the Middle East business environment? [Y/N]
8. If so, is the norm of wasta due to solidarity, mutuality, loyalty, and/or allegiance?
9. Are these norms of solidarity, mutuality, loyalty, and allegiance due to family ties?
10. Do family ties affect business relationships (e.g., which company wins a contract)?



11. If you have high status, do you have wasta? [Y/N]
12. If you have a good reputation, do you have wasta? [Y/N]
13. If you are respected, do you have wasta? [Y/N]
14. How important to your business is having wasta?
15. Can your business thrive without having wasta?
16. Is wasta attributed to an individual or a business—or both? In other words, can a business have wasta, or is it only resident in a person?
17. Did your choice of a generator supplier have anything to do with wasta (connections? Influence? Power? Favoritism? Status? Allegiance? Reciprocating obligation? Respect? Reputation)? [circle each that applies]
18. Did the generator supplier's choice of your firm have anything to do with wasta (connections? Influence? Power? Favoritism? Status? Allegiance, Reciprocating obligation? Respect? Reputation)? [circle each that applies]
19. By competing in the e-RA (i.e., by learning and experiencing the new e-RA procurement process), did you or your firm gain any wasta (connections, influence, power, status, respect, or enhanced reputation)?
20. If yes above, does that newly obtained wasta increase your satisfaction? [Y/N]
21. Prior to the e-RA, did you think it would be useful for your firm to have the experience and knowledge of how an e-RA works—knowledge and experience that other firms in Kuwait don't have?
22. Could that unique and rare experience and knowledge of e-RAs give you or your firm connections, influence, power, status, respect, or enhance your reputation?
23. The Middle East business climate has been characterized by: favoritism, some distrust, and sometimes corruption. Do you think this business climate necessitates that you have wasta in order maximize your chances to be successful?
24. In your opinion, does wasta decrease fairness?
25. From our interviews, we've learned that participants like the e-RA because it is transparent—you can see who bid what; thus, you have more information about the contract award decision. Do you agree that the transparency builds trust in the procurement process?
26. Does that transparency build trust in the buying organization?



27. Our initial interviews suggest the following relationship. We want to confirm them, and give you the opportunity to elaborate if you want to.
- Does e-RA use increase your perception of fairness in the procurement process? (Note: fairness means every bidder has an equal opportunity to win)
 - Does e-RA use increase your perception of transparency in the procurement process? (Note: transparency means you know what the selection rules and procedure will be; they are open, and the buyer is not hiding anything)
 - Informants told us that they would participate in another e-RA with the USAF. Whether or not you won the tender, do you believe the transparency and/or fairness of the e-RA process increased your satisfaction with the tender process?
28. In your opinion, in tenders with the U.S. Government, can the transparency and fairness of e-RAs in any way substitute for wasta (influence and work-arounds) in achieving desired outcomes (fair competition, odds of winning a tender, or bidder satisfaction)?
29. In general, does the use of an e-RA increase your perception of procurement integrity?
30. Do you believe wasta can be both good (positive outcomes) and bad (negative outcomes)?
31. Can you think of examples of how wasta can be “good” (positive outcomes)?
32. If you were contracting with the USAF, how might you use wasta to benefit both parties—your company and the USAF?
33. Classify the following acts as good wasta or bad wasta:
- Using wasta to save time in a bureaucratic government process (e.g., customs clearance; obtaining base passes from KMOD) [good/bad]
 - Using wasta in collusion in an attempt to win a contract [good/bad]
 - Using wasta in corruption (e.g., bribing a procurement official) [good/bad]
 - Using wasta to help a family member obtain a job—if it created unfairness to another job candidate [good/bad]
 - Using wasta to help a family member obtain a job—if it did not create unfairness to another job candidate [good/bad]
 - Gaining respect [good/bad]
 - Gaining prestige [good/bad]



- Gaining status [good/bad]
- Improving your firms' reputation [good/bad]
- Repaying a favor to a friend or family member—if it created unfairness to someone else [good/bad]
- Repaying a favor to a friend or family member—if it did not create unfairness to someone else [good/bad]
- Using wasta to secure admission to a top university where your selection might prevent a more qualified candidate from being admitted [good/bad]
- Using wasta to circumvent the law [good/bad]
- Using wasta to get a supplier to agree to team with you to compete in a tender [good/bad]
- Using connections or influence to obtain the most talented labor to perform a contract [good/bad]



Appendix H. List of Data Attributes

Textgroup	Textname	Creation Date	# of coded segments	# of coded memos	Author	Bytes
Correspondence	E-mail traffic w/ contractor on 28 Sept (wasta)	9/30/2009 12:36	3	1	RS1	3478
Correspondence	Company B—no wasta e-mail 22 Sept 09	9/22/2009 4:21	1	1	RS1	818
Correspondence	CCO and Sorcity CEO e-mails 4 Mar 08	9/20/2009 9:29	59	6	RS1	27793
Correspondence	Educating the customer e-mail (Commander)	9/20/2009 9:29	5	1	RS1	1966
Correspondence	ASG-KU 1 Jan 06 Ltr	9/20/2009 9:29	0	0	RS1	13
Correspondence	4 Mar Collusion e-mail from CCO	9/20/2009 9:27	13	3	RS1	6024
Correspondence	10 Feb Bollard e-mail (rqmnts)	9/20/2009 9:27	6	0	RS1	4584
Correspondence	CC e-mail to ECES re brand name on 19 Jan	9/20/2009 9:29	17	0	RS1	5321
Correspondence	Generators JA—Brand Name Restriction	9/20/2009 9:29	7	0	RS1	5748
Correspondence	CC e-mail to GTE—training	9/20/2009 9:29	1	1	RS1	2038
Correspondence	CC to Sorcity CEO on 19 Jan—intro	9/20/2009 9:29	2	1	RS1	535
Correspondence	Sorcity and CC on MR and agreement 23 Jan	9/20/2009 9:29	11	0	RS1	4073
Correspondence	e-RA announcement	8/21/2009 10:36	2	1	RS2	1142
Correspondence	18 Aug E-mail from Sorcity CEO	8/21/2009 10:36	10	3	RS2	1291
Correspondence	CECOM e-mails re trade-off tool 4 Sept 09	9/20/2009 9:29	0	3	RS1	7702
Archival Data	ECONS Slides—24 Jan 08	9/20/2009 9:29	0	0	RS1	1406
Archival Data	Sorcity Membership Agreement—Jan 08	9/20/2009 9:27	0	0	RS1	29897
Archival Data	Innovative idea saves nearly	9/20/2009 9:29	0	0	RS1	3459
Archival Data	Reverse Auction Basics to contractors	9/20/2009 9:29	0	0	RS1	1349
Archival Data	Technical Evaluation	8/21/2009 10:36	0	0	RS2	12587
Archival Data	Solicitation	8/21/2009 10:36	1	0	RS2	124874
Archival Data	SASS	8/21/2009 10:36	0	0	RS2	5087
Archival Data	PCM	8/21/2009 10:36	0	0	RS2	6447
Archival Data	P00001	8/21/2009 10:36	0	0	RS2	4214
Archival Data	D and F	8/21/2009 10:36	0	0	RS2	925
Archival Data	Contract	8/21/2009 10:36	0	0	RS2	55700
Archival Data	CENTAF Solicitation Clearance Request	8/21/2009 10:36	0	0	RS2	976
Archival Data	A00003	8/21/2009 10:36	0	0	RS2	9166
Archival Data	A00002	8/21/2009 10:36	0	0	RS2	56610
Archival Data	A00001 Narrative	8/21/2009 10:36	0	0	RS2	819
Archival Data	386 ECONS Response to CAOC Sol Clearance Rvw—Generator 08R	8/21/2009 10:36	0	0	RS2	6252
Archival Data	386 ECONS Response to CAOC Contract Clearance Review Comment	8/21/2009 10:36	0	0	RS2	5048
Archival Data	386 ECONS Response to A7K review	8/21/2009 10:36	0	0	RS2	3160



Textgroup	Textname	Creation Date	# of coded segments	# of coded memos	Author	Bytes
	comments for Generator proc					
Field Notes	Manager C—Wasta Questionnaire response	10/8/2009 12:10	50	13	RS1	9920
Field Notes	Manager B—Wasta Questionnaire 24 Sept 09	9/24/2009 9:37	50	12	RS1	6442
Field Notes	Manager A—FN & Questionnaire Sept 09	9/22/2009 5:24	51	9	RS1	9704
Field Notes	Manager A—Field Notes (only)	9/20/2009 10:04	0	0	RS1	2920
Field Notes	Manager B—Interview—Field Notes	7/14/2009 9:15	46	12	RS2	3674
Field Notes	Manager D—Interview—Field Notes	7/14/2009 8:50	64	12	RS2	4493
Field Notes	Manager C—Field Notes	7/14/2009 2:46	92	12	RS2	6727
Field Notes	FedBid Interview—Field Notes	7/10/2009 8:55	15	1	RS2	1470
Field Notes	AFCENT Interview—Notes	7/10/2009 8:31	18	1	RS2	1499
Interviews	Manager C—Wasta Interview 6_Sept 09	10/8/2009 11:36	52	6	RS1	27297
Interviews	Revised Manager A—Interview	10/7/2009 8:30	63	26	RS1	37237
Interviews	Manager B—Follow-up Interview	10/6/2009 3:35	43	16	RS1	23323
Interviews	Manager B—Response to initial questionnaire	8/28/2009 2:02	32	2	RS2	16148
Interviews	FedBid Interview—Revised, redline	7/9/2009 11:31	0	0	RS2	35578
Interviews	Logistics A—Interview	7/9/2009 11:31	59	2	RS2	38299
Interviews	Logistic B—Interview	7/9/2009 11:31	42	0	RS2	19865
Interviews	Manager D—Interview	7/9/2009 11:31	193	11	RS2	43756
Interviews	Manager E—Interview	7/9/2009 11:31	86	7	RS2	34406
Interviews	Coyne-Collins Manager B interview (revised)	7/9/2009 11:31	78	4	RS2	52057
Interviews	CCO—Interview	7/9/2009 11:31	102	3	RS2	40643
Interviews	Manager C—Interview	7/9/2009 11:31	228	10	RS2	135169
Interviews	Sorcity Interview 26 Mar 09	7/9/2009 11:31	66	7	RS2	63165
Interviews	AFCENT Interview	7/9/2009 11:31	64	1	RS2	16164



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APPENDIX J. Frequency of Codes

Code	All Coded Segments	Activated coded segments	Author	Creation Date
e-RA Provider Coordination with Offerors	7	0	Adam	9/23/2009 2:12:
e-RA Provider Offering Market Research	12	0	Adam	9/23/2009 2:11:
Buyer Coordination with e-RA Provider	23	0	Adam	9/23/2009 2:10:
e-RA Provider Membership Agreement	8	0	Adam	9/21/2009 1:45:
Arab business Climate	34	0	Mike Collins	9/3/2009 10:32
Distrust	8	0	Adam	9/21/2009 12:52
Corruption	21	0	Mike Collins	7/23/2009 2:14:
Collusion	39	0	Mike Collins	7/9/2009 12:06
Allegiance or Loyalty to Family or Friends	7	0	Adam	10/15/2009 11:35
Bad Wasta	26	0	Adam	10/15/2009 11:49
Connections	8	0	Adam	10/8/2009 12:42
Favoritism	8	0	Adam	9/20/2009 11:06
Good Wasta	16	0	Adam	10/15/2009 11:49
Influence	8	0	Adam	10/8/2009 12:41
Reputation	7	0	Adam	10/8/2009 12:53
Status	6	0	Adam	10/8/2009 12:47
Offeror's Reputation	18	0	Mike Collins	8/21/2009 1:06:
Cultural Disposition to Bargain	10	0	Mike Collins	8/21/2009 4:30:
Subcontractor Satisfaction	6	0	Mike Collins	8/27/2009 5:31:
Change Market Dynamics	13	0	Mike Collins	8/27/2009 12:38
Standard Business with Industry	6	0	Mike Collins	8/27/2009 10:43
Supplier Opportunism	10	0	Mike Collins	8/21/2009 4:51:
Specifiability	25	0	Mike Collins	7/23/2009 1:19:
E-RA Appropriateness	28	0	Mike Collins	8/21/2009 3:04:
Adequate Market Research	17	0	Mike Collins	8/28/2009 3:53:
Contractor e-RA Success	5	0	Mike Collins	8/21/2009 1:56:
Buyer Preparation	32	0	Mike Collins	8/21/2009 11:20
Buyer Savings	14	0	Mike Collins	8/21/2009 11:14
Offeror pre-E-RA preparation	15	0	Mike Collins	8/21/2009 11:05
Communication	18	0	Mike Collins	8/22/2009 11:04



Code	All Coded Segments	Activated coded segments	Author	Creation Date
Quality of RFP	18	0	Mike Collins	8/21/2009 2:22:
Formal Rules and Procedural Fairness	72	0	Mike Collins	7/9/2009 12:18
Justice	5	0	Owner	7/30/2009 10:46
Trust in Process (1)	28	0	Mike Collins	7/9/2009 11:42
Trust in e-RA Service Provider	26	0	Mike Collins	7/9/2009 11:41
Trust in the USAF/Buyer	36	0	Mike Collins	7/9/2009 11:42
Trust in CCO/Individual Buyer	14	0	Mike Collins	7/9/2009 11:42
Bidding Strategy	14	0	Mike Collins	8/21/2009 3:17:
LPTA Source Selection Method	11	0	Mike Collins	8/21/2009 2:31:
Subcontractor Inventory	5	0	Mike Collins	8/21/2009 2:07:
Attractiveness	9	0	Mike Collins	8/21/2009 1:38:
Excess Inventory	5	0	Mike Collins	8/21/2009 2:20:
Purchase Volume	28	0	Mike Collins	8/21/2009 11:19
Competition	11	0	Mike Collins	8/21/2009 1:06:
Award Price	11	0	Mike Collins	8/21/2009 11:18
Subcontractor Margin	5	0	Mike Collins	8/21/2009 11:16
Offeror's Margin	19	0	Mike Collins	8/21/2009 11:12
Contractor Management	6	0	Mike Collins	8/22/2009 11:02
Contractor Performance	19	0	Mike Collins	8/22/2009 10:47
Subcontractor Price	10	0	Mike Collins	8/21/2009 11:06
Satisfaction	5	0	Mike Collins	7/9/2009 12:40
Buyer Satisfaction	14	0	Mike Collins	8/21/2009 11:14
Offeror Satisfaction	42	0	Mike Collins	8/21/2009 11:13
Change in Bidding Strategy	52	0	Mike Collins	7/23/2009 1:30:
Subcontractor Reach back to Manufacturer	5	0	Mike Collins	8/21/2009 2:06:
Offeror Bargaining with Suppliers	19	0	Mike Collins	8/21/2009 10:52
Need for e-RA Training	12	0	Mike Collins	7/9/2009 12:31
Hands on e-RA Training	7	0	Mike Collins	8/21/2009 4:12:
Need for DoD e-RA Expertise	8	0	Adam	9/23/2009 2:14:
Poor Gov't Cost Estimating	6	0	Mike Collins	8/21/2009 4:41:
Undeveloped Local Market	12	0	Mike Collins	7/23/2009 1:42:
Need for DoD e-RA Policy/Leadership	16	0	Mike Collins	7/9/2009 12:31
Gov't Overpaying for Goods and Services	20	0	Mike Collins	8/21/2009 4:36:



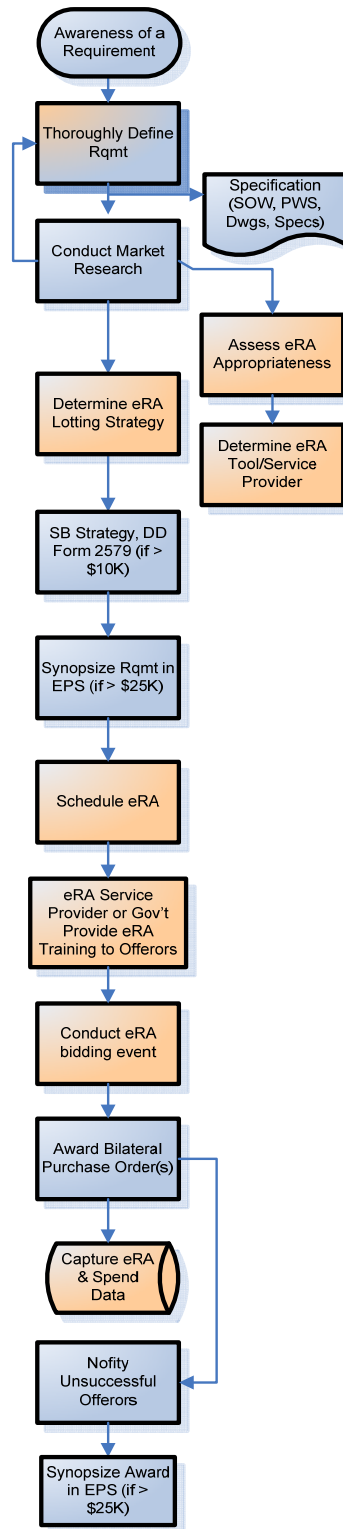
Code	All Coded Segments	Activated coded segments	Author	Creation Date
Need for Training	7	0	Adam	9/20/2009 11:49
Technology	9	0	Owner	7/30/2009 10:43
Education	9	0	Owner	7/30/2009 10:39
Profit Margins	10	0	Mike Collins	7/23/2009 1:22:
Offeror Opportunism	8	0	Mike Collins	7/9/2009 12:06
Attitude toward Technology	7	0	Mike Collins	7/30/2009 5:22:
Perceived Usefulness	5	0	Mike Collins	7/9/2009 12:23
Learn novel Acquisition Tool	9	0	Mike Collins	8/21/2009 1:06:
Innovative Acquisition Process	14	0	Mike Collins	7/30/2009 5:12:
Gain Competitive Advantage	8	0	Mike Collins	8/21/2009 10:49
Reduced Lead Time	5	0	Mike Collins	7/9/2009 11:55
Transparency	63	0	Mike Collins	7/9/2009 12:26
Increase Efficiency/Effectiveness for Future Business	7	0	Mike Collins	7/9/2009 11:56
Willingness to Innovate	14	0	Mike Collins	7/9/2009 12:28
Gain trust with Buyer/Seller Relationship	10	0	Mike Collins	7/9/2009 11:55
Access to New Buyers	11	0	Mike Collins	7/9/2009 11:52
Gain Market Intelligence	9	0	Mike Collins	7/9/2009 11:51
Increase Sales/ Revenue	10	0	Mike Collins	7/9/2009 11:56
Relational Exchange	11	0	Mike Collins	7/30/2009 4:33:
Flexibility	15	0	Mike Collins	9/3/2009 10:14
Cooperation	8	0	Mike Collins	8/21/2009 11:08
Relationship Building (1)	30	0	Mike Collins	7/9/2009 12:11
Collaboration	6	0	Mike Collins	7/9/2009 12:10
Commitment	19	0	Mike Collins	7/9/2009 12:08



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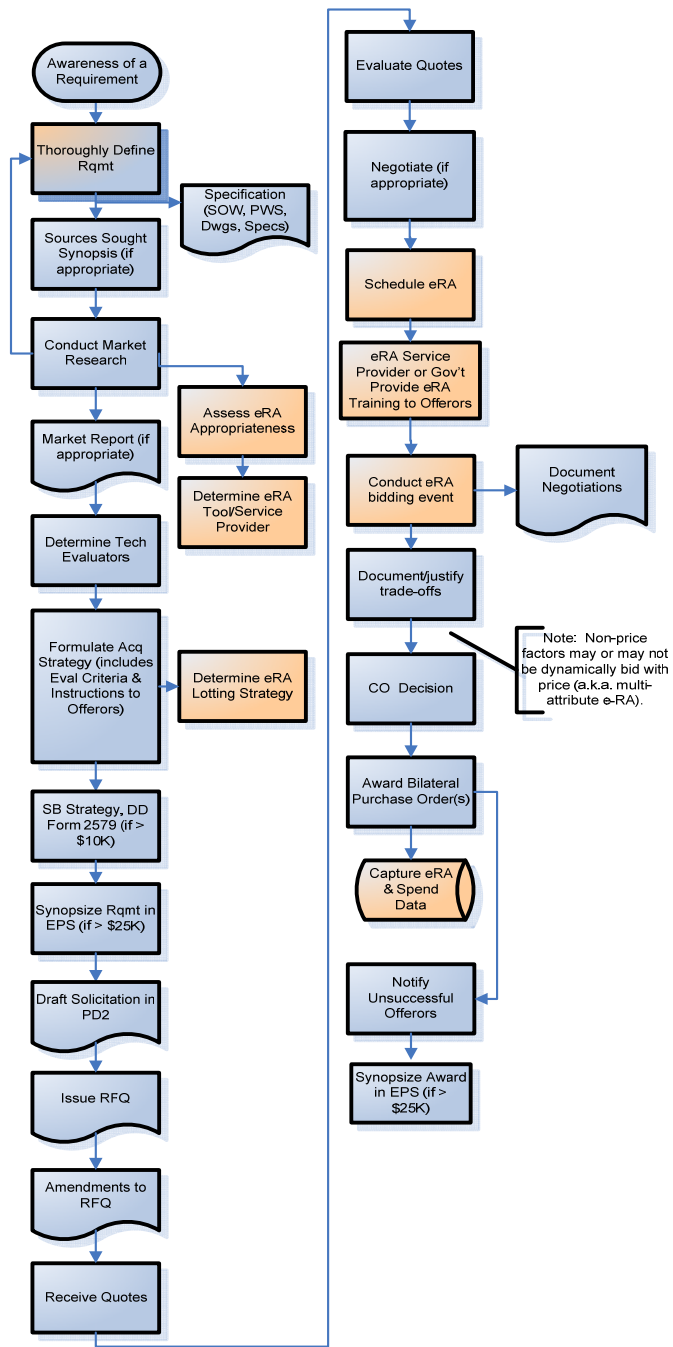
Appendix K. SAP Using Price-only Model



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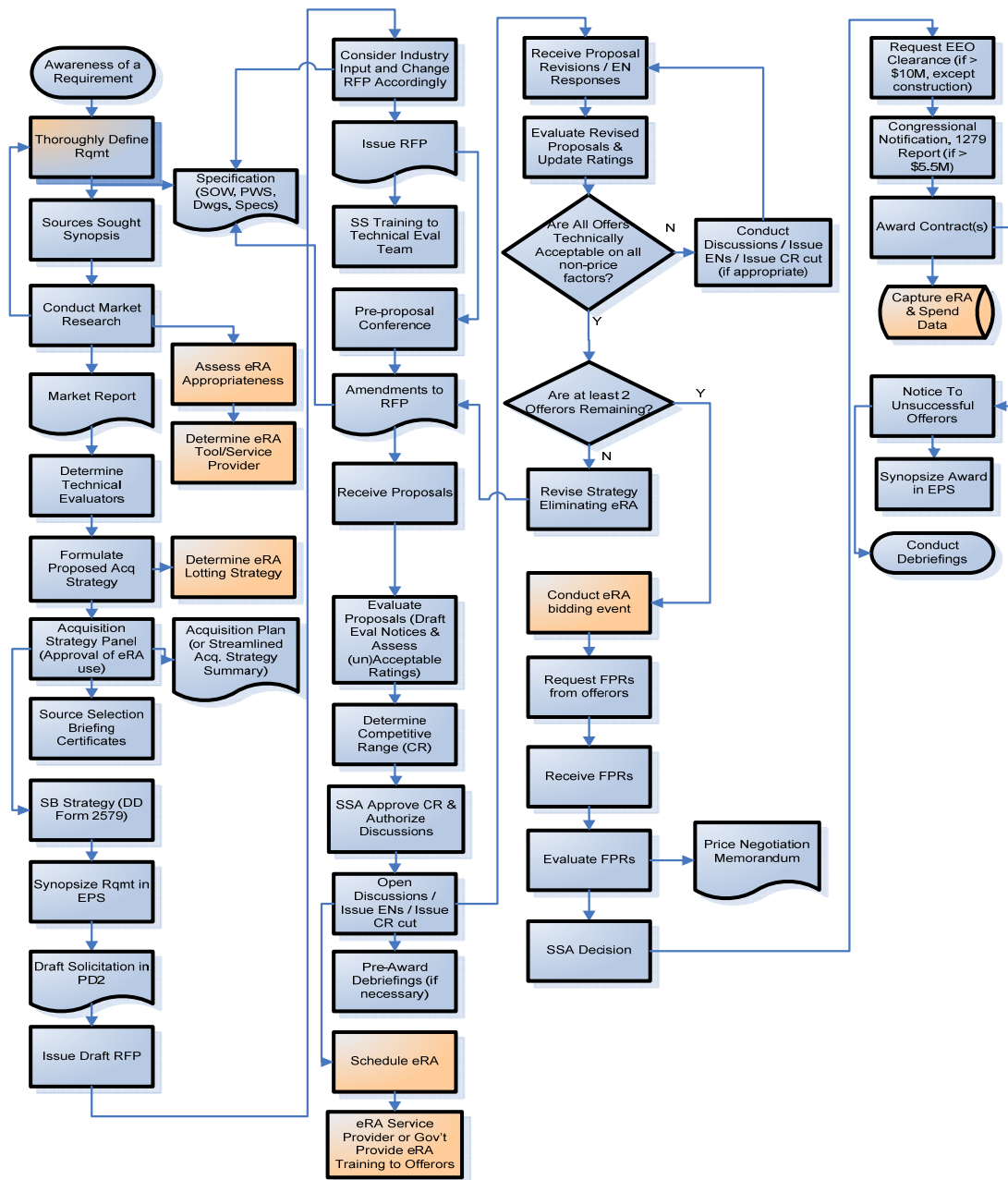
Appendix L. SAP Using Trade-off



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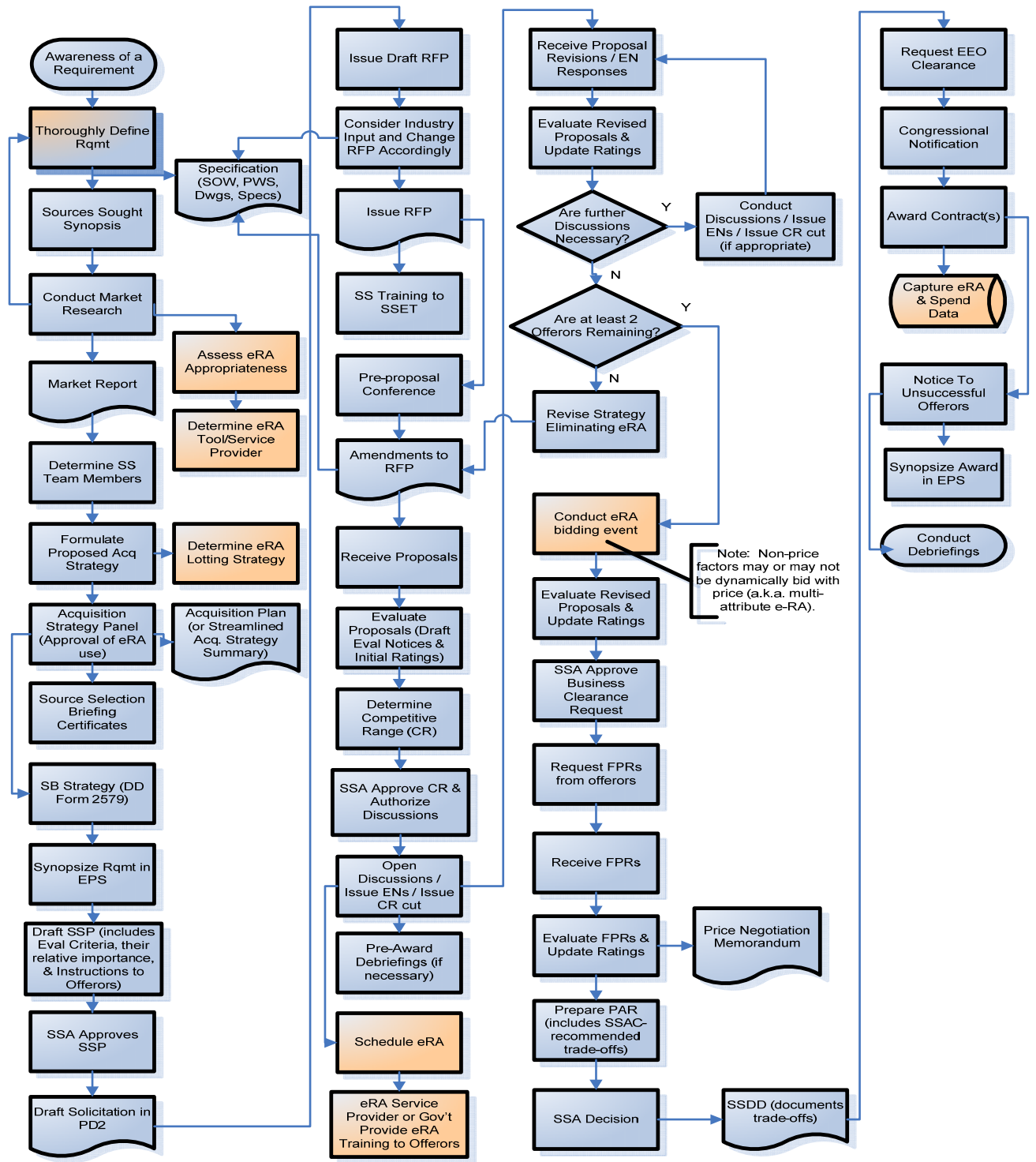
Appendix M. FAR Part 15 Using LPTA



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Appendix N. FAR Part 15 Using Full Trade-off



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2003 - 2009 Sponsored Research Topics

Acquisition Management

- Acquiring Combat Capability via Public-Private Partnerships (PPPs)
- BCA: Contractor vs. Organic Growth
- Defense Industry Consolidation
- EU-US Defense Industrial Relationships
- Knowledge Value Added (KVA) + Real Options (RO) Applied to Shipyard Planning Processes
- Managing the Services Supply Chain
- MOSA Contracting Implications
- Portfolio Optimization via KVA + RO
- Private Military Sector
- Software Requirements for OA
- Spiral Development
- Strategy for Defense Acquisition Research
- The Software, Hardware Asset Reuse Enterprise (SHARE) repository

Contract Management

- Commodity Sourcing Strategies
- Contracting Government Procurement Functions
- Contractors in 21st-century Combat Zone
- Joint Contingency Contracting
- Model for Optimizing Contingency Contracting, Planning and Execution
- Navy Contract Writing Guide
- Past Performance in Source Selection
- Strategic Contingency Contracting
- Transforming DoD Contract Closeout
- USAF Energy Savings Performance Contracts
- USAF IT Commodity Council
- USMC Contingency Contracting



Financial Management

- Acquisitions via Leasing: MPS case
- Budget Scoring
- Budgeting for Capabilities-based Planning
- Capital Budgeting for the DoD
- Energy Saving Contracts/DoD Mobile Assets
- Financing DoD Budget via PPPs
- Lessons from Private Sector Capital Budgeting for DoD Acquisition Budgeting Reform
- PPPs and Government Financing
- ROI of Information Warfare Systems
- Special Termination Liability in MDAPs
- Strategic Sourcing
- Transaction Cost Economics (TCE) to Improve Cost Estimates

Human Resources

- Indefinite Reenlistment
- Individual Augmentation
- Learning Management Systems
- Moral Conduct Waivers and First-tem Attrition
- Retention
- The Navy's Selective Reenlistment Bonus (SRB) Management System
- Tuition Assistance

Logistics Management

- Analysis of LAV Depot Maintenance
- Army LOG MOD
- ASDS Product Support Analysis
- Cold-chain Logistics
- Contractors Supporting Military Operations
- Diffusion/Variability on Vendor Performance Evaluation
- Evolutionary Acquisition
- Lean Six Sigma to Reduce Costs and Improve Readiness



- Naval Aviation Maintenance and Process Improvement (2)
- Optimizing CIWS Lifecycle Support (LCS)
- Outsourcing the Pearl Harbor MK-48 Intermediate Maintenance Activity
- Pallet Management System
- PBL (4)
- Privatization-NOSL/NAWCI
- RFID (6)
- Risk Analysis for Performance-based Logistics
- R-TOC AEGIS Microwave Power Tubes
- Sense-and-Respond Logistics Network
- Strategic Sourcing

Program Management

- Building Collaborative Capacity
- Business Process Reengineering (BPR) for LCS Mission Module Acquisition
- Collaborative IT Tools Leveraging Competence
- Contractor vs. Organic Support
- Knowledge, Responsibilities and Decision Rights in MDAPs
- KVA Applied to AEGIS and SSDS
- Managing the Service Supply Chain
- Measuring Uncertainty in Earned Value
- Organizational Modeling and Simulation
- Public-Private Partnership
- Terminating Your Own Program
- Utilizing Collaborative and Three-dimensional Imaging Technology

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