

MANAGING IT PROCUREMENT RISKS

Jay R. Rothstein

I. EXECUTIVE SUMMARY

Managing procurement calls for just the right skills and experience. Risks abound, and rote controls may actually cause more harm than good. Make sure your executive team, business principals, procurement office, IT, and internal auditors form a solid alliance for this high-risk area.

No Bad Deals!

Poorly negotiated deals are a major threat to business assets. But a well-formed framework for procurement management will protect assets, mitigate risks, contribute to the system of internal controls, ensure compliance, optimize business terms for acquisitions—even provide incentives for effective practices. A procurement management framework provides strategic advantages and helps ensure technology is best used to achieve business goals. It can literally save you millions.

There is no substitute for experience in building and managing the procurement framework. It must provide effective controls across the entire organization with expertise melded from many areas.

- All Lines of Business
- Information Technology
- Supply Chain Management
- Corporate Counsel (Legal)
- Risk Management
- Corporate Security
- Internal Audit
- Corporate Accounting
- Human Resources

Each of these areas has unique tools, methodologies, and perspectives. The synergy of their efforts can produce extraordinary results for the organization. And with the new SOX compliance rules in the PCAOB's Auditing Standard 5,¹ this is the right time to reevaluate internal control management of procurement for the benefit of the entire organization.

Managing Procurement Risks

In the procurement of technology, the company's operating funds are at risk of being paid out at significantly higher levels than required. That is because it is easier to respond to suppliers' proposals than to take a critical, active stance in managing the

full procurement life cycle. Procurement risk is accentuated in a financial-services environment because the corporate culture typically encourages quick, decisive action over more extended procurement processes. It is further accentuated in technology acquisitions because of the complexity and cost of the products and services.

Primary factors contributing to procurement risk include:

1. Supply Chain Management is not involved in major acquisitions.
2. Clients use Supply Chain Management but order Directed Sources, thus negating the advantages of competitive bids.
3. Clients approach Supply Chain Management late in the procurement life cycle.
4. Clients pursue acquisitions on a transactional basis rather than through corporate agreements (“silos of procurement”).
5. Supply Chain Management lacks adequate resources to address major acquisitions.

The company’s potential annual losses in procurement—corresponding to the opportunity for additional annual savings—can be estimated using the procurement group operating statistics. Many companies are also at risk for contracts negotiated by clients rather than procurement professionals. The key to managing these risks is to institute audit and controls in the procurement process focusing on the Lines of Business; and secondarily to engage support and participation from the entire management team.

II. COMPETING AND COMPLEMENTARY PERSPECTIVES

Bad deals are bad business: Inflated costs affect the bottom line. They incur a deferred opportunity cost for other acquisitions. They fail to mitigate risk through appropriate contracts. However, it can be all too easy to overlook these issues as long as the business stakeholders are getting what they want for their immediate requirements. The goal is to ensure compliance with effective procurement management practices including monitoring, measuring, reporting, and following-up on variances.

The Procurement Client

The culture of each business group affects the procurement environment in financial service firms. Traders and investors play for big stakes. Tens of millions of dollars can be made or lost based on a difference of minutes. Due diligence is important, to a point, but getting the deal and making the trade take precedence. Traders and investors would rather pay a premium and get what they want quickly than take the time needed to do a full Request for Proposal to get the best deal possible from a savings and contractual viewpoint. Many other groups—IT included—have their own reasons for wanting to own their procurement activities.

Key executives sometimes prefer to run their own competitive bids and negotiate their own deals. It is not unusual for such bids

and deals to reach the award stage (just prior to contract negotiation) before reaching Procurement and Legal. So it is important to structure the procurement management framework with rewards for consistently involving Procurement and Legal early in the process for the role they can play in delivering savings and negotiating favorable terms. The objective is to prevent deals falling through the cracks with potentially costly consequences.

The Executive Team

Financial services IT executives know effective cost control is essential to a good bottom line. They recognize the value of strategic sourcing and want to ensure the potential contribution is fully realized. And they want to support key stakeholders in achieving strategic business goals. A procurement risk management framework allows the entire executive team to enhance the bottom line by implementing procurement efficiencies across the full enterprise and across the entire spend, and within reason.

Procurement and Audit

Procurement people do not like bad deals. Their job is to get the best deal and negotiate solid contracts. Auditors are sensitive to the risks posed by bad deals, and they understand the controls to protect against loss. At the very least, internal audit should have the opportunity to assess and test the effectiveness and reliability of procurement controls and to evaluate and report on their effectiveness as an essential element of the enterprise system of internal controls. Procurement and Audit together have the opportunity to ensure the controls for the procurement management framework are tuned to the corporate environment.

The disciplines of Audit and Procurement share a common focus on risk management:

- Audit, through assessment and evaluation of controls²;
- Procurement, through negotiation of pricing and contracts.

The mind set of these two disciplines, however, differs considerably. Audit is process oriented, seeking to ensure “checks and balances” at key control points. Although Procurement may have its established methodologies, in some respects it is highly entrepreneurial and event-driven, responding to a set of particulars in the negotiation life cycle for a product or service. So a chasm typically divides Audit and Procurement—a chasm founded on divergent vocabularies, methodologies, and perceptions. To bridge the divide, auditors must learn to understand procurement professionals, and vice versa.

Procurement people may regard auditors as potential obstacles to making deals—“Please keep them out of the way!” Auditors, particularly post Sarbanes Oxley, tend to focus primarily on financial statement reliability, and secondarily on operations (although this is changing with the PCAOB’s Auditing Standard #5). Procurement tends to draw auditor attention with an eye toward potential wrongdoing. Indeed, courses on procurement auditing often

focus on identifying cases of procurement fraud. An alternative perspective on the relationship of Procurement and Audit includes an awareness of the potential for extraordinary synergy:

- Auditors can find low-hanging fruit in procurement through the identification and control of significant unrecognized risk.
- For Procurement, auditors can become an unexpected advantage—a resource that increases the influence and effectiveness of Procurement in delivering the best deals.

If the chief executives in IT, Procurement, and Internal Audit can align on common interests and approaches, they can enlist the participation of other key executives, facilitate alliances, and reap huge benefits in the bottom line.

III. AN INTRODUCTION TO PROCUREMENT

Project Life Cycle

A full project life cycle for procurement includes:

1. Form a cross-functional team of key stakeholders for the initiative.
2. Investigate the market for leading technologies and suppliers.
3. Develop business requirements including reliable volumes for a period of 3 to 5 years.
4. Develop technical requirements.
5. Issue a Request for Proposal.
6. Negotiate pricing and negotiate contract terms.
7. Evaluate responses and announce an award.
8. Administer the contract.
9. Perform technology refresh.
10. Anticipate and respond to end-life conditions.

Most procurement organizations conduct initiatives on this basis from time to time and also handle a greater number of cases outside the full project life cycle. Many, if not most, deals may reach Procurement when the client has made a decision and wants to negotiate the final terms and conditions.

Case Study

Here is an example of how a procurement officer works with his clients, his attorney, and the supplier to negotiate savings and mitigate risk.

The client asked Supply Chain Management, in November, to negotiate contract and business terms for tax forms processing to meet year-end deadlines for the calendar tax year. Procurement took the challenge and supported the client in developing volume requirements and consolidating operations for fourteen work groups across the firm. Procurement achieved savings of more than \$1.7 M (more than 22%) over a three-year term. Key components of the savings included reductions for:

- Software on a subscription basis
- Outsourcing of submittals to government reporting agencies
- Printing, distribution, and Web presentment of forms to recipients of the firm and those of the firm's institutional customers.

Highlights of the procurement officer's activities included the following:

1. The procurement officer investigated the firm's internal costs and exploited outside intelligence to reduce fulfillment costs. Pennies on a single component translate into hundreds of thousands of dollars for volumes of 10 million.
2. The procurement officer convinced the supplier to honor a commitment to waive the fees for Web presentment. Many suppliers make commitments to their clients in the course of marketing their products and service and forget these commitments in their formal pricing. A good procurement officer insists that suppliers keep their word on such matters. In another case, a procurement officer escalated such a broken commitment through three or four levels of management in the supplier's sales organization. Initially, the supplier affirmed its commitment, then it reneged in three separate rounds before keeping its promise.
3. On the contract side, negotiation is an iterative process of identifying issues, taking positions, and making concessions, balancing the client's interests with those of the supplier. In the case just mentioned, procurement added contingencies for an anticipated change in the business including a later off-cycle renewal date and the right to terminate without penalty. Other key achievements in mitigating risk were the inclusion of six-figure service credits for inadequate performance and indemnification for lawsuits by institutional customers. The supplier draft offered such indemnification only for lawsuits by individual customers. "Indemnification" means one party is making the other party whole financially for claims by third parties.

Measurements

The following measurements apply to the operations of Supply Chain Management:

1. **Touched:** Characteristic of an instance of procurement having been examined and/or processed by Supply Chain Management
2. **Impacted:** Characteristic of an instance of procurement of Supply Chain Management's having added value, either savings or other benefit, such as contract benefits
3. **Not Impacted:** Characteristic of an instance of procurement of Supply Chain Management's not having added value, either savings or other benefits, for example as a result of being a Directed Source
4. **Sole Source:** An instance of procurement for which only one supplier can meet the requirements

5. **Directed Source:** An instance of procurement for which the client specified a single acceptable source although more than one supplier is potentially capable of meeting the requirements
6. **Mitigating Circumstances:** Valid business factors that justify the use of a Directed Source
7. **Competitive Bid:** A procurement of goods and services that takes advantage of the benefits of negotiating with more than one supplier. Competitive bids may be either Client-led or Procurement-led.

According to the rules of engagement for procurement, significant acquisitions should be done by Competitive Bid unless there are Mitigating Circumstances. Certain acquisitions are genuine Sole Sources. In many cases, however, a supplier has convinced an internal customer that the supplier is the only company capable of providing the product or service. This constitutes a Directed Source rather than a Sole Source.

Ideally, procurement executives maximize the number of key deals Impacted in terms of both dollar savings and risk mitigation. Deals that are Touched but not Impacted may be the result of inadequate process control, such as when a deal is negotiated as a Directed Source without Mitigating Circumstances.

The “Tip of the Iceberg”

A traditional supplier ploy is to understate the value of an initiative and begin work on a very small part of what is known to be required. Such initial phases may be keyed to the customer’s thresholds for competitive bids. Once the supplier has begun work, it is challenging if not impossible to go to the market with a Competitive Bid. Thus, the supplier knows that a Statement of Work (SOW) for \$40,000 may be treated on a routine basis and approved without adequate review. It is the responsibility of the Procurement Officer to check with the client and get the details of the full scope of the work to be performed.

Upon investigation, two such SOWs proved to be the “tip of the iceberg” for multi-million dollar deals (see Table 1). It is a tribute to the technical accomplishment, relationship management, and political savvy of the supplier that the clients reported these initiatives as Sole Sources.

In some cases, Directed Sources become Sole Sources when there are Mitigating Circumstances. An example of such a Mitigating Circumstance is having to use an entrenched supplier to avoid penalties expected to be imposed within a short timeframe. Doing

Table 1 *The “Tip of the Iceberg”*

#	SUPPLIER	PROJECT	TOUCHED	IMPACTED	UNTOUCHED
1	Supplier 1	Project 1	\$32,000	\$0	\$1,279,900
2	Supplier 2	Project 2	\$39,000	\$0	\$8,355,000
3	Supplier 3	Project 3	\$225,000	TBD	\$3,850,000

a Competitive Bid and educating a new supplier could cause the firm to lose millions of dollars that would vitiate the benefits of a Competitive Bid. On the other hand, the long-term strategic interests of the company require the use of multiple suppliers to maintain a competitive space for key products and services.

IV. THE BUSINESS ISSUE: MAGNITUDE OF ANNUAL LOSS/POTENTIAL SAVINGS

The principals, management, and executives of Supply Chain Management have primary responsibility for developing comprehensive and reliable statistics for the entire buy across the enterprise. Secondary responsibility resides with the Lines of Business, Corporate Accounting, and Internal Audit.

At this time, it would be unusual for these key stakeholders to be aligned on the use of these statistics for the effective management of procurement.

By encouraging the measurement of key performance indicators in the audit of Supply Chain Management and the Lines of Business–Risk Management and Internal Audit can contribute to a significant improvement in procurement performance.³

Application to Sample Data

Each procurement officer must be required to compile summary statistics on a regular basis for each buy based on an analysis of each deal in that period of time.

The Sample Data in Table 2 reports on seventeen deals, of which two were Sole Sources, ten were Directed Sources, and five were conducted through Competitive Bids. On a Total Spend of almost \$42M, only \$23M or about 55% was Touched. In a separate compilation, the procurement officer reported the difference between the supplier’s initial proposal and the final negotiated price for Impacted deals during the period in question. Savings averaged 26.8%. If the \$19M that was Not Touched had been Touched with the same Rate of Savings, an additional \$5M would have been

Table 2 Sample Data

Factor	IT Only	
	\$/Number	%
Total spend	\$41,961,770	100.0%
Touched	\$23,136,170	55.1%
Impacted (compared with Touched)	\$22,985,970	99.4%
Competitive Bids	5	29.4%
Directed Source	10	58.8%
Sole Source	2	11.8%
Not Touched	\$18,825,600	44.9%
Rate of Savings	0	26.8%
Actual Loss/Potential Savings = Rate of Savings × Not Touched Loss/Savings Compared with Total Spend	\$5,046,948	12.0%

saved. This additional savings constitutes 12% of the Total Spend. More important, it constitutes a \$5M loss relative to the bottom line.

Not all deals can be addressed in a competitive environment on a full-project-life-cycle basis. Accordingly, it is appropriate to apply the rate of savings to less than 100% of the Not Touched Dollars. Even with such an adjustment, the Actual Loss/Potential Savings remain significant. Chief Risk Officers may consider losses of \$1M or more to be catastrophic. Yet, losses of such magnitude occur in major corporations on a frequent and ongoing basis due to non-competitive deals.

Global Application

Procurement executives consolidate results such as the above into aggregate figures for the firm. Table 3 represents a target matrix for all procurement and may include a separate breakout for categories other than IT.

V. INTRODUCTION TO PROCUREMENT AUDIT

Types of Procurement Risk

Auditors identify many different types of risk. This identification process serves as a basis for evaluating the system of controls. As a first venture in this area, Procurement Risk can be divided into the following categories:

1. **Requirements Risk:** the risk of not capturing the requirements for an acquisition completely and accurately
2. **Volume Risk:** the risk of not capturing the correct volumes for the products or services, resulting in either unused excess capacity or less favorable pricing than would otherwise be available
3. **Functional Risk:** the risk of making an acquisition that does not conform to correct client functional requirements
4. **Technical Risk:** the risk of making an acquisition that does not perform properly in the technical environment in which it will operate
5. **Pricing Risk:** the risk of purchasing the product at a price that is not well negotiated and is above fair market value

Table 3 Target Matrix for all Procurement

Factor	Everything		IT Only	
	\$	%	\$	%
Total Spend				
Touched				
Impacted				
Directed Source				
Not Impacted				
Rate of Savings				
Actual Loss/Potential Savings				

6. **Contract Risk:** the risk of acquiring the product:
- (i) without a contract
 - (ii) with a contract that is not negotiated—“(Untouched) supplier paper”
 - (iii) with a contract that is not negotiated correctly with regard to key interests.
7. **Disposition Risk:** the risk of discarding equipment in such a way that Non-Public Personal Information (NPPI) and other confidential information of the company and/or its clients is subject to misuse and/or misappropriation, in violation of Gramm-Leach-Bliley or other statutes.

On an operational level, key risks to be managed in procurement include:

1. Making an acquisition that does not conform to client requirements
2. Making an acquisition that conforms to spec but is purchased at a price that is not well-negotiated
3. Executing a contract that fails to adequately control risk.

Key Performance Indicators

From an audit perspective, the operational parameters defined in the Measurements section may be viewed as Key Performance Indicators (KPIs) for the audit and control of procurement. KPIs are measurements used by auditors as red flags. If KPIs fall within a certain range (defined by the business), then process definition and control are likely to be adequate. Outside that range, process deficiencies exist. To take a simple example, railroad safety depends on equipment maintenance, trip scheduling, and coordinated operations. For these factors, Auditors may evaluate controls and/or perform data sampling. In addition, they may track two Key Performance Indicators (KPIs):

1. Safety Record—Number of Accidents
2. Timeliness—Number of Late Departures and Arrivals.

KPIs outside of an acceptable range are red flags that point to issues for investigation and remediation. The Business Issue section showed how KPIs for the audit and management of procurement can be used for the benefit of the business.⁴

Risk/Control Matrix

The matrix in Table 4 is a framework for controlling procurement risk. It addresses “bad deals” from business and contractual viewpoints. It does not address deals that fail because of inadequate technical due diligence.

Auditors use Risk/Control Matrices to ensure they are on track with the Audit Charter and audit objectives. The Risk/Control Matrix is also an essential tool for designing a system of controls. Most Risk/Control Matrices include additional parameters such as

Table 4 Risk/Control Matrix

Risk	Contributing Factor	Control
R-1. The firm's Operating Funds are paid out at higher levels than required.	F-1. Instances of procurement are either Not Touched or Touched but Not Impacted.	C- 1. The executive team consults and builds consensus with senior management of the Lines of Business to work with Supply Chain Management and Legal on all major acquisitions. C- 2. The executive team consults and builds consensus with Internal Audit, Supply Chain Management, and Risk Management to monitor supplier contacts throughout the firm.
	F-2. Clients request Directed Sources rather than engage in Competitive Bids.	C-3. The executive team directs senior management of the Lines of Business to work with Supply Chain Management in performing competitive bids on major acquisitions in the absence of Mitigating Circumstances.
	F-3. Clients approach Supply Chain Management late in the procurement life cycle.	C-4. The executive team directs senior management of the Lines of Business to approach Supply Chain Management early in each procurement life cycle. C-5. Security reports all initial visits of supplier sales personnel to contacts at the firm.
	F-4. Clients pursue acquisitions on a transactional basis rather than through corporate agreements.	C-6. The executive team directs senior management of the Lines of Business to handle significant transactions through Supply Chain Management and Legal for existing contracts or new initiatives. C-7. The executive team directs senior management of the Lines of Business to work with Supply Chain Management to standardize and rationalize disparate products of similar functionality.
	F-5. Supply Chain Management lacks adequate resources to address major acquisitions.	C-8. The executive team directs Supply Chain Management and Legal to perform a cost-benefit analysis of staffing levels within Supply Chain Management and Legal vis-à-vis requirements to address the annual spend, and adjust resource levels accordingly.
R-2. Unnegotiated contracts and client-negotiated contracts do not manage risk effectively.	F-6. Clients sign and/or negotiate their own agreements.	C-9. The executive team directs senior management of the Lines of Business to negotiate contracts through Supply Chain Management and Legal or other authorized negotiators. C-10. The executive team works with Human Resources, Internal Audit, and the Lines of Business to develop, promulgate, and enforce authorization requirements for making acquisitions.
R-1 – R-2	F-1 – F-6	C-11. The executive team directs Risk Management and Supply Chain Management to evaluate the applicability of this analysis to the procurement of non-IT products and services. C-13. The executive team directs Risk Management, with the support of Supply Chain Management, to lead a cross-functional team in accomplishing procurement management goals.

system- versus non-system-related. The high-level Risk/Control Matrix in Table 4 addresses a set of concerns relative to procurement as discussed in this article. “Contributing Factors” may not ordinarily be included in a Risk/Control Matrix. They are offered here as a bridge to the elements of procurement discussed herein. Application of this Matrix to any particular firm would require additional resources to fully address the firm’s specific requirements.

IT procurement risks are oriented towards particular assets—primarily:

1. Operating funds of the firm
2. Contract base of the firm
3. Technology base of the firm.

Auditors typically address and test formal controls. Based on an integrated approach to the range of issues considered here they would also address the use of incentives as indirect controls. In particular, the executive team should consult and build consensus with senior management of the Lines of Business and Human Resources to include requirements for Cost Containment in the job descriptions and annual reviews of senior management. Such incentives should address all of the Contributing Factors in the Risk Control Matrix and be passed down the line to middle management and key operational personnel.

VI. CONCLUSION

In the procurement of technology, or any product or service, the operating funds of most companies are at risk of being paid out at significantly higher levels than required. That is because it is easier to respond reactively to the proposals of suppliers than to take a critical, proactive stance in managing a full life-cycle procurement initiative. Procurement risk is accentuated in a financial-services environment because of a corporate culture that encourages quick, decisive action over more extended procurement processes. It is further accentuated in technology acquisitions because of the complexity and cost of the products and services.

The primary factors contributing to this risk are as follows:

1. Supply Chain Management is not involved in major acquisitions.
2. Clients using Supply Chain Management but ordering Directed Sources, thus negating the cost advantages of competitive bids.
3. Clients approaching Supply Chain Management late in the procurement life cycle.
4. Clients pursuing acquisitions on a transactional basis rather than through corporate agreements (“silos of procurement”).
5. Supply Chain Management not having adequate resources to address major acquisitions.

The order of magnitude of a company’s annual losses in this regard—corresponding to the opportunity for additional annual savings—can be estimated using the operating statistics of the procurement group:

- Touched
- Impacted
- Not Impacted
- Sole Source
- Directed Source
- Mitigating Circumstances
- Competitive Bid.

Many companies are also at risk for contracts that are either (1) not negotiated or (2) negotiated by clients rather than procurement and legal professionals. The key to managing these risks is to institute audit and controls in the procurement process focusing on the Lines of Business; and secondarily, to engage the support of Human Resources, Internal Audit, Security, Supply Chain Management, and Risk Management.

Recommended measures within this framework focus on key directives by the executive team to senior management:

Lines of Business

1. To work with Supply Chain Management and Legal on all major acquisitions
2. To perform Competitive Bids to the extent possible on major acquisitions
3. To approach Supply Chain Management early on in each procurement life cycle
4. To work with Supply Chain Management to standardize and rationalize disparate products of similar functionality

Human Resources

5. To include requirements for Cost Containment within the job descriptions and annual reviews of senior management
6. To develop authorization requirements for acquisitions

Internal Audit/Supply Chain Management/Security

7. To monitor supplier contacts throughout the firm

Supply Chain Management

8. To perform a cost-benefit analysis of current staffing levels within Supply Chain Management and Legal vis-à-vis requirements to address the annual spend

Risk Management/Supply Chain Management

9. To evaluate the applicability of this analysis to the procurement of non-IT products and services
10. To lead a cross-functional team in accomplishing these goals.

Notes

1. Section 103 of the Sarbanes-Oxley Act of 2002 directs the Board to establish auditing and related attestation, quality control, ethics, and independence standards and rules to be used by registered public accounting firms in the preparation and issuance of audit reports as required by the Act or the rules of the Securities and Exchange Commission. Auditing Standard No. 5: An Audit of Internal Control Over Financial Reporting That Is Integrated with An Audit of Financial Statements was approved by the Securities and Exchange Commission on July 25, 2007 and is effective for audits of internal control over financial reporting required by Section 404(b) of the Sarbanes-Oxley Act of 2002. www.pcaobus.org
2. See: The Institute of Internal Auditors' "International Professional Practices Framework" available at www.theiia.org

3. As an interesting point of comparison, see *Connecting with the Bottom Line; a Global Study of Supply Chain Leadership and its Contribution to the High Performance Business*, www.accenture.com, cited in Bernabucci, Robert J. (2007). Boost your cash flow. *Inside Supply Management*, 18(11) (November), 12–13.
4. In addition to an echoing of our current concerns on the gathering and analysis of data—for a discussion of the use of automated systems and enhanced organizational structures to optimize procurement performance, see Duffy, Roberta J. (2006). Operational excellence in procurement, CAPS Research—Critical Issue Reports, Institute for Supply Management, available at www.ism.ws (members only).

Acknowledgment

The author wishes to express his appreciation to Charles Le Grand, Principal Advisor, TechPar Group, for his outstanding contribution in editing this paper, and to Bernard Plagman, Chairman, TechPar Group, and Dr. Charles Popper, CEO, TechPar Group, for their professional mentoring and encouragement.

Jay Rothstein has more than 25 years of experience in Information Technology as a specialist in procurement, audit and controls, and management consulting. Jay is currently serving as a procurement consultant at a leading Wall Street firm, where he is responsible for negotiation of business and legal terms on major initiatives. Jay is a Certified Information Systems Auditor (CISA) and recently served as a member of an IBM/TechPar Group team at Fannie Mae responsible for designing and implementing systems controls for the restatement of 2002–2004 financials. Jay is also an accomplished management consultant. His exemplary accomplishments include launching the American Express small business campaign and “EZ Pass” Traffic Toll Systems. Jay received his Bachelor’s Degree cum laude from Harvard University, in History and Literature—American, and his Master’s Degree from Columbia, in Linguistics. He is a member of the Advisory Board of the Gale Directory of Databases, the Institute for Supply Management (ISM), and Information Systems Audit and Control Association (ISACA). Jay has authored and delivered papers at industry forums and is considered an expert in IT Supply Chain Management, Audit and Controls, and Management Consulting. Jay may be reached at 845-558-8780 (cell) or via e-mail at jrothstein@techpargroup.com.