

Implementing E-Procurement Systems: The Promise, Reality, and Lessons Learned

Jeff Picchione, Northern Illinois University, Dekalb, IL 60115, USA; E-mail: jeff.picchione@gmail.com

Chang Liu, Northern Illinois University, Dekalb, IL 60115, USA; E-mail: cliu@niu.edu

INTRODUCTION

For most of the 20th century, the housing and auto industries were the key drivers of the United States economy. By the late 1990's, information technology (IT) accounted for a quarter to a third of economic growth. The increased productivity resulting from this IT growth, combined with the trend of globalization, together spawned what was coined as the "new economy."

THE PROMISE

A 1997 *Business Week* editorial touted that IT "boosts productivity, reduces costs, cuts inventories, and facilitates electronic commerce. It is, in short, a transcendent technology--like railroads in the 19th century and automobiles in the 20th [1]." There is little doubt that ease of access to the World Wide Web over the Internet was the catalyst of this "transcendent" technology. Businesses saw the potential for greatly increased markets, with significantly increased efficiency and productivity – a truly revolutionary development in the world of commerce.

One of the first and most obvious applications of B2B eCommerce was in the common function of corporate procurement. eCommerce was not new in this arena. Electronic Data Interchange (EDI) transactions over Value-Added Networks (VAN's) had been conducted since the 1970's as a technology that evolved completely separate from the Internet. These transactions, however, proved to be costly, required significant configuration, and forced trading-partner relationships that were formed out of convenience rather than for sound business decisions.

Commerce One, Ariba, and FreeMarkets were some of the more prevalent B2B eProcurement dot.com startups that promised to make the new economy a reality. They enjoyed double-digit daily stock price gains while maintaining negative cash flows and earnings in the dot.com frenzy. They developed their own "standards" such as xCBL (Commerce One's XML Common Business Language) and cXML (Ariba's commerceXML). Both "standards" claimed to constitute the XML schema, which would define how procurement transactions (and eventually all business transactions) would be defined over the web. As customers realized the challenges of these marketplaces and of complex integration requirements with suppliers, sales fell off sharply by 2001. Today Commerce One is an obscure part of Perfect Commerce, a \$13 Million company that focuses on Supplier Relationship Software and the Open Partner Network electronic Marketplace. xCBL has evolved into an open source eCommerce standard (xCBL.org), and has become the baseline for the evolving standard Universal Business Language (UBL).

What are the lessons to learn from Commerce One? As early as 2001, Commerce One was feeling its troubles: Commerce One must continue to innovate if it hopes to stay ahead of enterprise resource planning vendors such as Oracle Corp., SAP AG and i2 Technologies Inc., all of which continue to invade its turf [5]. It's refocusing on procurement rather than marketplaces. It really got involved with all these marketplaces that were popping up and took its eye off the procurement ball. The e-marketplace stuff was at a roadblock.

Ariba was Commerce One's main competitor in the dot.com era. Ariba developed the Commerce Services Network electronic marketplace. In contrast to Commerce One, Ariba's more conservative approach to providing "sourcing solutions" ensured its vitality and survival. Ariba has enjoyed a trend of increased revenues since 2002. In its Fiscal Year ended 2005, Ariba recognized \$323 Million in revenues, of which \$151 Million was in services (up from \$84 Million in services in 2004).

Although revenues are growing, so are expenses, to the point where Ariba has yet to recognize a net gain. Since 2001, net losses have ranged from \$2.6 Billion in 2001 to \$349 Million in 2005.

The following stated in Ariba's Annual Report's requisite risk factors, is true not only to Ariba but a reflection of the industry. It also sheds another view on the fate of its one-time competitors: "The markets in which we compete are characterized by rapid technological change, evolving customer needs and frequent introductions of new products and services. As we adjust to evolving customer requirements and competitive pressures, we may be required to further reposition our product and service offerings and introduce new products and services. We may not be successful in developing and marketing such product and service offerings, or we may experience difficulties that could delay or prevent the development and marketing of such product and service offerings, which could have a material adverse effect on our business, financial condition or results of operations [6]."

THE POTENTIAL

Supply-side B2B eCommerce was born. New web procurement specialists such as aforementioned Commerce One, Ariba, and FreeMarkets emerged. These startups offered procurement software, and fought for dominance to provide "the" web standard for electronic procurement.

Electronic Marketplaces including MarketPlace.net, Global Trading Web, Covisent, the Commerce Service Network, and scores of vertical marketplaces evolved. Many were created by and for software vendors, while others were created by and for specific industries. The goal was to increase the number of suppliers and the number of buyers. The concept being that more traders would yield higher volumes of transactions. With lower transaction costs, and exponentially higher sales volumes, lower margins could be accepted. Lower margins would yield lower prices and cyclically increased volume.

Long-time Enterprise Resource Planning (ERP) vendors including SAP, Oracle, PeopleSoft, Baan, I2, and JD Edwards scurried to update their application offerings and their technology platforms to be able to accommodate the web based eCommerce requirements of their procurement customers. Each of the ERP providers worked rapidly to re-engineer its products to work on a web services based platform. Many formed strategic partnerships with web services companies, others tried to develop their own. Thus emerged new solutions from the ERP players including Oracle 11i eApps, MySAP from SAP, PeopleSoft version 8 with "no code on the client", and JD Edwards OneWorld. The products were different in approach, but they all were leveraging web services in one way or another so not be overtaken by their low capital high promise startup rivals.

On the eProcurement front, these ERP stalwarts also needed to devise their own applications, and quickly. For example, PeopleSoft and SAP took turns having partnerships with Commerce One. SAP is attributed to contributing to the demise of Commerce One by draining Commerce One of its intellectual capital [7]. The partnership kept SAP in the game in the short-run, while they were able to invest their significant resources into developing their own web based solutions for the long run. Today, SAP, Oracle, and Microsoft each continue to offer eProcurement solutions. These solutions unlike their standalone competitors have the ERP advantage of full-integration of eProcurement to supply chain management (SCM), supplier relationship management (SRM), financials management systems (FMS),

and enterprise performance management systems (EPM).

THE REALITY

A March 2001 study from Gartner Group reported that there is no first-mover advantage in eProcurement. The study reported “being a pioneer in this market is a huge hassle” since “projects grow out of control, the software vendors are immature, the e-procurement software itself is immature, and very few consultants have much experience with it.” The study also pointed out that “early adopters of e-procurement are likely to have to educate many of their suppliers,” and that “those who expect a rapid return on investment are in for a big disappointment [2]”.

However, not all analyst outlooks were as bleak as Gartner’s. In a 2002 study, IDC analysts observed “The extensive conversion of existing EDI systems to an Internet foundation will be the primary force behind the continued expansion in e-procurement.” [3] By late 2003, the purchase of direct materials over the web surpassed the purchase of indirect materials for the first time, according to a study by Forrester Research Inc. Forrester attributed this increase to the number of available software tools available for companies to use for online procurement and an increased level of comfort with buying direct materials over the Internet. The study identified Ariba Inc., SAP AG, Oracle Corp. and PeopleSoft Inc. as top tools vendors in the e-procurement business. These software providers were applauded for providing eProcurement solutions that could focus on the intensive sourcing process involved with direct materials [4].

CASE ANALYSIS

Case 1: Department of Defense

The Department of Defense (DOD) announced in January of 2002 that it would integrate its own internal marketplace and procurement system with Ariba’s Commerce Services Network. The integration efforts were being managed by webMethods. The plan was that “DOD workers will be able to search for goods using keywords, manufacturer names or Universal Product Code numbers. The webMethods technology would let them see all relevant product information on a single screen instead of having to separately look through multiple online catalogs.” Plans were in place to add additional vertical marketplaces so that “data will be boiled down to provide easy access for end users” [8]. However, the project was halted soon after the project started, after facing harsh criticism from the Government Accountability Office (GAO). In 2004, the GAO reprimanded the DOD for not adhering to US Government best practices in its system implementation, and “made 14 recommendations aimed at strengthening the Pentagon’s acquisition policies for business systems as well as its controls for ensuring that proper procedures are followed.” [9]

By September, 2005, DOD was on its way to revamping its procurement problems, both technical and policy related. The technical problems stemmed from failed software integration efforts to back-office systems. The majority of the user systems were client/server, and not web based. The revamping effort included a radical overhaul of its integration strategy by establishing XML standards to eliminate hand coding, and creating automatic tools to assist in documentation and development, to assist in the shift to being fully web based. The new web based system was anticipated to be in production in late 2006.

Some valuable lessons to consider from the DOD project include:

1. **Synergize:** The 2002 integration to electronic marketplaces was completely independent of the longer-term procurement project, which was halted by GAO. Although the marketplace solution met the short-term need of part of the organization, its implementation could have provided valuable resources and lessons to the overall procurement project. The marketplace effort should have been included as a component of the larger procurement solution.
2. **Identify standards up-front.** Part of the procurement overhaul was defining XML standards to replace manual coding for each integration effort. Since there were hundreds of integration efforts, a standard and scalable model is essential. The lack of standards encountered by DOD caused each integration to be handled as a separate, sequential project.
3. **Continuously evaluate technology.** The timing of this project was at a time of the most significant changes in the IT industry – between the end of client/server and the beginning of web services. As web services started to grow in the marketplace, DoD under the enforcement of GOA was forced to re-evaluate the project technology, and make the changes accordingly.

4. **Involve end-users early and often.** This is a critical success factor of any change in any organization, particularly in the area of IT.

Case 2: United Nations Development Program

In September 2003 the United Nations Development Program (UNDP) Agency scrapped their legacy system in favor of PeopleSoft ERP in a \$27.5M global rollout, including eProcurement. The New York-based UNDP fights poverty and diseases such as AIDS and helps countries stricken by crises such as the December 2004 tsunami in Southeast Asia.

The motivation for this change was that the UNDP’s processes were supported by a hodgepodge of homegrown legacy systems, including 21 separate human resources, payroll and procurement applications. That myriad of software prompted the UNDP in 2002 to choose the centralized PeopleSoft system and have Unisys Corp. manage it [10].

By November of 2005 the agency entered “Wave II” of the implementation, now a \$59 million rollout, and now Oracle Corp.’s PeopleSoft applications. In September, the UNDP began implementing PeopleSoft’s eProcurement application, which would be deployed in the Americas, Asia, Europe and Africa by the end of the first quarter of 2006. The eProcurement module automated requisitioning processes, cutting the time between procurement and payment by 10% [10].

Although it is another large political organization similar to DOD, the UN approach varied for several reasons. The lessons learned include:

1. **Think Big Picture.** The UNDP’s implementation of eProcurement was not a standalone project, but one component of a greater global ERP system rollout. The economies of scale of resources, and the implementation knowledge base attained and transferred were applied across multiple module rollouts. Extensive monitoring, status, and documentation of project benefits and challenges were critical to this success.
2. **Plan, Plan and Plan.** The UN took its time to evaluate, analyze, and setup a realistic, phased timetable for its ERP project. It documented and evaluated progress each step of the way. It didn’t hop on the eProcurement bandwagon during its short ride, but patiently waited out the temptation. It effectively planned to implement the system to best compliment its current system and meet its business objectives.
3. **Management Sponsorship, End User Ownership, and Consistent Messaging from the top down.** The implementation not only had management sponsorship, but ownership at every level. The needs, challenges, proposed solution, and plan to implement those solutions were clearly identified, and clearly communicated to all the project stakeholders.

Case 3: Ford

Similar to the UN Project, Ford Motor Company made the effort to implement a procurement system built around an ERP Vendor’s eProcurement system. In 1999 Ford undertook a project appropriately named Everest, and started to go live in 2000 and continued with a “rolling launch.”

Despite four years in production and an investment of millions of dollars, by Q3 2004, Ford decided to abandon Everest, which was built around Oracle Corp.’s 11i E-Business Suite of applications. Sources indicated that Everest was hampered by poor performance [11]. Ford’s next plan was to migrate any relevant new features from Everest to its legacy system using its house development staff. Apparently, the mainframe procurement software continued to run in coexistence with Everest, and company suppliers used both sets of applications to handle procurement transactions.

A June 2001 assessment in Automotive Manufacturing and Production suggests that procurement in the automotive industry has the most complex procurement requirements of any industry. The article points out how “current procurement practices are rife with inefficiencies, complexities, and costly procedures” and that “A lack of standardization and its extraordinary complexity preclude any simple fix.” The charge is made that IT vendors underestimate the challenges in providing software solutions in this space [12].

Dave Stephens, a former Oracle iProcurement developer shed some light on the Everest project at Ford, summarizing that the project was over-ambitious, with lofty goals including the desire to “unify dozens of legacy procurement systems, - standardize procurement methodology across its feudally-run, fiercely independent plants, take on direct, indirect, and MRO at the same time, and

- rationalize its supply base while putting in the new system.” [13]. Here are the lessons learned from Ford:

1. **Prioritize Solutions and Implement Accordingly.** Ford was attempting to solve all of its procurement issues with one monumental effort. These included systems and non-systems issues, supplier, buyer and management issues. The eProcurement initiative and rollout to its end users got lost in the “big bang” approach of the Everest project.
2. **Align the Technology with the Business Need.** The timing of the rollout of Everest (1999) was prompted by the Web Revolution. Given the haphazard approach to the project and ultimate failure, it would have been in Ford’s best interest to address its business process needs, and determine how the web can best help it meet those needs. Although this effort was made, it obviously was not given due diligence.
3. **Have appropriate expectations when entering a software partnership.** Ford attempted to implement an off the shelf ERP system that had very little automotive industry specific functionality. As with any vendor solution, nor did it offer any Ford specific business processes. The integration and customization effort was so huge, that the software was modified beyond the point where it could be upgraded. Undoubtedly, this contributed to the ultimate result. Ford should have expected that it would be making significant modifications.
4. **Get Back to Basics.** Emphasizing focus on the core information of the business, and how that core information is used to accomplish overall corporate strategy. This also implies the opposite, get away from anything that is not basic, or core, to the overall corporate strategy.

THE NEW WAVE

Many eProcurement providers have learned from the mistakes of the past, and have invested time and resources in creating world-class software solutions. They also promise realistic savings in the 10-15% range, rather than revolutionizing and reshaping the business world. For example, PurchasingNet, Inc claims over 1400 satisfied customers. With the self-nomenclature of “PNet,” the company’s focus is to streamline the procurement process in medium to large organizations. The Procure to pay solution consists of three primary modules: eProcurement, ePayables, and Financial Management. The differentiator of PNet compared to its progenitors is that it claims on its website that it can be implemented in less than 5 weeks. Another claim, also justified through a marketing case study is its ability to be easily implemented with legacy systems.

In a case study citing Countrywide Mortgage services, PNet is attributed to allowing Countrywide to continue to grow at a rapid pace, while keeping procurement costs under control. The study claims an ROI in 18 months, that 98% of spend is managed through PNET (approximately 3400 Purchase Orders per month), and that there is a 65% reduction in Accounts Payable manpower [14].

Although PurchasingNet has maintained eProcurement as one of its three solutions, other providers prefer to nestle eProcurement into the confines of “Spend Management Solutions.” Katera claims to be “The Proven Spend Solution” with a products focusing on spend analysis, sourcing, contract management, procurement, invoice management and supplier connection [15]. The company has enjoyed quarter-to-quarter growth over the past 14 quarters, with an optimistic outlook.

Another example is SciQuest, Inc. The company features many pharmaceutical, as well as higher education institutions as having successfully implemented and gain cost benefits from implementing its products. Glaxo Smith Kline (GSK) opted for SciQuest’s Spend Director products which enhance existing procurement systems with content to increase on-contract spending, which was a business challenge at GSK. After implementing the product, GSK realized an improvement in contract compliance of over 20%, with 50% of all of its indirect purchases through the SciQuest product. It has also allowed GSK to integrate directly to their suppliers (over 200) avoiding a wholesales middleman, saving an additional \$500,000 a year.

The aforementioned New Wave of eProcurement providers have some key differences from the DotCom era eProcurement vendors. First, they all try to cleverly minimize the ‘eProcurement’ term as a buzzword. Second, none are publicly traded. Third, each focuses on procurement and procurement related business objectives. Although some expand into materials management (SciQuest) and others in integrated Financials Management (PNet), each knows its limits and has developed and implemented ERP integration points. Finally, each focuses on the solution being one of enabling users to make more efficient and effective procurement choices. The focus on the earlier eProcurement vendors was on how technology

would enable efficiency and effectiveness, grossly underestimating the critical need to incorporate the users as the key catalysts of change.

CONCLUSION

The philosophies, approaches, successful and failed eProcurement efforts over the past seven to eight years, are as various as the combined number of vendors and customers who have dabbled in or delved into eProcurement. However, the past in this case is not a clear indication of the future. Instead, the past offers many lessons learned from successes and failures that can serve as guiding factors for future implementations.

A December, 2005 Aberdeen Group study on eProcurement best practices sites [16]. The study claims there is now resurgence in eProcurement systems, and that the reasons for this resurgence include:

- Continued cost pressures, especially due to outsourcing
- Compliance issues that suppliers enforce compliance with purchasing contracts
- Advances in supplier enablement make it easier for more suppliers to be on board; including proliferation of supplier networks and catalog hubs
- Advances in eProcurement system functionality including integration and reporting
- New pricing models have made eProcurement more affordable for mid and small market companies.

The resurgence and noted successes of eProcurement in its second “wave” of less hype and greater returns is a testimony to the inherent human factors of competently addressing change management and project management. The cited critical lessons learned in this study are not unique to eProcurement, but are generally practiced for any successful change management or project implementation effort:

- Executive sponsorship has a direct relationship on the success of the project. Higher sponsorship yields greater chances for success.
- End-user involvement early and often has been cited as a critical success factor. This also involves extensive training of the system.
- Planning accordingly should be obvious, but especially in the dot com hype planning often took a back seat to the industry generated fear of being left behind.
- Putting company strategy first and IT strategy aligned with the company strategy should also be obvious, but also suffered during the dot com hype
- Consistent messaging across divisions, especially for large-scale projects, is critical for success. This can be hindered by poor planning and poor strategy alignment as well.

These human factors, combined with the fact that eProcurement systems involved people - lots of people – emphasize that it is truly the people that are the key implementation success factor, and not the technology. The implementers, the back-office experts, the systems experts, the supplier representatives, and thousands of potential end uses are all involved; each contributes and each makes a difference.

REFERENCES

- (1) Shepard, Steven B. “The New Economy: What it Really Means”; Business Week, Nov. 17, 1997
- (2) “Business Pioneers, E-Procurement: OK to Be No. 2”, Computerworld, March 12, 2001
- (3) Hamblen, Matther, “After the Hype”, Computerworld, December 23, 2002
- (4) Weil, Nancy, “Forrester: ‘Nuts and Bolts’ Buying up on Internet”, July 13, 2003
- (5) Meehan, Michael, “Commerce One Refocuses on Procurement”, Computerworld, June 22, 2001
- (6) Form 10-K, United States Securities and Exchange Commission, September 30, 2005
- (7) Shread, Paul, “Time Running Out for Commerce One”, Internetnews.com, September 23, 2004
- (8) Havenstein, Heather, “DOD Revamps Troubled Procurement Software”, Computerworld, September 26, 2005
- (9) Songini, Marc L., “Pentagon Urged to Fix Procurement Processes”, Computerworld, August 9, 2004

372 2007 IRMA International Conference

- (10) Songini, Marc, "UN Updating Oracle ERP Rollout", Computerworld, November 28, 2005
- (11) Songini, Marc, "Ford Abandons Oracle Procurement System", Computerworld, August 23, 2003
- (12) Piszczalski, Martin, "The Promise of eProcurement", Automotive Manufacturing & Production, June 2001
- (13) Stephens, David, "Marv Adams, Ford CIO and Ruminations about Project Everest", Wordpress: Procurement Central, March 24, 2006
- (14) "Financials Services Giant Realizes Significant Reduction in Costs", PurchasingNet, Inc. <http://www.purchasingnet.com>
- (15) "Identify, Capture, and Sustain Spend", Ketera Technologies, Inc. (<http://www.ketera.com>)
- (16) "Best Practices in E-Procurement", Aberdeen Group Report, December 2005.

0 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/proceeding-paper/implementing-procurement-systems/33093

Related Content

A Graphical Unit Interface to Generate Light Distribution Curves

J. G. Vera-Dimas and M. Tecpoyotl-Torres (2015). *Encyclopedia of Information Science and Technology, Third Edition* (pp. 2663-2676).

www.irma-international.org/chapter/a-graphical-unit-interface-to-generate-light-distribution-curves/112684

Comprehensive Survey on Metal Artifact Reduction Methods in Computed Tomography Images

Shrinivas D. Desai and Linganagouda Kulkarni (2015). *International Journal of Rough Sets and Data Analysis* (pp. 92-114).

www.irma-international.org/article/comprehensive-survey-on-metal-artifact-reduction-methods-in-computed-tomography-images/133535

Enhancement of TOPSIS for Evaluating the Web-Sources to Select as External Source for Web-Warehousing

Hariom Sharan Sinha (2018). *International Journal of Rough Sets and Data Analysis* (pp. 117-130).

www.irma-international.org/article/enhancement-of-topsis-for-evaluating-the-web-sources-to-select-as-external-source-for-web-warehousing/190894

Fuzzy Rough Set Based Technique for User Specific Information Retrieval: A Case Study on Wikipedia Data

Nidhika Yadav and Niladri Chatterjee (2018). *International Journal of Rough Sets and Data Analysis* (pp. 32-47).

www.irma-international.org/article/fuzzy-rough-set-based-technique-for-user-specific-information-retrieval/214967

Improving Spatial Decision Making in Cloud Computing

Michele Argiolas, Maurizio Atzori, Nicoletta Dessì and Barbara Pes (2014). *Contemporary Advancements in Information Technology Development in Dynamic Environments* (pp. 78-91).

www.irma-international.org/chapter/improving-spatial-decision-making-in-cloud-computing/111606