ERP Woes and Financial Disaster: When the Network is the Threat

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Abstract

Network security is frequently defined and evaluated on the basis of perceived external threats. Conceptually it is easier to identify and quantify threats from black-hats, competitors, disgruntle ex-employees and malware than it is to identify internal threats coming from employees and poorly designed systems. The later threat, however, in the guise of ERP (enterprise planning systems) that are defective in design, implementation, and training is a game-changer, capable of bringing almost any company to its knees within one or two business cycles. Previous studies (Poston and Grabski 2000) have evaluated the impact of ERP systems on firm financial performance of companies that are going-concerns. [1] This paper identifies real world cases of instances when the ERP implementation is defective and the network security threat becomes the system itself.

Keywords - ERP; GAAP; revenue recognition; FoxMeyer Health; going-concern; Hershey Foods; American LaFrance; Rich-Con Steel; Overstock.com; Nike; New World Pasta

I. INTRODUCTION

Financial reporting in the United States is based on generally accepted accounting principles (GAAP). Central to GAAP is the principle of revenue recognition, which in its most basic form entails: (1) what is revenue, (2) when it is recorded, (3) how it is recorded, and (4) how much is recorded. These concepts, as modified for specialized industries and changing financial reporting standards, form the foundation for the recognition of revenues for financial reporting purposes which is central to the capital markets in the United States and internationally. [2]

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II. ERP AND REVENUE RECOGNITION

Business complexity has grown increasingly more intricate as businesses have shifted from a manufacturing-based economy to a services-based economy. This has made the proper timing for revenue recognition more difficult to resolve, the proper recording of revenue more complicated to independently verify, and the nuts-and-bolts of everyday financial operations more troublesome. As new markets have opened competitive pressures on businesses have increased. Professor F. Warren McFarlan suggested in a 1984 article in the *Harvard Business Review* that a company might be able to use Information Technology (IT) to achieve strategic advantage in the marketplace. [3] In McFarlan's opinion, investment in Information Technology (IT) should contribute to company value. [4]

During the last two decades there has been an exponential growth in companies that have implemented enterprise resource planning (ERP) systems. Central to this growth in ERP systems has been the premise that ERP systems make users more competitive by making essential data for decision-makers readily available. On paper enterprise resource planning systems (ERPs) are conceptualized as highly-integrated, business information systems designed to provide total enterprise information in a format that is understandable and efficient. ERP may incorporate, based on the needs of the specific industry, accounting systems, cash management, purchasing, production management, inventory control, order entry, customer relationship management, and human resources as sub-systems. Defined another way an ERP is a collection of networks tied together through a central database which provides linkage of information for multiple applications.

On the financial end of the spectrum this is where the trouble starts. Revenue accounting errors and deliberate distortions fall into two general categories, (1) revenue is legitimately earned but is recorded incorrectly in the wrong fiscal period (a cutoff error), and (2) revenue is recognized but is in fact never earned. In both instances a central tenet of GAAP, the matching principle, which is revenue and corresponding expenses should be recorded (matched) in the same accounting period is violated. [5]

III. SYSTEM RELIABILITY – FOXMEYER HEALTH

Linkage of widely-dissimilar information systems, legacy computer systems, and thousands of employees with diverse levels of training is not without a cost. In recent years many companies have found that poor implementation of ERP systems has exacerbated existing issues, and in some cases has actually resulted in the user having to file for protection under Chapter 11 of the United States Bankruptcy Code. System reliability has been deficient in two key respects:

"Hardware reliability" has been inadequate to correctly perform required functions under normal operational conditions for a stated period of time, and,

"Software reliability" has been unable to produce accurate and consistent results that are repeatable under varying load factors in the intended operating environment. [6]

This is apparent in the FoxMeyer Health Corporation case. In 1993, when FoxMeyer's ERP project began (aka "DELTA") the company was the fourth largest distributor of pharmaceuticals in the United States. The company had according to its 10K filing with the SEC for the year ended March 31, 1995, approximately $5.2 billion in gross revenue, and net income of approximately $42 million. The caption for the annual report cover stated:

"FoxMeyer Health is leading the drug distribution industry in the development of electronic ordering and inventory control systems, automated picking technologies, and airborne delivery to customers throughout the United States. Critical to all of these advances are leading-edge information systems that generate efficiencies and also provide valuable information that can help improve the quality of health care." [7]

However, there were notable differences between reality as presented in the Annual Report, and what was actually happening in the data centers, offices, and warehouses of FoxMeyer. The Annual Report placed emphasis on a "record-setting" contract with the University Hospital Consortium which was expected to increase sales by $700 million during fiscal year 1996, five new distribution centers being opened, and the full operational completion of the DELTA project in late 1996, but the reality was that angry warehouse employees who were unhappy with the conversion, were damaging inventory, not filling orders, and struggling with an ever increasing volume of orders. Issues were further exacerbated by the SAP R/3 system which could process only 10,000 customer orders per night on the HP9000 servers, compared with the original FoxMeyer mainframe system which could process 420,000 customer orders. [8]

The 1996 Annual Report wasn't anywhere near as rosy. An $81.4 million non-recurring charge was taken to earnings which was attributable to integrating the Warehouse Management System with DELTA, and startup issues with the new National Distribution Center. Earnings became negative as operating costs exceeded revenue by $50 million and working capital fell by almost 40%. In the meantime, FoxMeyer was closing data centers, selling assets, and attempting to restructure loan agreements. [9] Before the next 10-K was filed with the SEC, FoxMeyer filed Chapter 11 in August 1996, and in March of the next year ended its attempt to reorganize under Chapter 11 and converted the case to a Chapter 7 liquidation. [10] What followed was a series of lawsuits filed by the bankruptcy trustee against almost all parties in the unsuccessful DELTA project. SAP AG, and Deloitte & Touche, LLP were sued for $500 million each. [11] Anderson Consulting, the SAP integrator, was named in an earlier suit by the bankruptcy trustee, who sought $500 million for the unsuccessful implementation. The trustee alleging fraud, breach of contract and negligence, told news sources at the time that Anderson charged,

"about $30 million to install the software, which was double the original estimate. And even then they had only managed to install it in less than 25% of the company's 26 distribution sites. FoxMeyer ended up paying double the agreed amount for a quarter of the work." [12]

FoxMeyer Health may be cited as the poster child for ERP implementations that go bad, but in actuality, there is a long list of notable ERP failures which have caused significant damage to the reputations and balance sheets of a string of well-known companies.

IV. INSOLVENCY AND FORCED SALES

In 1996, Rich-Con Steel, the oldest family-owned business, in Kansas City, Missouri installed a basic ERP system. After a short period of time, managers could not get accurate data for inventories, accounts payable, accounts receivable, and open customer orders. A backlog of orders was out of control, inventory changes were not being properly recorded, and sales invoicing was falling between the cracks. Cash flow of the company was crippled, and partially as a result of the negative after-effects of the poor ERP implementation Rich-Con's owners were forced to sell the company in 1999. [13]

In the case of Overstock.com the cumulative impact of five-and-one-half years of accounting errors did not fall out until October 2008. These errors accumulated after, an Oracle ERP implementation, years before that in the words of the company founder, Patrick Byrne, occurred:

"when we upgraded our system, we didn't hook up some of the accounting wiring; however, we thought we had manual fixes in place. We've since found that these manual fixes missed a few of the unhooked wires."

The total effect of the accounting errors was a $10.3 million increase in the cumulative net loss. [14]

No industry group appears to be immune from the fallout caused by a bad ERP implementation. In mid-2001, New World Pasta implemented a new ERP system. Concurrent with this the company was being buffeted by the negative impact of the Atkins craze. In 2002, the company announced that it had found significant "inaccuracies" in the financial statements for the 2001 and 2002 periods attributable to what the company termed to be, *"inadequate system design, integration and implementation."* Fifteen months later the company revealed the full extent of the problems and revised EBITDA (earnings before income taxes, depreciation and amortization) for 2001 to $37 million, and disclosed EBITDA losses of $20 million

and $14 million, respectively, for 2002 and 2003. Shortly thereafter in May 2004, New World Pasta filed a voluntary petition seeking reorganization under Chapter 11. [15]

V. Market Leaders Are Not Immune

Market leaders are also not immune to ERP disasters. Hershey Foods in the fall of 1999, was finishing a three year project which entailed the implementation of an enormous ERP software system from SAP AG that would put all of the company's operations on one integrated platform. Hershey commenced live operations right before the Halloween candy ordering season. The resulting disaster was punctuated by some of the company's largest customers, Wal-Mart and Kmart, going to Mars and Nestle to order extra candy, while Hershey candies stacked-up in company warehouses. The ultimate fallout was a 12.4% drop in third quarter sales, and a plunge in earnings of 18.6%. [16]

At the same time that things were going badly for Hershey, Nike bought a supply-chain management system from software vendor i2 in order to provide better demand-planning for Nike's 120,000 products and four cycles per year. Nike was eager to replace its twenty-five-year-old model, the "Futures" program, with the i2 system which was expected to be integrated with SAP's R/3 software. Managers at Nike, however, were impatient and rather than waiting for i2 to be implemented as part of the SAP ERP project they decided to install i2 beginning in 1999, while Nike was still using its legacy systems. What went wrong where, when, and how is still a bone of contention, but this much is known. As of 2004, the ERP project had cost Nike at least $400 million. More than $100 million in lost sales occurred in 2000, when algorithms in the i2 system that were adjusted by Nike employees generated false demand calculations, and the subsequent news of the computer glitches caused Nike stock to tumble by twenty percent. At the core of the problem was an anxious management, the necessity to heavily modify i2's software to work with Nike's legacy systems, and data records stored in different formats. The result was a system that frequently crashed, data entry times of as much as a minute for one entry to be recorded, and somewhere in excess of $10 million in implementation costs for the i2 system. [17] This, of course, was a small portion of Nike's eventual SAP ERP costs, and highlights the toxic mix of hasty management, legacy systems, unrealistic expectations, and extreme customization of existing software.

VI. Please Put Out the Fire

Negative publicity can be a software company's worst enemy. Just ask IBM. In January 2008, American LaFrance, the leading manufacturer in the United States of emergency equipment, filed for Chapter 11 reorganization in the U.S. Bankruptcy Court for the District of Delaware. [18] American LaFrance which was spun-off from Freightliner in 2005, hired IBM to implement an ERP system for purchasing, production, inventory control, payroll, finance services, and all accounting operations, after the spin-off from Freightliner where these operations had previously been centered.

What American LaFrance got in return, according to court documents, was a *"plethora of problems"* with an inability to transfer data from the Freightliner system, incorrect inventory data, missing financial information, inaccurate accounts receivable and accounts payable, and general ledger balances that were erroneous. [19] The problems were so severe that production was significantly impaired because inventory SKU numbers could not be matched with customer orders and production-line demands. Because emergency vehicles are all custom-orders the ability of the company to complete each order on a timely basis in accordance with customer requirements was seriously impaired. [20] As a result cash flow plummeted.

cONCLUSIONS

It is the purpose of information security and information assurance to protect critical network systems and the data being processed on those systems. [21] In the public domain it is the auditor's responsibility to evaluate the overall financial systems of a company and determine the impact of the underlying data processing systems on the processing, recording, and accuracy of financial data used in the preparation of financial statements. Key to this evaluation is the going concern assumption which is one of the basic principles forming the foundation of GAAP. Since 1981, with the issuance of SAS No. 34, *"The Auditor's Consideration When a Question Arises About an Entity's Continued Existence,"* auditors' have been required to give greater consideration to the elements of firm financial distress. [21] Extraordinary events which constitute natural disasters, such as floods, fires and hurricanes, are thoroughly described in the technical literature (Accounting Principles Board Opinion No. 30, *"Reporting the Results of Operations -- Reporting the Effects of Disposal of a Segment of a Business, and Extraordinary, Unusual and Infrequently Occurring Events and Transactions"*), and are also given adequate consideration.

There has been no guidance, however, with respect to another kind of extraordinary event, which is the catastrophic failure of networks in ERP systems. In the FoxMeyer Health, New World Pasta, and American LaFrance cases poorly designed and implemented ERP systems became a significant, material catalyst that drove each of the companies into insolvency. In each instance, the fatal network security flaw was the ERP system, which was not correctly identified, by management or its outside auditors, as being capable of suddenly and dramatically ending the life of the enterprise. Examination of the balance sheets of ERP survivors may be still more indicative of the truth. Poor planning and design, poor project management, legacy data processing systems, and unrealistic expectations were also critical flaws with Overstock.com, Hershey Foods and Nike, but the strength of their balance sheets was the necessary ingredient for each company to weather the storm.

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