**HP’s ERP Failure of 2004**

**The Importance of Contingency Planning**

Often business look to Information Technologies for cost-savings and increased efficiencies. At the same time, companies always want IT systems to work flawlessly. It is a seemingly never-ending job to balance these demands for IT Project Managers. It is these demads that also lead to increased pressure on Project Management to have fool-proof plans, despite the impossibility of that expectation. It proves difficult to convince business managers to honor plans for what happens when something fails; they don’t want anything to fail—“Just make it work”. In most cases, it is better to have a contingency plan than to have a perfect plan. What happens when the perfect plan fails, as is often the case? Many businesses have learned this lesson the hard way. In 2001, Nike lost $100 million dollars while centralizing its SAP systems without an appropriate contingency plan.[11] In 1998, Snap-On Inc. lost $50 million while trying to implement a computer-based inventory program for its first venture into retail sales at Lowe’s stores. [11] There are many of these stories, all very similar, yet it seems that companies still fail to have adequate contingency plans. Perhaps the most famous example of this is the Hewlett-Packard failure in 2004 while attempting to consolidate their SAP systems with those of newly-acquired Compaq Computers.

Christina Hanger was in charge of the IT consolidation project for the HP/Compaq merger, which started in 2002. After many successful roll-outs of centralized SAP systems in other divisions, Hanger was confident that, despite the massive size of the Industry Standard Servers/ Enterprise Storage and Server Group division, the sixth time would also be the charm. This is a case where, although contingency plans were made, they were not appropriate to the magnitude of risk this particular project entailed.

The ESSG is the division of HP responsible for enterprise-class server solutions, from standard out-of-the-box products to fully customizable servers for any need. All of Hanger’s previous successes were in divisions dealing with much smaller volumes, and much fewer possible production combinations. The integration team scaled the previously successful worst-case plans to fit the ESSG divisions’ quantities, including three weeks dedicated to bug fixing. To compensate for this possible three weeks of down-time, HP stocked three week’s worth of standard servers and converted a portion of one of their plants to manually accommodate special orders that could not be stocked in advance.[5, 6] Everything looked good for roll-out.

In June 2004, the system went live, and all hell broke loose in ESSG. HP estimates stated that about 20% of all server orders were stuck in limbo between the older legacy system and the new standard. [1, 2, 5, 6] While this proved to be a relatively simple problem to bug fix, the business repercussions were completely unforeseen. The IT system had failed, but it was the logistics system that really bit the dust. Planners within the product marketing division of ESSG failed to provide Hanger and her team with an accurate representation of the full domain of available choices for customers. While Hanger’s people tested many different configurations, lack of information lead to major data modeling issues. This was the root cause for orders in purgatory. IT responded quickly to solve these problems, but the damage had already been done. An enormous backlog of orders that ESSG was incapable of filling began to cause customers to not receive orders. As orders of this type piled up, HP quickly ramped up its supply chain to try to fill custom orders, dramatically increasing production, including opening up additional plants in Europe in an attempt to match demand. [5, 6] While this may have addressed production issues, problems earlier in the process limited the effect these measures could have. Despite being trained, customer service representative failed to correctly place orders manually, resulting in increased numbers of lost orders. Hanger reacted by re-training order-takers two weeks after roll-out, but this could in no way bring back the lost two weeks. As back-orders continued to pile up as HP responded as quickly as it could, customer orders went unfilled and many switched to competitors, often for good.

The best argument for a good contingency plan is to guard against any unforeseeable failures. In HP’s case, demand for custom server solution rose by 35 percent in June, well above forecasts for demand that month. Even if the system had had a low error rate, an increase in volume of that quantity would yield an unpredictably high number of exceptions.

While HP had done what could be considered a relatively extensive amount of contingency planning, its inability to properly communicate across departments caused large quantities of long delays, customer unhappiness and massive monetary losses.

**The Impact of Failure**

Although HP responded quickly, it was not quick enough. Identifying and correcting issues with customer service failures took two weeks, far too long to have no reliable source for customers to order. Even though Hanger and her team offered refresher course for order-takers, the lack of skills at launch time added additional unnecessary human error into the equation. Opening additional production facilities did help stem the growth of unfilled orders, but by the time these facilities were running, three weeks of orders had backlogged. HP was then unable to produce fast enough, putting increased pressure on its entire supply chain. While production rushed to catch up, backlogging continued. HP increased its efforts to deliver to customers, paying for rushed shipping on orders, saving days on orders delayed by weeks. [1, 5, 6] Reports streamed in of customers without servers, without reliable delivery dates, and most of all, without an understanding of how or why this happened. [2]

When HP announced publicly the issues it had been having, CEO Carly Fiorina reported revenue losses of $400 million and losses of $250 million in operating profits. Several executive were fired for their roles in the failure, but Fiorina refused to axe IT project managers or blame the SAP software itself.[1,2,5,6] Executive management was fully aware of their downfalls, yet even with hindsight was unable to determine if they could have ever implemented the steps it would have taken to prevent a failure of this magnitude.

**Least Common Denominator?**

Failing to implement ERP systems is not exclusive to HP and Nike; in fact some of the biggest failures in the history of software have come with ERP deployments. In 1996 a failed SAP ERP integration helped to bankrupt pharmaceutical company FoxMeyer. In 1998, they spent $9 million dollars rolling out their SAP systems, which lead to losses of $19 million in sales and $23 million in profits in a six-month period. Domestic chocolate producer Hershey Foods attempted to cope with Halloween and Christmas demand with an IBM-led implementation of SAP ERP systems by rushing the project by several months. This led to incorrect inventory numbers and logistical problems. Hershey lost 12% compared to the previous year--$150.5 million. Even as recently as this year, Levi Strauss was unable to properly connect legacy systems to its new SAP ERP implementation, causing net income to drop 98% as compared to the same time last year.

With so many (Google it, there’s so many more) stories like this, it begs the question—“Why are companies still pouring money into this ERP thing?” Often, projections for ERP systems’ ROI (Returns on Investment) make the choice simple, but if not executed properly, the investment can end up simply as a loss. To better understand why this type of software deployment has caused so many issues, a further examination of the system itself is required.

Enterprise Resource Planning (ERP) systems help analyze business resource data, so that managers can more effectively these resources and provide increased overall efficiency within the business. There are many advantages to these systems existing in the form of both direct and indirect rewards. It is fairly easy to note the direct benefits; improved business integration, improved response time and flexibility, better use of new technology, and vastly improved analysis and planning potential. As a product of these benefits, companies obtain a much better corporate image and improved customer satisfaction. Many companies see the use of ERP systems as the bridge from where they are to a land where they may reach their full potential, as ERP systems can help them redevelop their processes to be more effective. However, ERP systems are not turn-key solutions. Proper data modeling is required to configure the ERP system to effectively use the data it is given. Garbage in, garbage out. In the case of HP, the inability of the marketing people to provide any data remotely close to the aggregate numbers of very specifically-customized orders resulted in a failed contingency plan. In the case of Nike, incorrectly modeled data for expected orders was fed into the system, causing bad predictions to come out of the system, thus Nike had way more of product A than was in demand, and far too few of product B. The FoxMeyer situation seemingly had every ingredient required in a massive IT failure: lack of management control, lack of proper technical expertise, improper evaluate of scope, and lack of coherent commitment from top to bottom.

While ERP failures are often seen as IT failures, a further examination of cases shows that the failure exists in the business aspects of the project, whether it is unrealistic expectations or frequently changing requirements.

**Making it Work**

It is always important in business to have proper planning in all departments, but is especially essential when implementing an ERP system. As can be seen in the HP example, you can plan the roll-out, a roll-back, a contingency plan, and react to failures, but if everything you do is based on bad data, you will fail. The solution lies in correcting the root causes—the business processes. For companies hoping that an ERP will do this for them, millions of dollars will be lost before they realize the truth. For all the IT planning a business can do, it must be certain that the data its plans are based on are accurate. It is vital that planners have all of the appropriate knowledge to make an educated decision. As in the HP case, IT planners did not have accurate data for the level demand or for the combinations of possible orders. To increase the potential for success in projects such as that in ERP deployment, it can be very useful to employ certain metrics. A metric is a measure of certain properties involved with software development. Software metrics tie in closely to the basic functions of management, as follows:

1. Planning – There are metrics designed for cost estimating, training planning, resource planning, scheduling, and budgeting.

2. Organizing – Metrics used for size and schedule estimations determine the organization structure of the project

3. Controlling - Metrics used to track status allow management to adjust resources

4. Improving - Metrics are used to obtain data for process improvement, and to identify where assist in concentrating improvement efforts

All these metrics quantify characteristics of processes to allow management to take an overall view of a project and its requirements and status. Metrics are derived from observable data to develop indicators about individual projects, teams, processes, or any of the other quantifiable qualities of a development process. This is the type of data that is fed into ERP systems to raise a business’ efficiency. Without proper metric data, ERP systems cannot properly fulfill this purpose. The massive amount of money lost in challenged ERP roll-outs is a direct result of attempting to collect metrics and refine broken processes during the deployment. That is, as data modeling problems arise, it may become obvious that the process needs to be changed before data can be properly formatted for entry into the ERP system. This is the definition of changing requirements. This also dramatically affects schedule and budget plans. In addition, as processes change, dependant processes and procedures have to be adjusted accordingly. Considering all of this real-time modification, it is easy to see how so many companies lose so much money jumping into ERP systems before they have properly matured their processes. To ensure ERP deployments roll out smoothly it is important that business data is properly collected, organized and analyzed for broken, under-documented, and misunderstood processes before ever considering the installation plan. In the case of the HP systems, marketing data was not properly analyzed to be modeled so that the ERP could properly interface to the legacy ordering systems. In addition, the customer service and manufacturing processes were not adequately developed to cope with a failure within the automated order-taking systems. Perhaps the best contingency plan HP could have taken was to assume the system was going to fail completely, and be ready to take and fill all orders manually.

**Happy Ending**

HP refused to place blame on SAP or any of its IT department, despite the headlines detail the IT failure at HP. Realizing the true cause for failure was failed business processes and poor decisions by non-IT executives refusing to properly support the required data metrics require for a large-scale software project, HP fired three of its top business executives and placed top IT leaders in charge of its supply chain. Since its massive failure, HP has become one of the top providers of SAP-based ERP deployment services, as well as helping business prepare their processes and supply chains for such roll-outs. In the end, In retrospect, CIO and executive vice president of Global Operations Gilles Bouchard did not see the data modeling problems between the legacy and SAP systems as the source of the $US160 million impact, instead insisting that it was his company’s inability to keep pace with orders in the supply chain once the problems were discovered. "It was mostly capacity issues, material issues and factory issues," he says. "We had a series of small problems, none of which individually would have been too much to handle. But together they created the perfect storm."[6] It is business processes that failed here, and no amount of IT planning can fix that.

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