



Quantifying the Value of an ERP Solution

By Mark Miracle

Realizing that implementing a new ERP solution, or upgrading an existing one, represents a large investment of time and money, most companies would not embark on such a path unless their return significantly exceeds their cost. While it is generally agreed that a new or upgraded system will add value it is often difficult to quantify.

This white paper is intended to aid in quantifying the value that can be achieved in implementing or upgrading a complete ERP system for a small to mid-size discrete manufacturer.

While it would be nice to present one value analysis that applies to every situation, it is, of course, not that simple. There are a large number of variables that need to be considered in quantifying value for a specific organization that include, but are not limited to,

- annual revenue
- number of employees
- current systems
- maturity stage
- product mix
- business processes
- challenges.

However, by creating an example based on a typical manufacturer within the SMB space, the hope is that it will demonstrate that significant value can be achieved and that it may be beneficial to quantify the value of a well implemented and complete ERP solution for your specific company.

In addition to the variables that need to be considered, it is also important to note that the calculations used in determining value will always be somewhat subjective. For example, a company may not fall within specific industry benchmarks or may have a unique challenge in one or more functional areas that they will weight more heavily in their analysis. For an accurate analysis, the evaluating company must supply accurate input regarding their operations and challenges.

Again, the purpose here is to show a hypothetical, yet realistic, business case that will prompt the reader to consider quantifying the value of implementing or upgrading their current systems.

Before moving on to the hypothetical value analysis, it is important to comment on the source of the calculations made. Utilizing the inputs discussed above, the actual output of this analysis is based on a proprietary, detailed and customized toolset that provides calculations based largely on industry benchmarks from sources such as S&P Capital IQ Industry Data, NYU Stern Analysis, and, in some cases, historical client information. The resulting calculations are then adjusted based on the perceived maturity stage of the organization as it relates to their repeatable business processes and data management strategies. An example of such a calculation as it relates to reduction in inventory levels is shown below:

\$3,722,219¹

Inventory Value

X

4.5%²

Estimated Reduction in Inventory Holdings 4.5%

\$167,499

Annual Benefit Potential

¹ 20,000,000 Annual Revenue * 75.9% Cost of Goods Sold as % of Annual Revenue * (89.5 Days in Inventory / 365 Days per Year) = \$3,722,219

² 5% Potential Reduction in Inventory Holdings (Enter as Whole #) * 90% Maturity Multiplier for Improvement Factor (Enter as Whole # - Impacts Entire Model) =

In the case above the industry benchmarks of 75.9% of COGS (cost of goods sold) as % of Annual Revenue and 89.5 DSO (days sales outstanding) are used to determine inventory value for a \$20 million revenue company. The model then assumes a reduction benefit of 5% due to improvements in such factors as stock obsolescence, inventory turnover, raw material yield and others. Finally, the improvement percentage is then adjusted based on the maturity stage of the customer. Of course, this is just one of many calculations used in quantifying overall value, and will need to be adjusted based on the company's specific challenges in this area.

In building a case for analysis we first need to create a hypothetical customer called ABC company that has the following attributes:

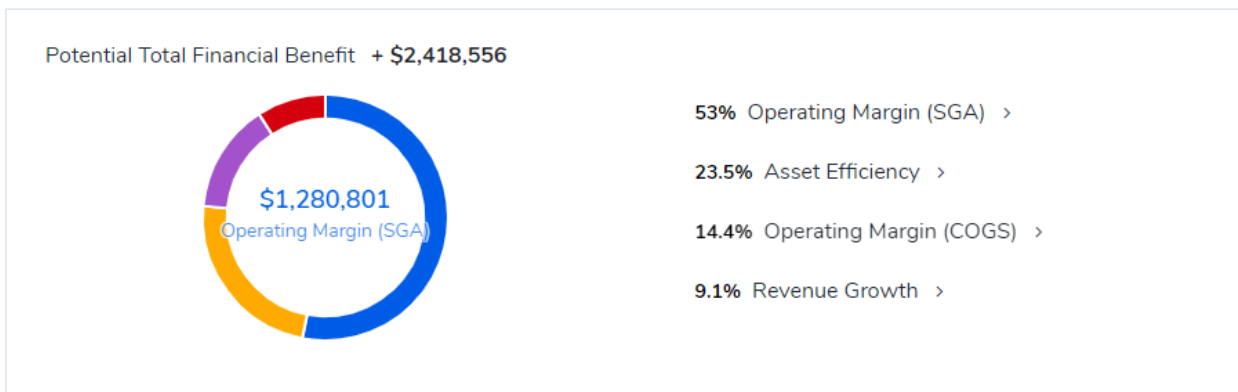
- **Company type:** Industrial Manufacturing with both MTS (make-to-stock) and ETO (engineer-to-order) requirements.
- **Product Mix:** ABC company manufactures a variety of pumps and valves used in the production of various types of machinery. About 50% of finished goods are make-to-stock, while the other 50% can be customized with various options and features based on client requirements. Approximately 20% of ABC company's revenue is generated from their field services department.
- **Current systems and process environment (maturity stage):** Multiple non-integrated systems and spreadsheets across functional areas. Business processes and KPI's in place but inconsistent. No clear master data management strategy in place.
- **Annual revenue:** \$20 million
- **Number of employees:** 100
- **Number of ERP users:** 30
- **Number of Inventory and Shop Floor Users:** 60
- **Critical Challenges:**
 - Lack of access to real-time information for decision making
 - Missed delivery dates due to inaccurate production and scheduling information
 - Increased costs of inventory, shipping, and materials due to inaccurate demand forecasting
 - Increased scrap and rework due to lacking quality control and shop floor oversight
 - Profit margin reduction due to inaccurate reporting of cost
 - Cost of slow moving and obsolete inventory
 - Shortage of IT resources for administration and maintenance of systems and hardware
 - Inaccurate tracking and processing of field service requests and resulting warranty issues

Although the above scenario is hypothetical it represents a realistic description of a typical small manufacturer with relatively common challenges. While your specific company may not be similar and may not face the same issues, the resulting value analysis should at a minimum provide a foundation of benefits that could be realized.

Based on the company attributes and challenges listed above, it is now possible to develop a budgetary estimate of software cost and implementation time.

Most complete ERP solutions provide functionality in the areas of finance, order processing, procurement, production, scheduling, inventory and shipping as part of the core license. In this particular case, based on the company’s challenges, they will likely also benefit from an integrated manufacturing execution system (MES), as well as a quality control and field service management application. Additionally, considering the shortage of IT resources, offering a subscription to the necessary software (SaaS) would likely be the preferred deployment method. Combining all these elements we can expect annual software costs of roughly \$60,000 a year and total implementation costs of roughly \$160,000 spread out over an implementation time of approximately 9-12 months to incorporate all applications.

Entering all the necessary criteria into the value tool set, the value analysis provides a total 5-year potential benefit of approximately \$2,400,000, yielding a return on investment of almost 380%, as shown below:



Cashflow	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Costs	\$176,895	\$90,365	\$71,523	\$71,523	\$61,523	\$471,829
Benefits	\$0	\$360,295	\$716,956	\$706,051	\$635,254	\$2,418,556
Net Cash Flow	(\$176,895)	\$269,930	\$645,433	\$634,528	\$573,731	\$1,946,727
Disc. Cash Flow	(\$168,471)	\$244,834	\$557,549	\$522,028	\$449,533	\$1,605,473
Net Present Value	(\$168,471)	\$76,363	\$633,912	\$1,155,940	\$1,605,473	\$1,605,473

As mentioned earlier, the above output is based on a long list of benefits by functional area utilizing industry benchmarks, company input and some historical client information. But to provide a high-level explanation as to how this value was derived, consider the main categories as follows:

- **53% (roughly \$1,280,000) in operating margin benefit as it relates to SGA (selling, general, administrative expenses):** These benefits are derived mainly from the elimination of IT administration and hardware costs, improved order fulfilment, optimized inventory and elimination of rogue spending.
- **23% (roughly \$570,000) in asset efficiency:** These benefits also address improvement in the areas of inventory as well as asset utilization, accounts receivable and accounts payable.
- **14% (roughly \$350,000) in operating margin as it relates to COGS (cost of goods sold):** Benefits include cost savings related to shipping, labor, raw materials, scrap and rework among others.
- **9.1% (roughly \$220,000) in revenue growth:** These benefits are centered around increases in productivity related to quoting, order conversion and general sales and marketing effectiveness.

Within each of the categories listed above are more than 45 specific cost benefits associated with a functional area, task or process. Rather than trying to list each of these, some with the most impact in this particular example are:

- Elimination of virtualization, database and software maintenance costs, valued at \$300,000 over a 5-year period. This is attributed to a shift in deployment method.
- Reduction in inventory levels valued at over \$200,000 over a 5-year period and attributed to factors such as optimization of WIP inventory, higher raw materials yield and reduction of obsolete and finished goods inventory.
- Reduction in receivables valued at over \$150,000 over a 5-year period due to quicker dispute resolution, improved reconciliation and faster cash collection.
- Improved asset utilization valued at over \$150,000 over a 5-year period through improvement of production efficiency, performance monitoring, preventative maintenance activities and equipment lifecycle optimization.

As stated earlier, this value analysis is specific to our hypothetical ABC company and its list of critical challenges. Other companies will likely see a higher or lower total financial benefit based on all the factors discussed earlier in this document.

One other key factor to be considered in creation of the value analysis is the maturity stage of the company as it relates to their systems and processes. In other words, how well defined and repeatable are the business processes of the company and how does that align with the systems and data

management in place. It stands to reason that a company that is further along in these areas will likely see less of a total positive financial impact in implementing a new system than a company that has very little in place. The tool set used for this value analysis takes this into account by assigning a maturity stage to the company being assessed. The five stages to this ranking model are defined below:

- **Initial** – These would be companies with no, or low, systems integrations, non-documented business processes, limited KPI's and no data management strategy.
- **Repeatable** – These companies have some integration between systems, documented and repeatable business processes and measurable KPI's.
- **Defined** – In addition to processes, systems and KPI's, these companies have adopted industry best practices and proactively manage their key customer and vendor base.
- **Managed** – Building on the defined stage, these companies leverage data collection and analytics for improvement and are heavily invested in the management of their data.
- **Optimized** - These companies are considered consistent top performers in their industry. Processes are continuously improved through monitoring and tight feedback loops, enabling innovative processes that add value.

For the purpose of this value analysis, the assumption was made that ABC company, currently in the initial maturity stage, would, with the help of a well implemented ERP system, attain a managed maturity stage over a 5-year timeline.

Speaking of a “well implemented ERP system”, the value analysis tool of course assumes that the ERP solution contains all the required functionality necessary to support the organization in solving their critical business challenges and that the organization invests the necessary effort to implement that functionality correctly. ERP implementation failures are well publicized, so it is possible that a value analysis such as this is met with cynicism or disbelief. However, there are many factors that can cause an ERP system to fail, not the least of which is the tendency of the client implementing the ERP to underestimate the resources necessary to maximize their investment. Company executives and end users need to be committed to, and prioritize, the project to achieve the financial benefit.

As a last point, the value analysis also calculates the opportunity cost of waiting to implement the ERP solution. This is important to note because when ERP evaluation projects are not prioritized, they have a tendency to be put off as other business concerns take precedence. It is not uncommon to see an ERP evaluation project take 6 months to a year before a final decision is made. At that point the ERP then needs to be implemented which, based on the complexity, can add another 9 to 12 months before beginning to realize full value. In this particular example, the opportunity cost of waiting for 3 months to make a decision is estimated at more than \$245,000. In this case that figure exceeds the first year of software cost and implementation.

Summary:

Implementing a new ERP or upgrading an existing one represents a significant investment on the part of the company and the financial benefits can be difficult to quantify. There are many variables to consider, and every company will likely have some unique challenges that will affect a value analysis.

However, taking the time and effort to conduct such an assessment can help the organization understand the true financial impact of moving forward and therefore prioritize appropriately.

As long as the chosen ERP solution is implemented correctly, even a smaller manufacturer can realize a significant return on investment. That return can be even more significant in those cases where the company is in the early maturity stages described above. Based on the provided example that shows a payback period of less than two years and a return on investment of close to 400% over a 5-year period, the positive financial impact of moving forward with an ERP implementation or upgrade is well worth the investment. Even if the financial impact is halved, there is still a compelling business case to be made for moving forward.

At the very least, a value analysis will offer insight into the opportunity cost of doing nothing, which based on the provided example, can have a significant negative impact on an organization's profitability.

If you are considering an upgrade or new ERP system and would like assistance in doing your Value Assessment, feel free to contact us. (303) 694-4400 or info@logicdata.com.

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