
JUSTIFYING A NEW BUSINESS INFORMATION SYSTEM



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Your company has decided it may be time to toss out that antiquated legacy system you've been struggling with for the past 10-15 years and get one of the new integrated software packages you've been reading about. Well, just like any other major capital investment, this means that someone will have to compile and document a cost vs. benefit analysis to justify the project. The formidable task of putting together such a justification document is not for the faint of heart. It is a complex job with extremely serious consequences lurking in the weeds. What if your assumptions are wrong? What if your cost estimates miss the mark completely? How do you know if you've found all the hidden costs? What if projected cost savings fail to materialize? How is anyone going to believe the numbers?

There are many questions to be answered and as many things that can go wrong in the process. So let's get started laying out a roadmap for this ominous journey. Here are the issues that will help lead to your successful project justification exercise.

- Why must you do a formal justification for a new system?
- What exactly is a formal justification and what are some general guidelines for preparing one?
- What are some common pitfalls to avoid?
- What are some common, and maybe not so common, sources of tangible cost savings that can be itemized as benefits?
- What are the various hard dollar components of the cost side of the equation?
- What are the intangible factors that enter into the cost/benefit decision?

Why Justify It! - Let's Just Do It!

Our first order of business is to examine the need for taking on this task in the first place. Is a formal justification exercise really necessary? Some companies skip over this justification exercise because they feel it's a foregone conclusion that they really need a new system. And since they accept that as reality, why waste the time putting together a formal cost/benefit justification model! But, while an edict from upper management to go out and replace the old system with a new one may seem appropriate in some cases, skipping the very important cost justification step can create serious problems down the road. On the surface, most project managers would be thrilled to hear the boss say, "Just spend what you have to spend, but get me a new system!" Let the buyer of the system beware, these words will come back to haunt you later.

Let's look at why the justification step is not only important, it is a critical component required to succeed. A sound project justification is key to getting management and employee support, so important to a successful installation. Genuine support comes from a firm belief that when implemented, the new system will provide benefits in excess of the costs (money, time, frustration, pain, etc.) incurred. Without a delineation of quantified benefits, people must accept the project on faith, and faith is often the first thing to disappear when the trauma of a major system change manifests itself.

The justification activity is a project's "rite of passage." It is the definitive statement that says, "this project is worth doing, and this is why." It is the basis for believing the business will operate more effectively (doing the right things) and efficiently (doing things right) with the

proposed system in place. If the justification exercise fails to rally adequate support and commitment for the project, the company may be better off doing nothing for the time being. If the project cannot be justified on paper, attempting it with real money and people will most likely result in a disaster. You are better served by putting off the project until a later time rather than risking a debacle of gigantic proportions.

What Does It Look Like?

So, now that we know we need one, just what does it (justification document) look like? First of all, it should bear no resemblance to “War and Peace,” nor a statistical abstract of the theory of relativity. The shorter, the better - as long as all key points are addressed and all pertinent numbers are included. What is “key” and what is “pertinent” are subjective judgment calls, but a guiding principle is that brevity should overrule verbosity. A proper justification is a cost/benefit analysis matching the project goals and costs to the company's business objectives and financial projections. The backbone is a simple formula that says the value of the benefits minus the costs of doing the project equals a positive return on the investment. The bottom line is that the value of the benefits over the life of the system will exceed the costs of purchasing, installing and operating it over that same life span. As a rule, the timeline of the cost and benefit dollars should cover a period of not less than 5 and not more than 7 years. While dollar figures are the required measuring stick, the justification document must be rich with explanatory narrative - both to explain the assumptions behind the various dollar estimates, and to provide a full and accurate picture of the intangible issues. In many respects, it is as much a sales and marketing presentation as a financial document.

Where To Start?

The next obvious questions are: “How do we get started?” and “What are the ground rules?” To properly launch the project, all involved parties should understand that this is not a computer project, it's a business decision. Like any business decision, we must get an acceptable return on our investment and the tricky part of justifying a project, such as this, is that the value of the return is often difficult to express in concrete dollars. Since technology can be very expensive, many people embarking on a justification project fear they will be unable to find enough tangible cost savings to justify the expenditure. This fear often creates an atmosphere that leads to disaster - grasping at straws to construct a justification that no one will believe, including you. Credibility is the key element. Both the cost and the benefit numbers must have credibility. The cost side is easier to quantify than the benefit side, but even the cost side has hidden problems. On the benefit side, we run head first into the problem of tangible vs. intangible savings and benefits. Tangible savings can be pretty straightforward, e.g., the \$10,000 per month cost of maintaining the existing legacy system and hardware can easily be cut in half by migrating to the newer technology. But major projects are seldom justified on tangibles alone. The intangibles are much tougher to quantify, and this is where the credibility issue is really put to the test. What dollar value does one place on improving customer service by 10%? Is it reasonable to expect that better decision making will be achieved with information analysis improved by X percent that will increase sales or profits by Y percent? And what are the bottom line figures resulting from better inventory management? What process improvements can we gain if we can implement new technology like bar coding, and an integrated system, etc.? If the projections are not

conservative or lack credibility, they will be seen as not based on reality, and the enthusiasm for putting effort into the project will surely suffer.

Non-Financial Benefits

What are the kinds of benefits that are typically used in justifying the acquisition of a new business system? Most justifications are built on financial benefits - the dollars and cents decisions. Occasionally, there are issues that cannot be quantified in terms of dollars but are strong enough to support such huge expenditures. Sometimes these issues boil down to pure survival - live or die decisions for the business.

There are sometimes other compelling reasons that tend to make the decision a “no brainer.” If your competitors gain a significant cost structure or customer service edge over you through a major technology shift, your very survival may depend on following suit with a matching technology investment. Look back a decade or two and picture yourself in the banking business. Suddenly, all of your competitors are introducing ATM machines and electronic banking. You realize that the cost of the system changes to accomplish these offerings are extremely high. On the other hand, you see that your bank will not survive for long if you do nothing. So now, instead of a “cost vs. benefit” question, you have more of a “cost vs. cost” trade-off. The cost of the new technology change vs. the cost of losing customers and a high probability of a business failure.

Another significant benefit often realized by changing to a new integrated system that is almost impossible to quantify in dollars has to do with employee satisfaction - it falls in the “quality of life” category. If people are struggling with an antiquated, cumbersome system today, the prospect of doing their daily jobs with tools that are better, faster, and easier to use is probably a very strong motivator. Using multiple copies of Excel is not the wave of the future. In such a situation, the new system can improve morale and job satisfaction, and reduce employee turnover (leads to reduced new employee orientation costs, one of the most hidden and hard to quantify costs). Most of today’s employees want to feel they are keeping up with the times. The fear of not being fully in step with information technology is continuing to be most prevalent in the workplace, which started in the 90’s and continues into the new millennium. The step of moving from a traditional character-based system to a new state-of-the-art point and click Windows friendly system can be seen by many administrative and management people as significant career enhancement. The green screens are mostly dead. The employee feels, if I use this technology at home why not have it at work?

The Gray Area Financial Benefits

There are many benefits expected from a better information system that are very difficult to quantify in financial terms in spite of the fact that common sense tells us they may be worth a lot of money. This is where benefit estimates must be able to withstand extensive credibility testing. It stands to reason that a better-structured integrated information system will result in improved resource utilization and cost control, which in turn will lead to greater profits. Unfortunately, the “how much?” question is unanswerable in such cases because there are too many complex interdependencies and since the future holds too many unknown variables. We must resort to educated estimates in these cases. Consensus is the key to credibility here. If it is one person’s

estimate, suspicion will be high. If however, the estimate to be used for final justification is a composite of the opinions of a representative group of knowledgeable people, it is likely to be widely accepted. This is especially true when the participants have shared their reasoning with each other before arriving at the final figures.

A prime example of gray area benefits is projected increases in sales volume. These make good justification material if they carry the weight of credibility. Rationalization is often achieved through the following factors, which should result from an improved information system:

- Delivery credibility in the marketplace positions the company as supplier of choice to its customers.
- Integrated quality assurance reduces returns against sales while keeping costs in check.
- Better order status information increases responsiveness and customer confidence level.
- More effective and efficient communication links with customers can help gain a competitive edge. This leads to being proactive vs. reactive.

The “Black and White” Financial Benefits

Perhaps the easiest part of the justification exercise is calculating the financial benefits where predicted results are generally accepted and calculations are essentially straightforward. There are two varieties of these dollarized benefits. The first is direct day-to-day savings affecting the company's bottom line. The second is increased working capital (cash availability) gained by minimizing temporary assets such as inventory, accounts receivable, and by better cash and asset management.

Probably the most common, and also the most dangerous cost saving projections come from the dreaded headcount reductions. While upper management can get very excited about hearing that a more streamlined system will allow them to run the operation with X% fewer employees, the effects of stating this as part of the justification can have debilitating effects. There has been so much negative press about downsizing in the past several years, the majority of employees harbor a frequent fear of losing their jobs. What kind of an enthusiasm level can they maintain when asked to help install a new business system that is destined to eliminate their jobs or the jobs of their associates? Ironically, even the best-planned new system installations rarely have a direct bearing on headcount reduction. In fact, installation of a new system has often lead to an increase in staff. What is more common is a re-deployment of the resources. People do different jobs under the new system than under the old one. If planned and executed properly, migration to a new and improved information system will lead to an increase in business, and this increase will create internal value added work. So rather than projecting a headcount reduction as a justification item, many companies approach it from the productivity angle. They place the value on being able to achieve higher sales and profits without a corresponding increase in resources.

Profit increases usually have the biggest impact when justifying major expenditures. While higher profits through increased sales typically falls into the gray area outlined above, increased profitability resulting from the lowering of costs ranks much higher on the management acceptance scale. Cost reduction has both time and material components. Shortening the production cycle time or reducing the unit cost and/or the amount of materials consumed for a given output will lower the cost of sales, and thus increase profits. There are many ways in which improved information systems can generate such cost efficiencies. Reduced purchasing

and manufacturing lead times can be realized with planning and simulation tools. Reduced material waste and labor inefficiency can be gained from tools that aid more accurate scheduling and provide early warning signals of pending problems. Purchase price reductions can be achieved through better material requirements planning, planning for bulk buys, and just-in-time deliveries. Costs attributed to material obsolescence can be lowered by shortening the time between purchase and use, managing the engineering changes, again a result of improved planning and scheduling systems.

While not as visible as the reductions in operating costs, the often-overlooked financial benefits of reducing the amount of working capital needed to run the business are very real. Improved inventory management results in fewer raw material and in-process inventories needed for a given output volume. Reducing inventory investment increases profit and optimizes working capital in several ways. The most obvious is the lowering of interest payments on the inventory sitting on the shelves. In addition, lower inventory levels naturally lead to reduced obsolescence and lower storage facility expenses. In general, the cost of carrying inventory, especially in multiple locations, is much higher than most people believe it to be. Bringing this issue to the surface and then showing how to reduce the corresponding costs can be a real eye-opener.

Improving the information system can easily lead to better cash management which in turn lowers the company's interest costs. Working capital can be optimized through more effective handling of accounts receivable. Timely customer invoice processing brings cash in quicker. Better-managed credit controls reduce bad debts. Proper management of accounts payable, taking of discounts, avoiding early payments, etc. - makes more cash available to the business. Cash itself should be managed like high value inventory. Cash sitting idle does no good, and hitting a cash shortage at a critical time can have serious business ramifications.

The Cost Side of the Equation

Calculating the cost of the project is generally much easier than figuring the dollar value of anticipated benefits. One does not usually have to rely as much on "crystal ball" estimates when working with cost projections. So, why then are the majority of major system implementation projects significantly over budget? This boils down to three major causes: 1) certain costs are purposely understated in order to secure project approval (is begging forgiveness later better than pleading your case up front?), 2) costs are understated because they are calculated with the optimistic vision that everything will go as planned, and 3) major cost line items are simply overlooked because of inexperience or poor planning.

Project costs fall into three basic categories: capital expenditures, one-time project expenses, and ongoing support activities. Front-end capital expenditures are amortized over the anticipated life of the system. Recent tax laws have altered how this may be handled. One fairly common cost allocation error is that the amortization period often exceeds the system's actual life span, so being conservative at the outset will make life easier down the road. One-time project expenses can either be capitalized or expensed. Ongoing operational and support costs are most often the line items that are understated or overlooked because many people don't see them as a cost of doing the project. They are, however, a very important component of the true cost of ownership of the system.

Capital expenditures typically include the following: computer hardware, application software, operating system and utility software, database management system software, PC's, printers, communications network (internal and external), and facilities preparation (rewiring, fiber optics, facility remodeling, etc.). These costs are typically the most visible and the easiest to estimate. Some vendor proposals will offer "bundled" pricing, which may include training, and implementation services along with the hardware and software to provide a single investment figure for the whole package. Bundled pricing generally provides more "bang for the buck" than line item pricing, but caution must be exercised to make sure that the "package" includes most of what you need to get the job done without lots of extra bells and whistles that you would not purchase if they were priced individually.

The one-time project expense category is the area most prone to massive budget overruns. Hidden costs and excessive optimism are very common in this area. One-time project line items generally include: outside consulting, travel expense to investigate software options, user and IT training and education (managers as well as system users), systems development (software customization and/or modification, custom add-ons, report writer specification, etc.), integration of new software with existing sub-systems that will be retained, implementation assistance, data conversion, initial new data file building, temporary help to free up project team members time, and new procedure/user documentation. Keep in mind that the more grandiose the plan, the tougher it is to control implementation expenses. Resist the urge to introduce too much new functionality all at once and keep software modifications to a bare minimum to prevent an explosion of unanticipated project costs.

Perhaps the most common of the underestimated expenses is the value of the time of existing employees who will work on the project and the time needed for learning and adapting to the new system. The value of this time is real, and it should be accounted for. The true cost of training goes beyond the formal classroom training on the new system - people productivity WILL go down as the company begins working in a new system environment. The value of existing employee time should not be viewed as a sunk cost - it's a day-to-day operating expense. A prime example of misjudgment in this area involves the use of outside experts, such as consultants and subcontractors, as an alternative to using existing employees on selected tasks. For example: a company may reject the idea of using an outside expert to get a particular task done in a month for \$5,000 because it is seen as an incremental expense. So they use existing employees who do not have the required expertise, but whose time is seen as sunk cost, to get the task done. Seldom does anyone do an accounting later to find out that the task actually took three months and consumed \$12,000 of payroll expense! In retrospect the \$5,000 consulting fee would not only have been justified, it would have been a terrific bargain.

The ongoing costs that will be incurred once the system is up and running are needed to complete the true "cost of ownership" picture. Line items in this category typically include: annual license fees for software (application software, operating systems, databases, utility software), application software maintenance fees (to secure ongoing vendor support, software fixes, upgrades, etc.), hardware maintenance agreements, taxes on fixed assets, and the cost of technology "caretaker" support (database administrators, systems programmers, network administrators, etc.).

This ongoing caretaker support is one that can present a few ugly surprises to unsuspecting management. Many systems will require ongoing post-implementation support that is not factored into original estimates. Resources are needed to maintain the operating environment, install new releases and/or fixes, monitor performance and modify the programs, procedures and reports. The big question affecting ongoing cost of ownership is: will this system require additional staff and/or periodic consulting expenses?

Money that is likely to be spent with the software vendor after the system is implemented should also be factored into the cost of ownership. Annual software maintenance agreements are generally changed at the rate of 12 to 18 percent of the *current* list price of the product (as opposed to the actual price you negotiated for the purchase). Software maintenance agreements can include support services such as hotline, new releases, software fixes, user meetings and literature. Many companies allow their maintenance contracts to lapse to save money, and regret it a year or two later when the next release looks irresistible. It is best to take the conservative approach and plan to retain the annual maintenance agreement for the life of the system.

Summary

The optimal cost justification exercise will be honest, conservative and exhaustive. Fudging the numbers on the front end to make it look like a better deal will come back to haunt you during the toughest part of the project - implementation. Being overly optimistic by expecting that all the pieces will fall neatly into place as the project unfolds sets the stage for constant re-shuffling. Failing to anticipate all of the potential line item costs can result in forcing compromises that can seriously endanger the odds of project success.

One very beneficial step that is almost always overlooked, but can be very helpful and actually happens after the project is completed – post-implementation audit. The post-implementation audit answers the question: Did we get what we said we were going to get? Since this happens long after the fact, the audit itself will not help the justification. However, if the project team and management commit to it, and everyone knows that there will be accountability down the road, people will give the justification a much higher degree of credibility. Words come cheap, but a “stake in the ground” that sets up some performance metrics to be measured before and after the project will do wonders for establishing ownership. The stronger the belief at the project’s inception that it is well worth doing, the more effort people will be willing to put forth to make sure it succeeds.

From a big picture perspective, the project manager and chief sponsors should avoid falling prey to the “conquer the world” syndrome. It is impossible to know exactly how you will want to be running things a few years from now at the time you are initially planning the project. So, it’s best not to try doing everything on day one. Trying to implement too much new functionality during the initial stage and/or planning to modify the software package as part of the implementation task are the two things that most often lead to disaster. If software is installed in its “vanilla” form and nonessential new functionality is implemented in a phased approach, the odds of keeping the justification expectations in line with reality increase by several orders of magnitude.

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Dennis has over 30 years of Operations Management and Consulting experience with GE, FMC, Expert Buying Systems, and Whitman Hart. Academic credentials include a B.S.E.E., M.B.A., and a graduate of GE's Manufacturing Management Program. Industry experience includes: major appliances, transportation equipment, motors & generators, computers, A&D, chemicals, consumer wood products, and capital equipment. Assignments included: Corporate Purchasing Manager, Corporate Materials Manager, VP Logistics and Materials, Corporate Purchasing Consultant, Materials Manager, Director Materials, Manager Methods and Work Measurements, and Manager Tool Manufacturing for US and Canadian businesses. Accomplishments have been in inventory management planning, business process enhancements, manufacturing process enhancements, business systems requirements definition, selection, and implementation. He has contributed articles and material for publication, presented at various APICS, ISM, and IIE conferences, and is an adjunct faculty at Governors State University.