MANUFACTURING ERP
10 STEPS TO SUCCESS

Your comprehensive guide to selecting and implementing an ERP for manufacturing

GUIDE HIGHLIGHTS

Key benefits of manufacturing ERP

How to calculate the ROI of your ERP system

Planning a successful implementation and go-live

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This guide will outline key steps to a successful manufacturing ERP project, including:

INTRODUCTION

The manufacturing industry is an essential component of a strong economy. Every $1.00 spent in manufacturing adds another $1.89 to business growth in supporting sectors[1]. Manufacturing today is helping developing countries grow their economies at rates four times that of the U.S. The key for manufacturing in developed (high-wage) countries to compete against manufacturing in undeveloped (low-wage) countries in today's global economy is by increasing productivity. Productivity, in this sense, means not only more work output per labor hour; it also means more pounds of usable product per pound of raw material, more product launches per development project, or more revenue per marketing dollar invested.

WHAT DOES THIS MEAN FOR ERP?

In order to make processes more productive, functional areas must be integrated; that's where an ERP becomes useful. In 2018, the manufacturing industry represented the largest percentage of any sector for implementing ERP systems[2]. More manufacturers are understanding that the right ERP system provides enormous benefits beyond 'simply' increasing productivity. The emergence of specialty ERP systems has enabled greater functionality for organizations, with 67% of manufacturing executives requiring industry-specific functionality in their ERP[3].

Although, ERPs are not all positive; every economic sector encounters their own unique problems when it comes to ERP and integrated business processes. Manufacturing's major challenge is the number of things that must be simultaneously and accurately kept up with. There are raw materials being transformed, costs being accumulated, inventories being stored somewhere (for easy later retrieval). There are purchases being made and production schedules being created and executed. There are sales orders being filled, capital equipment being maintained, and quality being monitored. The constant movement of all those things through a transformation process makes computer automation a godsend when it is done right, and a disaster when it is done wrong. The consideration of using ERP in manufacturing should be taken very seriously, but very positively.

This whitepaper will outline a number of factors manufacturers should consider when investigating or evaluating ERP. The series is not intended to provide bottom line answers, but rather, to highlight the appropriate questions for you to ask of peers, subordinates, vendors, consultants, and superiors on your way to your bottom-line answer. Your bottom-line will be unique to your organization, your industry, and your vision. You should try to ask the same questions of different

people. This will give you an indication of how complex a question is, as indicated by the nuances and differences in the answers you get. It will also give you keen insight into who grasps the critical issues.

The time you spend thinking about these issues up front will save you tenfold the amount of time fixing them after the fact.

1. DO YOU NEED AN ERP?

As a manufacturing company assessing your need for ERP, there are two questions that you first need to consider:

1. Should I automate my business processes?

2. Would my automation tasks be more efficient if they were integrated?

Ignore for the moment the question of whether or not your business processes support your business growth aspirations, and just think about today's operations. The answer to the first question is to examine the number of people needed for activities that do not directly add value to the manufactured product. People who operate production machinery, assemble parts, and package the finished product all increase the value of the finished product. People who are taking orders, planning production, and doing the accounting do not add additional value to the product. If the cost of people in the latter group is growing as a percentage of revenue, then you should consider automation. Automation which can be achieved through the implementation of ERP software.

Now, think about the second question: if the tasks that you think about automating share a large amount of common data, then integration – ERP – may be in order. Consider the data on your sales order. Assume it is the customer name and address, the material and quantity ordered, the price, and the due date. Planning needs to know the material, quantity, and due date, shipping needs to know the address, material, and quantity, accounts receivable needs to know the customer name, material, quantity, and price, and so on. If everybody is using the same basic data over and over, you may benefit from integration. Do not immediately assume that ERP is a bigger solution than you need. If you have a small manufacturing enterprise, then it just means that your enterprise planning system needs to be small.

If neither of the above two questions helps clarify your situation, then follow the paperwork trail. The "paperwork trail" means from order entry to invoicing, how many different documents (paper or electronic) must be created, distributed, and filed in order to execute and bill a sales order. If your six hundred thousand dollars of revenue comes from producing fifteen thousand parts per week of one material for one customer at ten dollars per part, then your paperwork trail is not extensive. If you are processing fifteen thousand orders per week for multiple materials, multiple customers, at ten dollars per order, then your paperwork trail is massive. The first example would not benefit from an ERP system; the second might.

Many manufacturers are so enthused about manufacturing that they ignore thinking about business processes. A little bit of thought can pay a huge dividend.

2. THE BENEFITS OF ERP

The benefits of ERP in the manufacturing industry are enormous - **if you use the software correctly.**

An ERP is a big investment, in both cost and time, and it's important to understand how that investment that will pay off in the long term. Considering 64% of organizations' main reason[2] for implementing an ERP is to improve business performance, it makes sense that organizations wish to see quantitative data that will support the likelihood of achieving this goal.

95% of businesses who have implemented an ERP have improved some or all of their business processes[2] as well as seeing benefits in: availability of information, improved data reliability, increased integration of business operations/processes, improved productivity and efficiency, improved lead time and inventory levels, and better decision-making. Modern ERP systems also provide a higher level of inventory accuracy, averaging at 97%, as well as improving on-time deliveries by 24% as a result of higher levels of productivity, order tracking, and decision-making; these are big benefits for a manufacturing business[4].

An ERP implementation also provides an 'accidental' benefit, as it forces an organization to thoroughly examine its business model and practices. Process manufacturing benefits disproportionately from this examination; by its very nature, process manufacturing tends to be more flexible and dynamic over time. As a result, many business practices are the result of evolution, instead of a thoughtful and well-executed strategy. In process manufacturing, you can almost always accommodate one more special customer need, until, after a while, your business model hardly resembles what your manufacturing, service, or systems were designed for. The misalignment between how the business was designed to run and how it actually does run will be highlighted in a number of ERP design issues.

A typical example might be defining a business model as either make-to-order (a specific manufacturing plan for each customer order) or make-to-stock (sell orders from inventory). ERP generally rewards a clear-cut choice between these two with rich functionality, but manufacturers often have difficulty committing to only one strategy. They want to describe a hybrid strategy, and decide, order by order which strategy applies. While this sounds very customer-focused, it is an administrative nightmare. As you begin asking who has authority to decide, and what the decision criteria is, you grasp that there is no overarching logic to the choices being made, and therefore it is not a business model that is easily programmable within an ERP environment. The conversation

which emerges as a result of this ERP question is a vitally important one to the leaders of the business. If the leadership team is collaborative and synergistic, it is possible that ERP will serve as the framework for re-establishing a set of logical business rules.

Other examples might include how planning and manufacturing scheduling occurs, how product that does not strictly meet quality specification is handled, or how much lot traceability is truly required. The benefit in all of these, just like the one in the preceding paragraph, is to hold up the evolutionary decisions that a single functional area has turned into business policy, and examine them in the clear light of the total business process. The results can vary from exhilarating to frightening, depending on your organization.

If your work group can agree to operate your manufacturing business logically, then ERP will be a stair step improvement.

3. PRESERVING STRATEGIC ADVANTAGE

One of the biggest risks a manufacturer needs to mitigate when planning an ERP implementation is preserving strategic advantage. The reason this is such a risk is that many ERP systems you evaluate may not (in fact, probably will not) be strongest in the area where you have a strategic advantage. If you do not understand, articulate, and insist on preserving your strategic advantage, an ERP vendor will likely attempt, with good intentions, to get you to change your business behavior to conform with the way their ERP system operates.

Let's discuss strategic advantage briefly: your strategy is the way you plan to win in the market. If it is your intent to grow, then your strategic advantage should remain an advantage whether you are twice the size you are today or ten times the size you are today. For instance, if your strategic advantage is the ability to produce engineered parts at half the tolerances standard in the rest of the industry, then that would be an advantage no matter what size your company. On the other hand, if your strategic advantage is that you are a small manufacturer, or that you have a large amount of excess capacity, then your strategic advantage can only be maintained by remaining small, or investing in additional idle capacity as you grow. So it is important when planning your ERP implementation to know what your strategic advantage is, and that it is sustainable as you grow.

IMPROVING STRATEGIC ADVANTAGE

With that knowledge, you must find the ERP features that best facilitate or, even better, enhance those strategic advantages. If your strategic advantage is that you are able to buy raw materials of better quality at lower cost than everyone else, then the first thing you want to ask about is an ERP's purchasing functionality. If your strategic advantage is the ability to ship product on the same day that you take an order, then your planning and ERP distribution system needs to be world class.

The reason ERP vendors tend to feel that their solution is right for you, regardless of your strategic advantage, is that they encounter so few manufacturers who have a deep understanding of how they make money. This problem is compounded when people from the business insist on the wrong thing being the thing that makes money. For instance, it is common for a sales or marketing professional to tell an ERP vendor that they make money because they are always the lowest price vendor. However, as a strategy, this is somewhere between dangerous and incomplete; to be the lowest price vendor, and make money, you must also be a low-cost vendor. In the first

interpretation you need a robust pricing and order entry functionality, and in the second, you need robust manufacturing variance and product cost controls. In reality, you likely need a strong mixture of both.

4. CALCULATING ERP ROI

Return on investment (ROI) is the yardstick most organizations use to measure the success of a project. In simple terms, this is taking the expected return of your ERP, deducting the expected costs of the ERP, then dividing the result by the expected cost which results in your ERP ROI. In reality, it is much more complicated.

For the purpose of discussion, let's assume the manufacturing ERP software package that is best suited for you would cost $100,000 totally installed and operational. That's a little bit more than you had budgeted, but the difference between the next best package that would come in at budget and your selected system is night and day as far as a good fit for your business model. Now the question is, can you justify the additional cost?

If you use conventional wisdom, and want a fair, but competitive return, you need to estimate two things:

      a) How long the ERP software will be in use.

      b) What a reasonable return would be over the course of that time period.

If your answers are: a) five years, and, b) 7%, then you would have to feel comfortable that you could save (or grow profits) $27,000 a year ($100,000/5 years + $100,000 x 7%). If you saved more than $27,000 a year, or the ERP system lasted longer than five years, your investment gets that much more attractive. The common sense part of the decision is thinking about whether or not you can realistically save that money.

LOOKING BEYOND COST REDUCTION

The sole aim of an ERP system is not just to reduce costs, but to improve service, reduce inventory, and in turn, increase profit. While it's true that implementing an ERP can provide significant cost savings, it's also true that you should aim for high financial payback percentages in triple or even quadruple digits. This level of ERP ROI isn't unreasonable if you frame your requirements to deliver two or more strategic improvements. Don't settle for the sole objective of your manufacturing ERP system being to just reduce costs; insist that it allows you to simultaneously reduce costs, improve service, and reduce inventory. When you set that as your solution space, your business team begins thinking about, and working on, a totally different (and typically more creative) set of solutions to

your business problems. What you define your problems to be is up to you, but by using ERP to make progress on multiple fronts, you are in a position to recoup more on your investment than a large, conventional company might.

As you think about it, setting a high goal for manufacturing ERP ROI is not wishful thinking. If your computer system can allow you to avoid hiring one more management person, or two more administrative people, you are approaching a one-year payback. Your ROI should not be a close call - you should know for certain that you are going to get a good financial return from an ERP system.

5. PRODUCTION SCHEDULING

For many of us, production scheduling is one of the primary objectives to justify the investment of time and money in a manufacturing ERP. The business design decisions you will make here will have a critical and disproportionate effect on your long-term service level, so take great care when considering the implications of production scheduling during your ERP implementation. Production scheduling in process manufacturing is typically a cross between a science and an art, since the problems that occur generally have multiple solutions involving tradeoffs between capacity, cost, lead time, and quality. The choice between multiple solutions in process manufacturing occurs because often in-process intermediates can be borrowed, modified, or quickly replaced in the short term, or machine setups changed to accommodate a changing customer need.

It is important to try to understand the reality of your production scheduling process with as much impartial honesty as possible. The term "honesty" creeps in because there is often a gap between the way the operation would like to be scheduled (for example, "We only run this product on first shift after a complete machine clean") and the way it actually is scheduled. You may find your production schedulers aren't very eloquent at articulating why they do things the way they do; they just know what has kept them out of trouble in the past. Production schedulers in process manufacturing tend to earn their keep by being good at exception management. Ninety percent of the production follows more or less automatic scheduling rules that everyone knows and understands, and ten percent requires intelligent violation of those rules.

NOT ALL ORDERS ARE CREATED EQUAL

Generic scheduling packages generally optimize around one trade-off dimension – for instance, cost – and create the most efficient schedule around that dimension. However, all that normally accomplishes is to schedule the ninety percent that everyone knew how to schedule anyway. Rule-based ERP scheduling could schedule batches which require similar or identical environmental conditions back-to-back to eradicate time lost in adjustment. It could also be used to reduce the inefficiencies associated with intensive equipment cleaning by assigning the batches that require this work to the end of the day. However, there are times when quality problems or customer emergencies make service a higher priority than cost. In those cases, the production scheduling system needs to recognize that not all orders are created equal and allow for efficient flexibility. True value-add occurs if the package can also make explicit the implications of various decisions

on the different trade off dimensions (like how much additional cost will be incurred, or how much capacity will be lost).

If you determine that the production scheduling software in your ERP system is not sophisticated enough for your needs, you can choose to write, or modify, your own. Be prepared for this decision to cascade into a host of new complications as you must thoroughly learn how the scheduling system interacts with internal work orders, inventory movements, capacity and demand planning, and available to promise logic.

The recurring message here is that the inherent flexibility in manufacturing typically manifests itself in more flexible service offerings to customers. Your ERP production scheduling package needs to be evaluated in terms of that offering.

6. SUPPLY CHAIN DATA DECISIONS

It is often surprising for a supply chain team to see how much master data they create and maintain when it is all collected and organized in one place. Because an ERP generally provides increased functionality, there is also usually additional master data required to use that functionality. Without attempting to examine every master data field in ERP, we will discuss three broad areas, which will hopefully help you start thinking about supply chain master data issues.

1. DATA OWNERSHIP WHEN THERE IS OVERLAPPING RESPONSIBILITY

Which department owns your master data? There are significant overlaps between departments when it comes to using data: an easy example of this category is the bill of materials (BOM). Many functional areas depend on the information in the BOM: finance for product costing, supply chain for material demands, engineering for spec sheets or blueprints, and development for new product adoption. Which of these functional areas should have ultimate authority over the numbers and relationships in the BOM? Typically, in legacy, every functional area created their own version of a BOM because every functional area had a different agenda which marginally affected the data. With an ERP, there is no need for redundant data duplicated across the system, so here comes the question of ownership. The best candidate for ownership of this type of data is the one with the least agenda, in this scenario - development. The paradox is because they have no agenda, they have no real passion for accurately maintaining the data.

2. YIELDS AND TOLERANCES

This tends to be a greater issue in process manufacturing than discrete, but it needs reasonable consideration in both types of industries. In this context, yield refers to the calculated expectation of how much first quality product will be produced on average from a fixed amount of components. Tolerances, in this context, refers to how much over or short you can be in filling an order, and still be of value to the customer. These two data pieces work in tandem as a hedge against manufacturing variation to determine how consistently you can satisfy customer expectations.

3. COMPUTING RULES

These are shorthand codes that tell the MRP portion of ERP how to behave. Each rule is generally

understandable on a stand-alone basis, but as the rules begin influencing each other, the results, while always logical, can be complex, unexpected, and unwanted. Computing rules involve everything from whether a material is purchased or manufactured, to whether a material is make-to-order or make-to-stock. Achieving the best results from these rules generally involves experimentation, rather than intuiting the setup based on written explanations.

It's important to assign people in your organization who are detail-oriented, and analytically-minded to figure out how to set up supply chain master data as soon as legitimate testing can occur. These people don't have to own the master data forever; they just need to discover and document what the right settings are. In supply chain, master data has almost as big an impact on ERP performance as configuration does.

7. LOT TRACKING

As with everything else in an ERP implementation, the goals and objectives of lot tracking should be explicitly understood and agreed when designing a transaction flow. Not all ERP systems have lot tracking capability the way your manufacturing operations may be used to. Because of that, you should be able to compellingly articulate the value you get from lot tracking, since at ERP software selection time strong financial and purchasing modules might trump a weak or non-existent lot tracking system. If lot tracking is a "just in case" process (e.g. just in case there is a quality problem etc.) and its value is difficult to quantify, you could end up without a robust lot tracking system. In that case, some type of workaround has to be created.

IS EVERYONE ON THE SAME PAGE?

Careful communication is required to understand the lot tracking capabilities of an ERP package, because most vendors have a good faith belief that they have strong lot tracking capability. However, unless your ERP vendor has specific experience in your industry, and thoroughly understands your lot tracking problems, you have to be cautious. There are very real philosophical differences that create performance differences.

A subtle but critical difference, for instance, is what a "lot" represents. Almost all process manufacturing defines a "lot" as all production of a single SKU manufactured in the same production run. However, ERP packages that lack depth in lot tracking might stop there. In that case, the lot number represents a group of physical things comprising a total inventory quantity: a group of pallets, a group of rolls, a group of drums, a group of boxes. That lot has a genealogy comprised of intermediate lots created under the same definition. In this case, the "name" of the inventory quantity is the lot number and the attributes of that inventory are associated with that lot number. But in this scenario, there is no visibility of how many things (pallets, boxes, drums) makeup that inventory quantity. In more robust lot tracking, however, each discrete piece of inventory – each pallet, each roll, each drum – receives a unique inventory name (serial number), and the lot number is attached to the serial number as one attribute (in addition to things like SKU number, quantity, quality). This philosophical difference leads to cascading differences in how sales orders are written, how available to promise works, and how inventory can be managed.

Manufacturing covers a wide spectrum of complexity and not every operation requires a complex

lot tracking solution. The complexity of serial numbers may not be needed at all in a specialty chemical process where homogenous quantities move in batches, but an absolute necessity in a paper or textile mill. The key question for your team to decide in advance is what priority lot tracking will have in making your ERP software selection.

8. IMPLEMENTATION

Preparation is key to any successful ERP implementation. Failing to adequately prepare for ERP implementation will almost undoubtedly lead to ERP failure, therefore it is important to devote some of your time to creating an ERP implementation plan. Manufacturing companies, large and small, will face the same fundamental trade-offs. Although, smaller manufacturers will likely have budget constraints which carry a higher weight. As a manufacturer, there are three basic organizational approaches to ERP implementation, which we'll discuss below.

1. ASSIGN YOUR EXISTING STAFF ERP IMPLEMENTATION RESPONSIBILITIES

Adding implementation responsibilities to your existing staff can be a fun and bonding experience if managed that way; it can also be a divisive and stressful exercise if it is just thrown over the fence without leadership - the key is to plan ERP delegation. There is an advantage in having all of your key leaders being somewhat familiar with the software (or at least, their portion of it), and it circumvents the later problem of someone claiming that they never agreed with the ERP design, but were never consulted. There are some potential surprises you need to consider (but not necessarily expect). For some staff, this will be the first test of true teamwork, and you may find that you have some individuals who don't work well in an ERP team and don't play well with others. This exercise also tends to expose a wide spectrum of thought quality and ability to articulate ideas among your staff.

2. HIRE A FULL-TIME IT PROFESSIONAL TO MANAGE YOUR IMPLEMENTATION

Having or hiring a full time IT professional is probably the most efficient approach, both for ERP implementation and for the long-term, if you can afford it. Your IT person can learn the product deeply, can be responsible for administering patches and updates, and can produce business reports and analysis. You have someone on your team who is always thinking about the future of your computer systems, and what lies over the horizon. Bear in mind, there are two key weaknesses of this approach: a) an overdependence on the specialized knowledge of the function, such that turnover would be disproportionately painful, and b) establishing the culture that the way computers are used is someone else's responsibility.

3. HIRE AN OUTSIDE ERP CONSULTANT TO IMPLEMENT

If you are struggling with how to implement ERP within your business, having an ERP consultant or using your ERP vendor to implement the system is likely the quickest and simplest solution.

Vendors are already intimately familiar with the program and its operation. It is possible that implementation costs can be negotiated into the purchase price of the software, and tangential distraction to the rest of the business while preparing for implementation is minimal. The only real risk with this approach is who is responsible for tracking down and resolving system problems after your vendor or consultant has left, and what the process is for making modifications and changes to the system as the business model evolves.

Learning how to implement ERP is unlike any project you've undertaken before. When you are finished – no matter what methodology you choose – you should feel that your business is stronger and that you have done good work along the way.

9. GO-LIVE

This is the moment when you throw the switch and your business begins running (much better) on your new ERP... but it's not over yet. Providing sufficient support at ERP go-live is a significantly different problem at a manufacturing plant than your typical business headquarters. At business headquarters, a large number of end users work on a computer all day long, and operations are normally only one shift. In contrast, most shop floor personnel do not spend large amounts of time on computers, and many manufacturing operations run around the clock, seven days a week. Planning adequate support is a key factor in defining your success at ERP go-live.

The first task for successful manufacturing support is to conduct a head count of how many people you'll need on site to provide round the clock support. Your ERP support team will need to be significantly bigger than the implementation team: you will need to recruit other IT support staff or perhaps business people from other divisions who have already been through an ERP implementation. The critical objective is to make certain that there is always a highly visible person available for shop floor people to turn to.

ALLOCATE TEAM RESOURCES

Common sense should be employed relating to the size of the plant and the number of support people required. In general terms, your starting point for support should be one person per functional area, per shift. If the functional areas affected by ERP are: a) receiving, b) production reporting and inventory movements, c) shipping, and d) quality management, then you would start with a target of four support people covering each shift. If there are only ten production people working third shift, you likely don't need four ERP people in support. If the plant is spread out over 250,000 square feet, the amount of time required to get from here to there will probably require that you increase coverage to two or three support people for production reporting. If in doubt, over-man your ERP support teams.

It is likely that your biggest unpleasant surprise will be the unusual and unforeseen ways in which manufacturing can cause transactions to fail. Some may see this as an ERP training problem, but you will be ahead of the game if you set out to make transactions as fool-proof as possible over the long run. Manufacturing will describe a transaction process as a "system bug" if it easily allows people to create problems through inaccurate data entry - regardless of how many times ERP shop floor data was reviewed and approved during blueprint and testing. Designate someone to work with the highest manufacturing leader practical to maintain a consolidated problem priority list, and

assign resources to resolve that problem list.

ERP go-live support in manufacturing is much more about being there, rather than knowing every answer immediately. If you pick conscientious people who care about the problems manufacturing is having, and you work to resolve problems systematically, you will have a very manageable ERP implementation.

10. PRODUCT COST

Managing an effective transition from legacy product costs to ERP product costs will be the ultimate test of your change management effectiveness. On the highest possible level, the total costs are exactly the same, and on the lowest possible level, the SKUs being manufactured are exactly the same, but in between, be prepared for the possibility that everything but the raw material cost is changing.

AGENTS OF CHANGE

If you wonder why that would be so, there are two primary reasons:

1. It is highly unlikely that your legacy cost system and your new ERP system have exactly the same methodology. The closer the two methodologies are, the less the change management challenge.

2. Accounting and finance will use the occasion of the ERP implementation to adjust practices and procedures which are either no longer best practices, or could not be changed incrementally because of GAAP compliance issues.

In the first methodologies category, the differences often appear to be benign in the ERP design phase, because at standard, the answer works out to be exactly the same. However, when variances begin accumulating, how those variances are accounted for probably changes. When you add in indirect labor (material handlers, maintenance, lab testing) the picture becomes even more disparate. The bottom line is that when it comes to product costing methodologies, little changes can have a big effect.

For those who fall into the second category, any changes to practices and procedures are typically made carefully and with a lot of transparency. Any change which materially affects the cost of a product might have a balance sheet impact if it results in a substantial change in inventory valuation. When making these kinds of changes as part of an ERP implementation, err on the side of over-communication with the financial community, because you do not want to find out at the eleventh hour (or worse, after go-live) that you have inadvertently created a conflict with the financial auditors.

BEWARE OF RECONCILIATION

A word of warning: if you are asked to reconcile an individual product cost back to its legacy cost,

you will a) probably have to try it, and b) be wasting your time on a mathematically impossible task. End users understand intellectually that the product cost of every SKU has changed - with some going up, and others going down - and that the total cost is neutral. But emotionally, they are certain there is an error on every cost that has gone up. Try as you will you can never fully reconcile these costs back to legacy as the inputs and the outputs are totally different.

How much attention this arena receives will depend on the culture of your company. Organizations which survive on razor-thin margins by knowing their product costs are going to be more sensitive than someone with an advantaged product and patent protection. If you are closer to the former category, be prepared for a whole lot of questions after ERP go-live.

CONCLUSION

The decision to pursue ERP is a business strategy decision, and not just an IT decision. Competition in manufacturing is fierce today, both domestically and from overseas. ERP is mature enough and widespread enough that it is difficult to position it as a competitive advantage. More often, ERP tends to be a cost of admission, just to earn the right to compete. Other "minimum-to-compete" expectations are dependable product quality, competitive costs, and ease of doing business. Although this is not to say that you cannot use ERP to preserve or enhance your particular strategic advantages.

It is practically impossible to run a successful manufacturing operation, and for that operation to have a future, without up-to-date integrated business software systems. Having recognized that, you also know from these resources that ERP is not an easy project. There are no physical laws that force disconnected functional business areas to behave logically, yet an integrated ERP system is premised on logic. Thus, you will find that your business is not designed for integration. That means that people and processes need to change, and change management is always difficult. It also means that the organization needs a strong degree of honesty if the benefits of integration are to be realized. It requires that executive leadership use every motivational tool at their disposal to coach, convince, enthuse, or even threaten the organization to the right attitude and right behavior. Remember, it isn't really ERP that people resist; it is change.

Lastly, you have to be prepared to find an ERP system that does a good job of supporting your type of manufacturing. Manufacturers have a very unique set of business problems that are not at all intuitive. These problems range from amortizing depreciation on capital equipment back to a product's unit cost, to accounting for yield loss in costing and planning, to making the appropriate math calculations to transform pounds of cotton into yards of fabric into dozens of women's blouses. Manufacturing moves quickly, and an ERP system must respond and move quickly with it. Attention has to be paid to functionality; shop floor personnel are there to add value to products, not to spend all their time operating computer systems.

One implied criticism of ERP you will hear after a go-live is "ERP won't let us do that anymore." A compliment you will never hear about ERP after go-live is, "I'm glad ERP forced us to correct that bad habit; we never should have been doing that to begin with." Remember that both statements are normally simultaneously true. ERP is neither a silver bullet nor a curse, but it is an important tool in today's competitive manufacturing world.

This guide was written by Richard Barker, Phil Marshall, Tom Stephenson, ERP Focus Columnists, with contributions from Megan Meade, ERP Focus Editor

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