

A Radius Solutions White Paper



Why Buying a Generic ERP System Could be an Expensive Mistake for Your Business

A guide for CEOs and CFOs

In the 70's and 80's, a common sentiment to be heard in IT circles was, "No one ever got fired for choosing IBM." While many of Big Blue's competitors could justifiably argue that their systems were faster, were more innovative, had a better price/performance ratio or were cheaper to maintain, everyone knew that when you bought an IBM box it would work. Solidity, reliability and service were what IBM traded on then, and you knew that even if you were paying a bit more, what you were buying above all was peace of mind.

In the 90's, as electronic hardware became more reliable, that argument became less persuasive. IBM suffered as a result, and during the decade had to re-engineer its business to fend off competitors that didn't even exist five years earlier. The late 1990s saw the rise of the enterprise resource planning (ERP) system, and in particular, the emergence of a top five; three US companies, Oracle, Peoplesoft and JD Edwards, and two European, SAP and Baan. The perception was if you chose one of those, perhaps in particular the renowned SAP, your job would be safe. How could you get blamed for choosing the world's bestselling enterprise software package?

The Three Most Important Considerations When Buying Software

There's a world of difference, however, between buying a box of electronics and buying software. Ask any realtor what are the three most important attributes that a property can have, and they'll answer with an old cliché – location, location and location. A similar concept applies to software. The top three attributes of a software package are fit, fit and fit.

There really is nothing that comes close to this attribute on the scale of importance. If you buy a software solution that doesn't closely fit your business processes, then it's going to cost you time and money. This is particularly true if you try to fit an ERP solution into a printing/packaging business. Later in this article we will discover that the functional gap is so significant that it is questionable if it can be made to fit at any cost. But first, some history.

What is ERP?

ERP systems are the evolution of a technique of planning and controlling manufacturing businesses developed by the American Production and Inventory Control Society (APICS) in the early 1960's. The concept was originally termed material requirements planning (MRP) because of the technique's focus on material planning and procurement. The technique continued to be developed (in US consultancy, the Oliver Wight organization was particularly noted in the field), and by the early 80's, the term MRP II came into use as the concept was extended to encompass high-level capacity planning. MRP became manufacturing resource planning and the 'II' was added to distinguish it from the previous definition. ERP is simply an updated term for MRP II, introduced by software marketing in the mid-90's to update the concept.

Functionally, the current product offerings in this area are similar to IBM's mid-70's MAPICS system, an early pioneer in the sector. These products are principally focused on manufacturers who assemble a range of standard finished products from a large quantity of parts and sub-components. These products can range in complexity from an automobile, which might be comprised of several thousand components, to a personal computer with several hundred. Clearly, for this type of manufacturer, material planning is most important. You can literally stop a production line at a cost of a million dollars an hour for the lack of a ten-cent component.

The starting point for ERP software is to define every single component of the finished product. If you can imagine taking your car apart down to the last screw, you can appreciate how complex this can be. ERP packages use bill of materials (BOM) software to define how the finished product fits together. Maintaining a manufacturing company's bill of materials is a full-time job for a large department; because every small engineering change or improvement may result in a change to the BOM.

The bill of materials defines which components make up a finished product, but this is only one-half of the manufacturing equation. The manufacturing processes required to produce the product also need to be defined. In ERP systems, this is typically defined in the production routing. The production routing defines the work centers, set up and run times of each operation. By combining the information on the bill of materials with the routing information, it is possible to compute the cost of producing the final product.

The original MRP function is still a key component of ERP systems. It is MRP that works out the required quantity of each component to support the forecast production of the finished product. It can also work out when these components are required.

Problems with ERP in the Printing Sector

The fundamental problem is that ERP systems are designed to address a set of manufacturing problems that are quite different from the special circumstances of the printing and packaging sectors. These differences are best illustrated by looking at a few selected functional areas.

Estimating

Providing fast, powerful and accurate cost estimating has always been a fundamental requirement of the printing business. There are arguably fewer sources of competitive advantage in the printing business than in other manufacturing sectors. The automobile makers can differentiate on style, technology, performance or luxury. In printing, there are many competitors who can produce the same products. There is always someone who is prepared to do the job at a lower price. Ultimately, printers compete on service and responsiveness, and responding quickly to inquiries is the essential starting point.

So how would you develop an estimate with an ERP system? Well, first you would set up a bill of material and a production routing for the product. This in itself is problematic, because BOM software is essentially designed for the assembly of discrete components. Fundamental concepts like impression size, number up and number on, grip allowances, and web cutoff lengths are completely alien to ERP systems, so you would have to work out the usage of paper per section manually. Additionally, ERP systems don't understand the concept of ink and varnish coverage, so the quantities of coatings required would also have to be worked out manually.

These restrictions are serious enough, but the real issue is that ERP systems have no mechanism for automatically working out the make-ready and run times of each production process. This is because in the ERP world, the creation of the bill of material and production routing data is a relatively leisurely process at the culmination of a long period of production engineering trials. Since most discrete manufacturers only introduce a small handful of new products each year, this is not a problem. Printers, on the other hand, do a hundred new and unique jobs a week, and might prepare quotes for a hundred more. A sophisticated method of calculating make-ready and run times based on machine speeds and capabilities is essential.

The final challenge is that most ERP systems do not have sophisticated pricing functionality; so setting the price is essentially a manual process.



Contrast this with a purpose-built estimating system like Radius Solutions' PECAS Vision. PECAS Vision can be set up with all the most common print and folding signature formats. Estimators simply assemble the format they want from a list. The system knows how to calculate paper weight based on area and GSM, and coating quantities based on coverage. ERP systems designed for manufacturing can't do any of this. PECAS Vision can calculate make-ready and run times automatically based on the performance capabilities of your equipment. You can arrive at an accurate cost in minutes. If you want to compare the cost of running on a different print machine, or using a cheaper board specification, you can do so in seconds. You then have sophisticated price-modeling capabilities available to fine-tune the prices to be quoted to the customer.

This comparison demonstrates the impracticality of estimating with generic ERP software. If you contemplate using that kind of ERP package in a printing plant, you are facing costly and risky development or "modifications" before you even begin.

Manufacturing Orders

Manufacturing orders, also referred to as work orders, production orders, or production jobs, are the mechanism used to plan and control production. Generally, the manufacturing order functions of ERP systems have difficulty in dealing with the routine methods of printing. ERP software is designed for businesses producing standard stocked products that are produced in an identical fashion every time, but printing is essentially a make-to-order business where each manufacturing order can be different. In an ERP system, the manufacturing order is generated from the bill of materials and the production routing. This means that for every job you do, a BOM and routing must be created. As we have seen in the previous section on estimating, this is far from a simple process, and is impractical for day-to-day use.

Because PECAS Vision was specifically designed for the printing make-to-order environment, producing a manufacturing order for a new product is straightforward. You simply choose the appropriate sections from a pre-defined list (for example 2 x 32pp sections and a 4pp cover) and PECAS Vision does the rest, calculating the necessary paper and coatings, and machine make-ready and run times.

Scheduling

Do you routinely run more than one job on a sheet or bind two-up? If so, you will find that ERP systems' manufacturing orders can't cope with these circumstances at all. Many ERP systems do not have finite scheduling systems as standard functionality, although some offer interfaces to third party products. But even here, there are some fundamental difficulties.

ERP systems generate manufacturing orders by running an MRP program and expanding the bill of material. This works fine for mainstream manufacturers, but it is not good for printers. Consider a routine publication of the format 2 x32pp sections and a 4pp cover; here, an ERP system would create separate manufacturing orders for each of the printed sections and for the binding process itself, and these manufacturing orders would also be created as separate entities in the finite scheduling system. Because they are not related, the scheduling process could produce some highly illogical results. For example, it would not insist that the printing process starts before binding because there is no dependency between the processes other than the printed sections' due dates.

By contrast PECAS Vision Scheduling Assistant knows that all the processes are related under the same manufacturing order and, therefore, ensures that physical dependencies are applied.

A Thousand Little Things

The above examples highlight some of the more obvious problems, but there is a long list of smaller, but equally important, "fit" issues that will hamper a smooth implementation. Some examples include the following:

- ERP order processing systems can't deal with routine print industry concepts like run-on and run-back pricing.
- ERP systems are not able to store the innumerable technical characteristics of publications such as their flat size, paper specification, PMS specifications and packaging specifications. These are essential in order to produce accurate work instructions or job bag information.
- ERP stock control systems can't deal with the physical characteristics of paper; so you can't store the sheet size, web width or GSM, nor can you convert from sheet/web size to weight and back again. This is effectively a showstopper.

Closing the Gap

It is readily apparent that bridging the gap in “fit” is not a trivial matter. It has been suggested by some that it is simply a matter of bolting on a cost estimating system. Upon closer examination, this emerges as a flawed analysis. It is, in fact, just possible to imagine running sales estimating as a stand-alone system. Sure, you would have to set up duplicate customer, item, raw material and work center data, but it could be made to work. The real fundamental gap is in manufacturing orders. The basic structure of ERP, its method of defining how a product is manufactured, is so unsuited to print production that it leaves the ERP system incapable of a good fit, even when modified. To re-work ERP software in order to meet the day-to-day operational needs of a printing plant would mean heavily modifying the core product, leaving it so heavily customized that it would be difficult and very costly to maintain. This should not be a surprise, remember that today’s ERP systems offer essentially the same functionality as the MRP II products of 20 years ago. For 20 years, printers have looked at general manufacturing software and most have eventually come to the same conclusion as this article. This is why, until the introduction of PECAS Vision, you may have found so many of the major printing and packaging companies using custom software.



North America Headquarters
312-648-0800
info@radiussolutions.com

European Headquarters
+44 1246 290331
infoUK@radiussolutions.co.uk

United States
United Kingdom
Netherlands