

Enterprise Software: Buy or Build? Part 2: Implementing the decision

Michael Talalay

Management Consultant & Senior Lecturer, Regent's University London, Inner Circle, Regent's Park,
London, NW1 4NS, UK
talalaym@regents.ac.uk

Abstract: Part I of this two-part article used two case studies to analyze the buy – build issue with respect to Enterprise Resource Planning (ERP) software systems. One company was a manufacturing conglomerate that opted for a package solution. The other was a ship management company that chose to build its own package. Whereas Part I looked at the strategic reasons behind these decisions, this paper looks at the implementation processes in these two different scenarios and tries to see what differences and similarities can be found. The paper begins by drawing possible key implementation factors from the literature and then tests these suggestions against the reality of the two case studies. Both case studies are both drawn from my experiences as an IT consultant in the manufacturing and logistics sectors.

Keywords: ERP; software implementation; project management; IT success factors; change management.

Word count: 4,645.

1. Introduction

In the late nineties, British Tyre and Rubber (BTR) was the largest non-pharmaceutical, manufacturing company in the UK. It had successfully implemented a standard ERP package into many group companies as well as a large number of external clients. At the same time, Acomarit was a leading global ship-management company that had embarked on a search for new IT systems. The result was to reject an ERP package and best-of-breed in favor of totally bespoke development. Again the result was outstandingly successful.

Part I of this two-part paper analyzed the build-buy decision and explained why BTR bought a package whereas Acomarit decided to build one. This paper asks the question of whether, despite the different approaches taken by the two organizations, there were common success factors in the implementation process. We look at the literature to try to extract likely success factors, which we then test against the reality of the two case studies.

2. Key Success Factors

In both cases, the decision suited the business requirements of the organization. For BTR, the ERP strategy was a reflection of the corporate strategy: tight financial controls, operational autonomy, and excellent (financial) information available on very short time frames. Acomarit's ERP strategy also reflected its corporate approach: increasing operational efficiency while providing an excellent client service and using IT for competitive advantage. However, strategy by itself is meaningless. Execution is fundamental. It is necessary to actually deliver the benefits that the strategy promises.

What, then, are the key elements in general of successful execution with respect to ERP implementation?

Unfortunately, the literature in ERP implementation research has developed a long and inconsistent "laundry list" of Critical Success Factors (CSFs).¹

The authors of a detailed case study of the ERP selection process at a medium sized US company with over 650 employees and \$600 million in revenue stated that all the consultants and experts the company met with pointed out that the biggest challenges to ERP implementation were poor people management, inadequately detailed execution plans, insufficient testing, and incomplete training of the first- and second-level employees who would be using the system and would have to change the way they had been working.²

Another study of ERP implementation in eight American companies of varying sizes concluded that the empirical evidence supported three factors as being crucial: the quality of the project manager, training of personnel, and the presence of a champion.³

A third study looked at thirteen factors and tested them on a single German implementation of SAP, arguably the leading ERP package for large companies.⁴ Seven factors were rated "most important": project team (defined very broadly to include process owners, consultants, and a project champion, as well as emphasizing the importance of having the best people), technical possibilities (meaning the fit of the software to the business requirements), strategic decision-making (ensuring that the ERP implementation fit into the overall corporate strategy), education and training, minimum customization, and performance measurement (managing expectations and measuring achievement against milestones).

A fourth study emphasized the importance of company culture, regulatory pressure, and trust within the ERP community.⁵

Clearly, there is no agreement in the academic literature. Equally clearly, there is a case of apples and oranges here, in other words a case of trying to compare findings that are fundamentally not

comparable. The methods, the companies studied, the definition of success, and even the meaning of the CSFs varied from study to study.

For a practitioner then, all we have is a “laundry list” of criteria to think about, a list of possible factors but drawn from situations and examples and with goals none of which is necessarily comparable with the others. What I want to do is to distill these various criteria down to a few major factors and look at their importance in BTR and Acomarit, the purpose being to see if there is commonality between the implementation of a package and a bespoke development.

To start with, we can dispense with “technical possibilities” and “strategic decision making”. The hardware and the software need to be appropriate for the task and need to fit with the organization’s business strategy and objectives. If these criteria are not met, then the chance of a successful implementation approaches zero. As we saw in Part I of this paper, for both Acomarit and BTR these two criteria were fully met – in fact they formed a critical basis for the selection decisions. Similarly, if regulatory requirements are not met, then the implementation is bound to fail. For BTR, the American package needed to be modified to handle VAT as opposed to a US-style sales tax. In the Acomarit development, the package needed to include a module to handle certificates. Without valid and current certificates for both the vessel and the crew, ships cannot leave port. This was a key driver for the system specification.

The other factors identified above can be distilled into seven general categories: people management, execution plan, minimum customization, training, testing, governance and commitment, and trust.

Both BTR and Acomarit successfully rose to these challenges.

3. Governance and Commitment

At both Acomarit and BTR client companies, the first step was to ensure that a governance structure was established. This was essential for two reasons. The first, more obvious one, was that key decisions needed to be made on staffing and resources and these decisions needed to be taken at the highest level of the organization so that they were authoritative. The second – and equally important though possibly not so obvious – reason was to demonstrate that the senior management was committed to the project, thereby ensuring that the project team and the end users would equally be committed.⁶

At Acomarit, building a package was going to be a complex and time-consuming project that required careful control. Staffing and budget decisions would need to be made. So, a key initial step was to set up a Steering Committee to handle these issues. This consisted of seven of us: the Chairman, the CEO, the Technical Director, the Operations Director (to whom the IT manager reported), the Finance Director, Tim (my boss), and me. The composition of the Steering Committee not only guaranteed this control but also, and critically importantly, signaled to the company as a whole this commitment of senior management. In addition, both the CEO and the Operations Director were project champions.

At BTR, for each of our clients we set up a similar high-level steering committee at the director and senior manager level. We also pitched our sales approach at this level. We made a point of selling to the MD and the FD, not to the IT department. I emphasized that user commitment was key to success. In its absence, failure was if not assured certainly probable. We also ensured that in each client there was a project champion – a manager at director level who would drive the project forward.

Governance, including a project champion, and commitment go hand-in-hand. Both were fundamental to the success of Acomarit and BTR. Projects (and not just ERP implementations) need support at the very top. Otherwise, they are likely to fail or just peter out.

4. People Management

People management is the second key aspect to success. It has at least three different aspects in the context of ERP systems: the IT management, the project team, and change management.

4.1 IT Management

It is worth dwelling on the issue of IT management because there are important lessons to be learned. One of the key questions for managers is domain experience. I remember when a client of mine, a company manufacturing vacuum-blasting equipment, hired a new company accountant. For the first 6 months, he worked in various departments around the organization – especially on the shop floor. He learned how the company worked – not just what the numbers said. Arguably the best HR Director of any client of mine was the ex-Operations Director. Again, he understood in detail what the factory did. Similarly, when I needed to hire project managers for BTR to implement our ERP package into customers, I looked for either production engineers or cost accountants with manufacturing experience. They could always learn how the software worked, but there was no way to be experienced other than being experienced. Indeed, the head of the Management Information Systems (MIS) department was himself an accountant and former financial controller of BTR. He had key domain experience for the strategic orientation of BTR and our systems.⁷

For Acomarit, IT management started with merging the two IT departments and finding an IT Manager who would also be the Project Manager. Which of the two existing IT managers – if either – should get the job? And what to do with the one who didn't?⁸ Logically, this was an easy decision to make. In practice, however, there was personality, pride and prestige to worry about. Of the two existing IT managers at Acomarit, the one I recommended was originally a shipboard engineer. He understood how ships worked and what it took to manage them; he knew from first-hand experience the problems involved in making sure that the information on board ship and in the shore office was identical and up-to-date; and he could talk and argue with other engineers and masters from a position of expertise – been there, done that, got the t-shirt.⁹ The other IT manager, in charge of the accounting and financial systems, did indeed stay with Acomarit, where he still remains as an important and well-respected member of staff and the expert, as he was before, in financial systems. Why did he stay and not move on? I'd like to think it was due to my charm and persuasiveness, but I suspect it was down to more fundamental reasons including that he was respected at Acomarit, that it was an interesting environment in which to work, and because we made it clear that his salary would not be reduced.¹⁰

At both BTR and Acomarit, in addition to setting up a steering committee, we needed a user group. This was a lower level group made up of key users, not necessarily managers. These were the people who would need to use the system and who could say what worked and what didn't. Moreover, because they were on the user group they took ownership and became committed to success.

BTR's customers also needed to appoint a project manager. This individual needed to be at the operational level, someone who worked in the trenches and understood the daily issues and problems that staff would confront. This needed to be a person who commanded respect and admiration within the organization, regardless of formal position. This was not a role that could be filled by external recruitment. As with the IT Manager at Acomarit, this person needed to have specific domain knowledge. He (or she in many cases) needed to have intimate knowledge of how the company worked.

At both BTR and Acomarit, the selection of the appropriate IT / Project Manager was critical.

4.2 The Project Team

The second key aspect of people management centers around the composition of the project team. The users who were involved in the project (either development or implementation) needed to be the best people and not those who could be spared from daily operations: "A company had to figure out how to engage its best people and motivate them to be major contributors to the project."¹¹ One way is through education and communication; and at both Acomarit and BTR we ran workshops and training sessions from the beginning of the project. Another key way of getting the best people is to

demonstrate high-level commitment to the project. This will attract good people at the operational level. Similarly, some initial success or “quick wins” would motivate individuals to become involved.

At both BTR companies and at Acomarit, these aspects of people management were followed. What made this possible was, on the one hand, an understanding of its importance, and on the other, the commitment to the project from the senior management, who understood the necessity of putting the best people on a project.

4.3 Change Management

The third component of people management is change management. Politics and fear are the two key aspects here. Users, at almost all levels of the organization, are concerned over what the effects of a new IT system will be for them. They will worry that they won't be able to understand the new package and that this will reflect badly on their performance. They are concerned about losing their jobs. Will they be made redundant? They fret that their jobs will be redefined and that salaries or wages may be reduced. In the worst case, and I saw this happen once, a manager may try to sabotage the implementation to protect (so he thought) his position. Power and influence, and thus salary and promotion prospects, can be altered by the introduction of new systems.

The BTR philosophy is instructive here. The operating companies had to provide a financial justification (i.e. a business case) for the cost of our package. The basis for this justification was pretty flexible, but there was one absolute no-no: staff cuts were forbidden. There were three clear reasons for this. The first, as BTR had a flat structure, was that if you could cut staff with the system then you could cut staff without it, or at least that was the head office directive. The second was that trying to manipulate “full-time equivalents” (FTEs) is a spreadsheet exercise that bears minimal if any relationship to reality. The third reason was more interesting. Any good IT/MI system will remove the donkeywork in both transaction processing and information retrieval and analysis. This frees up staff to do productive work; it does not mean that they have no work or even less work.

Acomarit achieved easy and successful change management through a combination of rapid application development (RAD) methodology and facilitated workshops (see below for details). One of the benefits of both was to involve users from the beginning – to give them a sense of ownership, a large degree of familiarity, and a feeling of enthusiasm about the new system. In other words, this approach went a long way to deal with and defuse many of the problems inherent in change management.

5. Minimum Customization

As noted in Part I of this article, and identified in the literature, minimum customization can be a critical success factor in ERP implementations. At Acomarit, there was no customization for any of the shore offices or for the on-board systems in the vessels. Similarly, at BTR, we strenuously resisted making any package modifications for our customers. This made implementation faster, saved needless expenses, and avoided the extra testing and training that would otherwise have been required. This avoidance of customization also had the benefit of making ongoing system improvements faster, easier and cheaper as there were no special routines that had to be altered.

6. Execution Plan: Development & Implementation

Above, we referred to ERP project failure as often being a result of “inadequately detailed execution plans”. This was not a trap that either BTR or Acomarit fell into.

6.1 Development at Acomarit

Every ERP project, build or buy, requires a business specification. This defines functionality and sets basic objectives, structures, and constraints. The problem with producing a business specification is always the same: if you ask users what they would like from a new system the answer tends to be “the same as now only better, faster and with a few tweaks”.¹² In order to create a business specification that went beyond this “tweaking” and generated a “state-of-the-art” product, I ran facilitated workshops with participants from all areas of the company. This was to avoid silos, accommodate

workflow, and ensure that the information needed all around the company would be effectively entered and readily available. The workshops were attended by twenty to thirty individuals, ranging in seniority from the CEO to the IT Manager's secretary. The objective, as noted above, was to design the best possible system not to tweak the current one.

The results of these workshops were twofold. On the one hand, they produced a functional specification that encompassed all requirements and could be used as a solid basis for development. On the other hand, they also led to a general understanding throughout Acomarit of what the system as a whole would do. In other words, we avoided silos both in development and in mentality. Users were involved in and exposed to the totality of the system and not just their particular areas. In practical terms, this led to the development of system-wide functionality, such as the use of alerts throughout the package and especially across functional areas.

We then adopted a rapid application development (RAD) approach instead of a conventional waterfall methodology.¹³ In a RAD project, an analyst programmer (AP) will sit down with an end user and the two will work out an initial screen design and look and feel – on the basis of course of the broad functional specification. The AP then codes (notice, there is no split between the analyst and programmer role) an initial version, with only basic functionality. The end user (or more likely users) from the business will then ask for changes. These are done and this iterative process results in a screen (or multiple screens) and workflow which meet the requirements of the users and the business in general. The AP then codes in the background functionality, taking into account the overall requirements as set out in the business specification. One of the key objectives and advantages of this approach is what can be called “usability”. The analyst and the user can together create screens that provide the necessary information displays, entry routines, and workflow in a manner that is easy to understand and simple to use. This is fundamental to gaining user acceptance of any system and to avoid frustration.

The approach worked well for development itself. It also made a major contribution to testing and training and change management.

6.2 Implementation at BTR

Execution was also critical for the BTR companies. It began with a comprehensive project plan. For every project we had a detailed task list for each module (or functional area, such as general ledger, stock control, or purchasing) and then an overall task list which summed up the module detail and added general project activities. We used a template with standard time, material, and personnel budgets. This included testing and training time. These standards would be modified for each project, but they provided a basis to ensure that nothing was left out and that duration and effort would not be badly miscalculated.

The second aspect of execution was phased implementations. We resisted all pressure for a “big bang” implementation where the entire package would go live simultaneously. Instead, we phased the modules. Moreover, this phasing was not random or determined by what the customer wanted. We went for “low-hanging fruit”, for what was quick and easy. In practice, this meant implementing the ledgers first. Clients might ask for manufacturing and material requirements planning (MRP) to go live first and quickly, but we quickly dissuaded them by pointing out the massive level of data inaccuracy in their inventory. The end result of this quick implementation of the ledgers was to demonstrate how much could be gained from the package. These quick wins added to the sense of commitment.

The key is being in control of time, cost, and functionality. For both BTR and Acomarit that was the case.

7. Testing and Training

It is almost impossible to overemphasize the importance of testing and training. This is one area of overwhelming agreement in the literature.

At BTR, testing and training were built into the project plan template. The pressure to shorten the time and effort allocated was strenuously resisted. But, as well as straightforward education and training sessions, we utilized a number of techniques to ensure that testing and training were executed properly. One of these was to have users load up and process historical data and then validate the results against the actual results. This accomplished both testing and training. A second technique was to train departmental superusers, who could then help their colleagues. A third, and very useful technique, was to set up a test account in which users could play and experiment without any real consequences for the business.

At Acomarit, of course, much of the training and testing was inherent in the RAD process. Users were not presented with a system; they actively participated in an ongoing fashion in its development, thereby encompassing both testing and training.

In both cases, what made testing and training easier was the phased implementation. Everything did not have to be done at once.

8. Trust

I have been involved, unfortunately, in a project where neither party trusted the other. Large sums of money were at stake, and the project ended up going to arbitration.

Trust is essential. The members of the project team need to trust each other and trust that the senior management will back them. The end users need to trust the project team. All parties in the company need to trust external consultants and software and hardware suppliers. If any of these relationships become hostile or even broken, the chances of implementation success reduce dramatically.

At BTR, for example, we recommended to our clients that if they trusted us they should proceed on a time-and-materials basis rather than fixed price as this would be cheaper for them. Many of them agreed. At Acomarit, trust between users and IT was reinforced by the co-operative RAD development approach. And both management and users trusted the external consultants.

Many of the other success factors identified above really boil down to the parties trusting each other to do a good job and not harm anyone's position or prospects. This is easy to say, not necessarily easy to do. But it is critical for success.

9. Conclusions

Two different IT projects; similar success factors. BTR successfully implemented a standard package into a large number of its operating companies. Acomarit developed and then implemented what has become the leading ERP package for Ship Management into its multiple offices around the world as well as on board the vessels under management. Despite this fundamental difference, the success factors – as we saw above – were if not identical then substantially similar.

These success factors boil down to some simple principles. The first is getting the right individuals in place, not just the project manager and the project team but also the senior management and a project champion. The second is execution. Training and testing must be extensive and comprehensive and a detailed project plan is essential. This needs to include milestones and feedback and reporting. Third the parties need to trust each other. A corporate culture that encourage all of these will be of inestimable value to ensuring a successful ERP implementation, regardless of whether it is build or buy.

References

¹ D. Schniederjans and S. Yadav, "Successful ERP implementation: an integrative model," *Business Process Management Journal*, 19, 2 (2013): 364-398.

² J. Hammond, P. Kalmbach and E. Bernstein, "Ozark Feed and Ag Corporation: The ERP Decision", Boston, MA: HBS Publishing (8 August 2018): 9.

³ J. Bradley, "Management based critical success factors in the implementation of Enterprise Resource Planning systems," *International Journal of Accounting Information Systems*, volume 9, issue 3, (September 2008): 175-200. The measure of project success was organizational improvement, on time and on budget. These are interesting but could potentially distort the results.

⁴ E. Reitsma and P. Hilletoft, "Critical success factors for ERP system implementation: a user perspective," *European Business Review*, Vol. 30, No. 3 (2018): 285-310

⁵ D. Schniederjans and S. Yadav, p. 387

⁶ Hammond, Kalmbach and Bernstein: 9.

⁷ BTR spun out the MIS department into a wholly-owned subsidiary called Real Time Business Systems, thereby turning a cost centre into a profit centre. The financial controller of BTR Industries became the CEO of RTBS and reported directly to a main board BTR director.

⁸ In a very early Steering Committee meeting, the Chairman looked at me and asked me that very question. I said that I thought the chap who managed the operational systems should get the job. The Chairman then asked me to take him out to lunch and tell him he had the job – and then take the other IT Manager out for lunch, tell him he didn't have the job, but persuade him to stay with the company. I was not best pleased with this request. I looked over at my manager, Tim, thinking to myself that he would speak up and bail me out. I was a consultant in IT systems, not a line manager or an HR manager in Acomarit. Tim was studiously concentrating on some invisible point on the ceiling. The Chairman was very charming and very persuasive. So I did – successfully on both counts.

⁹ In a different commercial context, the author of an article discussing buying or building financial trading systems quotes Michael Guttman, an independent trader, approvingly, "The system developer should have good experience actually trading his or her target markets." J. T. Holter, "Should you buy or build a trading system?". *Futures: News, Analysis and Strategies for Futures, Options and Derivatives Traders*, 39, no. 1 (January 2010). For a similar view, see N. Talbert, "Getting the Most from an Enterprise System," *Sloan Management Review*, volume 44, no. 1 (Fall 2002).

¹⁰ This episode is an interesting example of how to manage the Peter Principle – the idea that everyone is promoted to his level of incompetence. Had "A" been promoted to the overall IT Manager, this is exactly what would have happened. Instead he was gently dropped down to a role where he was highly competent, but without having to take a salary reduction. This should be viewed as positive rather than negative.

¹¹ Hammond, Kalmbach and Bernstein, p. 9. Interestingly, one implication of this is that new IT systems are easier to implement in an economic downturn when daily pressures are lower.

¹² You can call this propensity anchoring or functional fixedness. For an excellent, non-academic discussion of this idea, I recommend Daniel Kahneman, *Thinking, Fast and Slow*, London: Penguin, 2012

¹³ The traditional development approach is what is called waterfall. In essence, a business analyst produces a business specification, which is turned into a functional specification, which in turn is turned into a detailed programming specification. The programmer then writes the code according to this detailed spec. It is tested, revised, and so on. This is inflexible and time-consuming. It may be necessary where the programming is contracted out to a third-party (often for cost reasons), but it is not an effective way to proceed.