



The Decision Process for Acquiring an ERP Solution: The Case of Keller Manufacturing Company

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INTRODUCTION

For organizations, the purchase of ERP packaged is high-expenditure activity that consumes a significant portion of their capital budgets. It is also an activity that is fraught with a high level of risk and uncertainty. Why? Because, first of all, if a wrong purchase is made, it can adversely affect the organization as a whole, in several different areas and on several different levels, even to the point of jeopardizing the very existence of the organization. This highlights the obvious need for making the right choice of software. It also brings to light the need for finding the best for acquiring this type of software so that the right choice can be made. The second, because of the implementation and the risk of it going awry. ERP implementations are said to be the single business initiative most likely to go wrong (Verville & Halington, 2001; Verville, 2000; Hill, 1999).

Thus, it is important to understand how do organizations acquire an ERP software? What are the processes that are involved for buying ERP software? In this paper, we attempt to answer these questions by presenting and describing the case of Keller Manufacturing Company. In the following sections, we will present the organizational profile, background, a detailed analysis of Keller's ERP Software Acquisition Process and lessons learned

1. The Organization

Keller Manufacturing Company was established in 1895 as a manufacturer of farm wagons and did so until 1943 when it began manufacturing household furniture. Today, this organization has over 700 employees in three manufacturing plants in the U.S. (two of them located in Indiana [Corydon and New Salisbury] and one in Culpepper, Virginia) and manufactures over 2,000 different oak and maple legs, seats, and other components (with over 100 separate procedures) that are required in the assemblage of its products. In 1995, the company earned profits of \$3.1 million on sales of \$46 million. This represented a 76% increase in profits with only a 30% increase in sales from the previous year. In three short years, Keller Manufacturing grew from \$35 million in sales to \$54 million in 1996, representing a 54% increase in sales.

2. Background

During the last few years, Keller changed from a production-oriented company to a very effective market-driven business. It also expanded its product-line to include bedroom furniture, a change that proved to be a very successful marketing strategy. Consequently, the re-orientation of Keller's marketing strategy with the resulting increase in sales and new product introductions resulted in some production challenges to their manufacturing operation. Manufacturing was having difficulty supporting production demands brought on by the substantial increase in sales. Mainly, they attributed the problem to the lack of timely and accurate information that was necessary to effectively and efficiently plan for and control production.

At the time, Keller's information systems consisted of a combination of manual procedures and automated systems with computers only being used by the engineers and in manufacturing. The main computer (an AS400) handled batch-oriented processing and was supported by a number of stand-alone PC's. These stand-alone systems were originally installed in an effort to provide information that was desperately needed to support manufacturing operations. However, with the recent and sizable increase in sales and sales mix (expanded product-line), this type of information system (manual and computerized) could no longer effectively support Keller's manufacturing operations.

Unfortunately, the weakness of this information system was not limited to Keller's manufacturing operations. Personnel in other areas of the organization were having difficulty performing their duties effectively because of the inefficiencies of the manual systems involved.

As sales increased, the organization's ability to control costs and provide customers with products on a timely basis became more and more difficult. Competition continued to shorten lead times. Keller was faced with an escalating problem that needed to be urgently addressed—the organization could no longer continue status quo and still remain competitive and profitable. They were forced to seriously consider more “modern” systems that could help them better utilize their personnel, equipment, and facilities, and provide better service to their customers.

Hence, in 1995, Keller Manufacturing requested the assistance of an outside state-run agency to conduct an assessment of its organization. The objective of this study was to identify areas in which modern manufacturing techniques and new technology could benefit the organization in terms of performance and competitiveness.

The study showed that Keller was deficient in several areas and, in particular, manufacturing. The report outlined that Keller's manufacturing operations were controlled by a combination of manual and automated procedures and stand-alone PCs. However, with the growth that they were experiencing, the existing systems and procedures could no longer support operations and provide management with the information that it needed. If no action was to be taken, the organization's continued growth and ability to support its customer base would be compromised.

The recommendation was therefore made that Keller invest in a fully integrated manufacturing system, more specifically, a multi-user, multi-tasking, fully integrated, real-time manufacturing resource planning system. The study showed that implementation of a resource planning system could improve scheduling, efficiency in the assembly area (by keeping the lines running), tracking, security, controls over shipping areas, manufacturing processes and individual performance; it would reduce setup times and thereby improve efficiency, reduce unreported parts losses, and reduce database and key-entry errors. New employees could also be trained more efficiently and effectively with the new sys-

tem. They estimated that it would save the organization approximately \$1.2 million annually.

3. Keller's ERP Software Acquisition Process

Once the decision was made to proceed with the buying of a new manufacturing system, meetings were held and a team of twelve individuals was selected to be part of the buying process. The various areas represented on this team were finance, personnel, marketing, engineering, production (manufacturing and operations) and information systems. At the outset, it was decided that the team's task would be to find the very best integrated solution not only to meet Keller's immediate needs in manufacturing (on the shop floor), but also its long-term organizational needs. It was also decided that selection of the system would be user-driven. With this in mind, meetings with the line managers' at all three plants were arranged during which the team compiled a "wish list" of requirements for the new system. An employee advisory committee (EAC) was also formed about this time that brought representatives from various user groups together. Since Keller, was going to be introducing numerous changes to the organization, they realized that user buy-in from the various sectors would be very important to the successful outcome of the project. In addition to the EAC, Keller wanted to make certain that all employees were kept abreast of how things were progressing with the acquisition. Hence, weekly notices were published and distributed to all employees to keep them informed throughout the entire process.

In the initial phase of the acquisition process, certain members of the team began looking for companies that had developed this type of manufacturing system. Their principal reference was Manufacturing Systems Magazine in which was published a list of the top fifty manufacturing software vendors. From this list, they selected the vendors that had manufacturing execution systems (MES) and/or ERP (Enterprise Resource Planning) software. Then, they contacted the MESA (Manufacturing Execution Systems Association) Group which is an association of eleven member organizations. From this, they created their long-list of sixty-two vendors and subsequently compiled information on each of them.

At this point, a 'selection team' of five individuals was formed from the initial twelve-member acquisition team. These five individuals took on the task of selecting and evaluating potential vendors and their products. To assist them with this task, they refined the line managers' "wish list" and then expanded it to what became their list of critical requirements. This list was then used as one of their tools of evaluation of the various vendors' products. The 'selection team' proceeded to review the information that had been gathered on the sixty-two vendors. They eliminated thirty-two of them, then further reduced the list to fifteen vendors. These fifteen vendors were each sent a letter along with the list of critical requirements that Keller wanted the system to be able to do. After the team had received and evaluated the vendors' replies, each of the fifteen vendors were then invited to Keller's head office to meet with the acquisition team and present their software. Of the fifteen vendors, three submitted reports on their products and five came and met with Keller's team for a preliminary meeting and sales presentation. Each of the vendors was evaluated based on their demonstrations and the supplemental information that the selection team had gathered on them. At this point, the team also ran Dunn & Bradstreet (D&B's) financial reports on each of these eight vendors. They used these reports to rank each vendor based on their number of employees, financial stability, product, and other criteria. Further to this, six site visits were conducted to various vendor locations and customer installa-

tions. Additional references were also requested which they subsequently contacted. Some of the information that they received from these referrals provided the selection team with more insight into what they should be looking for, and they used this information to further refined their list of critical requirements.

After reviewing the D&B reports, their impressions from the demonstrations, the input that they had received from the site visits and the referrals, along with their critical requirements list, they reduced their list of eight vendors to a short-list of three vendors.

Keller then developed a comprehensive listing of specific performance criteria from their list of critical requirements. The selection team then used these requirements to evaluate vendor and software capability in detail. Further, Keller visited five companies who were using the systems from their short-listed vendors. Base on these evaluations (using their comprehensive listing of performance criteria and what they found during the five site visits), they found EMS (Effective Management Systems) to be the most capable to fulfill their information systems needs. Three of the selection team members then spent two days with EMS during which they learned more about their company, their strategic direction and their philosophies. All-in-all, the selection team determined that EMS would be a good long-term partner for them.

Keller then invited EMS back for intensive two-day demonstrations for the selection team, mill managers, and the EAC, a total of approximately fifty to sixty individuals. These individuals were then polled regarding their impressions of the demonstrations and the responses were overwhelmingly positive. The decision was then made to select EMS' packaged software solution.

4. Analysis: Keller's ERP Software Acquisition Process

The analysis of the case was done based on the data that was collected from various sources at Keller. The data collection endeavor focused on information that was pertinent to the acquisition process for the packaged software. Documentary evidence was provided in the form of reports, a request for information (RFI), memoranda, and newsletters. Other information was gathered using structured and semi-structured interviews. A total of four interviews were conducted. The participants included: VP of Information Systems, the VP of Personnel, the Corporate Materials Manager, and a Plant Manager. Each interview lasted approximately one hour and was audiotaped.

The case study was subsequently developed from the information provided during the interviews and from supplementary documents.

4.1 Data Collection

Each of the participants for Keller's case presented an overview of the process that was followed during the acquisition. Though brief, these summations allowed us to see six processes that outlined the ERP acquisition. The processes identified were: planning, information search, selection, evaluation, choice and negotiation and were evident in all of the participants' responses to the general question.

In the next section, we will be presenting each of the processes beginning with planning, information search, selection, evaluation, negotiation and choice.

4.2 Planning Process

For Keller, planning marked the beginning of the acquisition process. We observed within the data that 'planning' encompassed all of the activities that Keller deemed necessary to pursue this endeavor. Keller's planning process included meetings to determine schedules, priorities, participants; activities and tasks that

would need to be completed; types and sources of information to be sought; and so forth.

Although the term ‘planning’ was not specifically used in the responses to the general question, it was used in the responses to the question concerning the Planning process. In their responses to the general question, the interviewees spoke of tasks and activities that needed to be accomplished such as the development of a list of requirements and meetings with internal customers who would be affected by the new systems. According to Keller’s VP of Information Systems, “...a planning scenario as far as timing and dating, defining milestones” was developed and laid out in a Gantt chart using Microsoft Project Management.

As just discussed, data from the interviews and the supporting documentation shows that Keller’s acquisition team completed a planning phase. What can also be deduced from the data is that planning was continuous throughout Keller’s acquisition process. Planning was done iteratively as the acquisition process progressed, with the plan adjusting as warranted by ‘new’ information as it was received.

4.3 Information Search

What was most significant in the Information Search process was the ‘Sources of Information’. We identified two sources of information: internal and external. In their responses, the participants informed us that information was obtained from both sources.

As to the internal information sources, Keller availed themselves of information from various sources within the organization that included individual users and team members. These internal sources provided information primarily on the organization’s requirements at all of the levels and in all of the areas that the technology would impact.

External sources were sought to provide information about software solutions that might best meet their needs. Keller conducted a marketplace search, gathering information from competitors, trade publications, journals, a seminar, and professional associations. Keller used information gathered from these sources in the construct of their long-list of vendors.

In addition to the external sources listed above, Keller also gathered information from the visits that they conducted to some of the vendors’ sites and from vendor references.

4.4 Selection Process

Concurrent to the Planning process, several iterations of screenings were done during the Information Search process prior to arriving at a short long-list of vendors. Selection and evaluation criteria pertaining to both the vendors and their technologies were used to screen for vendors who could supply the type of software solution that Keller was seeking.

For the most part, we see the Selection process as having begun at the point when Keller received the RFI responses back from the vendors. According to the Corporate Materials Management, Keller’s Selection process was conducted in two phases. The first phase was conducted upon receipt of the RFIs from the vendors. With the RFI responses in hand, Keller proceeded with the ‘paper’ evaluation of the vendors’ packages, that is, they evaluated the responses as they were presented, at face value, on paper. More precisely, this entailed an initial cursory evaluation that was done by the VP of Information Systems that quickly eliminated more than half of the vendors on the long-list. The Acquisition Team after which they again reduced the number of vendors to half, thereby leaving fifteen vendors/software products for consideration, then conducted a second, more detailed evaluation of

the remaining vendors. At this point, the second phase of the Selection process began and it involved a second contact with the remaining vendors (via letter with a listing of Keller’s critical requirements), more in-depth vendor evaluations using Dunn & Bradstreet reports, in-house or telephone interviews with vendor representatives, basic product demonstrations, and visits to reference sites.

Among the factors that Keller considered important in the evaluation of the vendors were financial stability and size.

Another critical factor was the ability of the vendor to meet Keller’s requirements. Keller wanted a single vendor solution. Strategically, this was an important factor for Keller. Although this project was focused on manufacturing, Keller was also thinking of their future requirements in other areas of the organization such as finance.

The data shows that information was also gathered on some of the vendors and their software solutions (functional aspects) by means of visits to reference sites. Three reference sites were visited by some of the members of the Acquisition Team and all were found to be valuable sources of information.

According to the VP of Personnel, the objective of the Selection process was to create a short-list of vendors who would later be invited to do scripted in-house demonstrations.

4.5 Evaluation Process

From the data, we observed two distinct types of evaluation that were conducted by Keller: vendor and functionality. Evaluation criteria for both types were developed in the Planning phase of the acquisition process.

As part of the Vendor evaluation, each of the vendors was evaluated in terms of their financial stability, size, etc., based on reports from Dunn & Bradstreet as well as other information.

In Keller’s case, the Acquisition Team conducted the Vendor evaluation. In addition to the quantifiable factors (sales volume, the size of the company, etc.), according to the VP of Personnel, consideration was also given to qualitative factors such as the quality of the response, the appropriateness of the response to Keller’s particular needs, as well as the impressions made during ‘face-to-face’ meetings with the vendors.

The second type of evaluation that the Acquisition Team conducted focused on the functionality of the software. A high-level functional evaluation was conducted on the responses to the first RFI that Keller sent out. (After the evaluation of the responses to the RFIs, they were able to reduce their long-list of vendors from sixty-two [62] to approximately 30 vendors.) Following a second contact with the vendors for which they had sent out letters (a second RFI) with a detailed breakdown of the functionalities and capabilities they were seeking, Keller then conducted a more in-depth evaluation of the responses that they received. (After the evaluation of the responses to the second RFIs, they were able to reduce their short long-list of vendors from thirty [30] to fifteen [15] vendors.) They subsequently evaluated the software’s functionalities during standard or ‘canned’ software demonstrations. According to the VP of Information Systems, Keller invited the short-listed vendors to their facilities to conduct in-house demonstrations (sales presentations) of their proposed solutions. Of the fifteen vendors from the long short-list of vendors that were invited, only eight (8) of the vendors responded to Keller’s invitation—five of the vendors went to Keller’s facilities and did in-house presentations, while three submitted reports on their products.

According to the VP of Personnel, these in-house meetings/presentations were a means for the Acquisition Team to narrow the long short-list to a manageable few. It was also a method of educating the team about the various technologies that were avail-

able in the market place.

Lastly, Keller had the primary vendor conduct a scripted in-house product demonstration that was based on the criteria that they had developed to measure the software's capabilities in each of the fourteen critical areas.

Keller also used site visits and calls to vendor references as other means to evaluate the functional capabilities of the software.

During the Planning process, in preparation for the different stages of the Evaluation process, Keller developed questionnaires, the demonstration scenarios, and evaluation matrices using the functional and vendor criteria that they had established. The Acquisition Team assigned weights to each of the criteria and ranked them in the order of their importance.

One of the matrices that were developed (what we would call a 'Critical Requirements Score Card [CRSC]') was used during the Selection process for evaluating the RFI. This scorecard contained fourteen high-level criteria for evaluating the vendors and the functional aspects of the software packages.

4.6 Choice Process

The acquisition process culminates in the Choice process and consists of the 'final choice' or 'recommendation'. In Keller's case, the Acquisition Team arrived at a 'final choice' or 'recommendation' of the software solution. The responses to both the first and the second RFIs, meetings with the vendors, calls to vendor references, site visits, and standard/'canned' software presentations—all contributed information that enabled the Acquisition Team to narrow their lists of potential vendors to a primary choice. Then, for the purpose of confirming their choice, Keller invited the primary vendor in-house to do a scripted demonstration.

According to the Plant Manager, the Acquisition Team chose this particular vendor's software solution because it was the one (in the price range that Keller was looking at and for the size of company that Keller is) best able to meet Keller's current and future requirements, not only on the manufacturing side, but also in other areas of the company.

In addition to the CRSC that was used during the Evaluation process, a meeting was convened of all of the Steering Committee and Acquisition Team members to see if there was a consensus on which technological solution was the most appropriate for Keller. Input from the shop floor users who had participated in the Evaluation process was also factored into the final choice.

4.7 Negotiation Process

It became obvious to us, even while interviewing Keller's participants that there were two types of negotiations that transpired during the course of Keller's acquisition process. As the "primary negotiator", the VP of Information Systems conducted business negotiations with the vendors throughout the whole process on such things as cost and modifications.

He also conducted legal negotiations on the pricing and fine contractual details leading to the signing of the contract with the vendor.

The business negotiations were characterized as being informal, while the legal negotiations were characterized as formal. According to the VP of Personnel, they entered formal negotiations with their vendor of choice, EMS, after the Board of Directors approved the final choice.

As to how this process could be characterized, it appeared to us that the business negotiations were fluid throughout most of the process. As per the VP of Information Systems, Keller did "not pass up an opportunity to negotiate as [they went] along".

5. Lessons Learned

For Keller, the ERP acquisition process was an incredible 'learning experience'. As described by the VP of Information Systems:

"...all of us learned unbelievably from this experience. There was continual learning. We were running into phrases and statements that we'd never heard of before, especially since none of us were really trained MIS people."

Among the lessons that this experience taught them was that:

- (1) **they could do it!** Even though they took the long route in doing things, they learned that they could do it, on their own, without the help of outside consultants.
- (2) **they could adapt** and accommodate a lot of new information about technologies that they knew little or nothing about.
- (3) **they had to develop new procedures for dealing with ERP software acquisitions.** Since they had never previously undertaken a process for this type of software nor did they have in-house expertise in this area, the Acquisition Team had to 'construct' ('design') the process as they went along.
- (4) **they had to modify their existing purchasing procedures.** Since Keller's standard purchasing procedures were inadequate, they had to be substantially modified to suit the complexity of this acquisition.

The VP of Information Systems carefully documented the new procedures as well as this process so as not to lose what the organization had learned. Since this was a new experience, the VP of Information Systems wanted to leave behind some documentation explaining the rationale that was used and the decisions that were made for choosing this (the EMS software) technology over another. As a result, the Acquisition Team contributed a documented history of what transpired during this acquisition process to the organizational memory.

References upon request

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