HARVARD | BUSINESS | SCHOOL

9-616-019

REV: AUGUST 8, 2018

JAN HAMMOND

PAUL KALMBACH

ERIC BERNSTEIN

Ozark Feed and Ag Corporation: The ERP Decision

Sitting in his office on a cold night in December 2014, Christopher Page, CEO of Ozark Feed and Ag Corporation (Ozark), was trying to digest the results from the executive team meeting that had just taken place. He could hardly believe the numbers that were being discussed. It had been another record year for sales and profitability. The company's 2014 revenue and income were each 10% higher than in 2013, despite competing in an industry that was growing at 1%–2% annually with thin margins. Now, the sales team was projecting even higher revenue growth for 2015—no small feat for Ozark, an animal feed manufacturing company with over 650 employees and $600 million in revenue.

However, Page had reason for concern. The massive increase in volume had put pressure on the company's entire supply chain. Production facilities had reached capacity, the transportation network had seen an 18% increase in total cost per mile as it tried to deliver more and more product, and the sales team had started to report a noticeable decline in quality and customer service as measured by the number of quality complaints that were received—two key factors underlying Ozark's success for the last three decades. Without addressing these challenges, Page and the executive team feared that customers might start to "solve" the problem for them by moving their business to the competition. The meeting had focused on how they were going to address these challenges as they strove to achieve their growth potential in 2015 and beyond. Page and VP of Sales Darren Harper kept preaching to the organization that customers in this industry were too hard to come by to not capitalize on the opportunities currently available.

In preparation for the executive meeting, Leslie Daniels, the CFO, and Raj Johnson, the head of the IT department, had outlined three alternative proposals relative to implementing an enterprise resource planning (ERP) system. They believed that many of Ozark's supply chain challenges had arisen, in part, due to a lack of coordinated operational planning and oversight and that an ERP system could help the company execute on its strategy and manage its expected growth more effectively. They suggested that an ERP system could allow the company to more accurately track costs, improve budgeting and forecasting, better optimize supply chain processes, assist in transportation planning, help plan production requirements, formalize sales processes, and establish specific metrics against which performance could be measured. Daniels and Johnson also believed that the very process of implementing an ERP system would finally force the company to evaluate its processes and more formally structure the business—a necessity, they thought, for a company still being run, in many ways, like a small, single-plant enterprise. However, although agreeing that the company needed to move toward an ERP system, they disagreed on which of the three proposals represented the best way forward.

Professor Jan Hammond, Paul Kalmbach (MBA 2015), and Eric Bernstein (MBA 2015) prepared this case. It was reviewed and approved before publication by a company designate. Funding for the development of this case was provided by Harvard Business School and not by the company. Certain details have been disguised. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

As Page reviewed the three alternatives on his desk, he saw that implementing an ERP system could cost as much as 25%–50% of next year's projected EBITDA and would also require a significant time commitment from the company's top talent. Moreover, having recently reviewed the 2015 budget he knew that demands for capital investment exceeded $30 million over the coming year, including a new manufacturing plant, additional ingredient storage facilities, more marketing spend, upgraded transportation assets, and new business investment opportunities. As Page recalled his past experience with systems, he thought, "IT systems rarely solve the real problems, and I can hardly afford to have business disruption issues right now." He wondered, "Are Daniels and Johnson correct that implementing an ERP system would provide additional structure that would help manage the business better in the future, or would it just create processes and bureaucracy that would slow down the company's flexibility and decision-making?"

Industry Overview

The majority of Ozark products fell within the U.S. farm animal feed industry, described by IBISWorld Industry Reports as "highly competitive . . . principally based on price, product content and supply-chain management" and having a "strong element of unpredictability."[1] The primary reason for the intense competitiveness was that products were difficult to differentiate, which caused many customers to view the market as a commodity and focus primarily on price. In 2014, revenue for the U.S. farm animal feed industry was approximately $33.7 billion and profit margins were about $1.5 billion, or 4% of sales.[2] Industry veterans said that 50 years ago one could have driven across the central U.S. and seen a feed mill in every county. However, the capital intensiveness of the industry, the need to achieve scale as price competition increased, and decreasing margins had led to massive industry consolidation. In 2014, the top four players represented approximately 60% of industry sales; the remaining 40% belonged to a few regional companies and a fragmented group of niche players and farmer-owned cooperatives. The top competitors were established, well-capitalized, and vertically integrated, which allowed them to put additional downward pressure on prices but also maintain overall margins across their multiple business units. For example, Cargill, the largest private company in the U.S.,[3] had total global revenues of $134.9 billion and competed in industries ranging from food and agriculture to finance and industrial products.[4] The top four competitors commanded well over half of the market, and all relied on ERP systems to drive their organization. (See **Exhibit 1** for industry information.)

Ozark Feed and Ag Corp

Company Background

Founded in 1981, Ozark manufactured animal feed for commercial and companion animals located across the southern Midwest. The company employed approximately 550 people in eight manufacturing facilities and offices located in Missouri, Oklahoma, Texas, and Arkansas, and had a 90-person sales team spread across its sales territory. The majority of Ozark's business was manufacturing, selling, and distributing commercial animal feed to livestock producers who raised cattle, hogs, poultry, and dairy cows. Commercial feed was a complete nutritional diet that was formulated by nutritionists with PhDs in animal science, manufactured under strict quality standards, and delivered in bulk truckloads directly to farms.

Beginning in 2005, the company started building a more consumer-focused business by manufacturing and selling feed for companion animals such as horses, pets, backyard poultry, and others. Companion animal feed was primarily sold to end consumers in 12- to 50-pound bags through a dealer

network of retail stores—a network that had been developed by the sales team over the prior decade. The companion animal business was the company's first foray into branded products that required specific branded packaging, consumer awareness, and B2C (Business-to-Consumer) marketing. Entering the companion animal business had forced the company to adapt many of its processes to serve its new customers. Over the past five years, Ozark's companion animal business had been growing at a compound annual rate greater than 20% and now represented about a fifth of Ozark's total revenue.

Company Culture, Processes, and IT Infrastructure

Ozark prided itself on having a very entrepreneurial culture where decisions were made quickly and every team member was charged with one primary task: taking care of the customer. Ozark had distilled taking care of the customer into three core values: (1) The customer is always right; (2) The Golden Rule: treat everyone as you want to be treated; and (3) Quality, Quality, Quality. Ozark managers believed that by providing a consistently high-quality product and outstanding customer service, they could differentiate themselves and win the customer.

Executives constantly reminded each other of the company slogan: "We only want profitable growth." The pursuit of profitable growth in a deeply competitive industry had driven the company to remain as lean as possible. People were expected to go above and beyond their job descriptions to serve the customer and solve problems. However, the goal of having an ultra-lean business created a lack of depth in the management pool, which in turn challenged management capacity in the company's recent high-growth phase. Page observed:

> We've always tried to maintain a flexible, entrepreneurial culture and have avoided developing detailed, formal processes; hiring extra administrative staff; or implementing any bureaucracy that might diminish the speed of decision-making and reduce the company's ability to respond quickly and creatively to customer needs and competitive threats. For example, the company has almost no explicit decision-making structure. When a decision needs to be made, we expect team members to take action quickly and on the spot. If a decision is outside the scope of an employee's expertise, upper-level managers quickly step in, make a decision, and move to execution.

Lean thinking had allowed many ad hoc, manual processes to develop, partially supported by a home-grown IT infrastructure. (**Exhibit 2** outlines Ozark's ordering procedure and illustrates the mix of manual processes and basic IT utilized throughout the company.)

Historically, the company's IT strategy reflected its entrepreneurial culture and focused on the system's utility rather than the system's strategic design. Page believed that the company's system design needed to be as flexible as possible to handle the unique processes used by executives to manage the business in an entrepreneurial, highly responsive manner. The primary IT system, known as "Pluto," had been built by the company's IT team over 15 years, and was run on a small in-house server. It was based on the computer language Clarion and had only recently been redesigned to store information in a Microsoft SQL database. Despite being based on a fairly limiting software language, Pluto enabled the company to build unique capabilities into its system for pricing, order entry, and other key aspects that the company saw as a competitive advantage. For example, Pluto's pricing system had been built to allow Ozark to link price quotes to the company's commodity-hedging strategy and positions on a real-time basis. IT manager Raj Johnson noted that in addition to the home-grown Pluto system, the company also had acquired off-the-shelf software tools to conduct business on a daily basis (see **Table A**).

Table A

System	Purpose
Microsoft Dynamics Solomon	Record financial transactions and reporting
Agridata	Industry-specific purchasing software
HighJump	Warehouse management system (WMS)
WEM	Manufacturing execution system (MES) to run plants

Source: Company executives.

Johnson noted, "The warehouse management and purchasing packages we bought and customized slightly are considered 'best of breed' systems offering very industry-specific functionality unlikely to be found in generic integrated packages."

In addition to these systems, the company managed other operational and administrative tasks without specific software, including transportation management, manufacturing resource planning, plant inventory management, human resources, budgeting, and forecasting. These processes were performed manually by a supervisor using business judgment developed over years of experience, often with the help of an individually developed Microsoft Excel spreadsheet. The company employed four IT professionals who designed and developed the Pluto system, operated the server hardware, and provided general PC support to the company's employees. IT team members were resourceful troubleshooters and spent much of their time upgrading Pluto and trying to keep the various stand-alone systems communicating properly with each other. Only Johnson had any exposure to ERP software in a business operating context.

Johnson believed that the current systems provided the company with significant flexibility and kept IT costs at a minimum. He defined flexibility as "the ability to make changes to the system whenever a manager changed a process to meet a business need without a lot of time-consuming approvals and documentation." However, Johnson worried that the system might not be able to support the increased requirements being placed on it at the company's current growth rate. Leslie Daniels, CFO, said it this way:

> I definitely recognize the value provided by the current systems' flexibility to support our unique processes, which have enabled us to better serve our customers. However, as we grow, I don't believe we will realize the typical SG&A cost advantages of scale. Our administrative processes are essentially a variable cost and we will need to add back-office staff in proportion to our growth to manage these processes.

Page, on the other hand, worried that if he gave up the internally developed system, he would lose business flexibility, which could hurt the company's ability to serve customers.

What Is ERP?

ERP software had been defined in numerous ways since it was originally developed in the 1980s and 1990s. Gartner, a global technology research firm, defined ERP as follows:

> ERP is a technology strategy that integrates a set of business functions like finance, HR, purchasing and operational aspects, such as manufacturing or distribution, through tight linkages between operational business transactions and financial records. An ERP [system] can also provide analytic applications based on the transactional data set that is

> generated by the functionality contained within the suite. Most ERP solutions enable the flow of information across the organization, in end-to-end business processes, through a comprehensive set of interconnected modules.[5]

Others defined ERP as the "backbone technology" of a company that integrated accounting, finance, human resources, order management, and manufacturing within one system yet allowed additional capabilities to be "bolted on" through add-on modules.[6] Another definition referred to ERP as the "operational and transactional system of record"[7] for a business. Using a more transactional definition of ERP highlights the core functionality that any ERP system must be able to provide—transacting and recording a company's business operations from order entry to general ledger.

Effectively, ERP could be viewed as a group of stand-alone, yet interdependent, software modules that spanned a variety of functions in an organization with the ability to record transactions, standardize and control processes,[a] and consolidate data into reports that management could use for planning, financial reporting, risk mitigation, and decision-making. By defining ERP more broadly as a strategy, Gartner allowed for the incredible diversity that exists within the ERP market. No two ERP vendors had the same options, functionality, or available capabilities. (**Exhibit 3** shows the wide array of capabilities within the Financial and HR modules for a sample group of ERP vendors.)

New technologies were constantly being developed in the ERP space. Recent additions included cloud computing (software as a service), mobile user interface, and platform as a service.[b,8] Cloud computing, especially, was creating a significant buzz in the ERP market. SAP and the other major players in the industry were working on cloud-based solutions to compete against the dozens of start-ups that were entering the market. Many companies were looking at the reduction in on-site infrastructure and improved usability[c] enabled by the cloud and were weighing those benefits against the lack of information control.

Originally, ERP's capabilities included only accounting, human resources, order management, and manufacturing. Over the years, the scope of ERP expanded and numerous modules were added.[9] As of 2015, the modules that made up a complete ERP were less standardized across vendors. Most vendors included a variety of different modules in their software offering, and many recent entrants to the market like Red Prairie (WMS) and Salesforce.com (Customer Relationship Management [CRM]) offered stand-alone products to complement the main ERP vendor offerings. A company might have purchased a core ERP system, and then purchased a different supply chain advanced analytics package. Companies typically pursued this strategy when the core ERP system did not have some advanced or specific functionality that was critical to establishing and maintaining its competitive advantage. Many executives became accustomed to picking individual modules from a variety of vendors to best meet their companies' needs. Many Fortune 500 companies chose SAP, the largest ERP software company, as their core system, but chose a variety of other vendors for their manufacturing or supply chain management

---

[a] The benefit of process standardization came in two forms. First, software was designed based on the best practices of the vast number of organizations surveyed by major ERP vendors. Therefore, a software implementation would standardize a company's processes by marrying them to the best practices built into the software. Second, the process of going through an implementation forced a company to examine its current processes more closely, and in many cases contributed to a decline in exception handling and more standardized processes upon completion of the implementation.

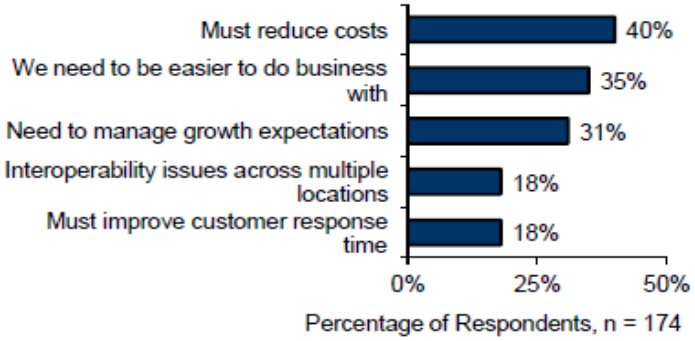
[b] Platform as a service was where a vendor provided the backbone ecosystem (software package) that other software modules could plug into. The Apple app store was an example of a platform as a service model. Apple provided the "platform" (the operating system and ecosystem) for apps and then allowed third-party developers to design the apps that could be easily "plugged into" the platform on the user's device.

[c] Cloud computing was often viewed as easier to use because software updates, installation, troubleshooting, and infrastructure management were handled by the company that hosted the software, rather than the user.

software. (**Exhibit 4** provides a framework that illustrates some ERP software package options and **Exhibit 5** depicts how SAP laid out its primary business-solutions ERP framework.)

As of 2015, practically every large company (companies with over 1,000 employees) used an ERP system to transact their business and assist with a wide variety of management activities.[10,11] However, ERP system usage was not confined to large companies. According to a *CIO* magazine survey of CIOs and IT managers in hundreds of small to midsize companies, "More than 85 percent of respondents agreed or strongly agreed that their ERP systems were essential to the core of their businesses."[12] In 2013, annual sales of ERP systems were $25.4 billion, 3.8% greater than the previous year (see **Exhibit 6**).[13] According to an Aberdeen Group report, 84% of surveyed midsize companies (100–1,000 employees) utilized ERP software in their businesses.[14] (**Figure 1** outlines the primary drivers of midsize firms' ERP strategy.[15])

Figure 1 Pressures Driving ERP Strategy in Midsize Companies (2012)



Source: Nick Castellina, "A Guide for a Successful ERP Strategy in the Midmarket: Selection, Services, and Integration," Aberdeen Group, May 2012, p. 7, http://public.dhe.ibm.com/common/ssi/ecm/en/sml12349usen/SML12349USEN.PDF.

Selecting an ERP System

Businesses with different processes required different functionality from their ERP systems, which led to segmentation of the ERP market. Most industry experts segmented the core ERP landscape into three different tiers (see **Exhibit 7**). The tiers were differentiated primarily based on system capabilities, features, functionality, vendor size, and the number and type of industries the system targeted. Most large companies utilized a tier-1 vendor simply because the smaller vendors did not have the built-in capabilities to manage multiple sites, currencies, business units, languages, and hundreds to thousands of concurrent users. Midsize and smaller companies were able to select from tier-1, tier-2, and tier-3 vendors based on their specific needs. The software package selection determined not only the system capabilities for the company as it grew, but also the number of customizations required to fully implement the system.[16]

Developing an ERP Strategy as a Midsize Business

Due to a lack of experience in the ERP space, Daniels and Johnson decided that they needed help exploring the ERP landscape. They determined that the best course of action was to meet with several consultants who had experience guiding midsize companies through the entire ERP preparation, selection, and implementation process. After multiple rounds of discussion with several industry-leading mid-market consulting firms and ERP experts, they identified the following questions as key decision areas for Ozark.

1. How should the company think about its overall IT strategy?

One of the key concepts that emerged from their meetings was that the company's overall business strategy should dictate its IT strategy. If these two strategies were at odds, the company risked diluting its competitive advantage by introducing processes, bound by software, that were not conducive to effectively running the business. The consultants stressed that an ERP implementation was as much a process implementation as it was a software implementation. They also highlighted the business strategy decision that they believed would most affect ERP strategy—whether the organization needed to be fully integrated or whether different business units could operate on a more stand-alone basis. For example, if a manufacturing company was planning production and distribution across multiple facilities and needed to have integrated production to service national accounts, then they would need an integrated ERP solution that could more easily transact across a diverse asset base. However, if the company had a strategy where each facility was treated as a stand-alone entity that basically controlled its own processes, it was not as critical for the company to have an integrated system across all plants. Instead, the company might have chosen to pursue a best-in-class software strategy that focused on matching each aspect of the business (for example, implementing software that was tailored to the different manufacturing processes used in different plants) to the software that would best meet its needs and preserve its competitive advantage.[17]

Another business strategy dimension that the consultants emphasized was capability modeling. Every business had specific capabilities that were essential to its competitive advantage, and also had other processes that were less unique and could thus be performed as shared services[d] across business units. For example, accounting could be performed individually by each business unit. However, if the services performed by accounting were not considered part of the competitive advantage, accounting would be most efficiently managed as a shared service that was centralized and standardized by a core ERP system across all business units. Integrating[e] a shared service across business units often improved business processes, provided cost savings, and reduced redundancy. However, integrating a core capability with a standardized IT solution could overly restrict the business and hurt its competitive advantage. For example, a business might have very specific sales and distribution capabilities that enabled it to serve its customers in a more competitive way. In order to protect that competitive advantage, a more adaptable, customizable software module might be selected for these crucial processes rather than trying to fit them to a standard WMS or CRM module that came with a larger ERP package. On the other hand, a firm's human resources, accounting, and manufacturing processes might be fairly standardized, and integration into a broader software strategy would be beneficial. Therefore, the consultants stressed that capability modeling for a company (from the perspective of which capabilities were part of the company's "secret sauce" and were essential for future growth) was critical to setting IT strategy.[18]

> If someone is signing up to grow the business and the growth numbers are enough that it will pay for the extra cost of best-of-breed modules vs. a wholly integrated ERP solution, then you should consider best of breed—but only if it matches the strategy of the organization. Too many people don't even consider this option, and SAP or Oracle sure won't tell you.
>
> — Jim Walsh, former CIO of a Fortune 500 Company[19]

---

[d] Shared services as defined here are services such as HR, accounting, finance, and other internal business processes that are utilized by multiple business units and are not a driver of a company's competitive advantage.

[e] Integration is defined in this context as the practice of standardizing processes for shared services within a business and utilizing ERP software to increase efficiency while sacrificing certain functionality.

2. When is a company ready for ERP?

Several consultants that Ozark met with mentioned that an organization rarely decides to pursue an ERP implementation voluntarily. However, all of them stressed that knowing when one's organization was ready to accept the ERP challenge was critical. Every consultant agreed that the two most important elements of readiness were management support and allocation of top people. ERP implementation was widely recognized as a painful process, and without management prioritization and avid support the likelihood of success was low. In addition to management support, an organization should have its best people managing process design and implementation because the resulting system and processes "are the product of the person who created them."[20] The struggle for firms was that assigning a company's best people to an ERP implementation led to lost productivity in the employee's primary jobs. However, several consultants mentioned that the best people for an implementation were not always the all-star performers. Instead, they might be the most detail-oriented people or the people with a certain characteristic or skill associated with problem-solving. It was important to match the team to the needs of the project. For example, an all-star plant manager might be really good at motivating people, but they might not be detail oriented. If you were to ask this plant manager to design the interaction between order entry and the manufacturing planning process he would not be able to design them at the level of detail required to execute the system change. Instead, a plant's process engineer might be a better choice.

An organization had to be ready to deal with the challenge of people allocation in order to make the most of the ERP implementation process. One consultant utilized the CMMI (Capability Maturity Model Integration) framework (see **Exhibit 8**) for thinking through a company's readiness. CMMI described the maturity phases that a company went through as it developed additional capabilities pertaining to business processes. Applied to ERP implementation, the consultant pointed out that a business in phase 1 was barely able to control its current processes and was not ready for an ERP implementation. However, a company in phase 3 or 4 had a good handle on its current processes and should be able to make the most of process upgrades and implementation of an ERP system.[21,22]

> No one wants to do an ERP unless they have to. The stat is 75% of ERP implementations fail (e.g., significant cost and/or schedule overruns or major service interruptions), and I think that 90% of those are because of management inefficiencies and lack of management support.
>
> — Jim Walsh, former CIO of a Fortune 500 Company[23]

> There are really three primary reasons companies do an ERP implementation:
>
> 1. The company is not getting scale advantages from SG&A as it grows revenue.
> 2. The company can't manage its growth or scale with the current processes.
> 3. The company's current software provider is unfavorably changing in some way.
>
> — Jim Walsh, former CIO of a Fortune 500 Company[24]

> Before going through an implementation process, every organization needs to consider its current life stage—are you mature enough to do this? If you're young and growing quickly, you may not be ready yet. You need to have a certain amount of management depth.
>
> — Tony Sansone, Former CIO and Partner at Tatum consulting, a Randstad company[25]

3. How should a company select its ERP system?

According to several CIOs that Ozark consulted, most companies did not have the expertise or breadth of knowledge to conduct an ERP search on their own. Therefore, a consultant should be brought in to help manage the process. The basic search process was fairly standardized across most consulting firms. The firm first spent a few weeks mapping out the current business processes in order to understand what capabilities a system needed to have. An ERP implementation was an opportunity to upgrade many business processes, but it would also lock in those processes. Therefore, the next phase was critical. Good consultants used their expertise to guide companies through a future business state discussion. How was the company's strategy expected to change in the future, and what capabilities would it need? It was important that the business not build its new system around the current processes, but rather decide what process improvements needed to be made in order to create the processes that would best support the future business.[26] Much of a new system's benefit started to take shape during this stage. Once the future state of the business was tentatively outlined, the consultant would bring in several software packages for the company to demo based on the required capabilities and the IT strategy that the company had chosen. Most companies had only a limited set of options given their requirements. After demoing the various options and identifying each system's pros and cons with the help of a consultant, the company selected the system that it believed was best suited to its strategy.[27]

> You must build the system around the future business processes that are going to support the business strategy. This is where consultants bring value. They have seen dozens of business processes and can help the company upgrade its processes based on established best practices.
>
> — Daniel Gingras, Former CIO and Partner at Tatum consulting, a Randstad company [28]

> A lot of companies run SAP, but a lot of companies also use SAP at the consolidation level and use best-of-breed systems at the operating level.
>
> — Jonathon Gross, VP at Pemeco Consulting[29]

4. What does implementation look like?

Most failures to install a new ERP system occurred during the implementation phase. The various consultants all had their own methodology for guiding a company through the process of actually implementing software. The software implementation, in theory, was a straightforward task. The business processes had been mapped in the planning stage (for example, general ledger account mapping) to how the software actually worked, but in some cases customizations of the software were necessary to match existing business processes that the company considered "essential." However, 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.

First, a company had to figure out how to engage its best people and motivate them to be major contributors to the project. There was going to be pain, and the business had to have a plan for dealing with it in a constructive way.[30] Often change-management techniques were combined with monetary incentives and expectation setting before the project launch to ensure engagement and commitment to the development process. And, since ERP projects could run longer than expected (sometimes a total of two to three years), the implementation project team could get tired, demoralized, and/or stale, and the company must find ways to reinvigorate the effort.

Second, the implementation required a detailed execution plan. An implementation team needed detailed milestones to keep them on track, detailed process mapping to ensure that tasks were being completed correctly, and detailed steps to follow. Loosely defined objectives and poor planning almost always led to failure. Several former CIOs Ozark consulted mentioned that the implementation plan was the most critical piece of the puzzle.

Third, an implementation had to be exhaustively tested before it went live. The best implementations often failed at the end because they were not tested properly. No matter what level of detail was pursued throughout the process, there were always bugs that could be found only through sufficient testing. Many with ERP experience urged companies to implement an ERP system in stages, using a less critical, smaller, or geographically contained operating unit as a prototype to identify the "hidden" bugs and anomalies, and then rolling it out gradually to the larger, more critical operating units. However, sometimes this was not possible in a highly integrated, single-sector enterprise like an airline or retail bank. Simple in concept, implementation—like business strategy—was all about execution.

Finally, the training challenge was often underestimated. Since ERP implementations often ran much longer than planned, the supervising executives and the project team often become anxious (or pressured) to "get on with it and go live." In their haste to do so they might fail to realize how significant a change the new system and processes would be for employees who had spent their entire careers doing things a certain way. Occasionally the changes were so great that they were incompatible with the company's long-established culture, and employees were unable or unwilling to actually use the finished product.

> No one really likes change. Most of what an ERP implementation requires is change management. Fundamentally, that's where success is determined. Never underestimate the people side.
>
> — Tony Sansone, Former CIO and Partner at Tatum consulting, a Randstad company[31]

> The implementation of ERP can, when done right, revitalize a business by streamlining and synchronizing its separate departments into one unified, precise and easily handled software system. On the flip side, a business can become paralyzed by a poorly selected or managed ERP implementation that is unable to support the company's requirements and processes. If the ERP system is not a good fit with an organization's needs, it can create business process challenges and obstacles.
>
> — Panorama Consulting Solutions[32]

5. What benefits can a company expect from ERP?

According to the experts, companies benefited from an ERP implementation in two important ways. First, most companies expected to see a decrease in SG&A or at least a decrease in SG&A as a percentage of revenue as the organization scaled. Many business cases were originally built around such SG&A saving propositions, which were widely touted by many vendors. However, other experts cautioned that while traditional SG&A costs might yield savings, the ongoing IT costs were often much higher than expected in terms of personnel, hardware, communication costs, "help desk" support, and the ERP vendor's charges for ongoing system changes and software maintenance (a function of the

pricing model[f] used by the vendor and whether the client had access to the source code[g]), and could sometimes outweigh the SG&A savings.

Second, all the consultants emphasized that the greatest benefit generally occurred through process improvement. The practice of going through each key business procedure and trying to identify ways of improving it within the overall implementation process generated significant returns. For example, a company might benefit greatly from being able to collect accounts receivable (AR) in five fewer days because invoices were sent daily instead of weekly and accounting received accurate reports regarding outstanding balances. AR collection was one simple example of the process improvements that a company could achieve through a properly executed ERP implementation. These improvements often translated into real economic value that dwarfed the gains received from SG&A reduction.

> ROI generally comes out of the business case . . . but don't look at just the ROI; take a more holistic view of where you want the business to be in the future. Often a company realizes that it simply can't manage the business going forward without an ERP system. You may also need to upgrade talent, which is costly, but benefits the business in the long term. Most of the time savings come from the operations side rather than the reporting side.
>
> — Jonathon Gross, VP at Pemeco Consulting[33]

> Remember that the benefit of an ERP is an enterprise benefit. That doesn't mean that every division or every person will feel like they benefit, and oftentimes they may be right. So you have to be very careful when thinking about the scope, depth, and process for the implementation.
>
> — Daniel Gingras, Former CIO and Partner at Tatum consulting, a Randstad company[34]

Proposals

After spending several weeks discussing these various issues both internally and with the consultants, Daniels and Johnson made three proposals for Ozark.

Proposal 1 Go through the business strategy, process design, and ERP vendor selection process with one of the consultants and ***fully implement an ERP software package***. This would be appropriate if Ozark executives decided that the benefits of upgrading the entire IT infrastructure outweighed the challenges. The decisions laid out above would still need to be made surrounding strategy and implementation. For example, what modules should the company choose to implement? Should Ozark choose one vendor for all modules or pursue a best-in-breed approach? The cost and time requirements for implementing a full ERP system ranged broadly depending on the vendor chosen. Based on preliminary discussion with consultants, Ozark estimated that a decision to implement SAP would cost $10–$12 million, significantly more than the $3–$5 million for Oracle or Microsoft Dynamics. The complete implementation of any of these systems was projected to require 9–18 months. This proposal

[f] Enterprise-level software was priced in several ways, the most common being a "per seat license" whereby the software vendor's price to a specific client would depend on the number of employees who would be using or have access to the program or application. In practice this meant there would be an initial price for the software based on the number of current employees, and if the client company grew over time and added more users they were obligated to make additional payments to the software vendor for each additional user.

[g] Source code refers to the actual instructions written by a programmer to tell a computer what steps to follow to perform the desired task or function. Any change or customization to what a computer application or program was supposed to do required that the source code be modified. Many, if not most, vendors of enterprise software did not allow their clients to buy or have access to their source code. This required the client to hire the vendor (or an approved installation partner of the vendor) to make any changes needed to customize the program for that particular client's needs during the initial installation process, ***as well as anytime in the future*** that the client might want to make a change to the program.

was favored by Raj Johnson, the head of IT, who, after visiting with a number of other CIOs of midsize companies, saw the benefits of a full ERP implementation and was comfortable that, with the appropriate staff additions, his IT team was up to the task.

Proposal 2 Go through the business strategy, process design, and ERP vendor selection but ***implement only selected modules of the chosen ERP system***. Ozark could mix and match a variety of different options if management did not believe a full system overhaul was right for the company at this time. The company could go through all the preliminary steps and select an ERP package, but only partially implement it. For example, Ozark could choose Microsoft Dynamics and start by implementing its accounting package and then implement additional modules in the future. This option would allow the company to gain implementation experience without disrupting the entire business and was expected to cost $250,000–$500,000 per module. The downside was that it would drag out the implementation process, spreading business disruption over a longer period, and might increase overall costs. This proposal was favored by Leslie Daniels, the CFO, who was worried about the company's ability to fund a full ERP installation in addition to the other capital needs required to support the business's growth opportunities, but who saw significant G&A cost savings in installing the integrated accounting modules.

Proposal 3 The third option for the company was to ***purchase one or several best-of-breed stand-alone functional packages*** to fill in gaps in the current IT infrastructure. For example, if executives believed that the 18% increase in freight costs per mile was the result of the transportation department's manual processes, they could implement a transportation management system (TMS) that could be integrated into a core ERP system in the future. Each single best-of-breed subsystem was expected to cost around $100,000–$1 million, depending on the module selected and the capabilities required, and was projected to require three to six months to implement. Several operating executives favored this approach, hoping their departments could get such a stand-alone package.

Of course, Ozark could also choose not to implement any ERP software package at that time. This would make sense if the company thought that its growth challenges and the other capital expenditures required by the business were more important than an ERP system at the time, or if the company thought the organization was not ready to allocate the people required for an implementation. Ozark could still go through some of the preliminary steps such as IT strategy development and process mapping in preparation for a future implementation. Perhaps Ozark could realize significant cost savings simply by standardizing and improving business processes and continue to use the current systems?

What Should Ozark Do?

Page looked up from his desk and saw that it had just started to snow. It was getting late, yet after reading through the three proposals, he felt no closer to a decision. In the back of his mind was the story of one of the top industry competitors that had recently tried to upgrade its ERP system from JD Edwards to SAP. After 12 months of implementation, it went live with SAP and could not ship certain products for over 30 days because the system was not working correctly. It created a huge issue with customers, and the company ended up scrapping the entire system and returning to JD Edwards. Millions of dollars were lost without even counting the lost customers or brand value. Ozark had hired several salespeople from the competitor who were frustrated by the issues. As Page recalled this, he recognized all the more clearly the impact that an ERP decision could have on the company. In the words of one of the consultants, "ERP is a 'bet-your-business' type of decision."[35] All three proposals had clear pros and cons for the future of the business. At the end of the day, Page knew that his job was to enable the company to meet its growth potential while managing business risk. Which proposal best balanced these two tensions?

Exhibit 1 Farm Animal Feed Industry Overview

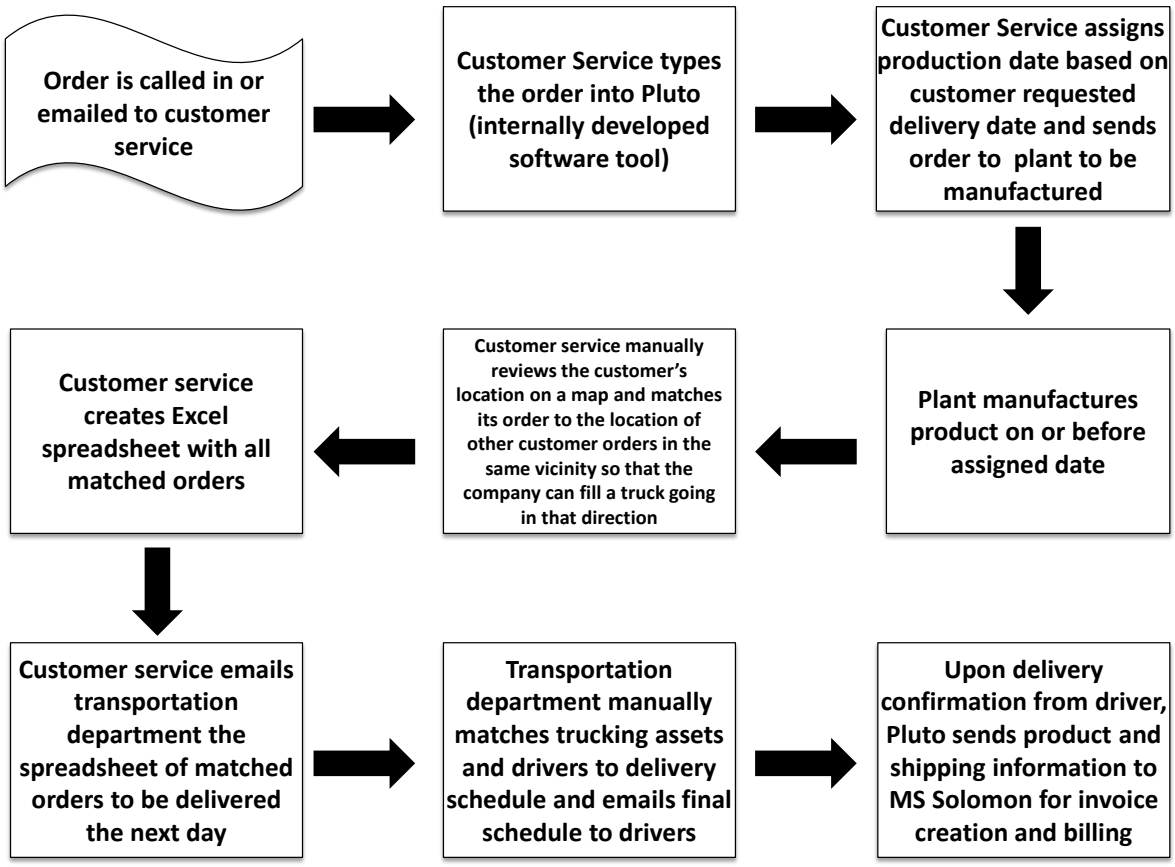
Key Industry Statistics	
Revenue	$33.7B
Profit	$1.5B
Profit Margin	4.5%
Annual Growth ('09-'14)	0.3%
Expected Growth ('14-'19)	2.9%
Exports	$1.4B

Top Competitors	**Market Share**	**ERP System**
Archer Daniels Midland (ADM)	28.7%	Oracle
Cargill	17.1%	SAP
Purina Mills	9.0%	JD Edwards
CHS Inc.	5.4%	JD Edwards
Ozark Feed and Ag Corp	~1%	
% of Industry Consolidated in Top 4	60.2%	

Product segmentation in farm animal feed industry	
Dairy and beef cattle feed	39.8%
Poultry feed	37.7%
Swine feed	21.5%
Other feed	1.0%

Source: IBISWorld, "Farm Animal Feed Production in the US Industry Report OD4613," October 2014, p. 23.

Exhibit 2 Walk-through of Order Entry Process



Source: Casewriter, based on company interviews.

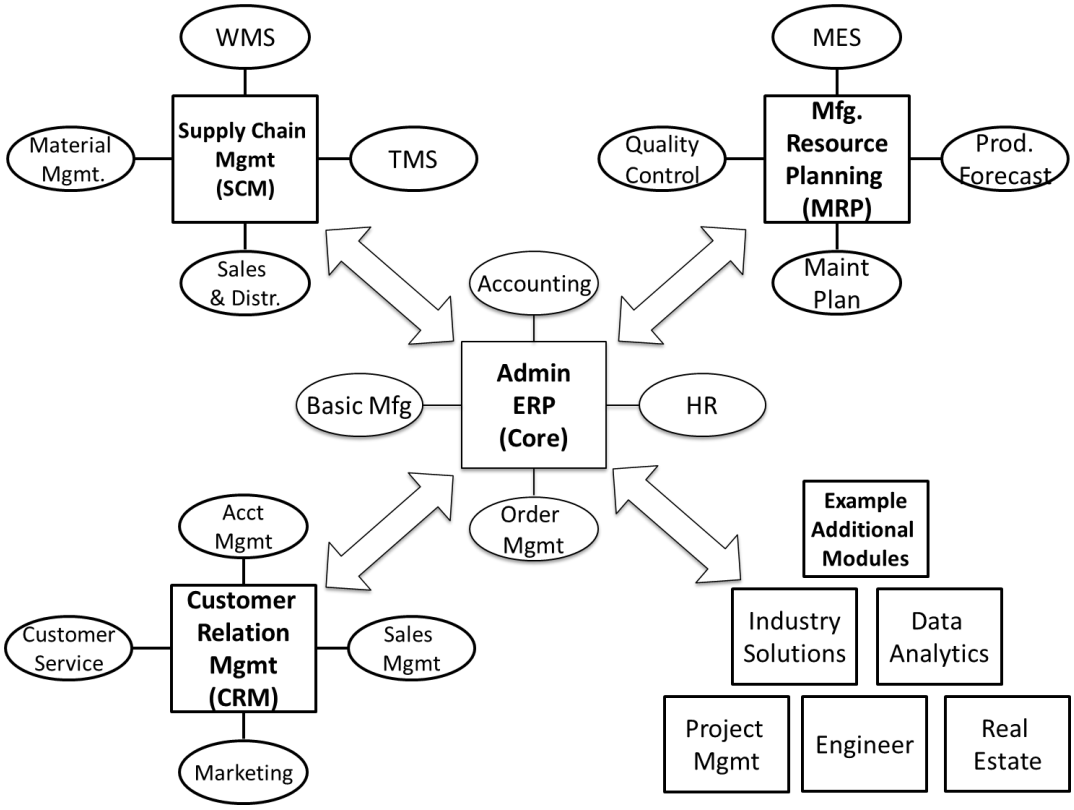
Exhibit 3 Analysis of Financial Management and Human Capital Modules in Select Vendor Offerings

	Core Financial Management Applications									Human Capital Management															
	General Ledger	Accounts Payable	Accounts Receivable	Purchasing and Purchase Requisitioning	Fixed Assets	Project Accounting	Cash Management	Treasury	Financial Reporting	Personnel Administration	Benefits Administration	Payroll	Employee or Manager Self-Service, , HR Call Center Tools	Workforce Planning	Talent Acquisition	Performance Appraisals	Competency Assessment	Career Development	Succession Management	Learning	Compensation Management	Labor Scheduling	Time & Attendance	Leave/Absence Management	Task/Activity Management
ADP GlobalView										P	A	P	P	P	A	Y	Y	Y	Y	A	A	P	P	P	P
Advanced Business Sol'ns e5	Y	Y	Y	Y	Y	Y	Y	**N**	Y																
Advanced Business Sol'ns eFinancials	Y	Y	Y	Y	Y	Y	Y	**N**	Y																
Advanced Business Sol'ns OpenAccounts/OpenHR/OpenPeople	Y	Y	Y	Y	Y	Y	Y	P	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	**N**
Deltek Costpoint	Y	Y	Y	Y	Y	Y	Y	**N**	Y	Y	Y	Y	Y	Y	P	P	P	P	P	P	Y	Y	Y	Y	Y
Deltek Maconomy	Y	Y	Y	Y	Y	Y	Y	**N**	Y	**N**	**N**	P	**N**	Y	Y	**N**	**N**	**N**	**N**	**N**	Y	Y	Y	**N**	Y
Deltek Vision	Y	Y	Y	Y	P	Y	Y	**N**	Y																
Epicor 9/Epicor HCM	Y	Y	Y	Y	Y	Y	Y	**N**	Y	Y	Y	P	Y	**N**	Y	Y	Y	Y	**N**	Y	**N**	Y	Y	Y	Y
Exact Globe Next/Exact Synergy	Y	Y	Y	Y	Y	Y	Y	**N**	Y	Y	Y	Y	Y	Y	**N**	Y	Y	**N**	**N**	Y	**N**	Y	Y	Y	**N**
FinancialForce Accounting	Y	Y	Y	P	P	Y	Y	P	Y																
Infor SunSystems	Y	Y	Y	Y	Y	Y	Y	**N**	Y			P													
Infor Lawson Financials/Infor Human Resources	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	A	Y	Y	Y	Y	Y	Y	Y	A	Y	Y	Y
Kronos Workforce Central										Y	Y	Y	Y	Y	Y	Y	Y	P	P	P	Y	Y	Y	Y	Y
Microsoft Dynamics AX	Y	Y	Y	Y	Y	Y	Y	P	Y	Y	Y	Y	Y	P	Y	Y	Y	Y	Y	Y	Y	P	Y	Y	P
Microsoft Dynamics GP	Y	Y	Y	Y	Y	Y	Y	P	Y	Y	Y	Y	P	P	Y	Y	Y	Y	P	Y	Y	Y	Y	Y	Y
Microsoft Dynamics NAV	Y	Y	Y	Y	Y	Y	Y	P	Y	Y	P	P	P	P	P	P	P	P	P	P	P	P	Y	Y	Y
Microsoft Dynamics SL	Y	Y	Y	Y	P	Y	Y	**N**	Y	P	P	Y	P	P	P	P	P	P	P	P	P	P	P	P	P
NetSuite ERP	Y	Y	Y	Y	Y	Y	Y	P	Y	Y	P	Y	Y	P	P	P	P	P	**N**	P	P	**N**	Y	P	Y
NorthgateArinso euHReka										P	P	P	Y	P	P	P	P	P	P	P	Y	P	P	P	P
Oracle E-Business Suite	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	A	Y	Y	Y	Y	Y	Y	Y	A	Y	Y	**N**
Oracle PeopleSoft	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	**N**
Sage 300 ERP	Y	Y	Y	Y	Y	Y	Y	P	Y	Y	Y	Y	Y	P	P	P	P	P	P	P	P	P	P	Y	Y
Sage ERP X3	Y	Y	Y	Y	Y	P	Y	A	Y	Y	Y	Y	Y	**N**	**N**	**N**	Y	Y	**N**	Y	**N**	**N**	Y	Y	Y
SAP Business ByDesign	Y	Y	Y	Y	Y	Y	Y	**N**	Y	Y	**N**	Y	Y	Y	P	P	**N**	**N**	**N**	**N**	Y	Y	**N**	Y	Y
SAP ERP	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	P	P	Y	Y	Y	Y	Y	Y
SAP SuccessFactors										Y	P	Y	Y	A	Y	Y	Y	Y	A	Y	P	Y	P	Y	Y
SilkRoad Life Suite										A	Y	P	Y	Y	A	A	A	A	Y	A	Y	P	P	Y	Y
SumTotal HR Applications										A	A	A	A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ultimate Software UltiPro										Y	Y	Y	Y	Y	A	Y	Y	Y	Y	P	Y	P	P	Y	**N**
UNIT4 Agresso	Y	Y	Y	Y	Y	Y	Y	A	Y	Y	Y	Y	Y	Y	Y	**N**	Y	Y	**N**	Y	Y	Y	Y	Y	Y
UNIT4 Coda Financials	Y	Y	Y	Y	Y	Y	Y	A	Y																
Workday Financial Mngmt/Workday Human Capital Mngmt	Y	Y	Y	Y	Y	Y	Y	P	Y	Y	Y	Y	Y	Y	P	Y	Y	Y	Y	P	Y	P	Y	Y	Y

Source: Nigel Rayner and Thomas Otter, "Vendor Guide for Administrative ERP," Gartner, p. 8, Figure 1.

Key: Y: Developed by vendor; A: Acquired by vendor; P: Partner Solution; N: Not supported; Blank: Not applicable.

Exhibit 4a Example Diagram of Possible ERP Software Modules



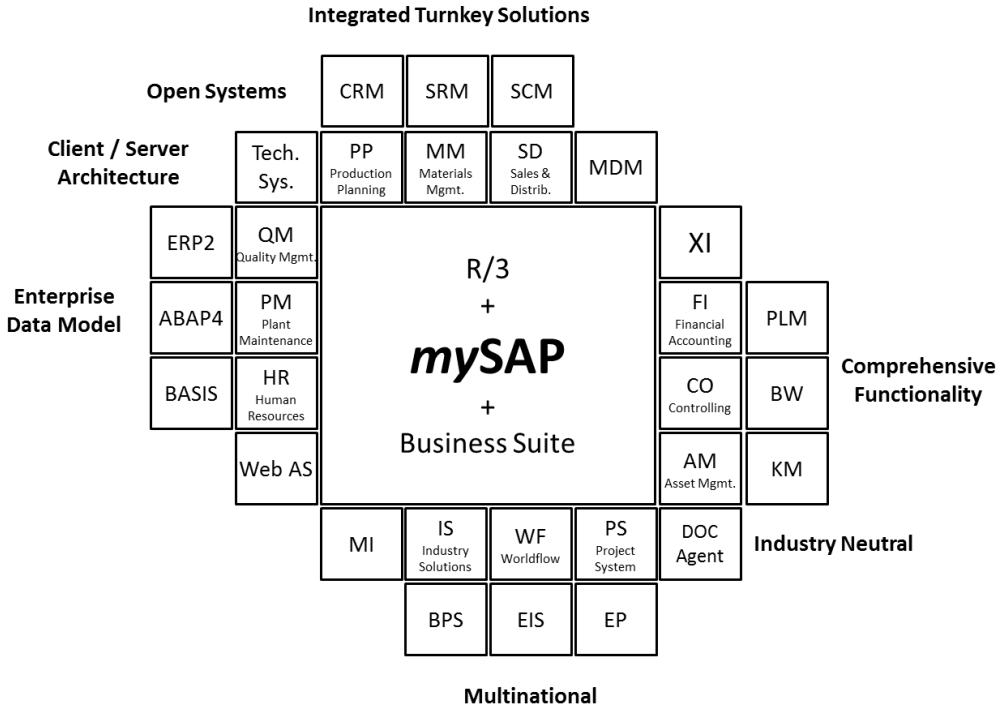
Source: Casewriter's diagram.

Exhibit 4b ERP Module Abbreviations

Abbreviation	Definition
MES	Manufacturing Execution System
WMS	Warehouse Management System
ERP	Enterprise Resource Planning
SCM	Supply Chain Management
CRM	Customer Relationship Management
IT	Information Technology
TMS	Transportation Management System
MRP	Material Requirements Planning
MDM	Master Data Management
PLM	Product Lifecycle Management

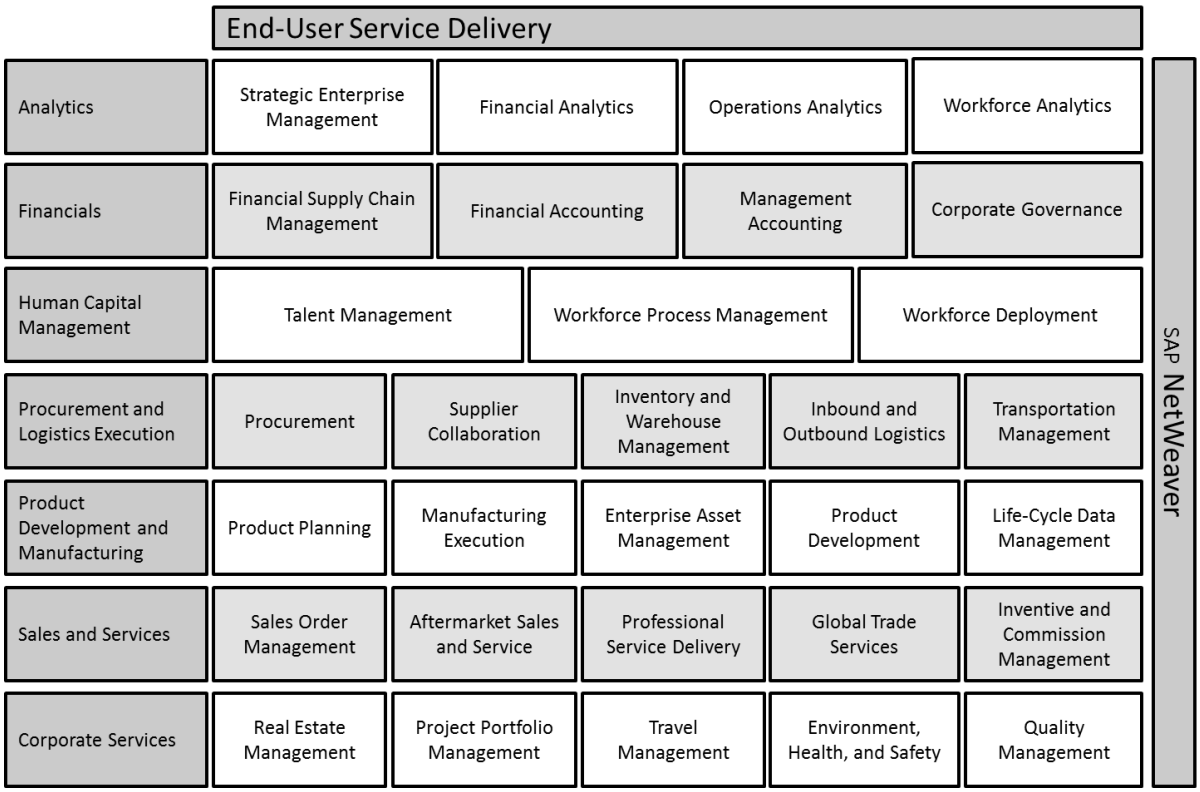
Source: Casewriter's definitions.

Exhibit 5 SAP Business Suite Modules



Term	Definition
SCM	Supply Chain Management
SRM	Supplier Relationship Management
CRM	Customer Relationship Management
ERP2	Second-generation ERP—a catchall term for interfaces, data exchanges or interaction methods in the vendor space, including supply, design and engineering collaboration areas
ABAP4	SAP's application specific coding language
BASIS	Business Application Software Integration System
Web AS	Web Application Server
MI	Mobile Infrastructure
BPS	Business Planning and Simulation
EIS	Enterprise Inventory and Service-level Optimization
EP	Enterprise Portal
KM	Knowledge Management
BW	Business Warehouse (reporting)
PLM	Product Lifecycle Management
XI	SAP's middle-ware
MDM	Master Data Management

Exhibit 5 (continued) SAP Business Suite Modules



Source: SAP Modules Training, "SAP Modules Overview," http://sapmodules.org/sap-modules-overview/, accessed May 2015; and casewriter definitions.

Exhibit 6 Top ERP Vendors by Market Share

Worldwide ERP Software Market Share, 2013	
Market Size: $25.4B, 3.8% Growth over 2012	
SAP	24%
Oracle	12%
Sage	6%
Infor	6%
Microsoft	5%
Kronos	3%
Concur	2%
IBM	2%
Totvs	2%
Yonyou	1%
Others	37%

Source: Louis Columbus, "Gartner's ERP Market Share Update Shows the Future of Cloud ERP Is Now," *Forbes*, May 12, 2014, Figure 1.

Exhibit 7 Overview of ERP Vendor Tiers

	Tier 1	Tier 2		Tier 3	
Primary Users	• Large companies (>$1B in revenue) with many users • Multi-site • Cross border transactions • Multiple business units, often different industries • Complex business processes	• Mid-size companies ($50M to $1B in revenue) • Less complexity • Looking for as much functionality as possible at a lower cost of ownership than Tier 1 • Often looking for industry focused software for a vertically integrated company		• Small companies with minimal system requirements • Require lower cost of ownership • Fewer capabilities needed • Often single location or business unit • Less growth expected • Often industry specific, niche markets	
Vendors[a]	• SAP • Oracle • Microsoft Dynamics[a]	• Epicor • Infor • Sage • IFS • Pronto • Deacom • Consona • CDC • TGI	• Fujitsu • Aptean • Cincom • IQMS • QAD • Batch Master • Deltek	• Abel • Sage • Quick books • eSoftware • Adexa • AGIS • Aptean • Acumatica	• ESP • PDS • Open Systems • Retalix • Harris Data • Syspro • xTuple
Market Share[b]	40–45%	25–30%		20–25%	
Average Cost[b]	• SAP—$20M • Oracle—$1.5-3.0M • MS Dynamics A/X–$500K–1.5M	Varies greatly between vendor and size of business		Varies greatly between vendor and size of business	
Time to Implement[b]	12–18 Months	9–12 Months		1–9 Months	

Source: Compiled from Panorama Consulting, https://www.panorama-consulting.com; Ultra Consultants, https://ultraconsultants.com; Nigel Rayner and Thomas Otter, "Vendor Guide for Administrative ERP," Gartner; and telephone interviews with experts described in **Exhibit 9**.

[a] The three vendors represented in Tier 1 were widely recognized within the industry as the upper-level Tier-1 vendors. Infor and Epicor's top product offerings were included by some experts in a Tier-1b category. Microsoft Dynamics had four different ERP product offerings of which only Dynamics A/X was a Tier-1 product. The remaining Dynamics offerings fell into Tier 2 and Tier 3. Other vendors listed under Tier 2 and Tier 3 represented only a sample of the available vendors and may have had products available that fell under both Tiers.

[b] These numbers are rough estimates based on multiple sources and vary widely depending on how the information was classified, size of the company implementing the system, modules selected, and vendor.

Exhibit 8 Characteristics of Maturity Levels

Maturity Level	Level Name	Level Characteristics
5	Optimizing	Stable and Flexible.
4	Quantitatively Managed	Measured and Controlled.
3	Defined	Proactive, rather than reactive.
2	Managed	Managed on the project level.
1	Initial	Unpredictable and reactive.

Source: CMMI Institute, http://cmmiinstitute.com/sites/default/files/resource_asset/What-Is-CMMI.pdf, accessed September 2017.

Exhibit 9 Experts Interviewed

- Zeb Egbert, Managing Partner at Tatum consulting, a Randstad company
- Daniel Gingras, Partner at Tatum consulting, a Randstad company
- Jonathon Gross, VP at Pemeco Consulting
- Vijayakumar Pandiarajan, Former Director of IT at Verizon Wireless
- Anne-Marie Renaud, VP at PepsiCo
- Anthony Sansone, Partner at Tatum consulting, a Randstad company
- Jim Walsh, Former CIO of a Fortune 500 Company

Source: Casewriter.

Endnotes

[1] IBISWorld, "Farm Animal Feed Production in the US Industry Report OD4613," October 2014, p. 23.

[2] IBISWorld, "Farm Animal Feed Production," p. 3.

[3] According to the Forbes 2014 list of the largest private companies, www.forbes.com, accessed April 2015.

[4] Andrea Murphy, "America's Largest Private Companies 2014," *Forbes*, November 5, 2014, www.forbes.com, accessed April 2015.

[5] Christian Hestermann and Jeff Woods, "What ERP Is and What the Associated Terms Really Mean," Gartner, November 18, 2009, p. 2, via Gartner Database, accessed February 2015.

[6] Hestermann and Woods, "What ERP Is," p. 1.

[7] Nick Castellina, "A Guide for a Successful ERP Strategy in the Midmarket: Selection, Services, and Integration," Aberdeen Group, May 2012, p. 3, http://public.dhe.ibm.com/common/ssi/ecm/en/sml12349usen/SML12349USEN.PDF, accessed March 2015.

[8] Christian Hestermann et al., "Magic Quadrant for Single-Instance ERP for Product-Centric Midmarket Companies," Gartner, November 26, 2014, via Gartner Database, accessed February 2015.

[9] Yvonne Genovese et al., "ERP, SCM and CRM: Suites Define the Packaged Application Market," Gartner, July 28, 2008, via Gartner Database, accessed February 2015.

[10] *Inc.*, "Enterprise Resource Planning," https://www.inc.com/encyclopedia/enterprise-resource-planning-ERP.html, accessed May 2015.

[11] Sharon Florentine, "ERP Comes to the Cloud and (Finally) Smaller Businesses," *CIO*, October 28, 2013, www.cio.com, accessed May 2015.

[12] Thomas Wailgum, "Why ERP Systems Are More Important Than Ever," *CIO*, January 29, 2008, www.cio.com, accessed April 2015.

[13] Chris Pang et al., "Market Share Analysis: ERP Software, Worldwide, 2013," Gartner, May 5, 2014, via Gartner Database, accessed March 2015.

[14] IBM, "A Renaissance for ERP and Why It Matters," December 2009, www.ibm.com/midmarket/us/en/, accessed February 2015.

[15] Castellina, "A Guide for a Successful ERP Strategy in the Midmarket," p. 7.

[16] Panorama Consulting, https://www.panorama-consulting.com; Ultra Consultants, https://ultraconsultants.com; Nigel Rayner and Thomas Otter, "Vendor Guide for Administrative ERP," Gartner; and telephone interviews with experts described in **Exhibit 9**.

[17] See **Exhibit 9** for interview sources. Also, Carol Hardcastle, "Postmodern ERP Is Fundamentally Different From A Best-Of-Breed Approach," Gartner, June 24, 2014, via Gartner Database, accessed February 2015.

[18] James Browning, "Agenda for IT Strategies for Midsize Businesses," Gartner, June 25, 2012, via Gartner Database, accessed February 2015.

[19] Jim Walsh, Former CIO of Fortune 500 Company, interview by casewriters, Boston, MA, March 23, 2015.

[20] Jonathon Gross, VP at Pemeco Consulting, interview by casewriters, Boston, MA, March 2, 2015.

[21] Carol Hardcastle, "Assess Your Readiness to Proceed With an ERP Initiative," Gartner, February 11, 2014, via Gartner Database, accessed March 2015.

[22] Denise Ganly et al., "How to Develop an ERP Strategy," Gartner, January 16, 2014, via Gartner Database, accessed February 2015.

[23] Jim Walsh, interview by casewriters, Boston, MA, March 23, 2015.

[24] Jim Walsh, interview by casewriters, Boston, MA, March 23, 2015.

[25] Anthony Sansone, Partner at Tatum consulting, a Randstad company, interview by casewriters, Boston, MA, March 30, 2015.

[26] Carol Hardcastle and Nigel Montgomery, "ERP Strategy, Ten Steps to Perfect ERP Plans," Gartner, March 5, 2014, via Gartner Database, accessed February 2015.

[27] Ultra Consultants, "Best Practices in ERP Vendor Selection," December 2012, www.ultraconsultants.com, accessed March 2015.

[28] Daniel Gingras, Partner at Tatum consulting, a Randstad company, interview by casewriters, Boston, MA, March 30, 2015.

[29] Jonathon Gross, interview by casewriters, Boston, MA, March 2, 2015.

[30] Carol Hardcastle, "Improve ERP Project Risk Management with Three Best Practices," Gartner, October 22, 2014, via Gartner Database, accessed February 2015.

[31] Anthony Sansone, interview by casewriters, Boston, MA, March 30, 2015.

[32] Panorama Consulting Solutions, "What Are Some of the Risks Associated with ERP Software," http://panorama-consulting.com/resource-center/frequently-asked-questions-faqs/, accessed April 2015.

[33] Jonathon Gross, interview by casewriters, Boston, MA, March 2, 2015.

[34] Daniel Gingras, interview by casewriters, Boston, MA, March 30, 2015.

[35] Jonathon Gross, interview by casewriters, Boston, MA, March 2, 2015.