Chapter 1 : Importance and Impact of ERP Systems on Industry and Organization

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The importance and impact of ERP systems across the industry is discussed. Ways on how to capitalize for continued growth are suggested. Examples that relate to real-world scenarios are applied to demonstrate business value.

1.1 Introduction

ERP systems have revolutionized businesses around the globe. Processes are leaner and more efficient, costs are minimized, positive customer service is more prevalent, and government compliance is present. Companies have saved significant amounts of money, sometimes even in the millions, when their operations are run by an ERP system. The ERP system not only affects the company itself, but also the supply chain including external entities, both customers and suppliers. Throughout this chapter, you will see the importance and impact that ERP systems make on industry and organizations.

1.2 Basic Concepts and Definitions

There are several key terms that can help to understand the importance and impact of ERP systems within industries and organizations. This is not a comprehensive list of terms; however, it will provide a foundation.

Business intelligence is a computer-based technique to help with decision making by analyzing data.

Business process is a logically related activity or group of activities that takes input, processes it to increase value, and provides output (Harrington, 1991).

Business process integration is the assimilation of business processes together in a central system.

Cloud computing is having a third party host the software and systems a business needs as a service through the use of the Internet.

Data redundancy is when the same data is stored in multiple separate locations.

Data repository is a location to store data.

Information system refers to interaction between information technology, business processes, and data for decision making.

Information technology in the broadest sense refers to both the hardware and software used to store, retrieve, and manipulate information using computer systems and applications.

Key performance indicators known as KPI, provide baseline metrics that companies use to measure how well the system and processes are performing.

Legacy system is when a new system is identified for replacement; the older system is referred to as the legacy.

Lifecycle refers to the structure from which software applications such as ERP evolves and is integrated within business processes.

ERP systems bring corporate business processes and data access together in an integrated way that significantly changes how they do business. The ERP system implementation, an enormous capital expenditure, consumes many corporate resources associated with a high level of risk and uncertainty. ERP systems are an obvious choice for companies operating with disparate legacy systems that do not communicate well with each other. These systems provide significant inter-related information, greater information visibility, and accuracy on a common database. Within the ERP systems are a standardized process to perform the majority of business processes using industry best practices. ERP systems are so widely diffused that they are commonly described as the de facto standard for replacement of legacy systems in medium and large sized organizations. If today's company CIOs were asked about the importance and impact of ERP systems on industries and organizations, more likely than not, they would say it is impossible to work without an ERP system.

1.3 Benefits and Importance

There are many benefits to having an ERP system within the organization. Information is readily available for the proper users, all data is kept in a central repository, data redundancy is minimized, and there is a greater understanding of the overall business picture.

If a company does not have an ERP system and employs separate standalone systems for functional areas of a business, the company will not be running at its full potential.

Data may be compromised because it is stored in multiple locations. How would a user know which information is most current ? When data is changed, is there a guarantee that it will be updated in all storage locations ? Are processes taking longer to start and finish than necessary ?

When a customer calls to inquire about an order, the customer may be bounced around to numerous departments within the company because the customer service representative does not have all the answers at his or her fingertips. Here is an illustration of this type of scenario produced by Hammer and Company.

With this illustration, the cycle has come full circle; back to the original starting point. How much easier would it have been for the customer if the customer service representative had the answers to every question that the customer asked? One of the most significant features of an ERP system is that all of the information kept by a company, including within functional areas, is retained in one central data repository, or in other words, the information is saved in a single database. By having the information in one location with authority levels for access in place, a customer service representative would have been able to answer all the questions posed by the customer instead of having to transfer the customer from department to department. All of the information is shifted from functional areas to the front-line, or in other words, to the person the customer will first contact when communicating with the company. From the above illustration, the importance of the correct employees having the correct information (in this case the customer service representative), is crucial to delivering exceptional customer service, and in turn serving the customer in the most valuable way.

The central repository of information will allow authorized users to access the same information in one location using an ERP system. This feature allows for one version of information to be used. With the central data repository comes the decline of data redundancy. The data is kept in one location where all authorized users have access. Data redundancy occurs when the same data is placed in two or more separate systems (Shelly, Cashman, & Rosenblatt, 2005). For example, referring back to our illustration before, the customer needed to change the ship to address. If the company maintained separate functional area systems, the customer's ship-to address would have had to be updated in all the places it was stored. Potential for human error becomes a factor at this point. The employee could miss a location where the customer's ship-to address needed to be changed, or the employee could have mistyped the correct information in any one of the change points. Having one central place for the information to be stored reduces the likelihood of human error and not using the correct information for future transactions. Ranganathan and Brown (2006) suggest that the use of a centralized data repository in an ERP system will result "in an integrated database for multiple functions and business units, providing management with direct access to real-time information at the business process, business division, and enterprise levels" (p. 146).

An ERP system allows users and the company to formulate a better understanding of the overall business picture. With access to multiple functional areas in one system, and the ability to generate any report necessary, the benefits of an ERP system are endless. Management and executives can formulate better business decisions because of all the data readily available within the system. Business performance can improve since the ERP system integrates business processes, that traverse multiple business functions, divisions, and geographical locations (Ranganathan et al., 2006). Another benefit of ERP systems is their ability to manage potential growth within the company and future e-commerce and e-supply chain investments. IT costs can be significantly reduced when implementing an ERP system (Fuβ, Gmeiner, Schiereck, & Strahringer, 2007). For the banking industry, merging banks can shorten post-merger integration time by 12 to 18 months, with a cost savings of potentially $60 to $80 million. Also, ERP systems can assist banks with the continuous industry-specific pressures, such as governmental regulations and globalization, faced by the banking industry. ERP systems can help a global bank run smoothly and adhere to compliance. The construction industry faces their own challenges when implementing ERP (Chung, Skibniewski, Lucas & Kwak, 2008). Their industry processes are less standardized when compared to manufacturing. For example, each construction project has a unique owner, project team, and specifications. When an ERP system is implemented successfully in the construction industry, Chung et al., (2008) report benefits of improved efficiency, and evident waste elimination.

Fuβ et al., (2007) have researched multiple articles and developed a list of anticipated benefits of ERP systems. The list includes the following benefits (p. 159) :

- Improved security and availability
- Increase in organizational flexibility
- Cost reduction
- Fast amortization of investment
- More efficient business processes
- Higher quality of business processes
- Improved integrability
- Reduced complexity and better harmonization of IT infrastructure
- Better information transparency and quality
- Better and faster compliance with legal requirements and frameworks

Bagranoff and Brewer (2003) wrote a case study based on a real company's ERP implementation. The authors use a fictitious company name, PMB Investments, Inc., to protect the confidentiality of the real company. The company's Amscot division, located outside of Little Rock, Arkansas, was in charge of printing, assembling, and distributing all printed materials for internal and external customers interested in the company's financial services and investments. The Amscot office was created as a result of anticipated growth. Amscot began with a hand-me-down legacy system named OSCAR, which came from the closing of two other plants to form the new Amscot plant. Unfortunately, OSCAR could not handle the increased volume of transactions. The ability to deliver to Amscot's customers was compromised. A second system was connected to OSCAR named KIM to help relieve the stress of the growth. "However, once every few weeks the interface between KIM and OSCAR would go down between 12 to 18 hours resulting in customer orders literally disappearing into cyberspace somewhere between KIM and OSCAR" (p. 86). Occasionally employees would perform a manual count of warehouse inventory because they did not trust reports produced by OSCAR, resulting in inventory being managed in multiple locations.

Amscot pursued the acquisition of an enterprise resource planning system to handle the circumstances the company was facing (Bagranoff et al., 2003). Amscot felt the long-run benefits to having an ERP system would be the consolidation of financials, human resources, manufacturing, and distribution applications in one central database system. Additionally, Amscot believed data redundancy and integrity problems regarding the multiple information systems would be eliminated. Decisions would be made more efficiently and effectively because of real-time information generated from the ERP system. Fulfillment and delivery would start automatically on receiving a customer order with the new system. Having the entire supply chain coordinated would reduce printed material inventories, minimize unnecessary shipping expenses, and streamline the receiving of goods cycle time. The new system would allow Amscot to perform and operate at peak efficiency. The ERP system implementation estimation of savings was $30 million annually, which came from diminishing the inventory obsolescence.

1.4 Value of ERP Systems

Getting the most out of IT is not a one-shot effort, but rather a continuous and evolving process. Included is not just the IT investment, but also how a company approaches improvement opportunities in support of its business strategy and objectives, business processes, and value assessments.

KPI is a tool that can be used to measure the ERP systems and process performance. Once an organization has defined its operational and strategic goals, progress can be measured. The value of KPIs is a quantifiable measurement that reflects critical success factors of an organization. KPIs are established prior to the ERP implementation and will differ depending on the organization. For example, a KPI could be defined to measure a) percentage of payable invoices that do not match a purchase order, b) accuracy of purchase orders that are received without defect, complete, and on time, or c) elapsed time for order approval.

1.4.1 IT VALUE OF ERP SYSTEMS

When examining the value of ERP systems, investing in technology is only half of what is needed to realize its benefit. According to SAP Executive Agenda, "investment in IT without analogous improvements in the management practices around IT will lead only to a slight increase in productivity". It is suggested that companies that invest in IT while enhancing management practices and governances have experienced sustainable results in increased value and improved productivity, in some instances as much as a 20% boost (Dorgan & Dowdy, 2004).

Research has demonstrated a circular cycle where one IT success gives rise to yet another IT success more favorable than the first (sometimes referred to as the "virtuous cycle"). The cycle typically gets started with an investment in core ERP systems software generating the landscape to facilitate a homogeneous integrated platform. Once the core ERP software demonstrates sound operational performance, investments to extend and add value to processes such as customer relationship management (CRM), supply chain management (SCM), and business analytics components are examined.

1.4.2 BUSINESS VALUE OF ERP SYSTEMS

Not only is IT value prevalent in ERP systems, but there is sound business value as well. For example, an ERP human capital management (HCM) system can help align a company's business strategy. This provides integrated processes and reporting, the managing of workforce to place the right people in the right jobs, develop and reward top performers, retain key talent for the long term, and increase efficiency and operating performance throughout the entire organization. An HCM ERP provides substantial benefit to a company while delivering a blueprint for transforming a company's human resource operations. These types of ERP systems make it possible to rapidly experience return on investment through reduced operation costs and increased efficiency. The HCM ERP system connects employees

and management to deliver business processes and automate common administrative tasks, while leveraging industry best practices.

Another important business functional area where ERP systems provide significant alignment for a company's fiscal account-

ability is financial operations. The financial ERP system assists a company with the control, accounting standards, financial reporting, and compliance to improve performance and confidence in this area of operations. Financial ERP systems can typically provide module applications that let customers tailor solutions to their specific business needs in operations.

Companies use the Financial ERP to enable flexibility with financial and managerial reporting across their organizational structures. This provides a real-time view of the business to quickly read, evaluate, and respond to changing business conditions with accurate, reconciled, and timely financial data.

For a company's financial supply chain, potential value can be gained for improved cash flow, transparent and real-time business intelligence, and reduced inventory levels, leading to shorter cash-to-cash cycle times, and increased inventory turns across the network that can lower overall costs. Companies can potentially make significant gains to reduce overall finance costs, enabling greater collaboration with customers or suppliers, and streamlining operations to reduce costs and resource demands (adapted from SAP, Inc.).

Companies can take advantage of an ERP financial system's ability to provide dynamic budgeting, forecasting, and planning to reduce overall financial costs. Financial ERPs offer companies the ability to streamline accounting, consolidation, process scheduling, workflow, and collaboration. By integrating budget, cost, and performance, companies can capitalize on opportunities to reallocate money to programs with proven impact; realigning resources where they are most useful to maximize value to the organization.

Treasury services in an ERP system can help a company make smarter decisions by having the capability to proactively monitor and adjust currency and interest rate exposure across the entire enterprise while complying with internal risk policies. Additionally, visibility to real-time data enables a company to make informed investing and borrowing decisions on a timelier basis. Other treasury operations can be automated to simplify dealing with administration for debt, investments, foreign exchange, equities, and derivatives while performing straight-through processing to enforce security and limit controls (adapted from SAP, Inc.).

Often times, companies operate shared services with their subsidiary operations or centralized organization functions. ERP systems provide shared services capabilities that can reduce a company's costs by automating, centralizing, and standardizing global transactional processes. In addition, ERP systems provide the ability to centralize liquidity and act as an in-house bank to subsidiaries, administer inter-company loans, and optimize excess funds across the enterprise.

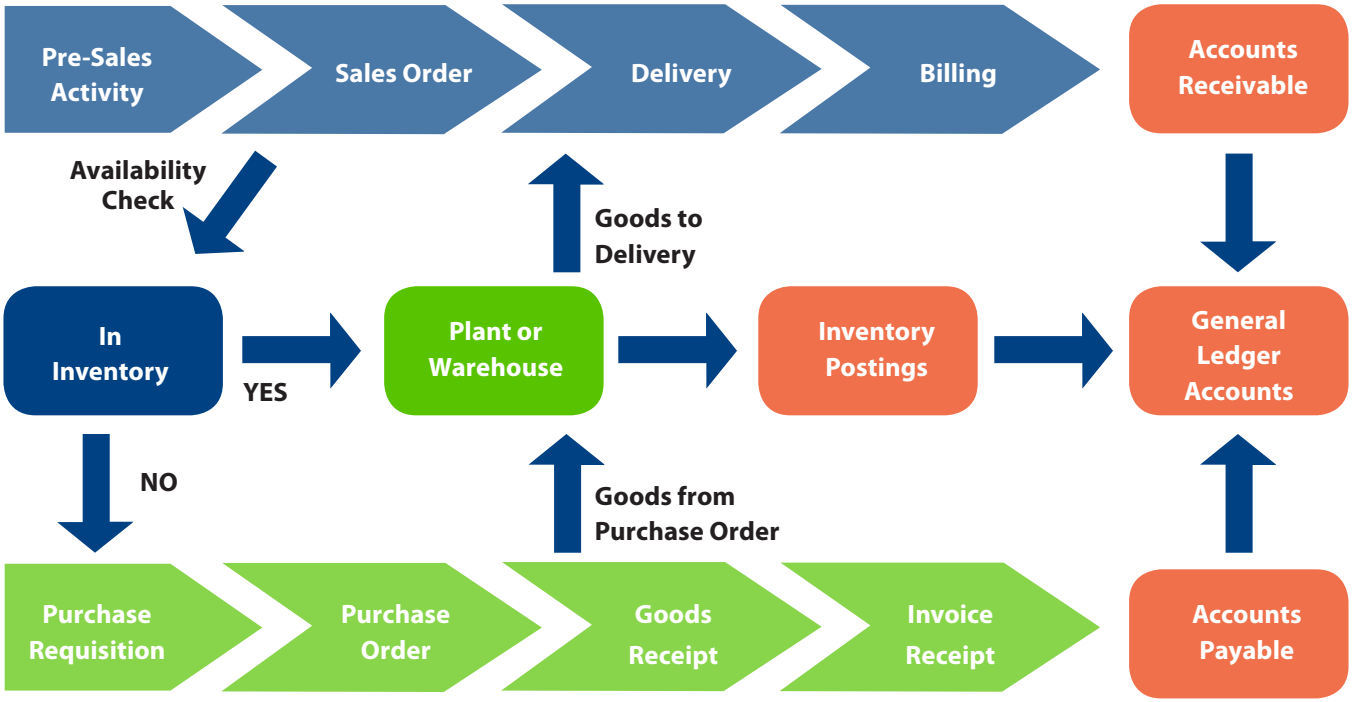
Different areas of the company receive business value from the implementation of ERP systems. For inbound logistics, ERP systems provide improved communication and integration with suppliers, enhanced raw material management, and value-added management of accounts payable (Davenport, Harris, & Cantrell, 2002). The system creates transparency across a company's entire purchasing process, including better tracking of raw materials, improved inventory management, lot size planning integration, and matching process documentation (Matolcsy, Booth, & Wieder, 2005). Accounts payable have automation tools to process vendor payments more quickly by way of ERP systems. Marketing, sales, and distribution functional areas benefit and value from ERP systems by the promotion and advertising activities integrated in item inventory levels and production schedules. These areas benefit because there is a better idea of what can be promised to the customer.

1.4.3 BUSINESS PROCESS INTEGRATION

Companies realize the business value of ERP systems with the ability to obtain business process integration. Business process integration allows processes within a company to be incorporated together in one centralized system. The value of encompassing process integration permits companies to gain efficiencies in overall and individual processes. Additionally, potential process improvements may become visible.

SAP University Alliances and The Rushmore Group, LLC developed a diagram of how business process integration works. In this example, a customer would like to place a sales order for a product. To start the sales process, a pre-sales activity such as a newspaper advertisement, television commercial, or word-of-mouth has prompted the need or desire to purchase a product or products. The customer will then place a sales order. Next, the company will check the availability of the item or items requested. If the item is in stock, the materials management segment of the company will pull the item from the plant or warehouse, and prepare the item for delivery to the customer. If the item is not in stock, this will prompt the materials management segment of the company to begin the procurement process with a vendor to restock the item. Once the item (good) has been received from the vendor, then the plant or warehouse will prepare the item or items for delivery to the customer. At the issuing of the items to the customer and the item receipt point from the vendor, the financial accounting segment of the

business is integrated into the overall process, with accounts receivable and accounts payable due. Another process could have been included into this scenario had the company been a manufacturing company. At the availability check point, in place of purchasing the item, the item may have been produced. The procurement process may have played a role in the production process as well, had a raw material or component part not been available to complete the production of the item. In this illustrated example, all three processes of sales, procurement, and accounting are integrated to complete the overall process of the cash-to-cash cycle. This is a prime case of business process integration.



To achieve business process integration, it may be necessary to perform business process re-engineering (BPR). BPR is an integral part of an ERP implementation and represents a fundamental rethinking of the company's current way of doing business. BPR is defined by Hammer and Champy (1993) as "the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service and speed" (p. 32). The essential features and benefits of a bundled ERP packaged software application are already developed based on industry best practices. For companies to take full advantage of the many benefits offered by an ERP system, business process reengineering is required to address the gaps in business practices, leveraging the functionality of the new ERP packaged application. Most company business processes are procedurally similar but industry uniqueness, distinct practices, and size play a significant role in the gaps that a company must re-engineer for an ERP system implementation. Research has found that successful ERP projects result when companies are involved in BPR and BPR is included in the ERP selection (Tsai, Chen, Hwang, & Hsu, 2010; Muscatello, Small, & Chen, 2003).

Companies that adapt organization processes to increase information flow across business organizations achieve greater success with IT investments than if they had launched the ERP software alone. By changing business processes to align with the new ERP system, a company can dramatically change the value derived from the technology and scale operations profitability. The ERP system usually consists of several functional modules that are deployed and integrated generally by business process. The ERP implementation creates cross-module integration, data standardization, and industry best practices, which are all combined into a timeline involving a large number of resources.

The business process "as-is" state and information flows between various business operations are examined for scope of the implementation. The "as-is" process model is developed by examining the layers of the "as-is" process, and focuses on the most important or major areas of concern (Ridgman, 1996). Often processes evolve to solve an immediate customer issue, operational problem, or some other concern that addresses the way a company conducts its business (Okrent & Vokurka, 2004). An understanding of why a process is performed in a particular way helps to identify the non-value added work for simplification of the process and improved task workflow.

An example of an "as-is" process would be how to pay a vendor invoice. A company typically issues a purchase order for goods or services to a vendor. A copy of the purchase order is sent to the accounts payable department and the vendor. Once the items or services are completed, the vendor submits an invoice electronically (email or EDI), or possibly by postal mail, to the company for payment. The accounts payable department matches the purchase order against the invoice, the receiving document (if items received), and the invoice. If they match, the accounts payable department issues payment.

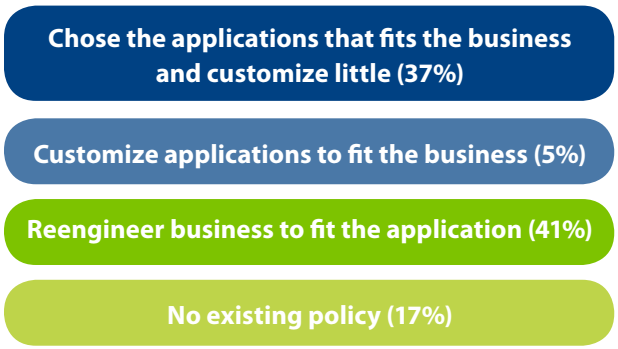
The "to-be" design and mapping of legacy business processes are developed according to the company's business model. The "to-be" design will generally include company operating business rules, data conversion, reporting, and organizational hierarchy requirements. Zhang (2000) suggests the first thing that must be done is to evaluate what processes are critical to the business. Several iterations and discussions take place between stakeholders, users, and the implementation team, to ensure that all business processes strengthen the process integration. Generally, the process examines the "to-be" model as the ideal workflow without constraint, along with considerations for future growth and IT investments. The vendor payment "to-be" process, for example. The purchase order is entered into the ERP system common database. A copy of the purchase order is electronically sent to both the vendor and the company accounts payable department. When goods are received or services are performed, a confirmation transaction takes place to alert of completion. Matching is done and a check is prepared and automatically sent to the vendor in the ERP system. The automated process enables accuracy of information, and eliminates redundancy of data and potential delay of payment.

Due to the characteristic nature of ERP system cross-module integration features, the more modules selected for implementation, the greater the integration benefits. However, with the increased benefits comes increased complexity and care to ensure minimum risk to map correctly a company's business process to the ERP system processes. Implementing the processes incorrectly can lead to poor integration between modules in the system, leading to significant operational deficiency. Additionally, there exists considerable risk in changing multiple processes at a time (Subramoniam, Tounsi, & Krishnankutty, 2009). The risk is certain to increase if a fallback plan is non-existent. An industry best practice of streamlining and simplifying business processes ahead of time may mitigate the risk. Prior research has concluded that the higher a company's process complexity, the higher the radicalness of its ERP implementation to enable fundamental and radical change in the company's operational performance (Karimi, Somers, & Bhattacherjee, 2007). However, many common business process challenges may be ameliorated if addressed appropriately. Listed below are a few typical ERP business process challenges, and suggested resolutions faced in business process integration.

BUSINESS PROCESS PROBLEM	SUGGESTED RESOLUTION
Lack of feedback opinions from process and legacy experts	Obtain feedback from experts involved in processes
Lack of IT expertise	Obtain qualified IT staff
Matching the process to ERP software	Communication with users
Lack of analysis of existing processes	Analyze the existing processes in greater detail
Hurrying business process redesign effort	Careful planning and measurement
Anxiety arising out of a massive downsizing	Mitigate through communication

Sources : (Olson, Chae, & Sheu, 2005 ; Paper , Tingey, & Mok, 2003 ; Parr & Shanks, 2003 ; Kvavik et al., 2002)

Previous research has indicated that an ERP system meets only 80% of the company's functional requirements (Subramoniam et al., 2009). A gap exists between company requirements and the proposed ERP solution. What is practiced by most companies is listed below, based on a survey by Forester Research (Lamonica, 1998 ; O'Leary, 2000).



There are many enterprise application integration (EAI) tools, structured methodologies, and systematic procedures available to facilitate business process integration. Companies typically approach business process integration based on their organizational needs and constraints (Subramoniam et al., 2009). Competitive pressure and system compatibility in business processes significantly explains the success of ERP systems (Elbertsen & Van Reekum, 2008). Organizations like Owens Corning (Bancroft , Seip, & Sprengel 1998; Romei, 1996), the State of Kentucky (Henry, 1998), Eastman Kodak (Stevens, 1997), and NEC Technologies (Bancroft et al., 1998) have all effectively integrated business process into the implementation of their ERP system.

Owens Corning began its business process integration efforts by establishing a global supply-chain prospective that would fit all its business unit improvements (Bancroft et al., 1998; Romei, 1996; Anita, 1996). Design teams worked in parallel to address integration issues across process boundaries. A standard business process integration methodology using benchmark data to design the process integration was used. In another example, the State of Kentucky's (Henry, 1998) enterprise ERP solution included financial, budget, and procurement functionality. Their business processes required radical changes in order to use a technical tool to change business processes, streamline government administrative procedures, and cut cost.

1.4.4 IMPORTANCE OF STRATEGIC ALIGNMENT OF ERP WITH BUSINESS GOALS

ERP systems are strongly characterized as operational information technology (IT) systems, enabling management to have sufficient data for analysis and decision making purposes (Mehrjerdi, 2010). This greatly contributes to a company's capability to align with its core business strategies and competences (Chan & Huff, 1993). Alignment involves "applying IT in an appropriate and timely way and in harmony with business strategies, goals, and needs" (Luftman & Brier, 1999, p. 109). These types of enterprise information systems provide a holistic integration, functional operation, and real-time processes in a single common database.

The mechanisms used to attain alignment can vary by business strategy and industry. Interestingly Chan et al., (1993) acknowledged a difference between industry companies and academic institutions when examining organization size on IT alignment. What would uniquely differentiate an academic organization from an industry company alignment ? Industry companies and academic institutions operate within substantially different institutional environments. While academic institutions have similar, if not the same highly skilled leaders, organizational structures, processes, and size as organizations; academic institutions may not necessitate the same level of requirements for its alignment

1.5 ERP System Use in Organizations

ERP systems are widely used in many Fortune 500 companies. Here are several examples of ERP systems in real-world scenarios demonstrating business value. These companies span a breadth of industry and ERP business needs.

Aegis Logistics, one of US leading oil and gas logistics service providers has completed Project Bluewater, where they rolled out a major ERP implementation (Aegis Logistics goes live with SAP ERP, 2010). The project is considered to be the single most important IT initiative in the company's history. Aegis experienced several inefficiencies with backend operations that used old disparate systems without any integration, lacked automation across key business processes, and did not have a consolidated view of all operations. Over the years, their legacy systems led to issues such as inconsistent workflows, unavailability of timely and accurate data, duplication of work, and other operational challenges. Just a little over two years after the implementation, Aegis realized the value and benefit of its ERP solution. The ERP system brought discipline to their business processes, eliminated duplication of work, and captured all crucial operational data to facilitate a seamless information exchange.

Software Paradigms International (SPI) is a large Atlanta, Georgia based company whose business leverages on and offshore business models to deliver quality IT and Business Process Outsourcing (BPO) solutions (Faster consolidation of financials and accounts, 2010). The company offers BPO services in medical and billing, legal coding, accounting finance BPO, data entry and validation, and image processing. Their main need for a system was to help consolidate financials and improve customer service across lines of business. SPI was operating with two distinct accounting systems, one for US operations, and the other for India operations. Their project job costing process most often led to a lot of inconsistent data being generated for tracking of employee actual time on projects, which led to inaccuracy in estimating the price of project work and subsequent Profit & Loss statements. A huge issue for SPI was to properly handle multiple currencies since their operations were global. SPI chose an ERP solution that was not an exact match to all of their requirements; however, the solution had the capability to get the desired results. Leveraging BI tools and expert consulting services along with the needed modules, SPI went live with an ERP implementation. SPI successfully completed two years of ERP operational use without any disruption since implementing in 2008. Now SPI can transact and process payments or receipts in any currency. The company has a better view of its financials and expense data than in the past. The ERP system has provided SPI with the ability to better manage their customers and increase profits.

1.6 Future Impacts to Industry and Organizations

ERP systems continue to be impactful towards industry and organizations. So many innovations have been developed and implemented just in the last five to ten years. More focus has been made towards supply chain management and customer relationship management. Many ERP vendors have incorporated these modules into their systems to help better serve customers. Vendors realize the need for the companies they serve to continue to be scalable, flexible, and have the ability to compete in their respective industries.

One future impact on the horizon is the amalgamation of cloud computing. Cloud computing is going to allow companies to free up resources, because the company will have a third party hosting the system and software needed to do business over the Internet. ERP systems could be included in this opportunity. More companies will be served with this new capability. The company will not be required to manage the hardware and software used. Companies will be allowed to pay as they use the service, instead of making a capital investment (Ford, 2010). Cloud computing will also make an impact on rapidly changing flexible areas of the company. Collaboration and communication including e-mail and file sharing will be positively affected. Transactions and workflows outside of the company, sourcing, procurement, trade finance, and supply chains, are suited for cloud computing. "This type of flexible technology opens the door to a new way of conducting agile business without being limited by technology infrastructure." (Ford, 2010, p. 58)

Business intelligence (BI) is another hot topic making an impact on future industry and organizations. BI is the ability to analyze data for decision making purposes using computer-based techniques. ERP systems have a built in BI component to help the data mining process. BI is also offered as a SaaS or software-as-a-service. It is expected that the Saas BI market will have triple growth and compounding annual growth at a rate of 22.4 percent through 2013 (Kanaracus, 2010). SaaS BI can assist front-office workers more efficiently. With the BI component of an ERP system, the Public sector has found the importance of this feature in critical areas such as public safety, border management, and tax collection (Effective information management is key to BI success, 2010). The impact of BI on the company's bottom line is so significant that employers are requesting more and more graduates have BI experience

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Questions

1. Given the information presented regarding future impacts to industry and organizations, what are some other potential impacts ?
2. How might benefits differ and be similar among industries ?
3. What are some advantages and disadvantages of business process integration ?
4. Environmental and competitive factors play an important role in organizations' ability to respond to changing requirements. What tools, methodologies, and techniques are needed for companies to meet dynamic factors ?
5. What additional ERP services and features would create added value for adoption and future use in companies ?