

CHAPTER 1

ANALYSIS AND FRAMEWORK TO EIS

Quotation

EIS management system model has been proposed to achieve better process integration and data integrity through the entire product development lifecycle in an enterprise.

W. He

Structure

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♣ **QUICK LOOK AT CHAPTER THEMES**

The number one benefit of information technology is that it empowers people to do what they want to do, lets people be creative, makes people productive and allows people to learn things which they didn't imagine they could learn before, and so in a sense it is all about potential [Steve Ballmer]. EIS is an integrated information system, which is used to endow management with needed information on a regular basis. The information can be used for various purposes such as strategic planning, delivering increased productivity, reducing service cycles, reducing product development cycles, reducing marketing life cycles, increasing the understanding of customers' needs, facilitating business and process reengineering. EIS goes beyond the capabilities of accounting software and other application software. It can help to achieve high operational efficiency, significant cost savings, and thus maximization of profits. It is packed with powerful features, comprehensive in scope, modular and flexible, customizable, totally secure, and incredibly robust. It is often beneficial to organizations to amalgamate applications. The foremost objective is to endow with scalable and reliable data exchange between manifold enterprise applications with functions across compound software packages with elasticity in using software.

♣ LEARNING OBJECTIVES

EIS has turned out to be the preferred software engine for the development of IT in most recent years. This chapter discusses EIS, its application, and its impact on organizations. This analysis and framework of EIS gives readers a solid introduction to EIS. The primary learning objectives of this chapter are to enable you to:

- ♣ Identify EIS systems software.
- ♣ Describe the concept of EIS.
- ♣ Define key terms as they relate to EIS.
- ♣ Be acquainted with the enterprise and its systems in general and EIS in particular.
- ♣ Explain the diverse concepts and applications of EIS.
- ♣ Discuss operational process support and control of resources with EIS.
- ♣ Emphasize EIS's integration and its impact on applications & functionality.
- ♣ Explain the background EIS.
- ♣ Explain other EIS challenges and capabilities.
- ♣ Explain the efforts made in creation of these systems.
- ♣ Identify and discuss their advantages in business applications.
- ♣ Be informed about widespread range of applications of EIS in business, industry, government & academia.

♣ CASE STUDY

**Ericsson's EIS: knowledge to bring people together,
automatically with Autonomy¹**

About Ericsson: Ericsson is a world-leading supplier in the telecommunications and data communications industry, offering advanced communications solutions for mobile and fixed networks, and consumer products. Ericsson is the undisputed global leader in mobile systems. Its continuous technology leadership is shaping the future of mobile and broadband.

The Need: To maintain its competitive edge, Ericsson has to stay at the forefront of technological development and that means its 100,000 employees need to know what is happening, both inside and outside the organization, all the time. The challenge was to create a multi-lingual information portal, which Ericsson named Business Intelligence Centre (BIC) that anyone across the entire organization could use to find, and to point users to relevant information, intelligence and points of contact. Ericsson's information management system at the time was not capable of automatically, and effectively managing multiple disparate data sources, like tracking live news feeds, on which the company relies to run its business. While employees needed to monitor and be kept informed of general market shifts to be responsive and provide higher levels of customer satisfaction, the vast amount of available information was not being utilized because employees didn't know it existed or where to find it.

About Autonomy EIS Software: Autonomy's Portal-in-a-Box™ allows all information sources to be available through one interface, and each user can have an automatically personalized splash page, tailored to their area of interest and expertise. The concept is based on the idea that only the end-user should get material relevant to him/her. Ericsson does not believe in "one size fits all" when it comes to information.

¹ Autonomy was founded upon a vision to dramatically change the way in which we interact with information and computers, ensuring that computers map our world, rather than the other way round. The company is the second largest pure software company in Europe and has offices worldwide, with a current market cap of \$4 billion. Autonomy's position as the market leader is widely recognized by leading industry analysts including Gartner, Forrester Research, IDC and Delphi, with the latter referring to Autonomy as the fastest growing public company in cyber space.

The Benefits: The three big challenges were: Finding new means to exploit internal company-wide knowledge, increasing employee productivity — less day-to-day duplication and fewer interruptions, and saving money — no manual input from employees and an easy-to-maintain system.

Autonomy helped Ericsson achieve all their objectives: As a result, Ericsson found that productivity and quality of work rose because useful information was suddenly easier to get to. In addition, automatic profiling of users improved the exploitation of intellectual capital held around the world. For a company passionate about remaining at the forefront of its field, this is a significant advantage. It also maximizes the company's intellectual assets in helping users create strong project teams by identifying other employees with relevant internal competence. The expertise and knowledge of employees may be one of the organization's most valuable assets but it's also one of the most difficult to exploit. There is huge potential in the intellectual capital throughout the corporation.

In addition, significant amounts of money are likely to be saved by providing a single company-wide portal that can centrally purchase and publish relevant external information. Speedier access to competitive information for employees and greater team working through an appreciation of the expertise available within the organization, will, in turn, deliver improved responsiveness in the marketplace. The outcome was not just cost savings because staff didn't have to interrupt what they were doing to go in search of more information, but also an increase in the quality of that work by supporting end users in their day-to-day tasks. The ability to find second opinion material automatically when they went through their email, to find their way through their own PC, to find relevant internal material throughout the organization and to find the relevant people within their community with whom to interact — all these actually became addictive.

"The benefits of Autonomy are easily measurable: analysts spend less time looking for relevant information; the possibility of identifying relevant competence for collaboration amongst employees is dramatically increased and finally Autonomy facilitates the administration of the system since a lot of the back-end maintenance has been removed." The Business Intelligence Portal is today one of the most visited sites on the Ericsson Intranet.

Source: www.autonomy.com © 2001 Autonomy Corp.

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♣ SKETCH OF EIS

Today a large portion of technology resources is being dedicated to complying with ever changing regulatory requirements from a myriad of sources. At the threshold of the new millennium, there is a marked shift in the business paradigm. An Enterprise Information System is a breed of computing system characteristically offering a high level of service, dealing with massive volumes of data and capable of supporting complex organizations (“an enterprise”).

♣ INTRODUCTION

A majority of workers today are knowledge workers who create, distribute, and/or use information. This includes bankers, coordinators, caseworkers, counselors, community organizers, programmers, insurance advisors, consultants, etc.

A critically important question is, “Whether there is a need in our organization for an EIS?” This is a very difficult question to answer which merits a great deal of study. The following points bear this out:

- ♣ About 80 percent of an executive’s time is devoted to information receiving, communicating, and use.
- ♣ Information is the starting point for virtually all activities performed in an organization.
- ♣ Key organizational ingredients in organizations include people and information, and it is critical to the organization’s success that these ingredients are used efficiently.
- ♣ Effective utilization of information systems in management is important.
- ♣ Productive use of information is also important.
- ♣ Information is a source to augment competence, effectiveness and competitiveness of an enterprise.

Some Examples of EIS

- ♣ Airline reservations (seat, booking, payment, schedules, boarding list, special needs, etc.).
- ♣ Bank operations (deposit, transfer, withdrawal) electronically with payment gateways.
- ♣ Integration of departments with the help of contemporary software like ERP.
- ♣ Logistics management applications to streamline transportation systems.
- ♣ Train reservation with the help of IRCTC.

Per Wikipedia²

“Enterprise Information Systems provide a technology platform that enable organizations to integrate and coordinate their business processes. They provide a single system that is central to the organization and ensure that information can be shared across all functional levels and management hierarchies. Enterprise systems are invaluable in eliminating the problem of information fragmentation caused by multiple information systems in an organization, by creating a standard data structure.” Figure 1.1 demonstrates this concept of an EIS.

1.1 INFORMATION AND SYSTEMS

Before talking in depth about EIS, we begin with information and systems. Information touches all human activity — it is repeatedly said that we live in the “information age.” Information is an important resource to an organization. It represents the organization’s tangible and intangible

² Wikipedia (pronounced /wi-ki-pi-di?/ or /w-k-pi-di?/) is a multilingual, Web-based, free content encyclopedia project. The name Wikipedia is a portmanteau (combination of words and their meanings) of the words wiki (a type of collaborative website) and encyclopedia. Wikipedia’s articles provide links to guide the user to related pages with additional information.

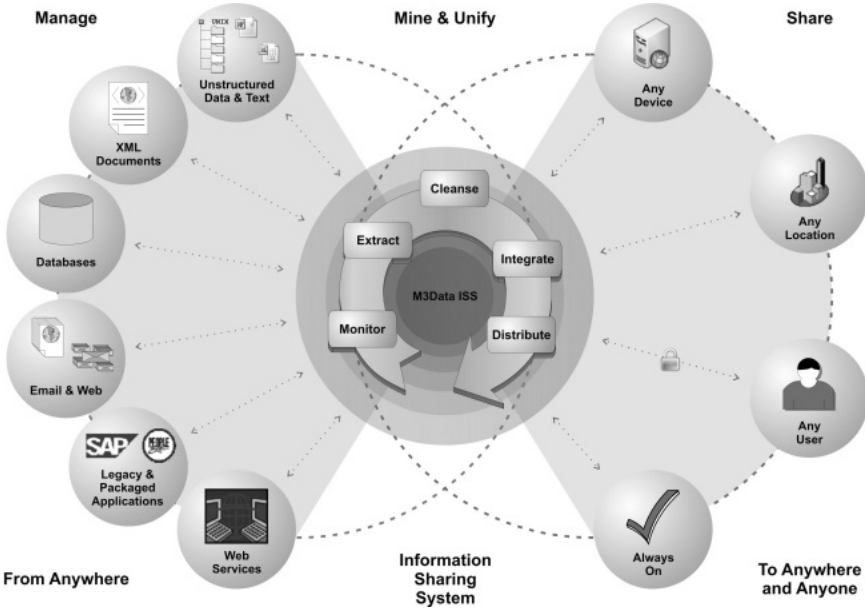


Figure 1.1: Conceptual view of an EIS.

Source: M3Data³ (2008).

resources and all transactions relating to those resources. Information influences the manner an organization operates. The right information, if it is delivered to the right person, in the right fashion, and at the right time, can lead to progress and make organizational effectiveness and competence more certain. The information system is the mechanism used to deal with and control the information resource. When we talk about Information technology it stands for “Information Technology” (IT). IT refers to anything related to computing technology, such as networking, hardware, software, the Internet, or the people that work with these technologies. Many companies now have IT departments for managing the computers, networks, and other technical areas of their businesses. IT jobs

³ M3Data is an information mining (gathering), processing, profiling, qualifying, distributed application development server built over the existing middleware technologies such as; WebSphere, Jboss, Weblogic, etc. M3Data provides exceptional power to process, store, archive, classify and evaluate information. www.artisnet.com/products.php

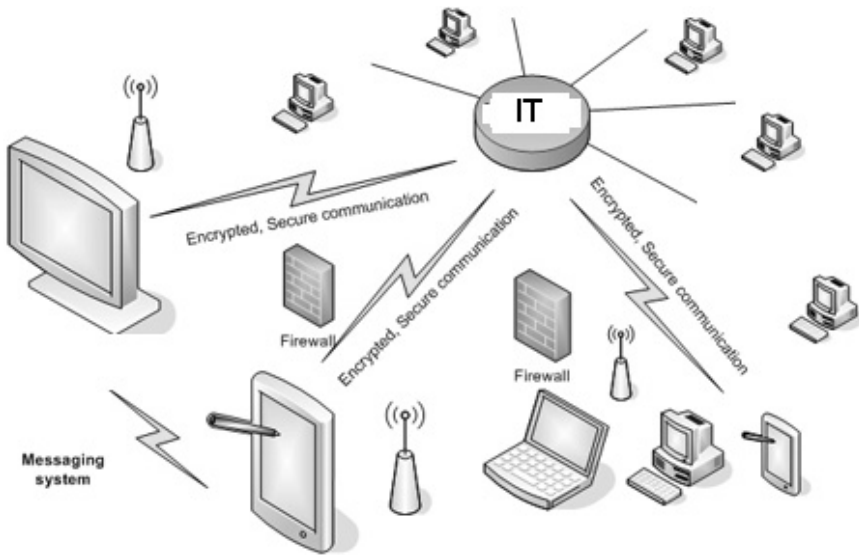


Figure 1.2: Information Technology within organizations.

include computer programming, network administration, computer engineering, Web development, technical support, and many other related occupations (Tech Terms 2008).⁴ There is another definition given by NDCC 54.59.01, “Information Technology means the use of hardware, software, services, and supporting infrastructure to manage and deliver information using voice, data, and video” as demonstrated in Figure 1.2.

1.1.1 Purpose of Information Systems

There is often misunderstanding between the terms EIS and information system. An *information system* is a set of interacting artifacts and human activities that perform one or more functions involving the handling of data and information, including data collection, creation, editing, processing and

⁴ The Tech Terms Dictionary is a constantly growing collection of computer and technology terms. Each definition is written in a way that is easy for the reader to understand and serves to explain the term, not just define it. <http://www.techterms.com/about.php>

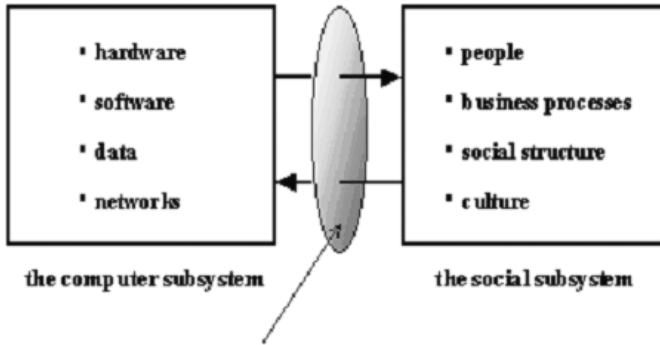


Figure 1.3: Information System = Computer + Social System.

storage; and information selection, filtering, aggregation, presentation and use. It is defined by the encyclopedia Britannica as “an integrated set of components for collecting, storing, processing, and communicating information. Business firms, other organizations, and individuals in contemporary society rely on information systems to manage their operations, compete in the marketplace, supply services, and augment personal lives.”

Figure 1.3 shows an information system as the sum of the computer system and the social system. An IS system includes components that are not focused on decision-making. People use information for numerous reasons and in wide-ranging ways. For instance, you almost certainly use information for entertainment and illumination by viewing television, watching movies, browsing the Internet, listening to the radio, and reading newspapers, magazines, and books. In business, however, people and organizations inquire about and utilize information focused on making sound decisions and for solving organizational problems.

1.1.2 Types of Information Systems

New information systems are based on Internet technology, data warehousing concepts (very large databases of operational data), or Web-enabled inter-organizational systems affixed to earlier, more familiar types of systems commonly discussed in the IT literature and found in most

organizations. These include transaction processing systems (TPS), management information systems (MIS), decision-support systems (DSS), office automation systems (OAS), and expert systems (ES).

- ◆ **Transaction processing systems:** Transaction processing systems handle routine information items, more often than not manipulating data in some constructive way as it enters or leaves the firm's databases. An order-entry program is an example of a TPS. Reasons for TP are recording, classification, sorting, calculation, summarization, storage and exhibit of results.
- ◆ **Management Information systems:** Management Information systems make available a focused vision of information flow as it develops during the course of business activities. This information is constructive in managing the business.
- ◆ **Decision-support systems:** Decision-support systems are methodical models used to assist managerial or professional decision-making by bringing significant data to a manager's notice. In many cases, these systems use data from management information systems, as well as from external sources, but DSSs purify the data to make it more functional to managers. DSSs support exceptional and non-recurring decisions, which are moderately unstructured.
- ◆ **Office automation systems:** Office automation systems use electronic mail, word processing, electronic filing, scheduling, calendaring, and other kinds of support for office work. First introduced with personal computers, these "groupware" applications became essential with the extensive use of personal digital assistants. They combine word processing, telecommunications and data processing to computerize office information, draw on stored data as a result of data processing and support handling of correspondence, reports and documents.
- ◆ **Knowledge work systems (KWS):** Information systems give support to knowledge workers in the creation and integration of new knowledge in the organization. Knowledge work systems (KWS) and office systems provide the information needs at the knowledge level of the organization. Knowledge work systems aid knowledge workers, whereas office systems primarily aid data workers (even though they are also used extensively by knowledge workers).

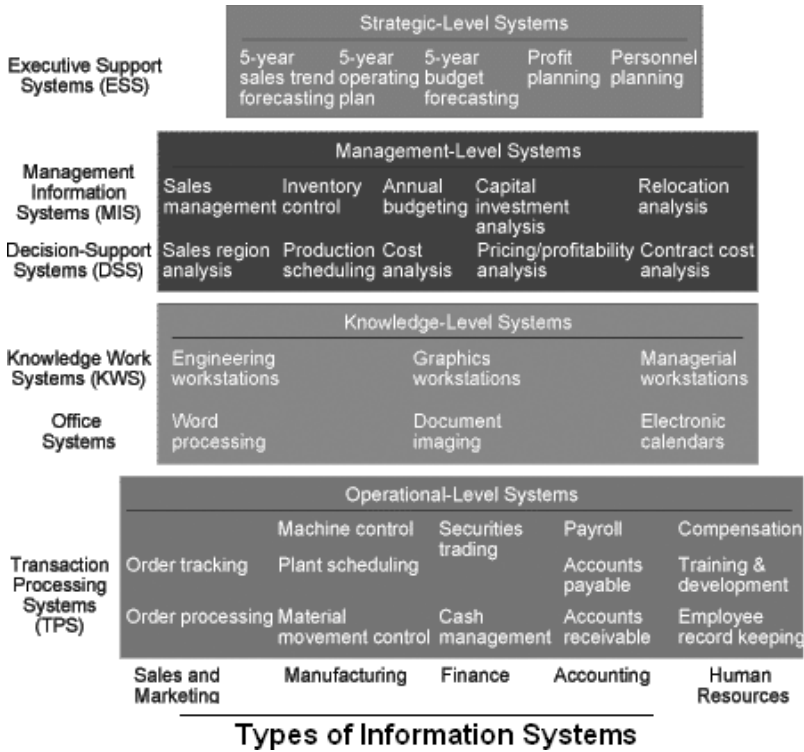


Figure 1.4: Types of Information Systems.

Source: www.macs.hw.ac.uk/modules/F24SR1/linksis/lec5.htm

- ◆ **Executive support systems (ESS):** Information systems at the organization’s strategic level designed to address non-customized decision-making options through advanced graphics and communications.

Figure 1.4 displays these levels of information systems.

1.2 HOW EIS DIFFERS FROM CONVENTIONAL PACKAGES

Conventional packages are very much restricted. In general terms they are known as legacy systems. A Legacy Information System can be

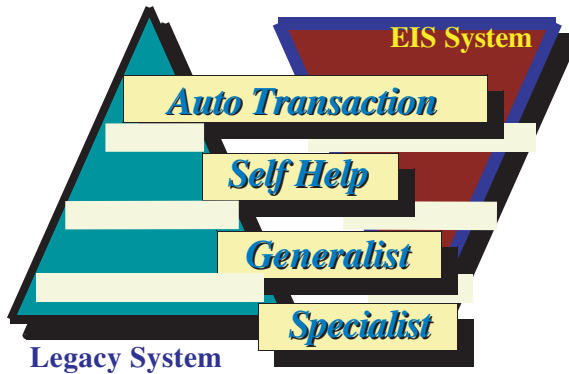


Figure 1.5: Comparison between Legacy system & EIS system.

defined as “any information system that significantly resists modification and evolution” (Brodie, 1995⁵). Legacy information systems are the main vehicle for consolidating information about its business. It has much less features and less flexible options. EIS packages are radically different. There are back-office & front office concepts. The back-office looks after the raw material, financial issues, logistics and, in brief, internal matters. On the other hand, the front-office interacts directly with the customer. eCRM (electronic Customer Relationship Management) is a recent front-office package. Figure 1.5 shows that while the legacy system is condensed and compressed, the EIS system is auto-transactional and self helping, and would adapt itself as a generalist and a specialist under different conditions.

EIS is critical to organizations today as business practices change and new information technologies provide competitive advantage. EIS evolution becomes more complicated with time as systems are repeatedly modified. This requires modernizing those legacy systems which can accommodate evolving business practices and incorporate modern information technologies.

⁵ Brodie, M. and Stonebraker, M. (1995). *Migrating Legacy Systems: Gateways, Interfaces and the Incremental Approach*. USA: Morgan Kaufmann Publishers.

1.3 EIS IS AN INTEGRATED APPLICATION

Most large information systems (IS) today consist of many independent applications. EIS generates a robust foundation for integration of heterogeneous applications, protocols and formats. Businesses today must deal with new markets, new competition and increasing customer expectations. Growth has often slowed with lower profit margins. This has placed stress on organizations as EIS has to efficiently synchronize demand, supply and production, support product quality, lower total costs in the complete supply chain, provide more reliable delivery dates and better service to customers, diminish stock to a minimum, condense throughput times, etc.

The EIS Application is a very powerful tool in enterprise perspectives. It takes into consideration logistics, the financial function, supplier, customer on one side with its differentiated approach and on the others, correlates itself with contemporary integrated systems like CRM and ERP. It also facilitates in analysis of business perspectives and help in building databases. All these aspects are very well explained in Figure 1.6.

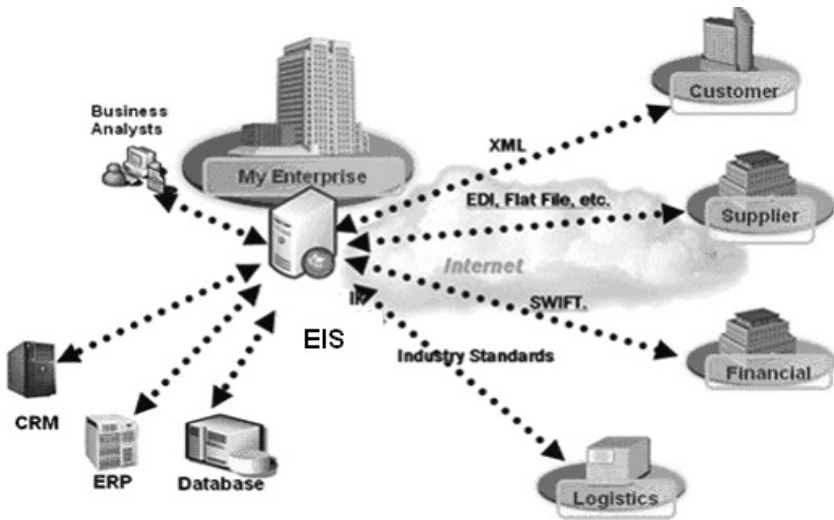


Figure 1.6: EIS Relationship to Functional Systems.

Source: Artin (2004).

1.4 CONCEPT OF EIS

The EIS concept is not applied merely for the manufacturing environment but for all kinds of enterprises. Early ERP systems focused on manufacturing, although they quickly expanded to support all sorts of organizations. EIS facilitates enterprise-wide integrated information systems covering all functional areas and performs core corporate activities and enlarges customer service. EIS is a business management system that seeks to combine all aspects of the organization. It is capable of taking care of planning, manufacturing, sales and marketing. The concept is to integrate legacy systems within a coordinated integrated system. Typically, an EIS system uses database systems which are integrated with each other.

EIS is not merely reengineering systems; it is reengineering the manner organizations accomplish business tasks. In a recent CIO Magazine case study, Jeri Dunn, CIO for Nestle USA, said it this way, "If you weren't concerned with how the business ran, you could probably (install the EIS software) in 18 to 24 months" (Worthen, 2002). EIS is one of three enterprise-class applications, including Customer Relationship Management (CRM) and Supply Chain Management (SCM) that companies are deploying to automate business processes. EIS includes the internal back office operations and external front office such as financial system, human resources, inventory management, shipping, customer order processing, warehouse etc. Thus Enterprise Information System (EIS) provides resources for EIS-specific functionality to its clients. Examples of an EIS resource include: record or set of records in a database system, business objects in an Enterprise Resource Planning (ERP) system, transaction programs in a transaction processing system, etc. The evolution from a simple information system to a demand-supply chain service provider model is shown in Figure 1.7.

EIS is a development of an enterprise-based management system; it is a consequence of the contemporary enterprise attitude towards how information systems are to be configured to innovative business firms. EIS brings together people who work on shared tasks inside the same enterprise or in their dealings with supplier and customer. Enterprises need a smooth flow of information at all levels and between all parts of their

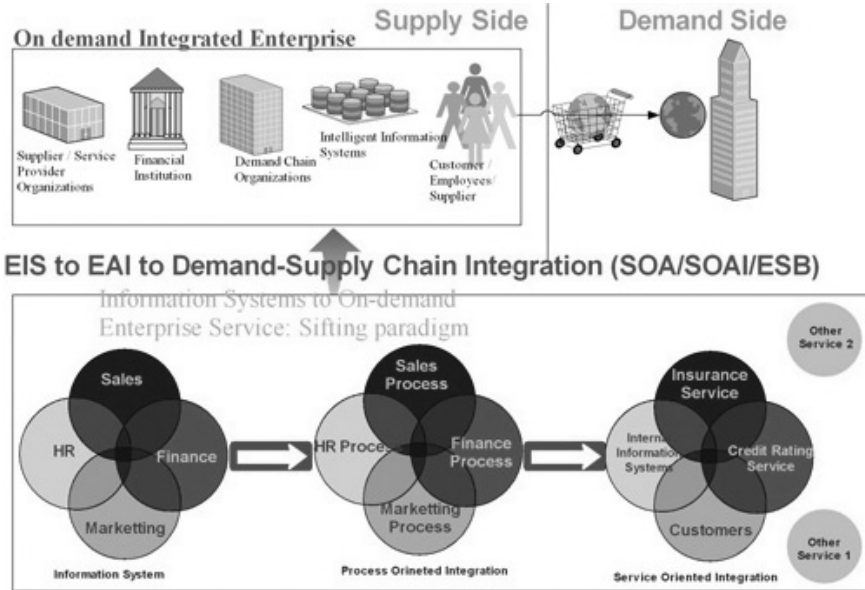


Figure 1.7: Enterprise Demand-Supply Chain Model.

Source: Software & Support Verlag GmbH. (2008).

enterprise to access up-to-date information flow integrating business processes. EIS is fundamentally an activity that encompasses the entire enterprise, irrespective of its size, number of plants and location. Another implication of EIS is that it does not blindly automate. EIS transcends the classical automation models and is considered to be the subsequent generation of post-automation. Integrated, uniform, relevant, up to date information is imperative for the very existence of an enterprise. It gives authority to the right person to make decisions at the right time. This is only possible when the whole enterprise shares the same information and views it in the same perspective. Lack of integration affects other flows like people, machines and money. EIS is the planning of the 5M's of an enterprise's resources — Man, Money, Material, Method and Machinery — to their best synergistic values. The overall EIS concept reorganizes an enterprise around process and modifies the style of doing business by abandoning the old functional approach and transforming the organization into a process-centric entity.

1.4.1 Common EIS Features

An EIS system is not merely the integration of diverse enterprise processes mentioned above but can also possess key characteristics to meet the requirements. Features often found in an EIS include:

- ◆ **Best Business Practices:** It seeks a compilation of the best business processes applicable worldwide.
- ◆ **Beyond The Enterprise:** In supply chain applications, the EIS should not be confined to the enterprise boundaries, but should provide on-line connectivity to the other business entities working with the enterprise.
- ◆ **Comprehensive:** It should be able to sustain a variety of enterprise functions and must be suitable for a wide range of business enterprises.
- ◆ **Flexibility:** An EIS system should be flexible to act in response to the changing needs of an enterprise. The client server technology enables EIS to scamper across various database back ends through Open Data Base Connectivity (ODBC).
- ◆ **Modular & Open:** The EIS system has to have open system architecture. This means that any module can be interfaced or detached whenever required without affecting the other modules. It should hold up multiple hardware platforms for companies with heterogeneous collection of systems. It must also support some third party add-ons.

1.4.2 Customer Expectation of EIS Packages

Customers have to be very cautious and carefully weigh what they expect from the product. They must consider the following factors:

- ◆ **Number of implementations in the country:** The more experienced EIS vendors are, and the greater their market share, the better after sales service customers are likely to receive. Take the example of Tally or other financial package such as wings, Accpac, etc. Often, these advantages are balanced by higher prices.
- ◆ **Is the package integrated?** The system should cover all areas from marketing, production, purchase, research and development and many more. Specifically it has to be very exhaustive.

- ◆ **Is the package too old or too new?** This includes latest trends, platforms, and compliance with regulations.
- ◆ **Is the package localized?** SAP is a German-based company and has a corporate office at that place alone. If an Indian enterprise wants to purchase a package, what strategy is SAP going to follow as far as service and upgrades are concerned?
- ◆ **Is implementation of the package easy?** This is a major challenge calling for cooperation from users and vendors.
- ◆ **How easy/fast is it to get skills on the package?** This also varies from company to company and also depends on the level of highly skilled specialists employed by the organization.
- ◆ **Quality of the consultants hired:** Consultants can be employed to bridge the gap between the vendor and the user. The consultant's job may be to provide training, giving knowledge to both user and vendor about the latest trends, and also guiding them about in-house development of EIS or purchasing from outside.
- ◆ **Financial health of the company:** Implementation of EIS can give an organization a new financial status, which may lead to greater profitability, but has led to bankruptcy in the past.
- ◆ **How big is the company and is its main focus implementation alone?** EIS's user's total strength and size play a very vital role. The vendor's core benefit is not only implementation, but also the building of long-term relationships for more business i.e. by providing after sales service and more implementation at different places.

1.5 EIS CHARACTERISTICS

There are many reasons to adopt an EIS. They offer an integrated system shared by all users rather than a diverse set of computer applications which rarely can communicate with one another, and with each having its own set of data and files. EIS provides a means to coordinate information system assets and information flows across the organization. The main benefit is the elimination of sub-organizational silos that focus on their own problems rather than serving the interests of the overall organization.

On the downside, EIS systems impose one procedure for the entire organization which requires everyone to conform to the new system. EIS systems are thus less flexible. But the benefits of integration are usually much greater than the costs of conformity.

Data can be entered once, at the most accurate source, so that all users share the same data. This can be very beneficial, because shared data is used more, by more people, which leads to much more complete and accurate data. As errors are encountered, users demand correction. There are limits, as a set of procedures are needed to insure that changes do not introduce new errors. This makes it harder to make corrections, but again, this added inconvenience is usually well worth the gains of data integration.

EIS systems can also provide better ways of doing things. This idea is the essence of best practices, a key SAP system component. The downside to best practices is that they take a great deal of effort in identifying the best way to proceed with specific business functions, and that they often can involve significant change in how organizational members do their work. Further, as with any theory, what is considered best by one is often not considered best by all.

EIS systems are usually adopted with the expectation that they are going to yield lower computing costs in the long run. Ideally, adopting one common way of doing things is simpler and involves less effort to provide computing support to an organization. In practice, savings are often not realized, due to failure to anticipate all of the detailed nuances of user needs, as well as the inevitable changes in the business environment that call for different best practices and computer system relationships. Training needs are typically under-budgeted in EIS projects. Furthermore, these training budgets don't usually include the hidden costs of lost productivity as employees cope with complex new systems. Table 1.1 recaps these pros and cons of EIS systems.

The key rationales for implementing ERP systems are:

- ◆ Technology — more powerful, integrated computer systems.
 - Greater flexibility.
 - Lower IT cost.

Table 1.1: EIS Pros and Cons.

Factor	Pro	Con
System Integration	Improved understanding across users.	Less flexibility.
Data Integration	Greater accuracy.	Harder to make corrections.
Best Practices	More efficient methods.	Imposition of how people do their work. Less freedom and creativity.
Cost of Computing	More efficient system planned.	Changing needs. Under-budgeted training expense. Hidden costs of implementation.

- ◆ Business practices — implementation of better ways of accomplishing tasks.
 - Better operational quality.
 - Greater productivity.
- ◆ Strategic — cost advantages can be gained through more efficient systems.
 - Improved decision-making.
 - Support business growth.
 - Build external linkages.
- ◆ Competitive — if an organization’s competitors adopt ERP and gain cost efficiencies as well as serve customers better, organizations will be left with declining clientele.
 - Better customer service.

1.6 EIS RESEARCH

The motivations for ERP/EIS adoption were examined by three studies using the same format. Mabert *et al.* (2000) surveyed over 400 Midwestern U.S. manufacturing organizations about ERP adoption. Olhager and

Table 1.2: Reasons for Implementing ERP.

Reason	U.S.	Sweden	Korea
Replace legacy systems	4.06	4.11	3.42
Simplify and standardize systems	3.85	3.67	3.88
Improve interactions w/suppliers & customers	3.55	3.16	3.45
Gain strategic advantage	3.46	3.18	3.63
Link to global activities	3.17	2.85	3.54
Solve the Y2K problem	3.08	2.48	NA
Pressure to keep up with competitors	2.99	2.48	2.94
Ease of upgrading systems	2.91	2.96	3.55
Restructure organization	2.58	2.70	3.33

Source: Mabert *et al.* (2000), Olhager and Selldin (2003), Katerattanakul *et al.* (2006).
Rating scale from 1 (not important) to 5 (very important).

Selldin (2003) replicated that study with 190 manufacturing firms in Sweden. Katerattanakul *et al.* (2006) again replicated the survey, this time in Korea. These studies reported the following ratings with respect to motivation for implementing ERP (see Table 1.2).⁶

Initially, fear of Y2K was a major concern. The Swedish survey was later than the U.S., and that might explain the lower rating for this item in the Swedish study. The later Korean study did not ask about this dated issue. The U.S. response was actually neutral (only slightly higher than 3), but Y2K clearly was a factor in ERP adoption in the mid- to late-1990s. However, more important reasons were always present. In the first two studies, replacing legacy systems received a high positive response. The desire to simplify and standardize systems was the second highest rating in the first two studies, and the highest rating in the later Korean study.

There were two other reasons that received relatively high ratings in the U.S. (a bit lower in Sweden). These were to improve interactions with suppliers and customers, which is one way to gain strategic advantage.

⁶ Mabert, V. M., Soni, A. and Venkataramanan, M. A. (2000). Enterprise resource planning survey of US manufacturing firms. *Production and Inventory Management Journal*, 41(20), pp. 52–58; Olhager J. and Selldin, E. (2003). Enterprise resource planning survey of Swedish manufacturing firms. *European Journal of Operational Research*, 146, pp. 365–373. Katerattanakul, P., Hong, S. and Lee, J. (2006). Enterprise resource planning survey of Korean manufacturing firms. *Management Research News*, 29(12), pp. 820–837.

The supply chain aspects of ERP have led vendors to modify their products to be more open, although work continues to be needed in this direction (and seems to be proceeding). Linking to global activities was slightly positive in the U.S. survey, more negative in the Swedish study, and relatively higher in the Korean study.

Three other potential reasons received low ratings in both studies. Pressure to keep up with competitors received neutral support in the U.S. study. Ease of upgrading systems is a technical reason that received neutral support both in the U.S. and in Sweden. Restructuring the organization was rated lower.

From these studies, we infer that ERP/EIS systems are an important means to upgrade the quality of information systems. They can provide organizations with coordinated systems that have higher quality data. Once the kinks are worked out, this information may be available in a more responsive way. Not all evidence indicates lower costs, but most evidence does indicate higher quality information systems.

1.7 CONCLUSION

EIS has become the favourite **software engine** for the development of IT in most recent years. This chapter discusses EIS, its application, and experience. This framework of EIS has been explained to give the reader a solid understanding from a number of perspectives.

Integration and consolidation of enterprise systems have proven highly useful to top management and IT divisions. Consequences should be more transparent business processes, better monitoring, faster and more effective response to changes and opportunities. This technology is designated for big companies that are embracing application integration.

To be innovative, in the world of networked markets, one needs not only to think out of the box, but also to think more importantly about contemporary information systems capable of responding to rapid change and linking to those with whom the organization interacts. EIS systems help organizations to maximize their growth & potential.

EIS suites can improve and update corporate resource management, but the training and costs involved can be high-priced. EIS has revolutionized the entire business environment. Thus the contemporary organization is an extremely diverse, decentralized and technologically advanced entity. Large volumes of information must be stored and processed at immense speeds with an elevated degree of accuracy and reliability. Paper flow systems which were widespread a few years ago cannot deal with the requirements of today's businesses, governments, universities, churches, charitable societies, etc.

☆ KEYWORDS

- ☆ **Client:** A software program that is used to contact and obtain data from a server software program on another computer, often across a great distance. Each client program is designed to work with one or more specific kinds of server programs, and each server requires a specific kind of client. A Web browser is a specific kind of client.
- ☆ **Module:** A segment of a program that carries out a specific function and may be used alone or combined with other modules of the identical program.
- ☆ **MRP (Materials Resource Planning):** Manages the same or similar process as an ERP, with an orientation to manufacturing.
- ☆ **Oracle:** Oracle claims to be the world's leading supplier of software for information management and ERP too, but it is best known for its sophisticated relational database products, Oracle 8 and Oracle 8i, which are used in Fortune 1000 corporations and by many of the largest Web sites.
- ☆ **Resource:** A resource could be labour hours, dollars or other resource factors. This could be used for Rough Cut Capacity Planning.
- ☆ **SAP:** A pioneer developer of ERP systems, and still the leading vendor of ERP/EIS systems.
- ☆ **Site:** Organization or facility where a host is located.
- ☆ **URL:** This stands for Universal Resource Locator. It facilitates in identifying an exact location on the Internet.

☆ **TERMINOLOGY REVIEW**

1. What are the strategies used for successful implementation of EIS application?
2. How have EIS systems changed the work of IT organization?
3. What do you mean by resource and what is its relationship with EIS?
4. Where has EIS originated from and what are the concepts behind its beginning?
5. Can CRM be EIS?
6. What are three major reasons to undertake EIS?
7. What do you mean by components of EIS?
8. Write in brief the technologies required for EIS.
9. How does EIS enhance the company's business performance?
10. Define Moore's Law and explain why it is significant in the development of EIS.
11. What are the main characteristics of an EIS system? List the benefits and disadvantages of implementing an EIS system.

☆ **COMPETENCY REVIEW**

1. Enterprise systems are all concerned with the enterprise and not the systems. Their success to a great extent depends on the responsibility of top management and energetic participation of the HR people. Implementation of an EIS is not a technology decision. In actual fact, it is a decision that ideally should be based on business needs and benefits.
2. "The idea behind EIS is to have a single enterprise of the customer for the purpose of cultivating these high-quality relationships that lead to improved loyalty & profits." Explain.
3. "EIS solution contributes greater user adoption, an enhanced user experience and real-time intelligence for your enterprise to make smarter decisions." **Justify the statement.**
4. Explain and elaborate on the above statements in the light of EIS systems.

- 5. What are the objectives of implementing EIS? Explain distinctive ways of implementing an EIS. In short, throw some light on the guidelines for EIS implementation and the practicalities faced during implementation.
- 6. Today business managers try to think in terms of business processes that integrate the functional areas, thus promoting efficiency and competitiveness. An important aspect of this is the need to share information between functions and functional areas. EIS software provides this capability by using a single common database.

☆ **CHECK YOUR PROGRESS**

- 1. Briefly comment on the following statements
 - a. Information can be identified by effective parameters.
.....
.....
 - b. Computers and communications have produced a technological revolution.
.....
.....
 - c. Information technology refers to both the hardware and software that are used to store, retrieve, and manipulate information.
.....
.....
 - d. Information can be identified by effective parameters.
.....
.....

2. Fill in the blanks

- a. EIS is _____ transaction processing software that supports an organization value chain.
- b. _____ is the creation of entirely new & more business process, with regard to what has gone before.

3. True & False

- a. EIS application modules are integrated interactively.
- b. EIS software are stand-alone modules that handle the transactions processing requirements of individual business units.
- c. Any EIS module is the same as an any EIS application server.

☆ SUGGESTED READING

Books

- Brady, J., Monk, E. and Wagner, B. (2001). *Concepts in Enterprise Resource Planning*. Thomson Learning.
- Curran, T. A. and Ladd, A. (2000). *SAP R/3 Blueprint*. Prentice Hall.
- Turban, E., Rainer, R. K. and Potter, R. E. (2003). *Introduction to Information Technology*. New York: John Wiley & Sons.

Journal Articles

- Joseph, G. and George, A. (2002). ERP, learning communities, and curriculum integration. *Journal of Information Systems Education*, 13(1), 51–58.
- Lee, A. and Lee, J. (2000). An ERP implementation case study from a knowledge-transfer perspective. *Journal of Information Technology*, 15(4), 281–288.
- Soh, C., Kien, S. S. and Tay-Yap, J. (2000). Cultural Fits and Misfits: Is ERP a Universal Solution? *Communications of the ACM*, 43(4), 47–51.
- Van Hillegersberg, J. and Kumar, K. (2000). ERP Experience and Evolution. *Communications of the ACM*, 43(4), 23–26.

White Papers and Conference Papers

- Jones, M. C. (2001). Organizational Knowledge Sharing and ERP: An Exploratory Assessment. In *Proceedings of the Seventh Americas Conference on Information Systems*, Strong, D. M., Straub, D. and DeGross, I. I. (eds.), 1030–1032.
- Pan, S. L., Newell, S., Huang, J. C. and Cheung, A. W. K. (2001). Knowledge Integration as a Key Problem in an ERP Implementation. In *Proceedings of the Twenty-Second International Conference on Information Systems*.
- Parr, A. and Shanks G. (2000). Taxonomy of ERP Implementation Approaches. *33rd Hawaii International Conference on System Sciences (HICSS)*.

Online Resources

- Davenport, T. H. (2000). Does ERP Build A Better Business? http://www.cio.com/archive/021500_excerpt.html (Accessed on 20.08.01).
- Emily (2004). Integrating ABC & ERP system. www.focusmag.com/back_issues/issue_02/pages/bci.htm (Accessed 13-09-2004).
- Koch, C. (2002). The ABCs of ERP. CIO Magazine. <http://www.cio.com/research/erp/edit/erpbasics.html> (November).
- Worthen, B. (2002). Nestle's ERP Odyssey. CIO Magazine. <http://www.cio.com/archive/051502/nestle.html> (December).
- Extreme ERP Makeover. CIO. (November 15, 2003).
- The Information Cannot Speak for itself. IntelligentEnterprise.com (July 10, 2004).