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A comparison analysis between ERP and EAI

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Abstract

Nowadays the traditional management approach has given its place to modern mentality. The traditional structured functionality has evolved into system understanding which concerns the whole of enterprise. System approach is used to solve the problems of the organization. The strategic weapons which are necessary to manage the organization as a whole, are "information systems". The critical points about rational management of organizations and obtainment competitive advantage are information and using of information. An enterprise solution on the basis of the software is needed to ensure the integrity of the organization and the integration between the elements. Enterprise Resource Planning (ERP) whose development is based on 1960s, is a holistic software that is fairly valid in terms of organizations. Disadvantages of ERP has led organizations to search for different software. Enterprise Application Integration (EAI) emerges as solution partner in this sense. In the study, explaining the establishment holism in the organizations and ensuring integration in the focal point, ERP and EAI are analyzed in a comparative manner.

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Keywords: ERP; EAI; Integration; Process; Interdisciplinary Approach

1. Introduction

A holistic structure and interdisciplinary mode of operation are required in order to ensure the flow of information within the organization that is consisted of business processes that affect each other and mostly depend on the cause-effect relationships. Information which is the output of a business process, is the input of another business process. A lot of software has been developed to provide accurate, complete and uninterrupted flow of information when they

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carry out the activities of organizations. This softwares which are prepared taking into account the interactions of business processes, are designed so as to form the integrity within the organization and interdisciplinary mode of operation, and cover the entire of organization. One of the softwares that provide the circulation of information within the organization as integrated into different management styles and business processes is "Enterprise Resource Planning - ERP". ERP softwares, are offered as a ready package, have a structure in which changing both themselves and the existing business processes is a condition when they are harmonized an organization. Addition to the advantages of a holistic structure, there are also disadvantages such as non-flexible business process and high cost because it changes the structure of operative processes. Organizations have customized business processes in different sectors, face with many problems of ERP integration. Enterprise Application Integration-EAI provide solutions to problems ERP cause on the flexible and special processes. EAI, which not only connect business processes to each other but also is integrated with ERP, offers flexibility at lower cost than ERP. In this study, the evolution process of ERP was analyzed, factors in the evolution of ERP and EAI, and superiority against each other were discussed.

2. System thinking and system approach

System theory and system thinking have become foundational in natural sciences, social sciences, and engineering disciplines as the second half of the twentieth century witnessed the ushering in of the age of systems science. Meanwhile, during the past 60 years, computers and networks have been increasingly applied to many business applications, and across different industrial sectors. This trend has been accelerated by continuous innovations in information technology. In this development process, as one of the bases of the information systems discipline, systems theory not only has been applied to information systems research, but also contributes greatly to information and communication technology (ICT) (Wang & Jones, 2012).

The system consists of many sub-systems have their own characteristics and it is a whole in which these subsystems interact each other. "System approach analyzes these parts make up the whole and their relation with each other." constituent parts affect the whole such as to affect each other. When a defect occurs in any of the sub-systems, it will be reflected to the whole. So, understanding a situation in the system, it may be possible to examine sub-systems and their relations with each other.(Gökşen, 2009). All the sub-systems are required to act together on the basis of sub-targets in order that organizations can achieve their target.

To achieve and maintain a competitive position, a company needs a reliable information system to provide the framework on which to do market analyses. The management system has to be integrated with all external interfaces and has to be flexible enough to do periodic estimates of the effects of market and product line changes (Tiller, 2012).

System approach is shaped by "understanding the system as a set of processes" as a principle, "analysis the behavior of the system and determination appropriate policies" as the purpose, "designing the system" as a method (Erkut, 1989). Rationally designing and the management of business processes are required in order that organization can achieve the target as a whole.

Hence, the process can be described as a number of stages connected to each other from the beginning to the end in order to achieve a specific purpose, such as described as sequence of operations and activities which moves to a particular end or gradual change which take away to a particular end. The process, is a set of business and a group of activities, is required to produce certain goods and services in the enterprises (Koçyiğit, 2006). The most critical point of such a structure is ensuring "integration" of entire organization on the basis of processes.

Value of Integration; Traditionally, organizations have been functionally divided, i.e. companies have been separated into departments such as market, production, and service. However, the functional organization has been shown to have a number of weaknesses. In particular, it requires a huge administration to handle issues crossing functional borders, and considerable resources are allocated to tasks that do not create value (Johannesson & Perjons
Early applications running on monolithic systems served individual target departments well, but information exchange between systems was limited. The evolution of client-server technology and improved relational data management technologies expanded the tools available for integration. The introduction of these new technologies to tie stand-alone applications together added complexity but also heralded the beginning of true Enterprise Applications, including Enterprise Resource Planning (ERP). ERP was built as an integrated suite of functions that allowed business processes to be modeled across departmental boundaries (LaFata & Hofmann, 2004).

While the technology has aged, the value of the applications to your enterprise likely remains fresh. Indeed, that "ancient" technology has probably remained critical to the workings of your enterprise. Unfortunately, many of these business-critical systems are difficult to adapt to allow them to communicate and share information with other, more advanced systems. While there always exists the option of replacing these older systems, the cost of doing so is generally prohibitive (Linthicum, 1999). Figure 1 shows the needs for application integration and their percentages.

![Fig. 1. The need for application integration (Linthicum, 1999)](image)

In the late 1990’s, the commercial expansion of the Internet gave enterprises a common communication channel that created additional collaborative demands on systems.

This period saw the emergence of other enterprise applications such as CRM and SCM solutions, which needed to be tightly integrated across the enterprise. At first, enterprise software vendors did not include connectors to integrate their products with other packages, creating a market for independent software developers to introduce EAI middleware to facilitate this integration.

The driving force of application integration is the ability for companies to transform their business through the automation and integration of businesses processes. Additionally, companies are expanding to a value chain approach, including customers and suppliers. EAI promises to help organizations better perform these functions (LaFata & Hofmann, 2004). Some of the Enterprise applications are shown and described in Table 1.

Table 1. Enterprise Applications (Gable, 2002)

| Enterprise Applications | Description |
|-------------------------|-------------|
| Enterprise resource planning (ERP) software packages have modules for manufacturing, order entry, accounting, general ledger, purchasing, warehousing, transportation, and human resources. Best known examples are J.D. Edwards, Oracle, PeopleSoft, and SAP. ERP's objective is to manage related functions and processes throughout the entire organization. |

Customer relationship management (CRM) software manages and controls interaction between a company and its clients with the objective of ensuring consistent, efficient service whether via phone, fax, e-mail, or regular mail. CRM software also lets customers track order status, view their accounts, and handle routine matters such as address changes. Its objective is to increase revenue and customer satisfaction while maximizing profits by lowering the cost per transaction.

Human resources management systems include software packages for performance appraisal, payroll, benefits enrollment, skills inventory, and
other function related to personnel.

Accounting systems technologies manage income and expenses, particularly invoice generation and payables management.

Records management/archiving (RM/A): According to industry analyst firm Gartner in its report, "Enterprise Applications: Adoption of E-Business and Document Technologies, 2000-2001," RM/A is software for "storage, access, management, and viewing of data that is often print-stream oriented."

Several business drivers have driven integration efforts, including the need to:

- Improve the visibility of information across functional and corporate lines by linking together disparate systems without having to develop custom interfaces
- Reduce data entry time, costs, and errors
- Improve application performance by creating event-driven business processes with lower latency times
- Introduce common “integrated” services used across enterprise systems, such as security and transaction processing, to reduce operating and support costs
- Decrease application migration costs during the transition to a new system or application
- Provide a common infrastructure for the merger of two entities (LaFata & Hofmann, 2004)

2.1. Approaches

There have historically been four approaches to integration: file transfer, sharing a database, leveraging services, and asynchronous messaging.

- File Transfer
- Shared Database
- Remote Procedure Calls
- Messaging (Lui, Gray, Chan and Long, 2011).

The weapons which are needed in order that organizations can be managed by the way of integrated on the basis of all sub-systems, are "Information Systems".

3. Enterprise resource planning (ERP)

3.1. Organization information system

Information Systems are "computer-based" systems which are used to obtain information used in the management of organizations. The system has a cycle of the system whose input is "data", conversion process is "information processing" and output is "information". Following the use of computers in the business world, business models have started to change rapidly. Computers added flexibility to facilitate being able to respond to changing customer expectations as well as changing the way of business.

The process of institutionalization starts from manufacturing. Manufacturing approach which had started with a simple workshop logic, reached a philosophy with Just-in-Time system. Materials Requirements Planning and, as a result of this, "Manufacturing Resources Planning" reveal that organizations has reached increasingly complex dimension and integration with their surrounding area is necessary. The next improvement is "Enterprise Resource Planning" that is reached with Distribution Resource Planning and capacity resource planning. Nowadays, "Enterprise Resource Planning-2" remains its popularity in the organizations with contributions of "Supply Chain Management" and "Customer Relationship Management" disciplines. the most important advantages of ERP are to restructure on the basis of all the processes and sub-systems of the organizations and to provide to be integrated.
Enterprise resource planning (ERP) is a software application that “integrates all functions and processes of a business and generates a comprehensive view of the entire company” using a single database (Wilson, 2012). An Enterprise Resource Planning (ERP) system is a set of integrated programs that manages the vital business operations for an entire multisite, global organization (Stair & Reynolds, 2012).

In the early 1990s, two distinct system integration approaches were developed—ERP and data warehousing—each with different integration purposes. While data warehousing systems focus on informational integration to support decision making, ERP addresses operational integration to support daily operations. EAI emerged in the mid-1990s to make system integration possible with lower costs and less programming (Lee, Siau and Hong, 2003).

ERP systems have emerged as a result of developments in organizational resource planning, to address the implementation of automated business processes. Such systems allow organizations to manage their core business process data and information across the enterprise, and can best be described as a collection of business software modules that attempt to automate core business process competencies in areas such as finance, HR, procurement, manufacturing and logistics, in a structured manner. Furthermore, ERP technologies have been designed to address the fragmentation of information across on organization's business, to integrate intra-and inter-organizational information. As such, ERP systems offer strategic, tactical and operational value-adding dimension to decision-making (Sharif, Irani, and Love, 2005).

Companies also spend a multiple of licensing costs on services related to implementation and maintenance of the software. The worldwide licence and maintenance revenue for ERP systems was US$21.5 billion in 2000, which represented a growth of 13.1% from the 1999 market value of US$19 billion (Hossain, Patrick and Rashid, 2002).

According to data of Gartner, international research firm, worldwide ERP market volume was $16.7 billion in 2005. ERP market grew by 5.4% in the world between 2004-2005. According to data of Gartner, as of 2005, the top 10 companies are in ERP market and their market shares; 1.SAP 28.21% 2.Oracle Corporation 9.99% 3.SAGE 7.29% 4.Micorsoft (MBS) 3.68% 5.SSA Global (now INFOR) 2.77% 6.IFS 2.21% 7.Infor (Agilisys) 2.13% 8.Kronos Incorporated 1.83% 9.Hyperion Solutions 1.64% 10.Lawson 1.25% .

The size of the ERP market in Turkey estimated to have reached around $20 million in 2000, $25 million in 2002 and $60-80 million in 2008. ERP market growth potential is observed that around 15 per cent each year. According to Gartner group, estimate of the money spent for ERP applications was 24.9 billion dollars worldwide in 2012. ERP installation also requires a long time. Completely transition to ERP applications can take from six months to two years. (Ünğan & Met, 2012).

3.2. Negative aspects of ERP

Organizations often want to use the best of breed software solution. Although it is possible to purchase software applications from a single vendor to support a large enterprise’s needs, organizations usually like to use what is considered the best software for each business function. This happens for several reasons: specialization sometimes yields better results, and it’s always practical to avoid completely investing in one vendor. Support could be an issue if the vendor goes out of business. In addition, there is the possibility that only a custom application will fulfill the business needs. Even with modern systems there may not be a standard means of communication that would work with each vendor’s software. Business applications can run on different operation systems such as Linux, Mac, Windows, Solaris, HP-UX, and IBM-AIX. These applications may be based on different databases, such as Oracle, DB2, SQL server, Sybase, RDB, and Informix. Applications are written in different languages such as Java, C, C++, .NET, Cobol, and ABAP. In addition the legacy mainframe systems (e.g., IBM and DEC) should not be forgotten (Lui, Gray, Chan and Long, 2011). Barriers and problems of ERP are summarized in Table 2.
Table 2: Barriers and Problems of ERP (Jonsson & Pernbro, 2004)

| Barriers          | Problems                                      |
|-------------------|-----------------------------------------------|
| Operational       | Software modifications                        |
| Managerial        | Problems with system integration              |
| Technical         |                                               |
| Strategic         |                                               |
| Organizational    |                                               |

All this makes integration of information hard and maintenance of the system very difficult. Understandably, management wants IS to become easier to support, easier to adapt and ultimately cheaper. Enterprise application integration (EAI) is often quoted as the solution that can deliver just that (Ana & Kresimir, 2009).

Table 3: Disadvantages of ERP (Brown, 2006)

| Disadvantage                                 | Source                                           |
|----------------------------------------------|--------------------------------------------------|
| Adequacy of new business process designs     | Lea, Gupta, Yu (2005)                            |
| Centralized structure                        | Davenport (1998)                                 |
| Compatibility of data architectures          | Lea, Gupta, Yu (2005), Davenport (1998)           |
| Complexity of ERP                            | Lea, Gupta, Yu (2005), Davenport (1998)           |
| High implementation costs                    | Lee, Siau, Hong (2003), Davenport (1998)         |
| Difficulty in customizing                    | Davenport (1998)                                 |
| Does not allow for non-standard processing   | Davenport (1998)                                 |
| Employee resistance to change                | Lea, Gupta, Yu (2005)                            |
| Requires high level of enterprise            | Davenport (1998), Sheu, Yen, & Krumweide (2003), Fowler & Gilfillan (2003) |
| High risk                                    | Lea, Gupta, Yu (2005), Davenport (1998)           |
| Inadequate training                          | Lea, Gupta, Yu (2005)                            |
| Matching ERP w/ Business needs               | Davenport (1998)                                 |
| Org structure changes                        | Lea, Gupta, Yu (2005), Davenport (1998)           |
| Scope of project                             | Davenport (1998)                                 |
| Strategic view of technologic adoption       | Lea, Gupta, Yu (2005)                            |
| Technology readiness of org                  | Lea, Gupta, Yu (2005)                            |
| Time consuming                               | Lee, Siau, Hong (2003), Sheu, Yen, & Krumweide (2003)
| Underestimated implementation cost            | Lea, Gupta, Yu (2005)                            |
| Underestimated implementation time            | Lea, Gupta, Yu (2005)                            |
| Unwillingness to adopt new business processes| Lea, Gupta, Yu (2005)                            |
| Initial performance dip                      | Fowler & Gilfillan (2003)                        |
| Going live not end of story                  | Fowler & Gilfillan (2003)                        |
| Ongoing / Maintenance costs                  | Fowler & Gilfillan (2003)                        |
| Cultural changes                             | Fowler & Gilfillan (2003)                        |
| Inflexibility of system                      | Fowler & Gilfillan (2003)                        |
Disadvantages of ERP are given from different sources in the Table 3. Hossain, Patrick and Rashid summarized these disadvantages as shown in Table 4 and presented solutions to overcome.

| Disadvantage                  | How to overcome                                                                 |
|------------------------------|--------------------------------------------------------------------------------|
| Time-consuming               | Minimize sensitive issues, internal politics and raise general consensus.       |
| Expensive                    | Cost may vary from thousands of dollars to millions. Business process reengineering cost may be extremely high. |
| Conformity of the modules    | The architecture and components of the selected system should conform to the business processes, culture and strategic goals of the organization. |
| Vendor dependence            | Single vendor vs. multi-vendor consideration, options for "best of breeds, " long-term committed support. |
| Features and complexity      | ERP systems may have too many features and modules so the user needs to consider carefully and implement the needful only. |
| Scalability and global outreach | Look for vendor investment in R&D, long-term commitment to product and services, consider Internet-enabled systems. |
| Extended ERP capability      | Consider middle-ware "add-on" facilities and extended modules such as CRM and SCM. |

4. Enterprise application integration (EAI)

"For many companies, the integration of their different information systems (IS) represents a great challenge. In the past, decisions about new investments in IS often were made at department levels. Consequently, each department tended to choose applications that best suited their specific, departmental needs. These systems were often bought from different vendors, using different technologies and interfaces, and usually could not communicate well with each other. This approach resulted in the company as a whole to be a collection of many isolated systems. Furthermore, as companies continued to grow thru acquisition, additional, often non-compatible, systems were added to the existing structure. Only a modest level of integration was achieved by creating customized, often homemade middleware.

Nevertheless, the total integration problem was far from being solved. In the last 15 or so years, EAI technology has been developed to overcome this integration issue. EAI is a sophisticated type of middleware, which allows a high level of integration. In addition, EAI generally increases flexibility of an organization’s information systems and thus prolongs the lifecycle of many corporate applications. Furthermore, EAI technology enables information sharing, which results in more efficient operations and flexible delivery of business services. Thus, investments in EAI can reasonably be expected to have a positive impact on a company’s efficiency and, therefore, on business value” (Roztocki & Weistroffer, 2009).

Enterprise application integration (EAI) involves linking applications, whether purchased or developed in-house, so they can better support a business process. Although there are myriad vendors that offer a variety of approaches, most packaged EAI software will offer users tools to model their business processes and link the applications with middleware that can make each application communicate via data messages (Orenstein, 1994).
EAI is:

- It is the process of creating an integrated infrastructure for linking disparate systems, applications, and data sources across the corporate enterprise.
- EAI is the methodologies, the technologies and the “glue” that helps companies shape a variety of old and new systems, multiple protocols and data sources and varying processes into a cohesive unit.
- Enterprise application integration (EAI) involves linking applications, whether purchased or developed in-house, so they can better support a business process.
- It is process of integrating various applications and shares information among them with differences in execution environments, programming languages, operation policies.
- EAI aims at integrating individual applications into a seamless whole, enabling business processes and data to speak to one another across applications (Banerjee, Chordia and Rajib, 2005).

"While acknowledging that smaller and more open systems can hold a very important place in the enterprise, this decision-making process lacked the perspective and foresight that might have minimized, or possibly avoided, many integration problems. The success of these smaller, more open systems was that they met the requirement of commodity computing but with a steep price—the need for integration with the existing, older system. The need for EAI is the direct result of this architectural foresight, or rather, the lack of it. Until recently, architecture at the enterprise level had been virtually nonexistent. Information technology decisions tended to be made at the department level, with each department selecting technology and solutions around its own needs and belief structures. For example, accounting may have built their information systems around a mainframe, while human resources leveraged the power of distributed objects, and research and development might have used distributed transaction processing technology. The end result could have been a mixing and matching of technologies and paradigms. As a result, the enterprise as a whole was left with a "system" that is nearly impossible to integrate without fundamental rearchitecture and a significant investment of precious funds.

To address the problem of architectural foresight, many organizations have created the role of the enterprise architect. This person or office is responsible for overseeing a centralized architecture and making sure that technology and solutions selected for the enterprise are functionally able to interact well with one another. As a result, departments will be able to share processes and data with a minimum of additional work" (Linthicum, 1999).

Every business has processes, but a typical company's applications rarely work together or share data to support them. With a lot of effort and money, enterprise application integration (EAI) can solve that problem (Orenstein, 1994).

Organizations that decide to integrate their software systems to improve their business processes must make sure they do three things: extend and build upon their existing software assets; avoid disrupting and corrupting the integrity of their applications and customer data; and; at the same time, continue to operate and expand their businesses unhindered by their existing proprietary systems (Wilkov, 2001). EAI allows diverse systems to connect with one another quickly to share data, communications, and processes, alleviating the information silos that plague many business (Gable, 2002).

Enterprise integration software, when implemented correctly, can be used to streamline companies' business processes. Once completed, the project's business improvements will last long after the economy's recovery. According to Meta Group, a technology research firm, "Business initiatives requiring enterprise application integration offer greater competitive differentiation and greater relative business return during down economic times." (Wilkov, 2001).

EAI solutions provide a way to connect the system of collaborators, partners, and others for as long as necessary, decoupling when the relationship ends. EAI is, in essence, the soluble glue for the modular corporation (Gable, 2002).
EAI represents the solution to a problem that has existed since applications first moved from central processors. Put briefly, EAI is the unrestricted sharing of data and business processes among any connected applications and data sources in the enterprise. The demand of the enterprise is to share data and processes without having to make sweeping changes to the applications or data structures. Only by creating a method of accomplishing this integration can EAI be both functional and cost effective (Linthicum, 1999).

4.1. Chaos today, order tomorrow

"Most enterprises leverage many different technologies. The integration of these technologies is almost always a difficult and chaotic proposition. Traditional middleware technology, such as message-queuing software, ties applications together, but these "point-to-point" solutions create single links between many applications, as we mentioned previously. As a result, the integration solution itself may become more expensive to maintain than the applications it's connecting (Linthicum, 1999).

While this is easily managed within the context of integrating two applications, integrating additional applications demands additional pipes. If you have successfully integrated application A with application B and would like to include applications C and D, you will have to create a pipe between each involved application. In no time, the process will grow so complex as to render it almost unmanageable (Linthicum, 1999).

Many enterprises that needed to integrate applications have implemented such integration architectures within their enterprises and continue to maintain them today. While it is easy to criticize these enterprises, they have done the best they could, given the available technology. Unfortunately, even their best efforts have resulted in chaos" (Linthicum, 1999). Figure 2 betrays the chaos of the Enterprises. Figure 3 proves that using EAI technology helps the organizations to solve this chaotic situation.

![Fig. 2. Enterprise chaos (Linthicum, 1999)](image-url)
While ERP and other applications seem to work well as an island of automation unto themselves, they lose value quickly when companies attempt to link services and data with external systems. Thus, it's difficult to share resources between ERP application brands (SAP, Baan, PeopleSoft), as well as ERP packages and custom applications. It is here, in the nexus that is integration that EAI adds a tremendous amount of value (Linthicum, 1999).

A typical data-integration initiative could have several primary business objectives (Gleghorn, 2005):

- Improved productivity.
- Improved data accuracy.
- Greater agility and flexibility.
- System replacement/organizational mergers.

The major business benefits of EAI are as follows (http://msdn.microsoft.com/en-us/library/ee265635(v=bts.10).aspx):

- Reduced IT costs due to a more productive EAI toolset.
- Reduced administrative costs through automation of manual processes
- Reduced operational costs through more efficient value-chain processes.
- Higher customer satisfaction and loyalty through new services and programs.
- Better and faster business decisions.

5. A comparison of ERP&EAI

Differences between traditional approaches and the vision of EAI:

- EAI focuses on the integration of both business-level processes and data, whereas the traditional middleware approach is data oriented.
- EAI includes the notion of reuse as well as distribution of business processes and data.
- EAI allows users who understand very little about the details of the applications to integrate the applications.
The comparison of ERP which continues its popularity among organizations and EAI from different perspectives is showed in Table 5.

| Factors                                      | ERP          | EAI          |
|----------------------------------------------|--------------|--------------|
| Degree of Business process reengineering (BPR) | High / Medium | Medium / Low |
| Integration Method                           | Process Integration | Process Matching |
| Implementation Period                        | Long-term    | Medium-term  |
| Organizational Resistance Levels             | High         | Low          |
| Using Expert                                 | Yes          | Yes          |
| Programming Requirement                      | Medium       | Medium/Low   |
| Business Process                             | Centralized  | Decentralized|
| Project Risk                                 | High / Medium | Medium / Low |
| Project Cost                                 | High / Medium | Medium / Low |
| Duration of the Project                      | Long         | Medium       |

According to the table above, it is clear that ERP and EAI show differences from each other on the basis of these factors. While it is necessary to restructure business processes in ERP, there is no requirement in EAI and harmonization of processes is sufficient. While ERP uses the process integration as a method of integration, EAI uses the process matching. ERP implementation period takes place in the long term but EAI implementation period takes place in the medium term. EAI has less programming needs than ERP. ERP has the central business processes whereas EAI has distributed business processes. While ERP offers higher cost construction, EAI provides cost advantage to the organizations.

Lee, Siau and Hong summarized these factors as six factors in Table 6 and provided two different perspectives as a Technical and Behavioral. It is clearly understood that comparison is shown in the Table 6 is similar to Table 5.

| Factors                                      | ERP          | EAI          |
|----------------------------------------------|--------------|--------------|
| Degree of BPR                                | High / Medium | Medium / Low |
| Integration Method                           | Process Integration | Process Mapping |
| Implementation Period                        | Long         | Medium       |
| Degree of Resistance                         | High         | Low          |
| Business Process                             | Centralized  | Decentralized|
| Internalization Period                       | Long         | Short        |

Depending on the industry and specific functions, EAI could reduce the expense of integration from 10% to 60% of the price of the ERP software (Lee, Siau and Hong, 2003).

In contrast to ERP, the installation of EAI may not need such an extensive restructure of the organisation. EAI enables integration between already existing systems and by that it may be appropriate for companies whose information systems are well built to support the processes (Jonsson & Pernbro, 2004).

Enterprise Application Integration (EAI), aka “middleware,” provides the infrastructure to connect information sources, acting as a go-between for applications and their business processes. In implementing EAI solutions,
organizations have been able to realize various benefits, including:

- Reduced development and maintenance costs
- Enhanced performance and reliability
- Implementation of a centralized information bus
- Extension of the legacy system lifecycle
- Reduced time to market (LaFata & Hofmann, 2004)

6. Conclusion

The traditional structured functionality has evolved into a system manner which concerns the whole of enterprise. System approach is used to solve the problems of the organization. System theory and system thinking have become foundational in natural sciences, social sciences, and engineering disciplines as the second half of the twentieth century witnessed the ushering in of the age of systems science. The strategic weapons which are necessary to manage the organization as a whole, are "information systems". Information systems are "computer-based" systems which are used to obtain information used in the management of organizations. The system has a cycle of the system whose input is "data", conversion process is "information processing" and output is "information". Meanwhile, during the past 60 years, computers and networks have been increasingly applied to many business applications, and across different industrial sectors.

In the late 1990’s, the commercial expansion of the internet gave enterprises a common communication channel that created additional collaborative demands on systems. The driving force of application integration is the ability for companies to transform their business through the automation and integration of businesses processes. Additionally, companies are expanding to a value chain approach, including customers and suppliers.

The critical points about rational management of organizations and obtainment competitive advantage are information and using of information. An enterprise solution on the basis of the software is needed to ensure the integrity of the organization and the integration between the elements. Information which is the output of a business process, is the input of another business process. A lot of software has been developed to provide accurate, complete and uninterrupted flow of information when they carry out the activities of organizations.

This softwares which are prepared taking into account the interactions of business processes, are designed so as to form the integrity within the organization and interdisciplinary mode of operation, and cover the entire of organization. One of the softwares that provide the circulation of information within the organization as integrated into different management styles and business processes is "ERP". ERP was built as an integrated suite of functions that allowed business processes to be modeled across departmental boundaries. EAI is a sophisticated type of middleware, which allows a high level of integration. In addition, EAI generally increases flexibility of an organization’s information systems and thus prolongs the lifecycle of many corporate applications. Furthermore, EAI technology enables information sharing, which results in more efficient operations and flexible delivery of business services.

ERP softwares, are offered as a ready package, have a structure in which changing both themselves and the existing business processes is a condition when they are harmonized an organization. ERP whose development is based on 1960s, is a holistic software that is fairly valid in terms of organizations. Disadvantages of ERP have led organizations to search for different software. EAI emerges as solution partner in this sense.
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