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Enterprise Resource Planning (ERP) Integration

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Abstract
A separate database system is typically used in organizations or businesses that have not adopted an ERP system. Each work unit has its own database, such as marketing with a marketing database, human resources or HRD with its own HRD database, procurement with its own procurement database, and the finance department has its own financial database. The purpose of the ERP system is to organize the overall business of the company. ERP is a program that exists in an organization/company that is used to automate and incorporate many enterprise and consumer processes. In a company, ERP implementation does not have to be in one complete system, but can be implemented first as a pilot project using only one module. If the application of one module is found to have been successful, so it is possible to apply another module in regard to the successful module. In its application, different business processes from one business to another optimize ERP customization.

Keywords: ERP, database, integration, modules, software, process

1. Introduction
Enterprise Resource Planning or better known as (ERP) stands for the three elements of the word enterprise (company / organization), resource (resource), planning (planning). Where, these three words reflect a concept that ends in a verb, namely planning. Thus, it means that ERP emphasizes the planning aspect. ERP integrates computer systems that used to be independent of each other in existing departments. Each department still has its own system, but all are integrated with each other, so that they can monitor problems that occur in a structured manner.

ERP systems can improve company performance by speeding up all processes and ultimately increasing company revenue. An ERP system is usually called a back-office system. The ERP integrates separate computer systems into established departments. Each department also has its own system, but all departments are integrated with each other so that they can monitor any issues that arise in an organized manner.

In general, Enterprise Resource Planning (ERP) is a concept used to plan and manage company resources, an integrated multi-module application package designed to serve and support various functions within the company, thus making work more efficient. And can provide more services. Services provided to consumers in the end can generate added value and provide maximum benefits for all stakeholders of the company.

2. Literature Theory
Enterprise resource planning
Enterprise Resource Planning according to Lee (2003) in Sinatra (2004) [3] is a method for industry in pursuing a more efficient business process by sharing information within and between business processes and running business electronically. Enterprise Resource Planning can also be defined as an information system that integrates and automates business processes related to aspects of a company's operations, production and distribution. The information system project has six stages of the implementation methodology (Indrajit, 2000) [1], namely the planning, analysis, design, construction, implementation, and post-implementation stages**.**

ERP Modules
Modularly, ERP software is typically divided into main modules, namely Operations and Support Modules, — for example Finance and Accounting and Human Resources (Zhang Z, 2005).

1. **Operation Module**
   General Logistics, Sales and Distribution, Materials Management, Logistics Execution, Quality Management, Plant Maintenance, Customer Service, Production Planning and Control, Project System, Environment Management.

2. **Financial and Accounting Module**
   General Accounting, Financial Accounting, Controlling, Investment Management, Treasury, Enterprise Controlling.

3. **Human Resources Module**
   Personnel Management, Personnel Time Management, Payroll, Training and Event Management, Organizational Management, Travel Management.

The Advantages of ERP usage

- **Financial data integration**
  Integrate financial data so that top management can better understand and control the financial performance of the company.

- **Standardization of the Operating Process**
  Standardize the operation process through the implementation of best practices resulting in increased productivity, decreased inefficiency and increased product quality.

- **Standardization of Data and Information**
  Standardize data and information through uniformity of reports, especially for large companies which usually consist of many business units with different numbers and types of businesses.

ERP System Implementation in Companies

There are several alternative ways to implement an ERP system, including.

1. Installing ERP applications directly and thoroughly. The company replaced the old system with an ERP system. This method of course also contains risks, such as the readiness of the company with the new system. Are the resources in it ready to operationalize the ERP system or not. Often times the implementation process will be slow because the process is not done in stages first.
2. Doing a franchise strategy, this method is done by implementing several different ERP systems for each business unit in the company. All of these systems are also interconnected by common modules such as financial modules. Implementation usually focuses on one unit first which is used as a pilot project. This reduces the risk of failure while testing the unit's ERP system for proper performance. If the results are satisfactory, the ERP system can. Implemented to other units in stages based on pilot project references.

The Successful Implementation of ERP Systems

There are several things that really determine the success of implementing an ERP.

1. **Mature Business Process**
   This is an absolute requirement for companies that implement ERP. Companies that do not have transparent business procedures can't implement ERP.

2. **A Good Change Management**
   It cannot be denied that the implementation of the system will often be followed by improvements in company's "behaviors". Change management is required to provide guidance to customers, operators, or anyone who may be in direct contact with the new system.

3. **Commitment**
   It will take a lot of time and effort to implement ERP in a company. Commitment of company leaders to users who will come in direct contact with the system is absolutely necessary.

4. **Teamwork**
   Cooperation must take place both internally and between the company and the consultants who carry out the work. Consultants and users have completely united the vision for the success of this implementation.

5. **Good Consultant**
   The experience of the consultants who carry out the implementation is also very influential in the implementation process.

The Signs of ERP System Failure

ERP failure is usually characterized by the following things, such as:

1. Lack of top management commitment
2. Lack of defining company needs (business strategy analysis)
3. Flawed software selection process (incomplete or hasty decisions)
4. Lack of resources (human, infrastructure and capital)
5. Lack of "buy in" resulting in employee resistance to change
6. Error calculating implementation time
7. Incompatible software with business processes
8. Lack of training and learning
9. Defects in project design & management
10. Lack of communication
11. Misleading savings suggestions

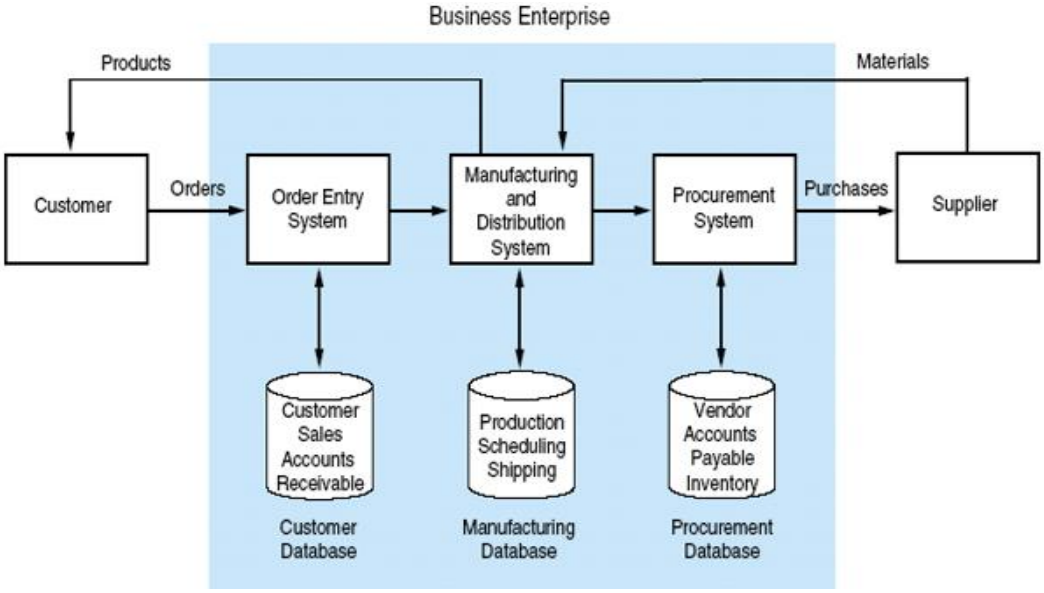
ERP Failure

1. Excess budget implementation time and costs
2. The pre-implementation was not done well
3. The operating strategy is not in line with the business process design and development
4. People were not prepared to accept and operate with the new system
5. Lack of education in the implementation stage will create difficulties for users which will actually slow down the company's process.

3. Discussion

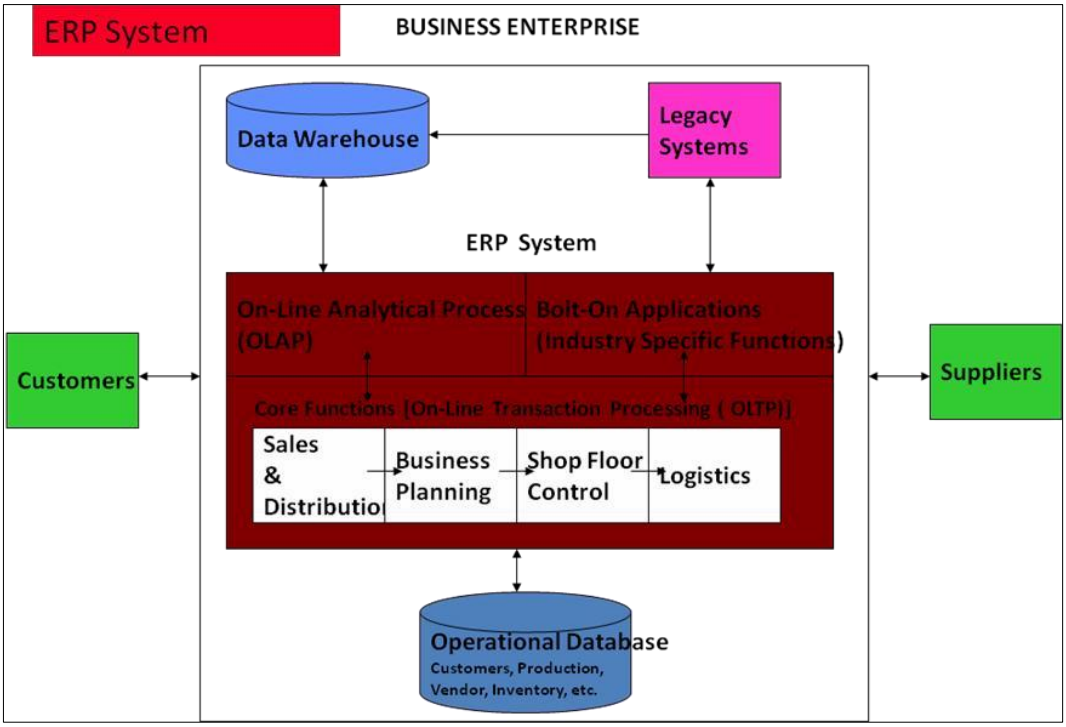
ERP is a software package that contains many software modules, especially those developed from the traditional manufacturing resource planning (MRP II) system. The purpose of ERP is to integrate main organizational processes such as order entry, manufacturing, purchasing and accounts payable, payroll and human resources. In the traditional information systems model, each department or functional department has its own computer system to optimize the performance of each department and functional department.

ERP combines all of this into an integrated system that accesses the database, thereby achieving information sharing and improving communication within the company.



The idea of a traditional information system with a closed database architecture is similar to the flat file method. As with the flat-file method, data is still an attribute of the application. Then there are independent databases. Like the flat-file method, there is also a strong probability of data redundancy. Ineffective communication between traditional systems often leads to decentralization of the system design process. Each system is designed to solve specific operational problems, not as part of an overall strategy.

ERP systems support the smooth flow of information. Cross organization is realized by providing a standard environment for the company's business and a common operational database that supports operations.



Core Application of ERP

According to its function, ERP is divided into two categories, such as core applications and business analysis applications. Core applications are applications that support the daily operations of the company. The core applications are not limited to sales and distribution, business planning, production planning, basic company control and logistics. Core applications can also be referred to as online transaction processing (OLTP) applications. Its applications include:

1. Sales and distribution functions can process orders received and arrange shipments. This involves verifying the availability of goods to ensure timely delivery and verification of consumer credit limits. A customer order reaches the ERP only once, unlike the conventional model. Since all users are able to access the regular database, the order status can be determined at any time. It reduces manual activity, saves time and reduces errors.
2. The business plan includes a demand forecast, a product

production plan and detailed directional information, which describes the sequence and stages of the ongoing process. Capacity planning and production planning can be very complicated, so some ERPs provide simulation tools to help managers decide how to avoid shortages of materials, labor or plant facilities. Once the master production plan is complete, the data will go into the MRP (Materials Requirement Planning), it provides three main pieces of information: exception reports, list of material requirements, supply requests.

3. The basic controls of the company including detailed production schedules, distribution and labor cost activities related to the actual production process.
4. Logistics is responsible for ensuring on-time delivery to customers. Most ERPs also have logistics procurement operations.

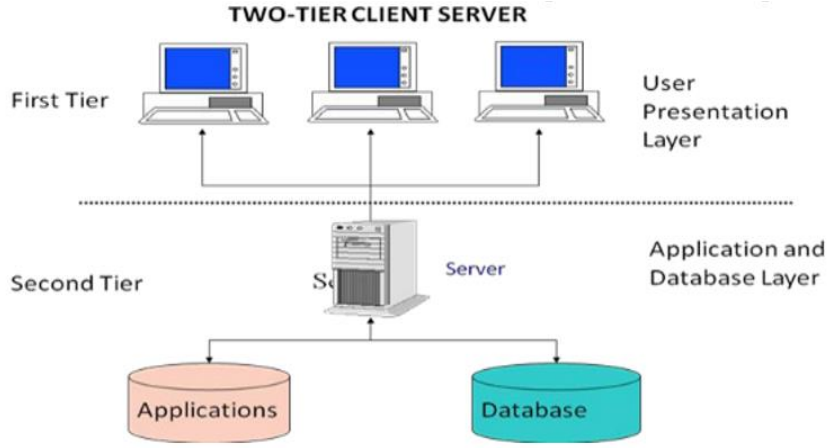
OLAP (Online Analytical Processing)

ERP is not just a complex transaction processing system. ERP is a decision support tool that provides real-time management information and enables timely decision making to improve performance and gain a competitive advantage. Online analytical processing (OLAP) includes decision support, modeling, information retrieval, ad hoc reporting analysis, and what-if analysis.

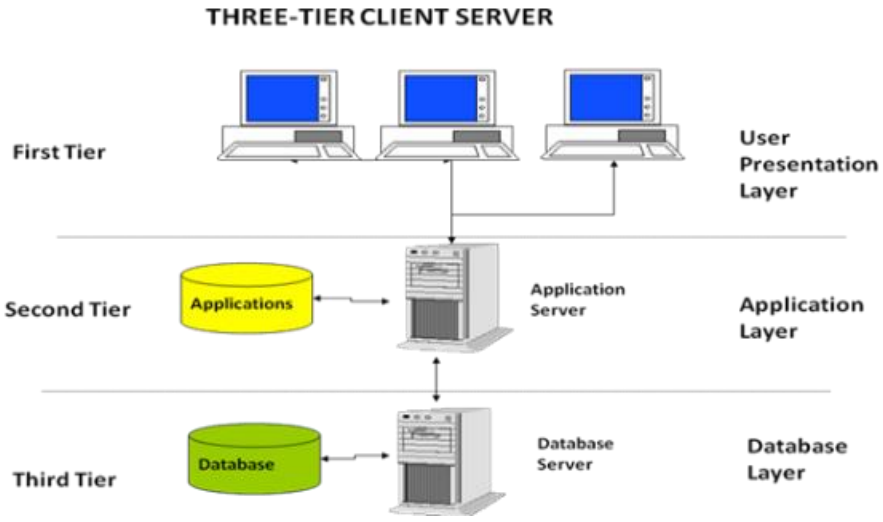
ERP system configuration

Most ERP systems are based on a client-server model. In short, the client-server model is a form of network topology in which computers or user terminals (clients) access ERP programs and data through a host called a server. Although servers can be managed centrally, customers are usually stationed in multiple locations throughout the company. The two basic forms of the client-server module:

1. Most ERP systems are based on a client-server model. In short, the client-server model is a form of network topology in which computers or user terminals (clients) access ERP programs and data through a host called a server. Although servers can be centralized, customers are usually stationed in multiple locations throughout the company. The two basic forms of the client-server module.



2. Three Tier Models, database features and different programs in a three-tier model. This type is specific to a broad ERP system where users use a wide area network to communicate to each other. Initially, the client will create connection with the application server. Then the application server continues a second connection to the database server.



OLTP vs. OLAP

The differences between OLTP and OLAP can be summarized as follows. OLTP applications support critical management tasks by simply querying database operations. OLAP applications support key management tasks by analyzing and examining complex data obtained from data warehouses.

The OLAP server supports common analysis operations, including

- Consolidation is the collection or roll-up of data.
- Drill-down allows users to view data according to a choice of level of detail.
- Slicing and Dicing allows users to examine data from different points of view, often being implemented over time to illustrate trends and patterns

Bolt-On Software

Many companies find that they cannot use ERP software on their own to run all processes in the business. The company uses bolts in software provided by third party vendors to perform certain business processes. Selection of the software requires attention so that it can run on the ERP system to be implemented.

Supply Chain Management (SCM)

Supply Chain Management is a set of operations related to the movement of goods from the raw material level to consumers. This includes purchases, production planning, handling of such orders, inventory control, transportation, warehousing, customer service and forecasting of commodity demand. SCM is a software application that supports this function. The success of SCM allows these activities to be coordinated and integrated into a seamless process. SCM connects all partners in the chain, including suppliers, transportation companies, third-party logistics companies, and information system providers.

The risks of ERP implementation

The following are the risks that need to be considered in ERP implementation:

1. **Implementation with the Big-Bang and Phased-In approaches**
   Most ERP implementation failures are caused by cultural issues within the company that oppose the process. There are several ways to implement ERP, including.
   a. **Big Bang Method**
      This approach tries to immediately transfer operations from the old system to the new system without an implementation stage. This of course would create some opponents, as everyone in the organization was more familiar with the old system. In addition, individuals often find that they fill in more data than using older systems. This can cause interruptions in day-to-day operations. However, when the adjustment period passes and a new company culture emerges, ERP becomes an operational and strategic tool that can provide a company with a competitive advantage.
   b. **Phased-In Method**
      Due to many objections to the above method, this method is the preferred alternative for the implementation of the ERP. This method incorporates ERP in a single business unit at a time. General processes and data can be integrated without affecting the activities of the organization. The purpose of this method is to ensure that the ERP and the old system work well together after the organizational roles have been changed to the new system, the old system will stop working.

2. **Opposition to change a business culture**
   For ERP implementation to be successful, change must be supported by the company culture itself. In addition, new systems technicians or user groups who understand computer technology are needed so that the learning process can run smoothly.
3. **Choosing a wrong ERP system**
   A common reason for ERP implementation failure is that it does not support one or more important business processes. If the wrong solution is chosen, extensive and time-consuming ERP model changes will be required, and of course it will cost a lot of money. Due to this negligence, serious interference may occur. In addition, ERP system development will be increasingly difficult.
4. **Goodness of Fit**
   Management needs to ensure that the ERP is suitable for the company. To find it, you need to go through a software selection process like a funnel, which starts from scratch and is more focused. However, if the business process is very unique, the ERP system must be modified to run with the old system or install bolt-on software.

5. **System scalability issues**
   If management wants to increase business volume when using an ERP system, they need to solve the scalability issues. Scalability is the ability of a system to operate smoothly and economically as user needs increase. Important measures of scalability are size, speed and workload.
6. **Choosing a wrong consultant**
   Successful implementation depends on expertise and experience that are usually not immediately available. Therefore, most ERP implementations require a consulting firm to coordinate projects to help the organization determine its needs. However, due to the many requirements to implement an ERP system, the consulting firm lacked human resources. This has resulted in the placement of unqualified personnel.

High costs and expenses that surpass the budget

The risks involved are costs that are known to be too low or uncertain. Problems that often arise in a variety of fields, such as:

- **Training**
  Training costs were always higher than expected, because management was primarily focused on the costs of new software for faculty and staff. In fact, this is only part of the training needed. Workers also have to learn new procedures, which are usually overlooked in the budgeting process.

- **Testing and unifying systems**
  ERP is the overall model, in theory, ERP is the system that drives the entire organization. In fact, many organizations use ERP as the backbone combined with legacy systems and additional software to meet specific company needs. Combining these different systems with an ERP system may involve writing conversion procedures or even modifying the internal ERP code. Combinations and tests are carried out according to certain conditions, making it difficult to estimate the cost in advance.

- **Database conversion**
  A new ERP system usually means a new database. Data conversion is the process of transferring data from an old system to an ERP database. If the old system data is reliable, the conversion process will continue through an automated process. Even under ideal conditions, manual testing and verification is required to ensure complete

and accurate transmission.

4. The impact of integration

By implementing an ERP system in an organization will integrate the system which results in.

1. Changes made in one module would update the other modules automatically when the modified information is associated with that module. The data will be changed immediately as soon as the data is entered into the system by the user. This is referred to as "real-time processing"
2. System integration can occur on condition that all companies must use the same data source for both customer data, product data and vendor data.
3. Data transparency, all users who have access to the system will be able to see all the most up-to-date information whenever needed, even if the information is inputted by other users.

5. Conclusion

ERP is a software package that contains many software modules developed from the traditional manufacturing resource planning system. The purpose of ERP is to integrate main organizational processes such as order entry, manufacturing, purchasing and accounts payable. Ineffective communication between traditional systems often leads to decentralization of the system design process. Each system is designed to solve specific operational problems, not as part of an overall strategy. The idea of a traditional information system with a closed database architecture is similar to the flat file method.

Most ERP implementation failures are caused by cultural issues within the company that oppose the process. Big Bang Method: Immediately transfer operations from the old system to the new system without an implementation stage. Phased-In Method: This method incorporates ERP in a single business unit at a time. Common reason for ERP failure is that it does not support one or more important business processes. If the wrong solution is chosen, extensive and time-consuming ERP model changes will be required.

6. References

1. Indrajit, Richardus Eko. Manajemen Sistem Informasi dan Teknologi Informasi, Gramedia, Jakarta, 2000.
2. Putra YM. Perencanaan Sumber Daya Perusahaan (Enterprise Resource Planning). Modul Kuliah Sistem Informasi Akuntansi. Jakarta: FEB-Universitas Mercu Buana, 2018.
3. Sinatra, Hadi Susanto. Aplikasi ERP di Jurusan Teknik Industri Universitas Kristen Petra, Bachelor thesis, Petra Christian University, 2004.
4. Wibisono, Setyawan. Enterprise Resource Planning (ERP) Solusi Sistem Informasi Terintegrasi. Jurnal Teknologi Informasi DINAMIK. 2005; 10(3).