

Enterprise Resource Planning System Implementation Framework for Not-for-Profit organization

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Abstract

Enterprise resource planning (ERP) system has been one of the most popular business management systems, providing benefits of real-time capabilities and seamless communication for business in large organizations. Project-bases, people-centric ERP system are designed to assist not-for-profit (NPF) organization and Non Government Organization (NGO) in fulfilling their mission. The aim of this paper is to propose an ERP implementation framework of not-for-profit organization. The framework that has been produced is a conceptual framework base on literature review. It divides into two dimensions, namely, ERP implementation process and components involved in these processes. The ERP implementation process contains of project preparation, technology selection, implementation /development and maintenance and review. The component involved organization and people, process, data and technology.

Keywords: *Enterprise Resource Planning, ERP, ERP implementation Framework, not-for-profit, NPF, Non Government Organization, NGO*

1. Introduction

In today's complex business environment, many companies are constantly trying to reduce costs, increase market share, implement business process change, improve staff productivity and improve profitability through the implementation of integrated business applications. Thus, more and more companies are turning to Enterprise Resource Planning (ERP) to help achieve these business goals.

ERP applications are software which helps organizations to integrate business processes and information flow. Basically ERP concept refers to standardization and integration. It is a system that integrates functions of different departments and

monitors transactions between them in a single package.

Enterprise Resource Planning (ERP) is a software solution that integrates business functions and data into a single system to be shared within a company. While ERP originated from manufacturing and production planning systems used in the manufacturing industry, ERP expanded its scope in the 1990's to other "back-office" functions such as human resources, finance and production planning. Moreover, in recent years ERP has incorporated other business extensions such as supply chain management and customer relationship management to become more competitive.

2. Related work

Due to the increasing needs for better direction and management of service organizations, operations management researchers and practitioners have started to implement ERP systems developed in manufacturing sector. Since service sector have more human-related business activities, especially in non-profit and government organizations, the sector uses human resources and workforce management functions more than their manufacturing counterparts. There are several ERP application in healthcare, financial services, higher education, whole sale or retail distribution, pharmaceutical, energy and aviation industries, commercial restaurant business, academic administration of university, etc.

Healthcare information systems are becoming more and more computerized. A huge amount of health related information needs to be stored and analyzed to understand what kind of facility equipment and workforce decisions are critical. With the aid of ERP systems this can be done faster and more efficiently.

Merode, Groothuis and Hasman[18] have suggested to divide hospital processes in two parts; deterministic processes and stochastic processes. They have claimed that ERP can be very useful for planning and controlling the deterministic processes

which means a certain patient group and non-complex cases.

Bakker and Leguit[3] revealed in their research that an integrated approach to information technology applications in hospitals would bring more benefits than the traditional isolated systems. The research aims to gather knowledge and experience with an integrated Hospital Information System (HIS). The HIS is expected to contribute to better quality of patient care, more efficiency in resource utilization, support of research, and support of education. At present, it is supporting almost all the activities in the hospital, not only medical support departments, but also nursing care, operating theatres, meal supply, finance and administration, logistics, human resource management, medication, appointment scheduling, etc.

Roth and Van Dierdonck[14], have studied on a Hospital Resource Planning System(HRP) framework which is similar with ERP systems. That HRP system consists of the operations management, clinical systems, hospital management system, support service system, finance and administration system, and system administration. Many hospitals have introduced this kind of ERP solutions. Some have implemented the software enterprise-wide (Baxter Cardiovascular Centre „HarveyCabr era“, California; Schwetzingen District Hospital, Germany; Wesley Hospital, Australia). Others have implemented only some modules (Vogtland Clinic, Germany; Hospital Saint-Joseph, France; HCL, France) [6].

As Zhu, Li, Wang, and Chen [20] declared, as the variety of products increases and the retailer size expands, it becomes a challenge for retailers to sell the right product to the right customers at the right time and price. The front- and back ends as well as various functional departments of retailers have to be tightly connected to handle this tough situation. The authors have developed an integrative model to explain the post-implementation success of ERP, based on the Technology–Organization–Environment (TOE) theory in Chinese retail industry.

Broadbent et al.[7], have discussed the ERP implementation of the banking industry. Citibank Asia has centralized and standardized back room processing across five Asian countries by adopting an ERP solution. The technology enabled the Citibank Vision in two major ways: first, with a one-stop paperless account opening, instant account availability, instant card and check issuance; second,

with a customer relationship database that supports the creation of customized products.

When ERP applications at commercial restaurant businesses are examined, according to the Ansel and Dyer [2], these firms have viewed technology as an additional cost of doing business, rather than an investment in future profitability. However, by tracking customers demographic characteristics, dining patterns, average meal duration, and typical amounts spent per hour, restaurants can do better at booking the right customers at the right time, serving them and practicing differential pricing strategies.

Scott and Wagner [15], analyzes an ERP implementation project in an academic administration of an Ivy League university. The paper focuses on the identification of temporal zones and creation of durable work times designed to re-order priorities between competing visions for the future of higher education. The authors have analyzed detailed negotiations during periods of controversy to reveal how standard work practices come to be created and recreated.

3. History of ERP

Historical development of ERP systems has begun in the 1960s with widespread use of computers. The first usage area is inventory management systems and the first implementation is “Bill of materials” process. At these years many software has been developed to determine material requirements for future periods. The first developed software is Materials Requirements Planning (MRP). In the 1970s, MRP systems have been improved to Closed-Loop MRP, including the issues Capacity Requirement Planning (CRP) and Sales and Operations Planning (SOP). In the early 1980s, Manufacturing Resource Planning (MRP II) systems have been developed to control whole manufacture processes of an enterprise and contains functions such as finance, sales planning, capacity management and scheduling. Increasing need to wide system integration in multi-national companies, stronger distribution management and Electronic Data Interchange (EDI) have lead to new developments in MRPII.

So, Enterprise Resource Planning (ERP) systems are bring to life that provide coordination and planning of business activities in different geographic regions within the framework of global data integration and database system. The second half

of the 1990s is the beginning of the transition period to e-commerce and e-structure. Companies have focused on e-commerce infrastructure to receive a share from growing internet and electronic market.

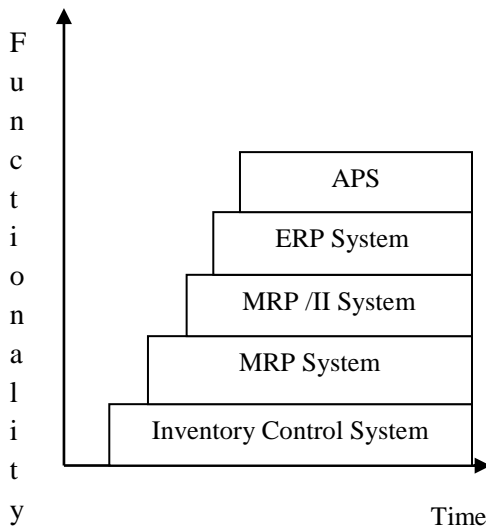


Figure 1. Development of Enterprise System

When ERP systems first come out, companies in manufacturing sector have begun to adapt to this system. Therefore, ERP software is commonly used for the manufacturing sector. Then, ERP has been used in service industry to ensure the integration of information flow. Current ERP systems are being used and developed by 74% of manufacturing firms and 59% of the companies in service sector. The common service industries that use ERP systems are:

- Banks & Insurance
- Defense & Security
- Health Education & Research
- Public sector
- Media & Telecommunication
- Retail & Wholesale Distribution sector
- Travel & Logistics Services
- Energy

3.1 ERP in Service Sector

Today, service sector has become a considerable force in the global economy. It can be divided into three parts that each part has different characteristics in itself.

(a) Capital-intensive service sector: This is inclusive of sectors, that have strong demand and requires quite large equipment such as energy, hotels, telecommunications...etc.

(b) Knowledge-intensive service sector: This is the sector that does not require very large investments for physical assets such as consulting, architecture, advertising, management...etc.

(c) Non-profit service sector: These are the institutions with legal entity, created to allocate a product for a particular purpose or to carry out a specific aim, except profit-sharing such as associations and foundations.

Service companies use ERP systems mainly to:

- Reduce administrative workload
- Replace dispersed legacy systems
- Replace unreliable finance and materials management systems
- Improve visibility across the entire system
- Real-time data processing

4. Not-for-Profit and NGO Organization

In the minds of many people, not-for-profit organizations (NFP) and Non Government Organization (NGO) are less complex than commercial enterprises and, as such, have little need for sophisticated, integrated enterprise resource planning software. Not-for-profit organizations and NGOs may not have to deal with the complexities of manufacturing and inventory management; they share many of the same internal processes as commercial entities.

While not-for-profit organizations and NGOs do not typically have customers or traditional accounts receivable, they may have large rosters of donors and outstanding “pledges” that need to be collected and managed. They also need to maintain books of account and periodically report the results of operations to stakeholders and external parties.

In fact, in respect to general accounting, and particularly project accounting, not-for-profit organizations and NGOs may be more complicated than their commercial counterparts. Finally, it often does not have sufficient internal IT resources available to develop and maintain complex computer systems. Thus, the acquisition and use of function-rich, integrated ERP software is an appropriate way for not-for-profit organizations and NGOs to control and report upon their operations.

Non-profit organizations are continually challenged by shrinking budgets and an increase in the need for services offered. Effectively managing your finances can be complex and time consuming as not-for-profit organizations are required to keep accurate records, provide financial transparency, and

adhere to ever-changing regulatory compliance. To meet these challenges, many non-profit organizations are implementing enterprise resource planning solutions designed to give organizations the ability to easily create and manage budgets, automate data entry and reconciliation, reduce human error, and provide detailed financial reporting.

4.1 Needs for Not-for-profit and NGOs Organization

The needs of NFPs fall into three main areas:

(i) Accounting Integrity

The accounting for NFP typically follows “fund accounting” rules and standards, which are very different from rules and standards that govern commercial enterprises. Accounts are grouped into various funds that capture inflow of funds from donations, government grants, etc. and outflows of funds, or expenditures related to the purpose of the organization.

The NFP’s charter or the source of the fund, such as an endowment or a government program, sets up the rules governing the type of expenditure. While NFPs need general accounting software that supports fund accounting processes, they may also need the same transactional financial functionality as commercial enterprises. Many NFPs have branch offices overseas or manage projects in international locations. As a result, these organizations incur expenditures denominated in foreign currencies, meaning they need the same multi-currency transaction execution and reporting capabilities as commercial companies.

NFPs may also need to deal with different or multiple accounting periods. While most commercial enterprise follows a calendar year accounting period, NPOs may need to support calendar year reporting as well as fiscal year reporting.

NFPs typically have a need for robust project accounting capabilities. An NFP may have dozens or even hundreds of projects, each of which is generating transactions that need to be processed, recorded, and reported.

(ii) Transaction Visibility

The often stringent requirements governing NFP activities create a need for transaction visibility by source, purpose, or other attributes. This visibility translates into a systems requirement for “drill down” capabilities, so that the detailed transactions within a project or a given fund can be examined and audited.

(iii) Reporting Requirements

NFPs typically need to prepare a statement of results from operations and a statement of fund balance. Both commercial entities and NFPs must report to their management and stakeholders (or donors). However, it is in the area of external reporting that NFPs have the most complexity. NFPs need to provide regular reporting to donors, regulatory agencies, and tax authorities. These reporting requirements may be on a calendar year or fiscal year basis, or both. Projects may need to be closed out in each fiscal year or carry forward to the next.

NFPs need more than just ERP transaction processing systems. It needs very robust project tracking and accounting systems. It needs accounting systems that can support “fund accounting” standards, as well as traditional commercial accounting. It needs software that is multi-lingual and supports multi-currency transactions. It needs cash management, collection, and donor roster maintenance capabilities.

Nonprofit organizations may have limited resources, but that does not mean that they are not complex and don’t need robust software solutions. It is limited internal resources and tight budgets.

4.2 Business Needs for Not-for-Profit and NGOs Organization

Not-for-profit and NGOs organization have numerous business needs:

- *Financial management* – provides a full understand of the true costs of projects, including associated overhead costs to allocate cost appropriately.
- *Human Capital management* – human resources and payroll are designed to meet the needs of not-for-profit and NGOs employing a wide range of staff.
- *Project management* – fully automate business processes to manage, track and report on all activities ensuring projects remain on track and make optimal use of resources.
- *Grant management* – helps maintain existing grants, secure new grants and comply with grantor requirements.
- *Research costing and pricing* – provides a flexible full costing, pricing and approval tool that enables the production of accurate cost estimates and agreement on appropriate prices of grant applications and research contracts.

- *Non-Profit fundraising and Donor management* – provides native donor management capabilities that are flexible and extensible.

4.3 Benefit using ERP at Not-for-Profit and NGOs Organization

ERP can be adapted to meet the unique needs of not-for-profits. It is combination of systems and operational and organizational improvements from which most not-for-profits can benefit. It includes:

- Improved donor, member or constituent relationship management
- Streamlined delivery of program services
- Reduced inconsistencies between development, program and fiscal data
- Elimination of national/regional provincialism
- Eliminating islands of information

5. Key Success Factors (KSF) on ERP Implementation Process

The key success factors (KSFs) were important part on ERP implementation. These factors will be used to build ERP implementation methodology / model. The following table will describe the key success factors that influenced ERP implementation.

Table 1. Key Success Factors

Aspect	Key Success Factors
People	Top management support
	Team Work
	User Involvement
	Use of Consultant
Process and Organization	Clear Goal and objective
	ERP implementation Strategy
	Project Management
	Change Management
	Risk Management
	Business process reengineering
	Communication
Training	
Technology	Infrastructure
	Data analysis and migration

6. ERP Implementation Framework

The ERP implementation process divide into four stages, namely: project preparation, technology selection, implementation/ development and maintenance and review. Every stage has some activities that must be done by component involved.

The ERP Module Composition for not-for-profit organization is used the following:

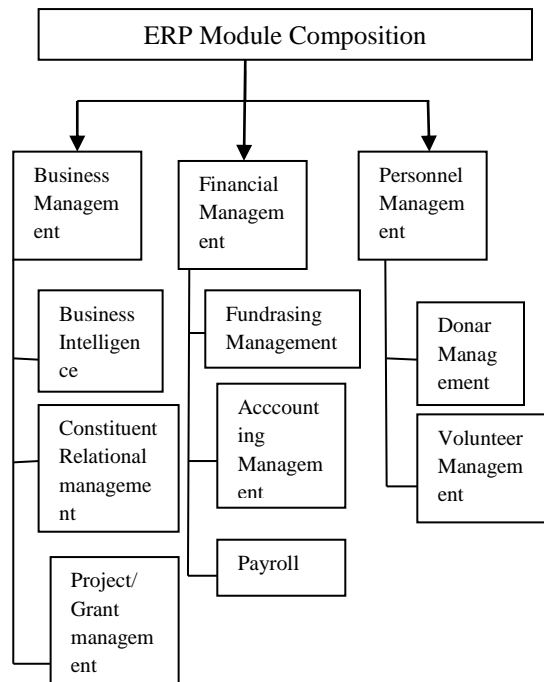


Figure 2. ERP Module Composition

Table 2. ERP Implementation Framework

	Preparati on	Selecti on	Implement ation	Maintena nce
Organ ization	Organiza tion Maturity	Project team selecti on -Top managem ent selecti on	Project monitorin g User training User Acceptanc e	Top Managem ent decision
Proc ess	-Project goal and object-ive	ERP imple mentat ion strateg y selecti on	ERP customizat ion Reporting	Evaluatio n and audit
Data	-Data analysis	data selecti on	data analysis data testing	Monitorin g data Refine and update data
Techno logy	-Techno logy analysis	HW selecti on	HW installati0 n HW testing	Monitoring HW performanc e Increase performanc e

6.1 Project Preparation

In this stage, organization has identify the maturity level of its organization in order to know whether the company visible to adopt an ERP system. The organization maturity level based on information system role into three, namely: operational, managerial and strategic. Each level has some indicators to measure. ERP system, if viewed from the function it was in the strategic level. Therefore, for companies that are in operational or managerial level is expected to improve the internal processes first before adopting an ERP system.

Other activities have to be done are formulation a clear goal and objective, business process reengineering (BPR) and evaluation of information Technology investment. These are essential to guide the organization in achieving the successful implementation of ERP system. This is intended to achieve the implementation of ERP in accordance with the time and costs have been determined and in accordance with company business needs. There are three things important in the implementation of ERP systems, namely: project scope, cost and time.

Organization's business process was adjusted in order to be aligned with ERP's business process. Evaluation of IT investment needs to be done to measure the level of organization's visibility both in technical and economic. Data and technology should be done an internal and external analysis of existing information system/ information technology. This activity aims to identify the information system/ information technology that has been owned by company and also to analyze a technology trend that will be used to support an organization's business.

6.2 Technology Selection

In this stage, at the organization level will be established ERP project team and steering committee and also will choose a project manager who is trusted to lead this project. Project managers must have strong leadership and really have a strong commitment to the success of ERP implementation.

While ERP implementation teams should be composed of people who are chose for their skills, past accomplishments, reputation, and flexibility. Management should constantly communicate with the team, but should also enable empowered and rapid decision making. The implementation team is important because it is responsible for creating the

initial, detailed project plan or overall schedule for the entire project. The team also involves all functional departments and demands the effort and cooperation of technical and business experts as well as end-users.

At the process level, it will perform activities selection of consultant, project scope and schedule and selection ERP implementation strategy. The selection of appropriate consultant greatly affects the success of ERP implementation. ERP implementation strategy can be divided into: clean sheets, customizing and best of bread.

The activities have been done at the technology level are ERP product selection, database product selection and hardware product selection. The company needs to choose the appropriate selection to support their operational process.

6.3 Implementation/ Development

At the organization level, it will be done a project monitoring, user acceptance test and user training. At the process level will be done some activities, namely: ERP customization, software change and reporting. It is also conducted a user acceptance test which aims to test the system in term of its function. The ERP customization will be done based on a functional requirement that generated at the project formulation stage. The amount of customization will affect the cost, project time, benefit, system performance, and implementation success.

At the technology level will be carried out functional testing, data analysis and migration, data testing, installing hardware and hardware testing.

6.4 Maintenance and Review

At the organization level, top management decision for going live. Top management level have to look at some previous activities to take this decision, such as the result of project monitoring, user acceptance test, functional testing, integration testing, data analysis and migration, data testing and hardware testing. These results will be considered by top management level to make decision. At the process level is still done some previous activities and the new activity is done evaluation and audit system. At the technology level, it will be done monitoring of application, update version, monitoring data, refine data, monitoring of performance

hardware/network and increase of performance hardware/network.

7. Conclusion

There are several stages must be performed in an ERP implementation for not-for-profit and NGOs organization. The stages are project preparation, technology selection, implementation/development and maintenance and review. The components involved are organization/people, process, data and technology. Each component will perform activities in each stage of ERP implementation framework. These activities are prepared based on the key success factor of ERP implementation process.

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