



Enterprise Resource Planning - A Review

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ABSTRACT

There is an essential expectation to build a holistic business solution that serves important business functions. The ERP software, which is designed to satisfy this demand, has been widely adopted by companies. Several firms nowadays integrate and operate ERP in order to enhance operational performance and create strategic value. In this study, we aim to synthesize our review of papers related to enterprise resource planning and provide an overview of it.

Keywords: ERP, enterprise resource planning.

Introduction

According to Chen et al. [1] on the significant effect of ERP systems on a company, the success of a firm "increasingly depends on timely information (internal and external) being available to the appropriate person at the right time for important management decision-making." An ERP system's integration of all business operations and services allows organisations to boost productivity [2]. According to Davenport [3], the adoption of enterprise systems by the business community "may be the most significant advance in the corporate application of information technology in the 1990s." However, organisations' intentional value-added operations are dependent on a number of essential aspects, including the proper deployment of ERP and the successful management of its operational performance over time.

Enterprise Resource Planning

2.1 Definition

The Gartner Group developed the phrase Enterprise Resource Planning in 1990 to designate the next generation of Manufacturing Resource Planning II (MRP II), software. ERP emerged historically from the 1970s and 1980s material requirement planning (MRP) and manufacturing resource planning MRP II systems, respectively [4]. According to Akkermans et al. [4], ERP may be characterised from several viewpoints such as functional, technological, or business value that encompasses the entire enterprise. Tarantilis et al. [5] define ERP as a system that integrates traditional accounting, manufacturing, sales, management, and other management tools to provide a "all-in-one" solution that addresses all areas of an organization's business management.

2.2 Evolution

MRP was created to calculate the materials required more effectively. It developed into Manufacturing Resource Planning II (MRP II), which included new features such as sales planning, capacity management, and scheduling [6]. Though MRP II was initially viewed as the subsequent step in improved production planning, companies quickly realised that profit growth and satisfaction of customers are priorities that apply to the entire enterprise, encompassing finance, sales and distribution, and human resources in addition to manufacturing. ERP refers to the notion of a fully integrated corporate solution (enterprise resource planning). A prevalent viewpoint on Enterprise Resource Planning focuses on the historical evolution of business integration principles [6].

2.3 ERP Modules

ERP systems are categorized into modules. Various industries have diverse demands, which lead to various modules. Companies can mix and match the components they require. They may progressively improve their system and expand its usefulness.

The ERP Modules can be mainly classified into

- Sales and Distribution
- Materials Management
- Financial Accounting

- Project Management
- Human Resources
- Quality Management

2.4 ERP Systems

The following Table shows the major changes between both Traditional and Cloud ERP (Link and Back, 2015).

Table 1 – Comparison between Cloud ERP vs. Traditional ERP

Category	Cloud ERP	Traditional ERP
ERP system total cost	Monthly Subscription Fee for ERP system	Cost of license
Maintenance	No maintenance cost	Annual Maintenance
Cost of ERP Installation	No installation cost because the system is already installed on the server provider	Costs to set up the hardware and install ERP software
Updates	Included in the subscription fees	Included in the maintenance fees, but needs extra fees for updating hardware and software
Implementation time	Short time for implementation	Time consuming
Flexibility in the ERP modules	Additional modules can be added in a short time if required	New modules may need to be added to the installation of a new package from the ERP system and removed from the old package
Selection of modules	Packages can be subscribed from modules by offers so they cannot subscribe to one module only, which reduces the flexibility of choice	Only required modules will be purchased
Mobility	Accessed from anywhere	Accessed from the location of ERP system servers, the system can be accessed via the web from anywhere, but special packages must be purchased, which leads to extra cost to the customer

3. ERP Lifecycle

3.1 ERP Lifecycle Stages

In this part, we employ Esteves and Pastor's [7] ERP lifecycle structure. This architecture is divided into phases that represents an ERP system travels across over its entire life within the originating firm.

The stages are:

- Adaptation decision,
- Acquisition
- Implementation,
- Use and maintenance,
- Evolution,
- Retirement phase

3.1.1 Adaption decision phase

During this stage, business decision-makers must examine the requirement for a new ERP system while deciding on the information system's reasoning approach [8].

3.1.2 Acquisition phase

This step entails selecting the product that best meets the needs of the company in order to reduce the need for customisation[9].

3.1.3 Implementation phase

This phase is concerned with the customization, parameterization, and adaption of the purchased ERP package to fit the demands of the firm[9].

3.3.4 Use and maintenance phase

This phase entails using the product in a way that maximises projected advantages while minimising interruption[9].

3.1.5 Evolution phase

During this phase, the system is upgraded by incorporating new technology and integrating extra capabilities into the ERP system to get enhanced advantages[9].

3.1.6 Retirement phase

When new technologies emerge or the ERP system becomes insufficient to meet the demands, managers must determine whether to replace it with another information system approach that is more appropriate to the current organisational needs[9].

3.2 ERP Lifecycle issues

3.2.1 Adoption decision

Hirt and Swanson [10] provide a case study that examines the ERP system adoption process. This article gives essential information on various challenges and elements that are crucial to the effective implementation of an ERP system in a business. The issues faced under Adoption can be classified into the following :

- Adoption drivers
- Adoption evaluation
- Organizational characteristics [11]

3.2.2 Acquisition

Stefanou [12] proposes a structure for the ERP System selection process, which may be beneficial for identifying crucial concerns for future study as well as supporting managers contemplating ERP initiatives. The issues faced under Acquisition can be classified into the following :

- Factors affecting selection
- Selection criteria
- In-house developed systems[11]

3.2.3 Implementation

Umble et al. [13] give important implementation processes for ERP implementation. The issues faced under Implementation can be classified into the following :

- Impact of consultant
- Risk management

3.2.4 Use and maintenance

Pozzebon [14] analyses the elements influencing ERP use by integrating a structural viewpoint with a behavioral-based model.

3.2.5 Evolution

Lenzerini et al. [15] present a framework for giving a unified view of data related to the ERP system. The framework can handle data from many types of applications.

3.2.6 Retirement

FoxMeyer Drugs [16] is the most well-known retirement instance. The majority of companies are now in the implementation or usage and maintenance stages.

4. Challenges in Implementing ERP

A new aspect of ERP systems, implementation for global companies across many sites has been investigated by Markus, Tanis et al., [17].

4.1 Technology Selection

Ratkevicius et al. [18] conducted a study of several categorization of such crucial components for the ERP system screening process, dividing them into two categories: software-related and implementation-related. It is emphasised that ERP system functionality is the most important software-related ERP selection factor.

4.2 Change Management

Hurt [19] applies numerous well-known management and information systems ideas in the case study: the value chain, expectation concept, change management principles, the capability maturity model, as well as the systems development life cycle.

5. Conclusion

ERP will undoubtedly continue to evolve and perhaps more so in coming technologies. Many papers on technological innovations and ERP were highlighted as potentially intriguing subjects for future research by scholars, corporations, and industrial organisations. The number of articles on ERP systems in the information systems industry appears to be limited in comparison to the amount of business they created. ERP systems provide several research opportunities, few of which are addressed in this article. While we feel the material has served to bring to light the complexity involved with ERP ideas.

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