Transaction applications of enterprise information system

V Prajová[1], M Homokyová[1] and M Horvátová[1]

[1]Slovak University of Technology, Faculty of Materials Science and Technology, Institute of Industrial Engineering and Management, J. Bottu 25, 917 24 Trnava, Slovakia

E-mail: vanessa.prajova@stuba.sk

Abstract. The huge amount of data currently available to enterprises needs to be exploited to their advantage, as the lack of information can decide the future of the enterprise in the near future. On enterprises development in recent years has been greatly influenced by the rapid development of technologies for processing and organizing them. These technologies share the role of an information integrator to support decision-making at all levels of the manufacturing enterprise. Enterprise resource planning is a key transactional application of enterprise information systems. Its main features include the ability to automate and integrate key business processes, functions and data across the enterprise.

1. Introduction

In terms of defining enterprise data categories, transactions have been characterized as transforming a state that has atomicity, durability, consistency, and isolation characteristics. Business transactions then change business, usually during activities or processes [2].

In order to support business transactions, transactional applications. These applications integrate a variety of enterprise management tasks into one application sharing a common data base. This ensures the minimization of inconsistencies and errors in business data and eliminates inefficiencies in operations with these data. Enterprise Resource Planning is a key transactional application of enterprise information systems.

Enterprise Resource Planning (ERP) is an enterprise resource planning and management tool that integrates sub-agendas, comprehensively supports core business processes, and provides the necessary business management information. There are two basic views of ERP systems. In a narrower perspective, the ERP system represents a solution that integrates in-house areas, especially manufacturing, logistics, finance and human resources. In a broader perspective, ERP systems also include applications for managerial decision-making, MIS, and applications to support the environment. In the case of suppliers, it is SCM (Supply Chain Management), in the case of customers, CRM (Customer Relationship Management) [3].

2. ERP application features

The functions of ERP applications can be divided into the basic functions that are associated with the three basic circuits of transactions (economy, logistics and human resources), and the extensions. The individual functions are grouped into application modules. The range of functions and range of application modules can vary widely across different ERP applications.

ERP applications provide a wide range of features and are most comprehensive in relation to other types of applications. If we want to compare the functionality of ERP applications of different suppliers, then it is good to draw attention to these pitfalls [1]:

- ERP functionality is very extensive and therefore more detailed comparative analysis is quite complicated and time consuming;
- the structure of the functions, and thus the menu structure, is very different between different ERP applications;
- various ERP application vendors use partially different terminology, different names for similar functions.

The basic ERP modules or feature groups include [1]:

- *Economic governance* - must provide a comprehensive view of the economy of the entire organization and the effective implementation of financial operations. It usually includes features related to the general ledger and individual journals, bank relationship management functions, asset management, cost accounting. The module provides a comprehensive overview of financial operations in the company, evaluation of the economic performance of the company and its individual business units and continuous provision of compliance of the information system with legislation.
- *Sales and marketing* - includes, in particular, integrated support for customer management, sales activity management and marketing, displaying relationships between customers, buyers, suppliers, employees and competitors, managing business opportunities, sales management, support for creating and managing marketing campaigns, and evaluating their results.
- *Purchasing and warehouse management* - Provides support for processing purchase requirements, for stock assessment and for own supply operations, supply price analysis, for material requirements records of individual manufacturing and other centres, and communication of purchase and inventory management requirements [6].
- *Human resources management* - Ensures personal records and, in particular, supports the management of the company's staff development, its efficient use and recruitment.
- *Production module* - is focused mainly on production planning, or production orders, monitoring their status and performance with respect to deadlines, monitoring and evaluation of stock, production management at the level of operative and workshop management.

Most manufacturers supply specialized vertical solutions for individual areas, which differ from each other by the composition of modules, functionality and support for individual processes. The overall degree of process automation by implementing an ERP system is different in every industry. The common area occurring in all verticals is support for purchasing and accounting processes.

3. Linking ERP to Business Process Management
There are various explanations for the concept of process in the literature. However, it can simply be defined as "transforming inputs into outputs". The ISO 9001: 2008 standard characterizes the process as "a set of interrelated or interacting activities that change inputs into outputs." If we look at definitions by author [10], we understand the process - a set of activities that require inputs and generates value-added outputs for the customer.

If we look at this definition, a closer process is not only linked to the production process, as the word process might seem. The process concerns all areas of the business, administrative or non-administrative, and thus, of course, manufacturing. In addition, processes go far beyond the enterprise and thus create and shape relationships with other businesses, partners, customers, employees, government [7].

The process is triggered by an initial event. The event can be created after any activity, with the most important end goal being a customer-oriented outcome [1]. The process or process result is determined by a variety of parameters, such as process costs or process efficiency. In this case, the value for the endpoint - customer. The process owner and the process parameters are responsible for the process.

There are so many business processes in the company that there would be very little overview of them without their categorization. The information system implementer works with these categories. Therefore, three basic process categories have been created [4]:

- *key processes*: are processes that lead to the company's core vision, to profit, and thus to customer satisfaction;
- *supporting processes*: these processes are equally important as key processes, they are also customer-focused, but internal. Internal customers are employees of the enterprise and thus one of the inputs to the process;
- *side processes*: are support processes that can be excluded from the organizational structure of the enterprise and thus can be "outsourced".

The link between the information system and the business process is confirmed by the implementation of enterprise information systems by the need to carry out an "inventory" and, of course, to change all processes in the company, whose activities are affected by the new information system. In today's companies, it is possible to say almost all areas from logistics, business and technical departments, through employee records and all related tasks - remuneration of merchants based on delivered goods, remuneration of technical workers based on repairs and installations, remuneration. BackOffice workers for their work, to quantify all work and results in the hands of management [8]. As a result, it is not only the achievement of data availability but also the method and thus the processes that obtain and handle the data. Finally, foreign surveys [3] demonstrate this information system symbiosis with processes, which show that the introduction of ERP systems has brought not only cost reductions and quality improvements, but also a space for decision-making in decision-making and customer-driven decision-making. Also improve processes throughout the enterprise.

Most ERP vendors offer present processes for each vertical. In the following section, we look at an overview of the basic processes delivered in the E-Business Suite for manufacturing.

The basic processes provided by the E-Business Suite ERP package are [1]:

- Order entry, planning and customer service
  - ✓ from forecasting to planning;
  - ✓ from order to delivery;
  - ✓ from order to delivery from manufacturer;
  - ✓ from claim to credit note;
  - ✓ from complaint to exchange.

- New product development, workshop management
- from design to release to production;
- from planning to production schedule;
- from schedule to production;
- from standard production costs to warehouse valuation.

- Shopping processes
- from request to income - indirect purchase;
- from request to receipt - direct purchase;
- from analysis to contract.

Business processes need to be mapped to maximize efficiency. Mapped processes are recorded in the business process model. The role of this model is to summarize all the activities of the company that generate high efficiency gains in one place. Such an overview then makes it easy to look at the entire process structure of the company, allows the processes to monitor, control and then continuously optimize, train new employees, each of which is easier to access, thereby saving time and thus the whole company [1].

The business process shown in the Figure 1. begins with the creation of an application, the request to send a quotation, the creation of a contract or a purchase order, the processing of goods receipt, the processing of the incoming invoice, the payment. In manufacturing plants, the primary source of demand is the purchase of direct materials planning - the most common run of MRP.
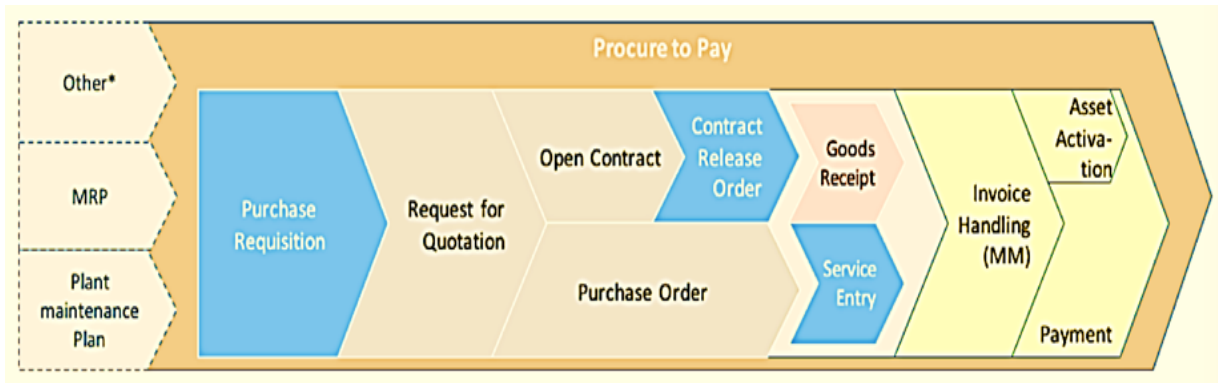
Figure 1. SAP Process Diagram, From Purchase to Payment [11].

4. Metrics as an indicator of ERP efficiency and performance

Many IT projects in the past and present in businesses are unsuccessful. The projects do not meet their objectives and do not bring the expected benefits of their introduction. IT support for business processes is so often sceptical. Solutions that were originally intended to bring productivity gains, time savings, cost reductions are often out of control and ultimately do not meet customer expectations. It is no exception if the situation becomes even worse after the introduction of the information system. Summary of IT Problems by [9]:

- the benefits of introducing new technologies from the IT sphere are not being met;
- implemented systems are not being used properly, failing their possible benefits to the organization;
- many projects are closed or cancelled due to budget or time frame overrun;
- users reject changes in information technology;
- there is a misunderstanding between the needs of business and IT.

For accessing enterprises to deploy ERP by [9], the recommended basic steps are as follows:
- ensuring support for a new project in the company;
- use of external consultant services - deployment partner;
- thorough mapping of key task holders;
- identification of business processes;
- project scope definition;
- written documentation of requirements;
- identifying potential solutions;
- solution presentations;
- reference projects;
- final decision.

One of the key issues encountered in introducing a methodology to measure the benefits of deploying an ERP system or other major change affecting an enterprise is to use an appropriate methodology to evaluate these benefits. As the comprehensive deployment of the new ERP will generally affect all of the company's departments with the desire to cover and optimize key in-house processes, it is appropriate to address a methodology that can quantify the benefits and improvements

from a corporate perspective. According to [5], the metric is a system of parameters or pathways for the quantitative and periodic evaluation of processes that will be measured. Metrics are typically specialized by area of application and cannot be mechanically transferred to other applications.

5. ERP effects

ERP applications bring users the full range of effects among the main features include [1]:

- Labor productivity increases in normal business and administrative activities through the use of existing data (about customers, suppliers, goods...) and copying them into existing documents.
- It reduces the risk of errors and errors in management activities, business or financial transactions by using embedded control mechanisms in the software.
- It reduces the risk of errors and errors in management activities, business or financial transactions by using embedded control mechanisms in the software.
- The accuracy of decision-making operations is enhanced due to the interconnection of individual ERP modules, for example, by more objective assessment and planning of customer orders with immediate evaluation of their material capacity and economic efficiency.
- The overall level of business management is enhanced by using ERP embedded management methods, such as controlling, order planning, and so on, with many previous installations, often worldwide.

6. Conclusion

Nowadays, the automation of in-house processes and their optimal implementation is an important success factor. ERP systems provide efficient business process management at a low cost. They are a solid foundation on which to build and operate new types of enterprise software applications that can provide strategic benefits in the competitive world of today. Only efficiently executed processes are able to move the company to the competition, increase its competitiveness, flexibly respond to constantly changing customer requirements and strengthen the market position. Implementation of modern ERP systems is a means by which it is possible to cope with ever more demanding customer requirements, increase competition pressure, fast technological development and globalization of business. The ERP lifecycle is closely linked to the lifespan and support for the technologies in which it was developed. Already today, ERP systems have become the information ecosystem of any future-thinking company.

References

[1] Gála L, Pour J and Šedivá Z 2015 *Enterprise Informatics*, 3rd, updated edition, Praha, Grada Publishing, a.s., ISBN 978-80-247-5457-4
[2] Bruckner T, Voříšek J 2012 Buchalcevová A 2012 *Creation of information systems*, Praha, Grada Publishing, a.s., ISBN 978-80-247-4153-6
[3] Basl J and Blažíček R 2012 *Business information systems*, Praha, Grada Publishing a.s., ISBN 978-80-247-4307-3
[4] Řepa V 2006 *Business processes*. Praha, Grada Publishing a.s., ISBN 80-247-1281-4
[5] Učeň P 2001 *Metrics in Computer Science*, Praha, Grada Publishing a.s., lSBN 80-247-0080-8
[6] Basl, J 2011 *Innovation of enterprise information systems*, PBtisk Příbram, ISBN 978-80-7431-045-4
[7] Sodomka P 2016 *Information systems in business practice,* Computer Press, Brno, ISBN 80-251-1200-4

[8]   Vrana I and Richta K 2017 *Principles and procedures of enterprise information systems implementation*, Grada Publishing, Praha, ISBN 80-247-1103-6

[9]   Kováč M 2009 *Metrik ERP system applications,* In: Transfer inovácií 13/2009, Technical University of Košice, ISSN 1337-7094

[10] Hammer M 2002 *Process Management and the future of six sigma*, MIT Sloan Management Review

[11] https://erproof.com/mm/free-training/sap-procure-to-pay-process/