

# From ERP Systems to Digital Accounting in Relations with Customers and Suppliers

LAURA-DIANA GENETE  
Business Information System Department  
“Alexandru Ioan Cuza” University of Iasi  
22 Carol I Blvd., Ro-700505  
ROMANIA  
[glaura@uaic.ro](mailto:glaura@uaic.ro)

ALEXANDRU ȚUGUI  
Business Information System Department  
“Alexandru Ioan Cuza” University of Iasi  
22 Carol I Blvd., Ro-700505  
ROMANIA  
[altug@uaic.ro](mailto:altug@uaic.ro)

*Abstract:* - The last decades' technological evolution resulted in essential changes in the way accounting processes are done. The extension of organizations' activity at a global level and the large use of Enterprise Resource Planning (ERP) systems contributed significantly to the change in the way operations take place within the companies and in the relations with partners. All these aspects, together with the accounting standardization and harmonization processes, lead to the emergence and extension of the use of a new concept: *digital accounting*. It regards the representation, manipulation and transmission of the accounting information in electronic format across all accounting cycles, as well as their communication to partners interested in it. Digital accounting is based on the existence of a coherent information system ensured by the ERP-type systems and the use of Internet for the transmission of information generated by the system both within the company and outside it. This paper intends to catch the main aspects produced by the transition from the ERP systems to digital accounting, following the example of two accounting cycles essential for any company's activity: the revenue cycle and the expenditure cycle.

*Key Words:* - Digital Accounting, Enterprise Resource Planning, Suppliers, Customers, Internet, Information Technology, Accounting Cycles

## 1 Introduction

The last decades' technological evolution marked in a definite manner the way the companies' economic activities take place. All the studies show that competition intensifies in almost every industry, companies must develop innovative products and business processes to survive and thrive and that information technology is a powerful tool to help them do so. [1] In this context, it is well known that more and more organizations are involved in the technological development either directly, as producers, or indirectly, by being used, thus increasing the hardware and software demand. Also, we must notice the global development of the electronic transactions both regarding their number and their value. Under the circumstances, a strongly digitized and interconnected economy will bring about the modernization of the enterprise, whose flows will also be digitized. [2] In order to meet this

technologic level, we can distinguish two major directions [2]:

- Its relations with other enterprises mediated by the Internet, the Extranet and the Intranet;
- The digitization of the extant information flows in the cell-enterprise.

Nevertheless, the realization of complete digitization of the enterprises' operations involves at least the fulfilment of at least the following conditions: (1) meeting a superior coherence and collaboration level at the organization level, both from the human and technologic viewpoint, (2) the clear-cut distinction of the informational cycles within the company and also in the relationships with external partners and (3) assuming material and social risks by the company and its employees.

An important step in this process is the implementation and use of an internal coherent informational system ensured by solutions of the *Enterprise Resource Planning* type.

## 2 The revenue and the expenditure cycles in ERP systems

For an enterprise, the ERP system represents the central element of the activity management and it is used in order to support the business strategy by supplying best real-time answers for customers, suppliers, production and management, as a result of the integration of the following elements [3]:

- *resource planning* includes forecasting and planning, purchasing and material management, warehouse and distribution management, product distribution, and accounting and finance;
- *supply-chain management* includes understanding demand and capacity, and scheduling capacity to meet demand;
- *demand chain management* includes handling product configuration; quotes, pricing, and contracts, promotions and commissions;
- *knowledge management* includes creating data warehouse, a central repository for the enterprise's data; performing business analysis on this data; providing decision support for enterprise leadership; and creating future customer-based strategies.

The ERP systems' functions extended impressively during the latest decades as a result of the technological and economical evolution and of the users' requirements. According to some authors, these functions *create the processing of an organization's transactions in order to make more accessible the planning, production and increase of customers' satisfaction*. [4] From a functional viewpoint, an ERP system comprises the following components [5]: *production planning, acquisition management, stock management, interaction with suppliers, customer relations management, and order tracking, financial resources management*. The first main characteristic of integrated systems is that they combine separate records relating to the same subject into one related record held in the computer. [6]

Currently, ERP systems provide modules that ensure an efficient management of information inside the company and supply the necessary information for establishing business relationships with external partners (Fig. 1).



**Fig. 1** Components of an Enterprise Resource Planning system [7]

1. *Customers' management* concerns the sales process regarding contracts and orders, the delivery and invoicing process, financial results analysis per each customer, and allows at least the following operations:
  - a. Receiving requests for proposals from customers;
  - b. Management of contracts;
  - c. Delivery planning and the creation of the delivery order;
  - d. Establishing the price lists, including various computation options for one product;
  - e. Elaboration and/or management of sales-related documents: invoices, attendance notices, merchandise returns etc.;
  - f. Elaboration of reports: delivery status, contract/order lists, offer lists, detailed sales status - comparative and customized, sales statistics and analysis;
  - g. Registering and management of the accounting information regarding customers (registering, cancellation, visualisation and listing of accounting notes).
2. *Suppliers' management* creates the automated evidence of offers for and requests from suppliers, choosing the best offer by using the supplier's history analysis, the price/quality analysis, and that of the payment and delivery conditions, the tracking of contracts signed with suppliers, all through their validity period. The most important operations made using this component are the following:

- a. Elaboration of requests for proposals for suppliers;
  - b. Contract management;
  - c. Elaboration and/or management of suppliers documents: invoices, entry notices, merchandise returns, entry-reception notices etc.;
  - d. Elaboration of reports: acquisition status, contract/order lists, offer lists, provisioning statistics and analysis;
  - e. Registering and management of the accounting information regarding suppliers (registering, cancellation, visualisation and listing of accounting notes).
- faster cycle times – these include credit approvals, payments and collections, posting of transactions, closing of the books, generation of reports and more time available for higher-level analysis;
  - boarder geographic reach;
  - continuous service availability, 24/7 access, and more satisfied internal and external customers;
  - reduced error rates – that means fewer transactions with errors as well as fewer errors;
  - reduced accounting staff and improved productivity;
  - better cash management – efficient payments and effective collections;
  - cost savings in mail, paper and storage of paper;
  - improved audit trails and security.

Mention must be made that the functioning of the ERP systems regarding suppliers and customers is not limited to the components listed above. It is directly related to the production planning and tracking, planning regarding the necessary materials, consumption and costs, as well as their tracking, to stock qualitative and quantitative administration, and, indirectly, to fixed assets and human resource management, and also to general accounting. Based on the information provided by these components, customer and supplier classified lists and other reports are created, as well as the analysis and synthesis useful for the management team in making decisions.

### 3 The revenue and the expenditure cycles in digital accounting

Digital accounting was the result of the last decades' technological development, as well as of the adoption of international standards in the field. Digital accounting includes both the representation of the accounting information in electronic format, as well as its manipulation and transmission in the same form, and it concerns all accounting cycles, processes and functions in an enterprise that uses financial – accounting information. Accounting informatization up to the level of digital accounting is not possible without a coherent informational system ensured by the integrated systems and without the extension of Internet use, which allowed business and electronic commerce development. The transformation of accounting processes from classic into digital involves not only a rigorous analysis of theirs, but also of the costs – benefits report, which is most of the times difficult to estimate or quantify. The most important benefits of digital accounting are [12]:

The analysis of advantages must be strongly correlated to that of costs involved in the change towards digital accounting. According to the organization's infrastructure, to the applications and activities it has, costs can vary from one concrete situation to another. Here are some of the most significant costs:

- Investments in hardware and software resources;
- Costs necessary for redesigning processes;
- Personnel trainings and guidance requested from experts outside the company;
- Costs generated by extra security measures;
- Unexpected costs due to application malfunctioning or human errors.

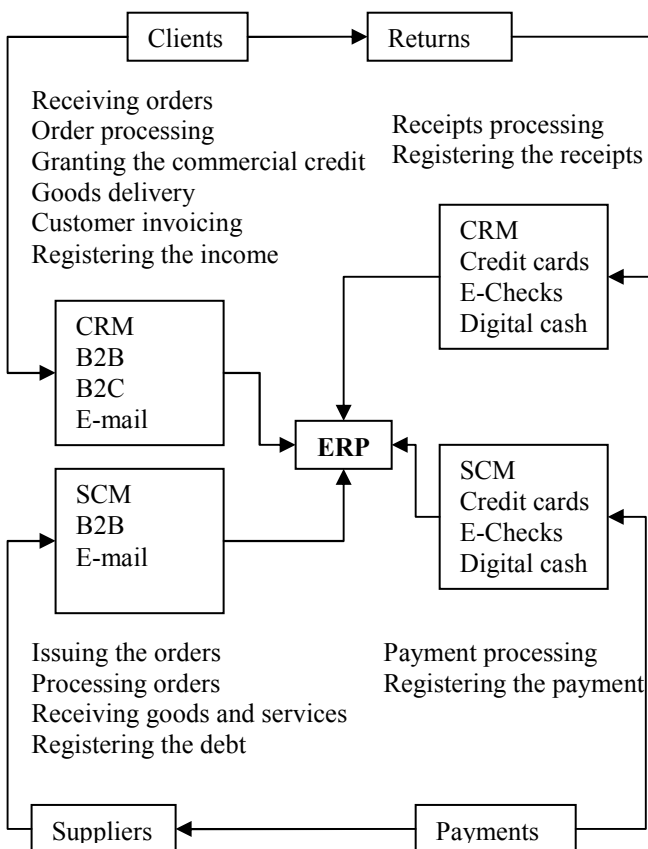
We must mention that the evolution of expenses needed for accounting digitisation can sometimes be unpredictable both due to internal factors (the applications used are difficult to integrate; personnel's resistance to changes), and also to external ones (the qualification and experience of the company ensuring the system integration; partners' receptivity to changes taking place in the way transactions are made; possible changes in the law system unforeseen from the beginning).

The revenue and expenditure cycles represent essential components of a company which carries on activities in optimum conditions. The evolution and extension of Internet use and the development of ERP systems resulted in major modifications in the way the sales and acquisition operations of goods and cash operations take place, that is, of their equivalent payment by [12]:

- Sales orders can arrive on the Web through EDI, B2B or B2C storefronts, online exchange, CRM or Sales Automation software; shipments can be tracked or monitored using the Internet, the billing function can be handled as Electronic Invoice Presentment and Payment, payment can be made using negotiable electronic instruments or digital

cash. The electronic information is automatic downloading in the accounting software, further processing, such as posting to accounts receivable and general ledger, can automatically performed;

- Suppliers can tap into company database and based on the inventory, which can be done automated over the Internet, identified the organization needs, the purchasing process can also take place over the Web in the absence of face-to-face contact. This tool can interact with the accounts payable module for payment processing and all information is automatic downloading in accounting software and accounts for purchasing and payment are automatically performed and general ledger also. A short presentation of these changes, including of the operations and technologies/systems involved in the acquisition, sales, payment and receipt processes, and also of the way they interact with the ERP system in digital accounting is shown in the following figure (Fig. 2).



**Fig. 2** Acquisition and sales operations in digital accounting

Nevertheless, the acquisition and sales operations digitization is a complex and collaborative process, especially since it requires the active participation of all the partners taking part in economical transactions. Considering this aspect, in the

following sections we describe in detail the stages each category of operations involves and the conditions the involved parties must meet in order to reach a truly digital accounting.

### 3.1 The revenue cycle

The revenue cycle starts with the request made by a buyer and ends with the goods or services transformation into a current commercial account receivable and then into pecuniary resources; it comprises the decisions and processes required for transferring the property right to the goods and services towards customers, after they are ready for sale. [13] The basic principle of the revenue cycle, that supports the evolution of an economic organization in the current environment, which is extremely competitive and dynamic, is orientation towards customers. Also, another important characteristic of the economic environment, which essentially influences the sales activity, is the global extension of businesses, where an important part is played by the development of information and communication technologies that allow the performance of transactions at any time, no matter the geographical position of the persons/organizations involved.

The digitization of the revenue cycle requires the homogenization of the principles and documents on which accounting operations are based, that is, the use of a standard structure at the documents level in order to ensure interoperability. An example in this case is the invoice that must contain a current number, the product code, monetary unit, quantity, price per unit, VAT value, excises, total etc., which, combined with a unitary structure, create the possibility to be moved from one application to another, no matter their type. The stages of the sales process in digital accounting, that must complete and extend the functionalities of the ERP systems used in organizations, are the following:

1. The seller makes the invoice in electronic format, signs it using the digital signature and send it to the customer by e-mail;
2. In the storehouse, the products sent to customers are identified by reading bar codes and, similarly, they are received after the accompanying document from the list is ticked (the administrator having only the obligation of introducing the delivered quantity);
3. The customer's quantitative values are correlated to the supplier's, and if certain differences appear, they must be pointed out to the issuer;

4. The invoice received by the customer by e-mail is integrated in his/her application and the accounting operations of the acquisition operation are generated based on it. Similarly, the operations characteristic for the sales process are generated in the supplier's application;
5. The operations for performing the payment are done, taking into account the money the customer paid in advance, if this is the case.

In order to correctly perform the sales transactions in an exclusively virtual environment, the following essential conditions must be met:

- the invoices based on which some products have been received must not appear on more than one reception form;
- the administrator is responsible for erroneously receiving the products;
- any modifications of the reception notes are determined by a modification that must be motivated made in time;
- both the supplier and the customer must have machines for reading bar codes, which will help them deliver and receive goods, respectively, to/from the storehouse;
- the supplier and the customer must also use documents with a standard structure, digital signature and e-mail integrated with the accounting application;
- if the circuit is fully digitized, the information in electronic format can be received by several persons, including by the Ministry of Finance that can identify the possible erroneous fiscal codes and will initiate control operations for the partners involved in the transaction. This system has at least two major advantages: (1) the issue of declarations regarding the received invoices is not necessary any longer and (2) it allows the identification of possible fictive deliveries;
- the existence of a complex infrastructure is necessary in order to assure the communication and transmission of information in real time among the business partners and at the state's control devices.

### 3.2 The expenditure cycle

The expenditure cycle includes all the activities and decisions made in order to obtain the raw material, the materials and services for a proper functioning of the organization's processes and it starts when a provisioning request is made an entitled person from inside the company and it ends when the goods and services are paid for. The supply process has various

similarities with the sales process, if we take into consideration the fact that one company's sale represents the business partner's supply. In this case as well, the digitization of the supply chain requires, first of all, the homogenization of the principles and documents on which the chain is based, that is, the use of a standard structure to ensure interoperability. The stages of this process that should complete and extend the functionalities of the ERP systems used in organizations are the following:

1. The company that wants to purchase selects the supplier by means of e-auction or, if it already has business relationships with a certain supplier, it can send a new order. Both the contract and order authentication is made by means of the electronic signature, and it is sent by e-mail to the supplier;
2. At the supplier and at the customer similarly, the ordered products are identified using the bar codes and, in both cases the administrator has the obligation to introduce the delivered/received quantities after marking the accompanying document from a list generated based on the information found in the company's database.
3. The supplier's quantitative values are correlated to the customer's. In case differences in quantity or in value appear, the supplier must be contacted in order to identify the cause of the differences;
4. Simultaneously, the supplier sends the invoice to the customer, by e-mail, the invoice being automatically taken into the database and generating, in the same manner, the accounting operations specific to sales. Similarly, the operations characteristic for the supply process are generated in the customer's application;
5. The operations for receiving the value of products and for the recording of amortizations, according to the situation, are started by taking into account possible payments in advance, a process in which at least one banking unit is usually involved.

The main conditions that must be fulfilled for a correct supply transaction in digital environment are the following:

- the administrator is responsible for some products' erroneous delivery;
- both the supplier and the customer must have machines for reading bar codes, which will help them deliver and receive goods, respectively, to/from the storehouse;
- the supplier's delivery of products and their reception by the customer must take place on

the basis of documents with a standard structure, the parties must use the digital signature for the authentication of operations and they must also use an e-mail application integrated with the accounting application;

- the document and information cycle must be well established in order to clearly identify who is responsible for each operation or component;
- similarly with the sales process, the fully digitized circuit of information and documents allows their reception by the state control bodies that can easily identify possible fiscal errors, makes useless the issue of declarations regarding the received invoices and it allows the identification of possible fictive supply.

#### 4 Conclusion

ERP systems appeared and developed as a requirement of the economic, social and technological evolution to allow companies to develop and people to facilitate and optimise their activity. They became established in a relatively short period of time due to the strategic advantages they offer and they reached a level where they can meet the diversified information requirements of managers and employees. Also, their integration with other systems used by organizations, such as Supply Chain Management, Customer Relationship Management, Internet connection and the activity expansion by using specific e-business practices, allowed the orientations towards a new evolution level, that is, *digital accounting*. Obviously, the implementation of a system capable to automatize all the operations in a company, such as digital accounting can do, is a long and expensive process that requires detailed analysis, especially since in the electronic environment a possible error is often spread and multiplied with an amazing speed, being much more difficult to identify and correct. Despite all the risks digital accounting involves, it tends to become established due to the advantages it offers, presented in the third section of this paper, to which we can add the following [2]:

- eliminating or limiting tax evasion because all operations will be automatically registered and therefore they can be controlled;
- eliminating human errors – the resort to information and communication technologies will implicitly lead to a higher standardization of procedures and it will make it impossible not to observe the problem solving algorithms;
- the standardization of procedures by automatization will lead to a smoother

standardization at the level of quality management and accounting harmonization;

- intern control and financial audit will constitute attractive and efficient activities from all points of view.

We must remark that accounting digitization must be approached step by step, by a gradual informatization of the company's activity, supported by all the employees involved in the accounting activities, and, of course, by the management team. Also, in various situations, including the ones described in the present paper, in the management of the sales and supply operations, the involvement of all the participants in the economic operations is required, because one refusal might interrupt the chain of operations performed in the virtual environment and determines the return to the classic way of performing operations. Another condition is that the government institutions accept to actively take part in the accounting digitization by recognizing and supporting the methods of keeping the electronic evidence of the tax payers and economic operations performed by them.

Despite all these requirements, which are sometimes quite complex, we consider that digital accounting represents the following phase in the evolution of organizations' activity and will definitely contribute to the economic, social and technologic growth.

#### References:

- [1] S. Haag, M. Cummings, A. Phillips, *Management Information Systems for the Information Age*, McGraw-Hill Irwin, Inc., 2006.
- [2] A. Țugui, D. Genete, Financial accounting e-activities in the virtual enterprise, *E-Activities: Networking the World. Proceeding of the 6th Conference on E-ACTIVITIES (E-Learning, E-Communities, E-Commerce, E-Management, E-Marketing, E-Governance, Tele-Working / E-ACTIVITIES'07)*, 2007, pp. 215-220.
- [3] G. Norris, R. J. Hurley, M. K. Hartley, R. J. Dunleavy, D. J. Balls, *E-Business and ERP: Transforming the Enterprise*, John Wiley, Inc., 2000.
- [4] D. O'Leary, *Enterprise Resource Planning Systems (Systems, Life Cycle, Electronic Commerce, and Risk)*, Cambridge University Press, 2000.
- [5] D. Fotache, *Enterprise Resource Planning*, <https://portal.feaa.uaic.ro/C6/ERP/Documente/Prezentare%20curs%20ERP.pdf>, Retrieved May 2007.
- [6] Y. F. Musaji, *Integrated Auditing of ERP Systems*, John Wiley & Sons, Inc., 2002.

- [7] Adapted by Rashid, M., Hossain, L, Patric, J.D., *Enterprise Resource Planning: Global Opportunities and Challenges*, [http://www.idea-group.com/downloads/excerpts/193070836XExc\\_erp.pdf](http://www.idea-group.com/downloads/excerpts/193070836XExc_erp.pdf), Retrieved April 2006.
- [8] <http://www.ebsromania.ro>, Retrieved June 2008.
- [9] <http://www.siveco.ro>, Retrieved January 2008.
- [10] <http://www.crescendo.ro>, Retrieved May 2008.
- [11] Navision 4.0 documentation.
- [12] A. Deshmukh, *Digital Accounting. The Effects of the Internet and ERP on Accounting*, Idea Group, Inc., 2006.
- [13] Arens, A., A., Elder, J., R., Beasley, S., M., *Auditing and Assurance Services: An Integrated Approach*, 11th Edition, Pearson Education, Inc., 2006.