Enterprise Resources Planning Systems – accountancy support. Dematerialization of the documents

Mehedintu, Anca and Pirvu, Cerasela

University of Craiova, Faculty of Economics and Business Administration

3 December 2009

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Anca Mehedintu, Cerasela Pirvu
Faculty of Economics and Business Administration,
University of Craiova, Romania
ancamehedintu@yahoo.com
ccpirvu2006@yahoo.com

Abstract

The globalization and of very fast changes realised in the field of technology of information and communications, the dematerialization of documents represents an objective attended in designing enterprise integrated informatics systems. In this sense, documents that are specific to the financially – accountable activities need on one side a legal frame adequate for dematerialization, on the other side enterprise integrated software solutions capable of making possible the processing of operational transactions based on processing justifying documents, as well as reporting economic indicators.

This paper proposes to present the most important aspects characterising enterprise integrated solutions of Enterprise Resources Planning – ERP, advantages offered by these solutions and to underline the increase of the efficiency of the financial – accountancy activities, as part of the organizations using these software platforms. However, the paper emphasis the process of dematerialization of the documents, on its importance in the present context and proposes some alternatives of shaping this process. At the end of the paper, it is presented the tendency of the system of ERP type to ensure the management of the operations/ registrations through electronic means, but also their communication/ transmission between business partners or between emitters and receivers involved in the electronic exchange of documents.

Keywords: ERP system, dematerialization, integration, accountancy, electronic documents, software systems

JEL Classification Codes: M15

Introduction

Enterprise resource planning systems or enterprise systems are software systems for business management, encompassing modules supporting functional areas such as planning, manufacturing, sales, marketing, distribution, accounting, financial, human resource management, project management, inventory management, service and maintenance, transportation and e-business. The architecture of the software facilitates transparent integration of modules, providing flow of information between all functions within the enterprise in a consistently visible manner. Corporate computing with ERPs allows companies to implement a single integrated system by replacing or reengineering their mostly incompatible legacy information systems.

American Production and Inventory Control Society (2001) has defined ERP systems as a method for the effective planning and controlling of all the resources needed to take, make, ship and account for customer orders in a manufacturing, distribution or service company.

We quote several definitions from the published literature to further explain the concept: "ERP (enterprise resource planning systems) comprises of a commercial software package that promises the seamless integration of all the information flowing through the company–financial, accounting, human resources, supply chain and customer information" (Davenport, 1998). "ERP systems are configurable information systems packages that integrate information and information-based processes within and across functional areas in an organization" (Kumar & Van Hillsgersberg, 2000). "One database, one application and a unified interface across the entire enterprise" (Tadjer, 1998). "ERP systems are computer-based systems designed to process an organization's transactions and facilitate integrated and real-time planning, production, and customer response" (O'Leary, 2001).

The concept of the ERP system can be illustrated, following Davenport (1998), with the diagram in Figure 1.

This diagram shows the modality in which all data fluxes taking place as part of functional areas of an organization can be managed through an integrated solution of ERP type.

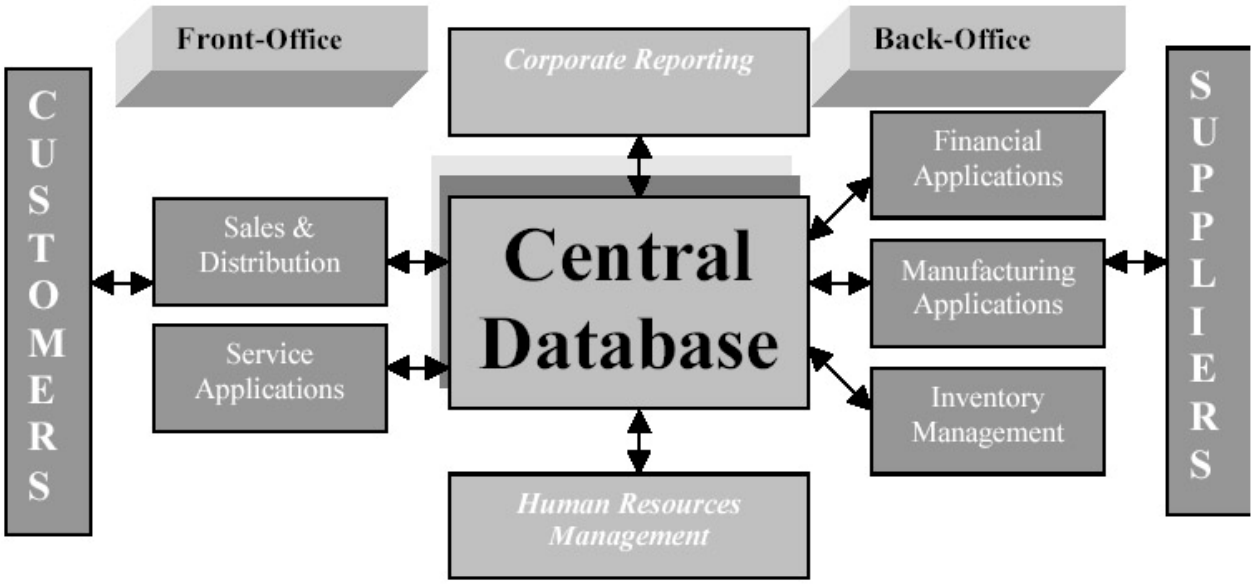

Figure 1: ERP systems concept

An ERP system is required to have the following characteristics:

- Modular design comprising many distinct business modules such as financial, manufacturing, accounting, distribution, etc.
- Use centralized common database management system (DBMS)
- The modules are integrated and provide seamless data flow among the modules, increasing operational transparency through standard interfaces
- They are generally complex systems involving high cost
- They are flexible and offer best business practices
- They require time-consuming tailoring and configuration setups for integrating with the company's business functions
- The modules work in real time with online and batch processing capabilities
- They are or soon they will be Internet-enabled

Different ERP vendors provide ERP systems with some degree of specialty but the core modules are almost the same for all of them. Some of the core ERP modules, found in the successful ERP systems, are the following:

- Accounting management
- Financial management
- Manufacturing management
- Production management
- Transportation management
- Sales & distribution management
- Human resources management
- Supply chain management
- Customer relationship management
- E-Business.

1. The ERP system and the efficiency of financial – accountable activities

The Financial–Accountable module is the main element, the core of any ERP application. All information from the system is centralized in the financial – accountable module, offering so the support for different legal reports. For small companies, the investment in a financial – accountable solution is the first stage; while these develop, making an appeal to ERP solution for the integration of all business processes, it becomes a compulsory request.

Even though compulsory, it can't be said that the Financial – Accountable module is the essence of an ERP, thing that is valid for any other module. The power of such an ERP resides in the capacity to collect and manage information in any place where it is produced, in a unitary, coherent, integrated manner, fact that allows the maintenance of real time raports, which are necessary to decisional process at any level of a company. The financial – accountable module, in comparison with other ERP module, is used by a small number of users, but the managed information is considered as being critical for any company.

The existence of such a module as part of an ERP is important, the compulsory condition being that functionalities be covering and in conformity with legislation in force. As part of an ERP, it cannot be stated that this module's functionalities are most appreciated ones, these being considered most of times involved.

We can certainly say that the functionalities of the financial – accountable module are among most important ones. Even if the essence of an ERP resides in the integration in the same data basis of all information that is available in the company, for many beneficiaries the financial – accountable module is the resistance piece. As a generality, the importance of this module is reversely proportional with the size of the beneficiary's organization. Small companies tend to grant attention only to this module, meanwhile in great organizations it is only a puzzle piece, having value only as a result of summing information from modules adjacent to productive and commercial activities.

We consider that speaking about Enterprise Resource Planning could not be possible in the absence of the financial – accountable data from operations that these systems manage. As a principle, the financial – accountable module collects and consolidates information regarding all activities of the company, allowing this way a unitary management (Figure 2).

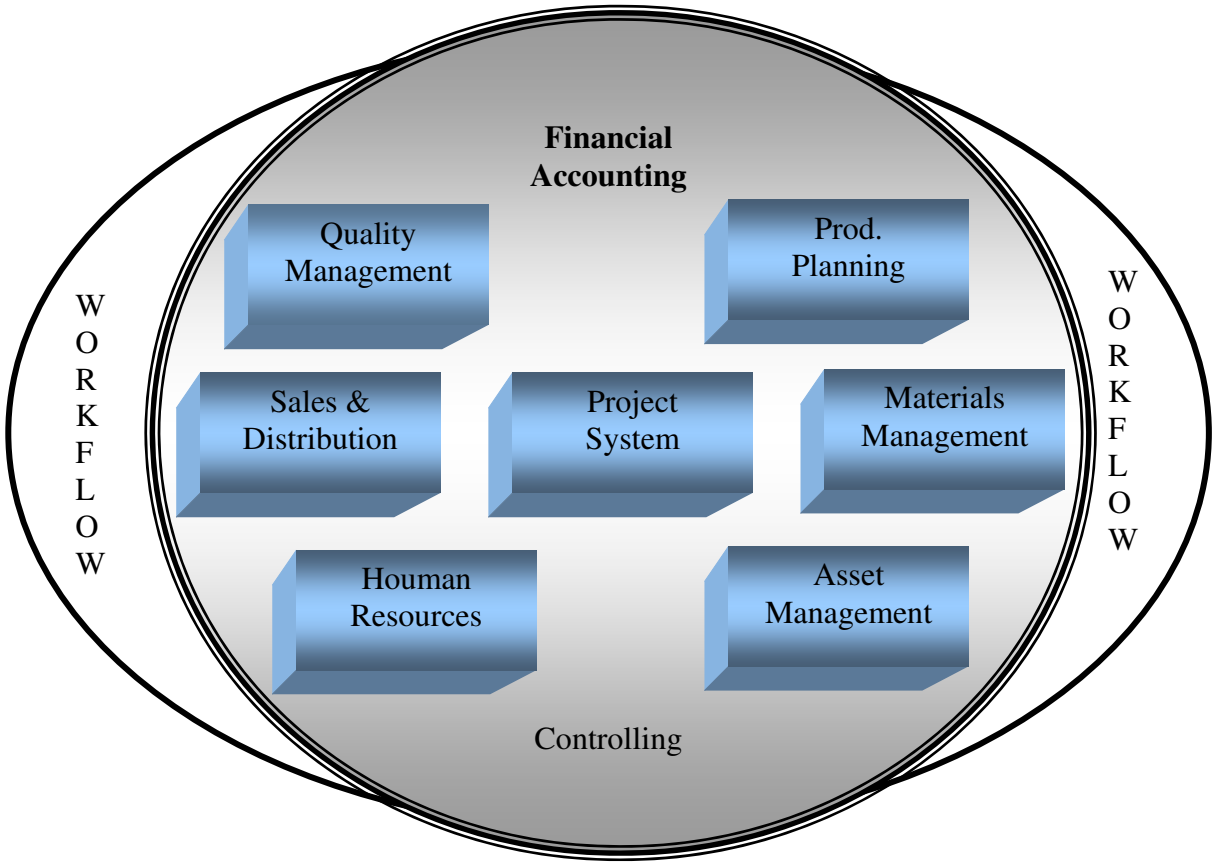

Figure 2: Conceptual scheme of the management of the enterprise's resources

The conclusion is that the Financial – Accountancy module is not the most important one, but is compulsory in the implementation of any ERP. Anyhow, it should be realised a difference between accountable activities and the financial management, because – even if accountable operations can be missing, as a result of externalization of this activity – the financial management is a *sine qua non* condition.

One of the challenges at which an efficient ERP should have a positive response is connected to the transfer of the operational activities that are specific to the financial – accountable department from the operating areas of the documents to an analysis of the financial indicators and the control of the working flows.

This thing must be realized when, for example, this department is under-dimensioned in rapport with the rest of the structure of the company, the number of the persons that directly or indirectly generated accountancy effects being not only much higher, but also geographically distributed, and. especially, not having specialty accountancy knowledge.

In these conditions, to ensure a high quality of information that the operational generates in accountancy, it is necessary a great flexibility in the configuration of the initial parameters, doubled by restrictions that are specific to the operational roles and of powerful instruments of analyze and verification.

As follows, we will present the most important characteristics that an ERP solution must fulfil to ensure the efficiency and optimization of the financial – accountable activity:

1. ***Usage flexibility***. Starts from defining the accountable plan, no restrictions regarding the number of levels of analytical accounts continuing with the configurations of the accountable monography that are specific to subjects of operational management (articles, partners, banks, pay desks, VAT, customs tax, fix means, personnel, etc) and finalising with formulas of automatic realization of the accountable notes that are specific to each operation. In case of apparition of legislative modifications, the experimental models for generating accountable notes, of assignment of VAT journals or on accountable registers are mentioned as historic, so that during the process of regeneration of accountable note that is afferent to an operational document, the elected formula would be the active one during realization that document, and not the actual one.

2. ***Automation*** of over 95% from the accounting operations (registrations/ notes). Besides the integration of data integration and obtaining some complete reports regarding activity, as generic advantages of implementing an ERP, the Financial – Accountable module brings, as a major advantage, the automation of the specific operations in a percentage of up to 95%, depending on the degree of personalization of the application. The automation is capable through the high degree of repeatability of the financial – accountancy operations and means the application of some experimental models, which are existent in application or are pre-defined at implementation.

Together with the increase of the operational speed, this automation allows persons without accountancy knowledge to work in the application, but especially erases human errors from certain operations.

The ERP system, having an integrating character, through the automation of the operations also solves the problem: to generate correct accountable effects, in cases in which the majority of the users from the system do not have specialty notions. To this extent, the connection points between operational patterns and the accountable one must be defined in a very simple manner, precise, flexible, which must be easily controlled and once configured, not being able to intervene in their respect, only if that person has the access level and correspondent knowledge/ responsibility.

It is important to know that a great part also from verifications that are specific to the period of closing the management period can be automated in the ERP system, using extensible frameworks, which would allow new verifications in the period of their identification as stringent needs. It is indicated to be maintained a historic of verifications realized and of results generated by any verification processed, to realize, at any moment an audit regarding the degree of assimilation and respecting the working procedure.

3. ***Processing operations in real time***. Working in real time warrants the possibility to analyze partial results in any moment, being capable to interfere, in a proactive manner, to realize necessary corrective operations. For example, as part of the process of budgeting, it can be intercalated an intermediary stage of approval of any expense exigency, the financial department being able to space

out requests as to ensure the observance of the established parameters. Also, the conclusion of incomes and expenses registered in advance (non-actionable), even on principle automatic, can be adjusted manually so that this should be able to be redistributed according to necessities.

4. ***The ergonomics of interfaces and exactness of registrations***. The financial – accountable operations must respect a certain exactness imposed by the nature of trading information, as well as the closeness of the legislative requirements. So, the ERP, generally, and the Financial – Accountancy module, in particular, must maintain the equilibrium between the ergonomics of the interface/ simplicity of the working modality and the accuracy of the registration. The equilibrium must be found at the level of every ERP modules, but it must be taken into account the fact that in the Financial – Accountancy module this requirement is critical, as here are introduced or transited the greatest number of documents. Both desiderata can be achieved through an attentive configuration of the interfaces, depending on the operation type, namely depending on the necessary of information that the managers need. We can state that the two are not contradictory objectives, on the contrary, an increased ergonomics encourages the accuracy of the registrations.

5. ***Efficient economic reports***. It is indicated that verification reports starting from synthetically/ consolidated situations should be detailed up to the level at which appears non-conformity, using drill-down techniques (allowing navigation on different levels of summarising, to the most detailed information). Generated accountable notes receive for the debtor account, as well as for the creditor one, the subject of operational management that generated that amount, eliminating the necessity of creating an exaggerate number of analytical.

The ERP solution must allow the generation of reports and the data export in a multitude of formats, offering support for integration with other products: population's evidence, geographical informatics systems, document's management, etc.

6. ***Control of the user's access through security levels.*** The ERP system must ensure the management of rights/ advantages of the users at the screen/ operation/ control screen, on group/ user, allowing the usage of simple options, as well as increased complexity.

7. ***Configurable character.*** The ERP solution must offer the personalization possibility at language and interface level. The very high degree of parametrization and extensibility makes that ERP solutions be perfectly adapted to the necessities of each separate client, depending on their business pattern.

8. ***Structured contextual Help*** The ERP system must have a help with usage instructions and usages samples instruction for each facility.

As a conclusion, we consider that each ERP solution fulfilling the presented characteristics can ensure a complete and unitary approach of processes. So, the qualitative aspects of the activity of the financial – accountancy department, can be underlined on several stages: budgets, cost centres, cash-flow observance, management of fix assets, quality control of documents operation, economic – financial analysis with the use of Business Intelligence type instrument, repetitive activities of document's operation, being automated in a percentage of over 95%.

2. Legal frame at European and national level, regarding the electronic change of documents and registration of the operation through electronic means

The justifying documents, specific for the financial – accountancy activities, need a legal frame, adequate for dematerialization. At the level of the European Union, it was adopted the directive no. 2001/115/CE allowing the modernization of the invoicing procedures of the economic agents, in their business relationships, by electronic invoices transmission, concordant with the security norms: advanced electronic signature and Electronic Data Interchange (EDI).

In Romania, the basic laws in this field are already in force, leaving a free space to the large scale implementation of the informatics technologies. The Electronic signature Law and the Notary electronic activities Law make possible the electronic signature of any document, and the Electronic commerce Law as well as the Law regarding temporal mark make possible transactions in a digital format. The dematerialization of the documents become possible also in Romania, once with promulgation of the ***Law of electronic archiving*** (Law 135/2007), mentioning rules of safety depositing of the documents in an electronic format.

From this moment, the market of IT industry from Romania passes to the development and implementation of solutions allowing the passage towards "paperless" technologies.

The law of archiving documents in an electronic format, expected with interest by the economic agents, especially by the IT industry, is considered as an important step for continuation of the process of dematerialization of the documents from the commercial societies. The law creates the juridical general frame applicable to the realization, preservation, consulting and utilization of the documents in electronic format, archived or that would be archived.

A second law, ***The Law of registration of the commercial operations through electronic means/*** Law of electronic invoicing (Law 260/2007) establishes the juridical regime of the electronic format documents containing information regarding the economic operations of exchange or sale of goods or services between persons issuing or receiving invoices, fiscal tickets or receipts in an electronic format.

These two laws are important also by the fact that aligns Romania at European settlements in the field. In other words, since 1st January 2008, also in Romania would be born the first digital invoice.

The promulgation of the above mentioned law opens the opportunity of implementation of some solutions to ensure the support of the operational processes by the most performing technologies. These solutions allow the enlargement of the integration of the process of document processing beyond the borders of the accountability department, by suppliers, logisticians and the other internal department that play an important role in the control and validation of the documents.

A special case of application of these rules is represented by the dematerialization of the invoices. In the field of invoices there are a series of problems generated in present by their use in a paper format.

As it is well known, high periods of realization of the transactions, lost invoices, double payment, high administrative costs, dissatisfactions of the suppliers are only some of the problems that even the most experimented specialised department face, in operation connected to the accountancy of the suppliers.

World statistic studies (IOMA and Gartner) that have been realises, show that:

- about 7,5% from the invoices are wrong routed
- one of the 20 documents is lost, requiring a long period (25 hours) to recover a copy of the lost document or issuing a new document.
- 85 Euros is the average price to retrieve a lost invoice
- Data extraction, validation, archiving/ retrieving represents up to 72% from the average cost for processing an invoice on paper format
- all these lead to a conclusion indicating the reduction of personnel costs with 87% by passing to electronic processing. The processing cost of an invoice on paper support is of 14 Euros, and in electronic format of 4 Euros.

Studying the assignation of the time of a financial – accountancy department, it results that this consumes 66% from the time by processing transactions, and only 19% for risk management, 11% for the assistance of decisional support, and 4% for internal management (Figure 3).

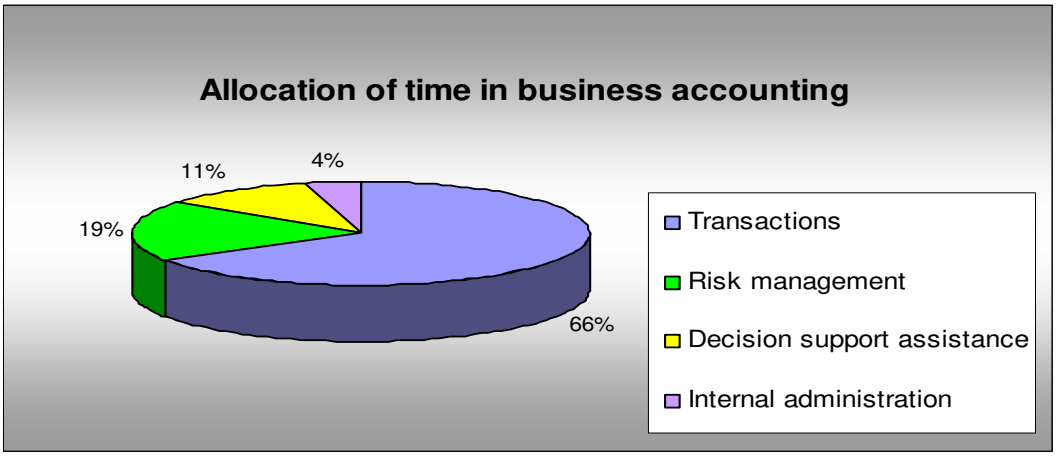

Figure 3: Time distribution on operations in accounting activity

Invoices represent, in terms of volumetric analysis and cost, an important part of the daily routine of an accountancy department. Paper elimination and electronic processing of invoices can be translated in a costs processing with over 50%.

It can be considered that the important reduction of the processing time of an invoice means an important economy of costs at the level of an organization.

The first step towards the dematerialization of the document having a direct impact upon the financial – accountable activities is realised by the modification of the Fiscal Code (Law 571/2003) and its application norms stating that invoice forms, receipts, the delivery advice do not have a special numbering and typing regime. According to the legal provisions regarding the registration of the commercial operations by electronic means, issuing invoices can be realised, exclusively, in one of the two modalities:

- in electronic format – it must respect the format and content established by the law and will have the temporal mark certifying the release moment and the electronic signature of the issuer of the invoice
- or on paper support, in off-gauge form.

We consider that the application of this law will annul paper invoice in a number of years. Also, some west – European countries, which started long ago on this road, reached a degree of presence of the electronic invoices that in significant in the case of Finland and quantised at 20% in case of France, after almost four years of electronic invoices. Other studies indicate an economy of 1% from Romania's GDP, obtained through the reduction of the bureaucratic costs, as effect of this law.

These economies might be realised by making administration productive, the easy access of the citizens to electronic governing instruments, and also by public acquisitions in informatics system, the requests of the European Union being that, up to 2010, these should be realised in Romania, in a percentage of 50%.

Invoices can raise also a series of problems at the level of the format in which are received by the economic agents. For instance, it is probable that small dimensions companies not be interested in investing in the construction of the necessary infrastructure for electronic invoice issue. From this reason, a company that opted for automation of the treatment will receive invoice in electronic format, as well as on paper support, depending on their suppliers. To ensure the coherence and unity of the process, it should turn to a system of dematerialization of invoices on paper, by scanning and introducing them in the informatics system.

3. The impact of documents dematerialization on ERP systems

At present moment, business partners still invest important material and human resources for communication through paper documents. The transmission of orders to supplier, obtaining specific information regarding the status of the order, transmittance of transport instructions or of an invoice, all these consume time and generates errors through human interaction. Costs for such a materialised informational flux (imprinted on paper and transmitted by mail or fax) are considerable.

This problem can be solved by dematerialization of documents. Seen in a simplest manner, this would be rapidly solved by transmitting documents by electronic mail and the subject would be rapidly closed. But things are totally different, that is why, in the present paper we aim reaching some key points in understanding the process of documents dematerialization regarded from the point of view of management integrated solutions of ERP type (Shields, 2001). We consider that these systems must be designed and developed so that they should represent the technical support for the dematerialization of the documents.

Generically, the process of transfer of the documents through which it is ensured the observance and reporting, in a traditional system, can be represented through the following succession of operations:

1. reception
2. control
3. validation
4. introduction in accountancy
5. physical archiving

6. disputes management.

The dematerialization of the documents can be treated as part of ERP system in the following alternatives of shaping processes:

- simple dematerialization
- indexing dematerialization
- electronic documents by images signed in an electronic manner
- electronic – structured documents.

Simple dematerialization can be realized through the following succession of procedures, represented in a schematic manner like in Figure 4:

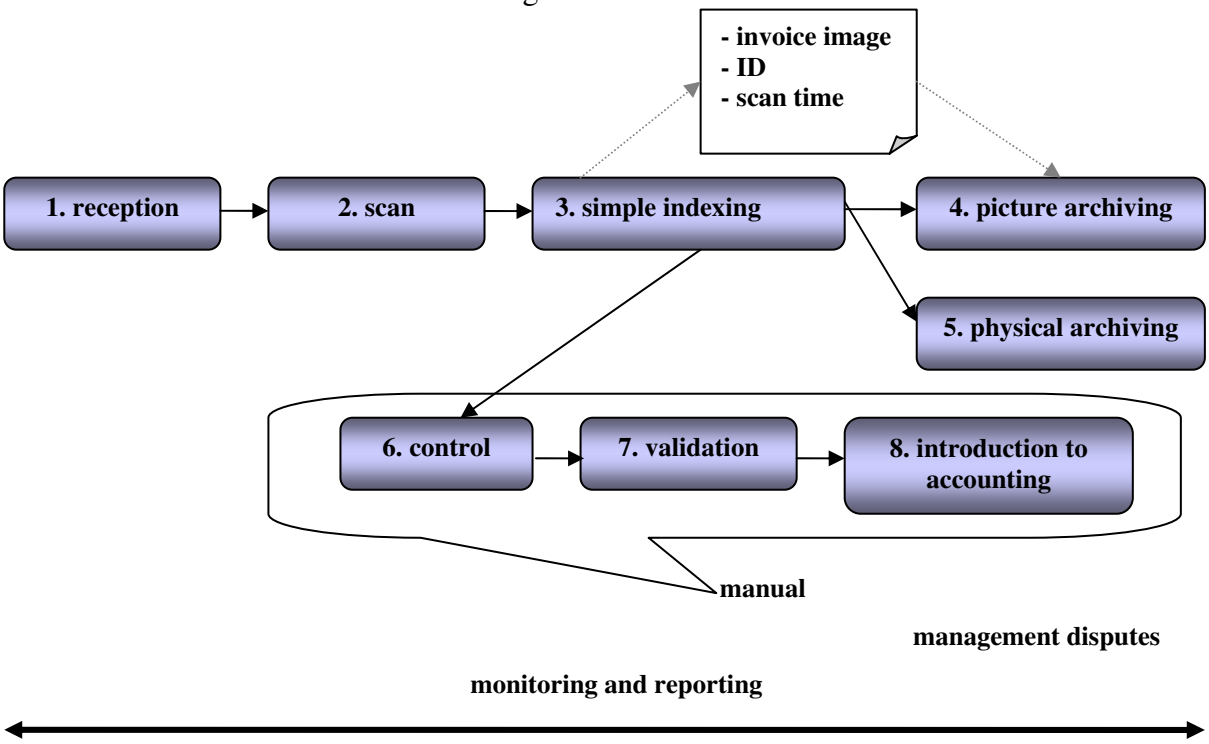

Figure 4: Simple dematerialization

Simple dematerialization is based on scanning documents with the purpose of electronic registration and introduces the concept of indexation of the electronic documents, using primary keys as well as Ids, with the aim of optimization of the system, to ensure a mechanism of direct, easy and fast access.

The elected variant depends on the technical infrastructure and of communications that the organization has, that will implement the integrated solution but also the budget that is appoints for investments in the field of information and communications technology.

Any variant of the four presented solves the problem of document's dematerialization, but the most performing are presented as follows.

Indexing dematerialization can be realised with the following sequence of steps, presented in a schematic manner in Figure 5.

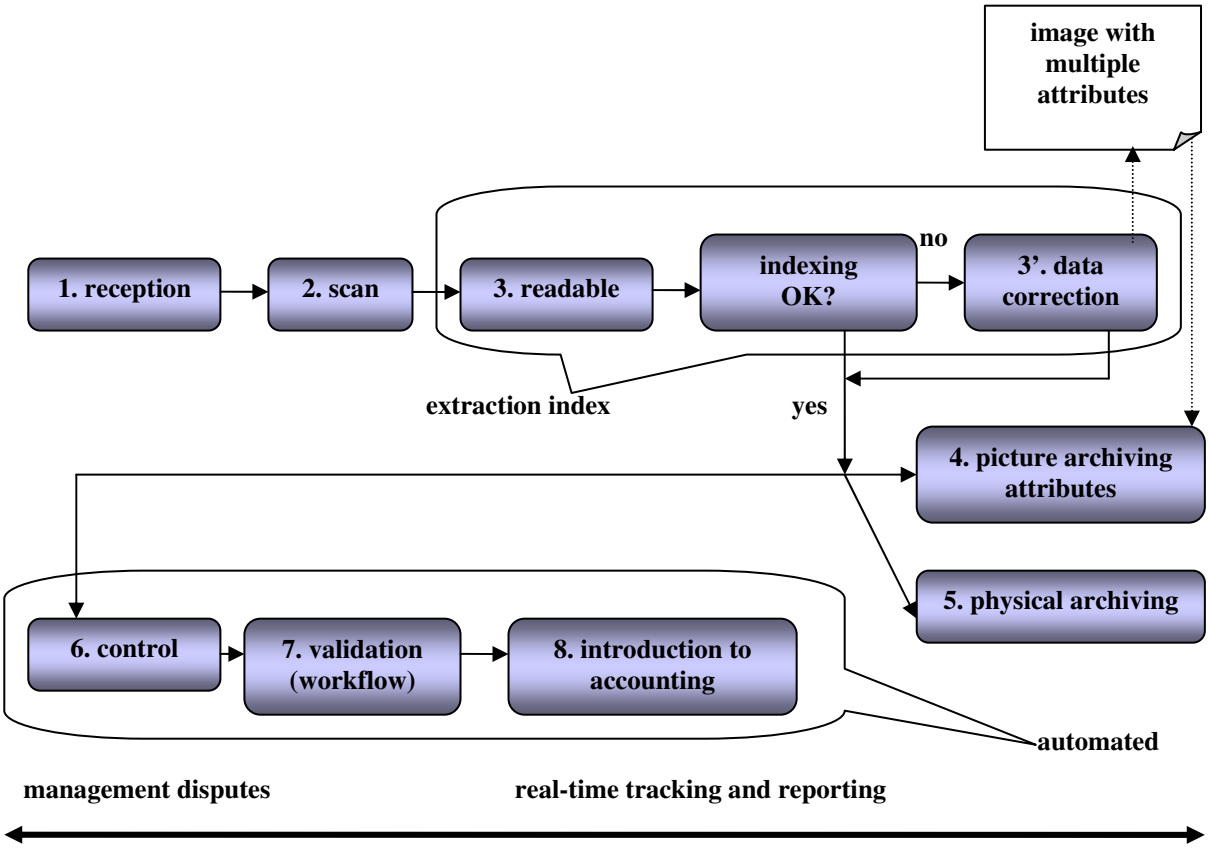

Figure 5: Indexing dematerialization

This alternative is a superior variant of the previous one, which uses the automatic reading of the documents that will ensure also their automatic indexing (a possible variant is the one of using the bar codes). The advantage of this method is also the one that control operations, validation of data fluxes and the introduction into accountability is realised in an automatic manner. Figure 6 presents a succession of procedures in a system of electronic documents dematerialization by electronically signed images.

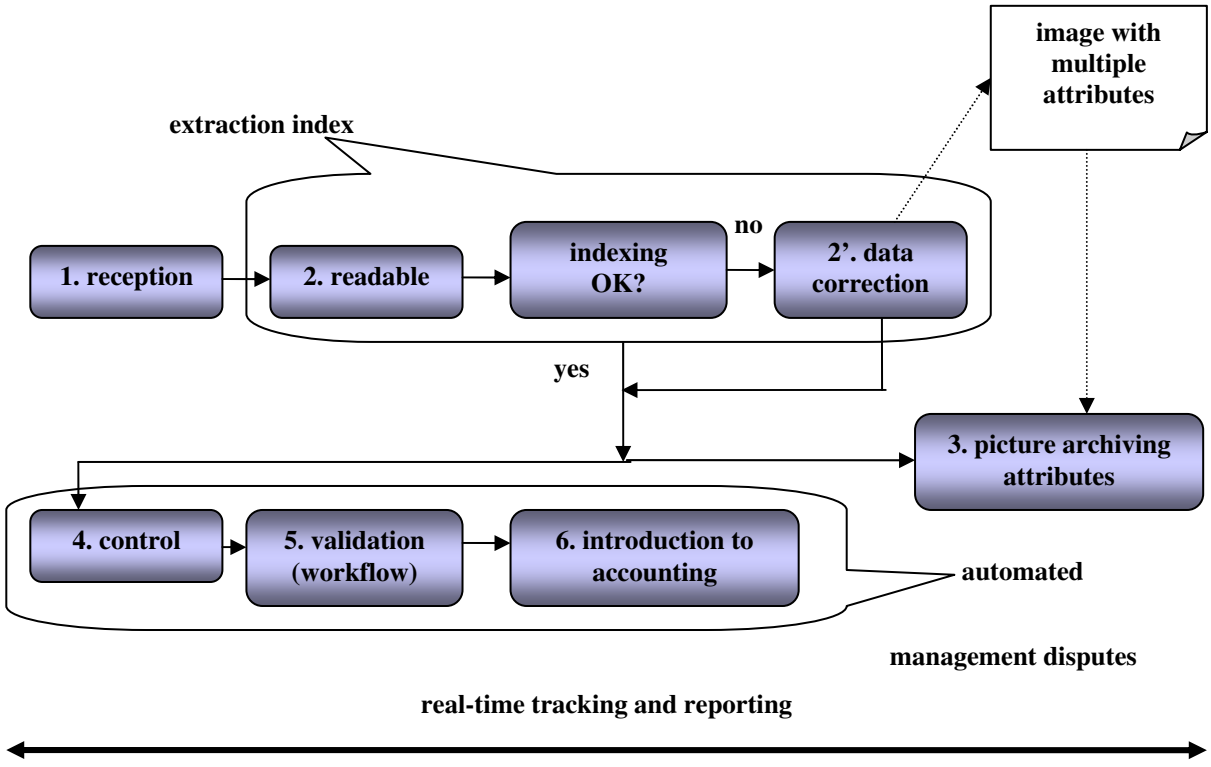

Figure 6: Electronic documents by electronically signed images

This solution eliminates the document's physical archiving procedure and is based on the concept of digital signature that is equivalent with the handwritten signature for printed documents.

The last scheme (Figure 7) presents the flux of the procedures in a system based on the dematerialization of the documents by structured electronic documents.

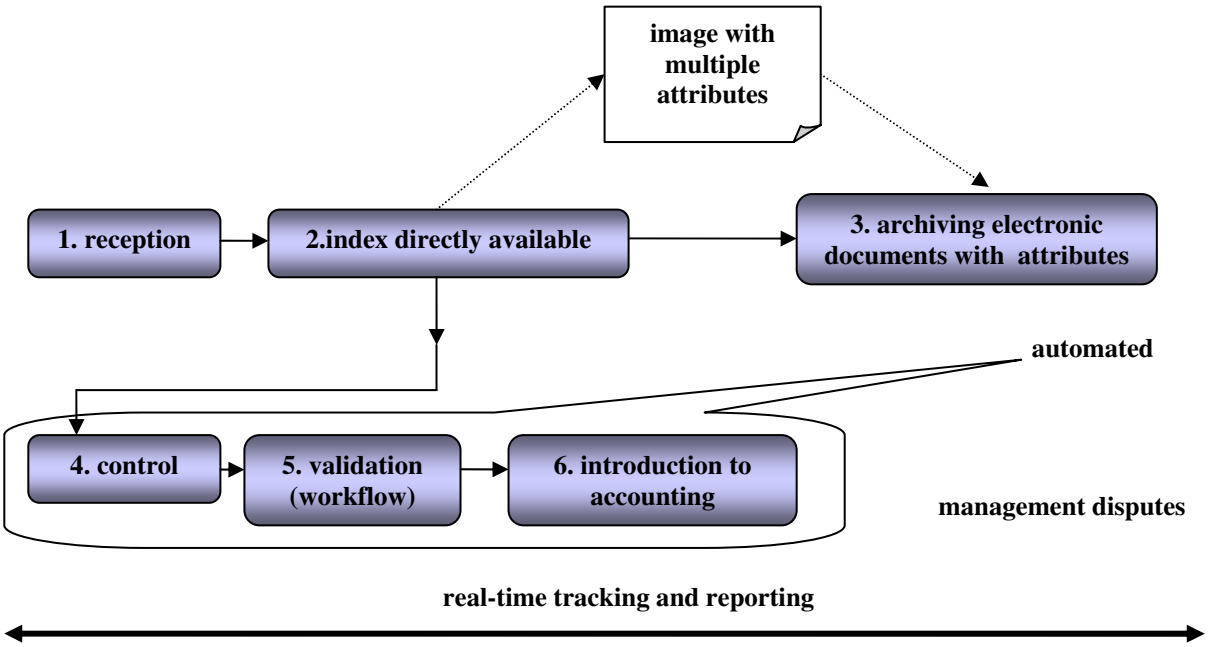

Figure 7: Structured electronic documents

From chronological points of view, this variant is the latter appeared one. It uses SGML language- Standard Generalized Markup Language as a format used by choice for structured electronic documents. SGML is a non- strict, legible format by the user. Marking is realised by generic structures named DTD (Document Type Definition). Most often it is used the descriptive marking as well as the marking in content. There is no particular description form of the document's format, other than the one described in the application. The metadata most frequently used are Dublin Core Metadata. SGML is adequate for structured documents, lasting their entire life cycle, from realization to archiving (including their re-use and exchange). The electronic document is constrained by the depositing environment and of the consulting one which evolutes permanently. The normalization of the document's formats, of the depositing supports, of the reading equipments, of telecommunication supports is essential to have everlasting electronic information. Some of the most recommended formats of the SGML language are (Rambhia, 2002): XML (Extensible Markup Language) Advanced Electronic Signatures, formats that are compatible with the marking language XML, PDF - Portable Document Format.

No matter which is the elected solution, from the ones presented above, at the development of a ERP system that is based on dematerialization of financial – accountable documents, we consider that can be substantially improved the following performance indicators, from the point of view of:

- ***costs***: cost for employee, total cost of operations, control and acquisition cost's optimization, transaction cost.
- ***productivity***: number of employees, transactions per employee, processing time, automation of the operations
- ***quality***: audit, back-up, automation processes.
- ***strategy***: control, processes integration strategies, preferential suppliers.
- ***suppliers***: information, supplier's loyalty, optimization of payment terms.

At the same time, we consider that these informatics solutions of ERP type, based on the dematerialization of the documents would ensure also an efficient management of registrations. As the economic operators are consuming or producing great quantities of documents, it is very important that

ERP solutions, in the conditions of registration of the transactions by electronic means to manage in an electronic manner the archive volume that was generated as part of the organizations.

The most important advantages ensured by electronic management of the registrations are materialized in:

- improving the flux of document and of the control of the rights to have an access at it.
- reduction of the response time to the requests of the employees of the company regarding the consult of the archived documents.
- facilitation of the management of some great volumes of documents
- automatic management of the periods of retention of documents and the support of the selection process for transfer or destruction
- complete traceability of the events for each specific document.
- Facilitating the modality of putting into conformity with the international standards in the field to which the organization adheres to and with the internal norms of the authorised control organisms.

As follows, we will present some of the obstacles met in Romania regarding the development of informatics solutions of ERP type based on the dematerialization of the documents:

- this practice is less spread between business partners (suppliers, customers, public administration)
- there are used heterogeneous practices in the data electronic exchange
- potentially gains generated by electronic documents can hardly be materialised.

These obstacles can be alienated through the development and implementation of some ERP solutions based in the dematerialization of the documents, which would ensure (Wagner, 2008):

- processes of dematerialization and automation that are independent of the behaviour of the business partners
- the possibility of using own format
- interfacing with the partner's formats can be externalised by using some intermediation platforms. These will ensure: dematerialization of the documents, editing, support for business transactions and cooperation between partners.

We consider that these information solution will ensured the communication of the electronic documents by transmittance, using Internet or VAN – closed nets including all members of a production system. In this last case, the producer and the distributor are connected at the EDI system by VAN net. EDI aims and classifies the daily accountancy and the inventory of a business.

At the level of partner – supplier, the information system that is used must ensure: document's extraction, translation of the format, formatting according to a standard, and the level of the partner – buyer, the system must translate the format of the documents and to realize their integration in the own architecture.

Conclusions

The use of the integrated informatics systems of ERP type plays an essential role in the process of registration of the commercial operations, by electronic means, representing the key element to ensure some services to respect principles required by the law: the guarantee of the authenticity, of the origin and of the integrity of the content.

These informatics systems in the context of document's dematerialization must fulfil also the following minimum security requests, regarding:

- confidentiality and integrity of communications
- confidentiality and data integrity
- authenticity of parts involved in business transactions
- protection of data with personal character
- continuity of the services offered to the customers
- preventing, detecting and monitoring the unauthorised access in the system
- rehabilitating information managed by the system in the occasion of some natural calamities and unpredictable events
- management and administration of the informatics system

- any other activities or technical measures that are realised for safety exploitation of the system.

The ERP solutions must ensure the observance of the legal requirements established by the special normative documents for each of the three processes of the activity of registration of the commercial operations, through electronic means:

1. the process of issuing electronic accountable documents:
   a) the process of generating electronic accountable documents;
   b) the process of generating electronic signature and of the temporal mark for the electronic accountable documents;
   c) the process of conversion of the electronic accountable documents – where is the case;
2. the process of transmission of electronic accountable documents;
3. the process of archiving electronic accountable documents.

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