THE GENERAL ARCHITECTURE OF THE ACCOUNTING INFORMATION SYSTEM AT TRADE ENTITIES

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Abstract:

At trade entities, most of the activities carried out within the framework of accounting information system revolve around accounting operations, they being the basis of this system and the financial perspective over an entity activity, through the accounts, by the way, most of the accounting information resulted from accounting information system are obtained by analyzing the information in the accounts.

In the context of the existence of an integrated information system almost all accounting operations can be generated automatically or semi-automatically, by retrieving data from other modules of the informatic system existent within the entity: purchasing, sales, human resources, asset ,cash register, bank, etc. Otherwise, to dispose in a trade entity of a performant financial-accounting information system it should be analyzed, designed and implemented only in conjunction with other components they interact with, namely: purchasing, sales, human resources, assets, cash register, bank, etc., in order to avoid certain inherent redundancy in other approaches.

Key words: *accounting information system, trade entities, accounting operations, informatic system*

JEL Classification : *M40, M41*

1.Introduction

The today, financial and accounting information systems, are no longer the traditional ones, they are subject to international normalization and harmonization, under the idea of globalization, and as a natural consequence of this situation, the users of accounting information within the economic entities are asking more and more diverse information from these systems; so, the development of society as a whole, modernization and restructuring of the economy, leading to amplification and diversification of information demand from the field of accounting and finance, and in this general context accounting mission acquires a special importance.

2. The general architecture of the accounting information system at trade entities

The economic entities in general and to those in the trade, in particular, an efficient management, an management of current situation, with various crisis phenomena, suppose the justification of decisions on the basis of a system of real information, pertinent, relevant and provided in a timely manner. (Radu, 2011, pag. 9) [7]

The main role of accounting information system in the framework of the information system of economic entities from trade requires that by the way of its structure and functioning to ensure accomplishment under optimal conditions of at least the following **objectives:**

-to provide the necessary information for decisions elaboration, both for management of respective entities and third parties;

-to provide information needed for the drawing up of plans and programmes of economic activity, particularly the budgets of those entities;

-to ensure the cronoligical and systematic registration of economic transactions which affects the financial position, financial performance and cash flows of the trade entity;

-to ensure the necessary data/information needed to calculate the costs of supply and sale of the goods;

-to ensure the integrity of heritage and control of economic operations carried out by registering heritage elements by categories, by responsible people, etc.;

-to provide information needed for the drawing up of financial statements. (after Oprean I (coordinator). (Oprean, 2001, pag. 28) [6]

As Hall (2011, pag. 14) [5] stated, each economic entity, in general, and those in the trade, in particular, in our case, it must adapt their information system to the needs of its users. Therefore, the specific objectives of the information system can differ from one entity to another, but as the author believes, three fundamental objectives are common to all systems, namely:

1. to support administration of management function. The administration refers to the responsibility of management to properly manage the resources of the entity. The information system provides information on the use of resources for external users through traditional financial statements and other mandated reports; while internally, the management receives management information from various responsibility reports.

2. to support management in decision-making. The information system provides managers with the information they need to perform their decision-making responsibilities.

3. to support continuously the operations of the entity. The information system provides information to the operating personnel in order to assist them in carrying out their daily tasks efficiently.

But, in order to achieve the objectives listed above, I am of the same opinion with professor Epuran (1994, pag. 22) [4] and that the accounting information system of economic entities in general, and those in the trade, in particular, must fulfil the following **functions**:

-the function of registration of economic phenomena and processes occurring in the context of trade entities and which can be expressed as a value. At the same time this function does not necessarily mean only recording (reflection) "gross" of those economic phenomena and processes but also processing and shaping the information recorded in the order for the accountant informational standards to get higher.

-information function, which consists in providing information concerning the financial position, financial performance and cash flows that were established at the end of a accountancy period (month, quarter, half-year, fiscal year) for the purpose of making decisions. As I have mentioned, the accounting information system must ensure on the one hand information of entity managers, and on the other hand the information of third parties; and by information supplied to users, information related to material resources and money management, revenues, expenses and results obtained, accounting information system should allow for economic efficiency and knowledge of the work carried out by the entity within a specified period of time.

On the other hand, as Oprean (2011, pag. 28) [6], stated, perfectioning this function is subject to extensive use of the means of collection and automatic processing of data in order to obtain field information, fast and quality, at all hierarchical levels.

- administrator control function consists in checking using accounting data of the preservation and use of money and material values, resource management, verification of the degree of achievement of the indicators predicted, deadlines for payment of debts and debt collection, control of financial department, etc.. As affirms Achim (2009, pag. 86) [1], it should be noted that this function is specific to the accounting information system, and none of the other components of the economic information system doesn't comply with this function.

-legal function, given by the fact that data from accountancy can serve, if necessary, as evidence in court to prove the reality of economic operations, determination of liability for materials, or for determining the guilt or innocence of individuals, etc.

-estimation function, given by the fact that the accounting information system is not limited only to the past or present related information, but can also provide information that can give the anticipated future issue of the different processes and economic phenomena. Moreover, as Capron affirmed (1994, pag. 64) [2] information provided by accounting system are used (...) in the elaboration of development scenarios based on the past reality and the present one (...) being base fo the programmes, in drafting budgets, I may add, at trade entities.

For the efficient organization of the accounting information system of trade entities should take account of at least the following requirements as Oprean considers (2001, pag. 25) [6], opinion with which I agree as follows:

-accounting information system must be based on *principles and rules fundamented scientific and legally*; so the organization of accounting information system on scientific grounds offers trade entities, for example, most new and better ways to achieve the proposed objectives, under conditions of maximum efficiency;

-to be *comprehensive*, covering all organizational subdivisions of trade entities; an accounting information system cannot function effectively if it provides partial information from an entity or omit certain sectors or certain organizational subdivisions;

-to be organized *after an identical methodology*, uniform for all fields from an entity;

-*to ensure effective and operative* information required by users, meaning that the information used must have a justifiable cost relative to benefits that may result from their use. So, on the one hand, the information must reach users before making decisions and not afterwards, and on the other hand, the cost of information provided by accounting information system should not exceed the benefits derived from their use;

- *to be simple, clear, accurate, documented and continuously*, so it is not for the benefit of anyone conducting an accounting information system, bushy, complicated, with tangled informational circuits and through which to circulate parts of information or incomplete information.

As Dumitru states (2009, page. 22) [3] accounting information system architecture approach must necessarily include certain elements, as follows:

-analysis of the activities conducted under this scheme;

-information supply arrangements;

-the recipients of the information supplied by the accounting information system;

At economic entities in general, and those in the trade, in particular, the result of the registration of the accounting transactions can be found in the following categories of information outputs:

-reports of core financial accounting: account sheets, big book, statement of verification, the registry log, instances of revenue and expenditure, situations of receipts and disbursements, and the information system must be organized in such a way that these reports should be available in a timely manner, at any time and for any period;

-summary financial and accounting reporting: balance sheet, profit and loss account, cash flows, the situation of the change of capital and reserves; accounting policies and explanatory notes, etc.;

-monthly reports; quarterly, half-yearly, yearly of certain accounts: VAT statements, tax declarations and other statements regarding debts toward the state consolidated general budget;

-calculation of costs;

-budgets for sales, purchases, cash receipts, payments, etc.;

-graphs concerning the evolution of the expenditure, revenue and other accounting components that lend themselves to graphic;

- analyses of accounts to capture at any given time, certain situation of economic and financial indicators of the entity, such as the situation of the receivables and payables;

-other analyses and reports.

At economic entities in general, and those in the trade, in particular, the accounting information system processes financial and non-financial transactions, transactions which, in fact, directly affects the processing of financial transactions. For example, changes to the names and addresses of clients are processed by the accounting information system of trade entities in order to maintain up-to-date the file/customer card. Although from technical point of view are not financial transactions, these changes provide vital information for future processing sales for their respective customers. (Hall, 2011, pag. 7-9) [5]

In the author's opinion, at economic entities in general, and those in the trade, specifically (in my opinion), from the point of view of architecture, accounting information system is composed of three major subsystems:

- processing system of transactions (transaction processing system TPS) that support the daily, business operations with numerous reports, documents and messages for users in the whole entity;
- Journal Register system/financial reporting system (general ledger/financial reporting system-GL/FRS), which produces the traditional financial situations, such as the profit and loss account, balance sheet, cash flows, fiscal statements and other reports required by legislation;
- management reporting system (MRS management reporting system), which provides internal management with various special purpose financial reports as well as information required for making decisions such as, for example, information for drawing up budgets. Management reporting system provides the internal financial information needed to manage the entire business from an entity.
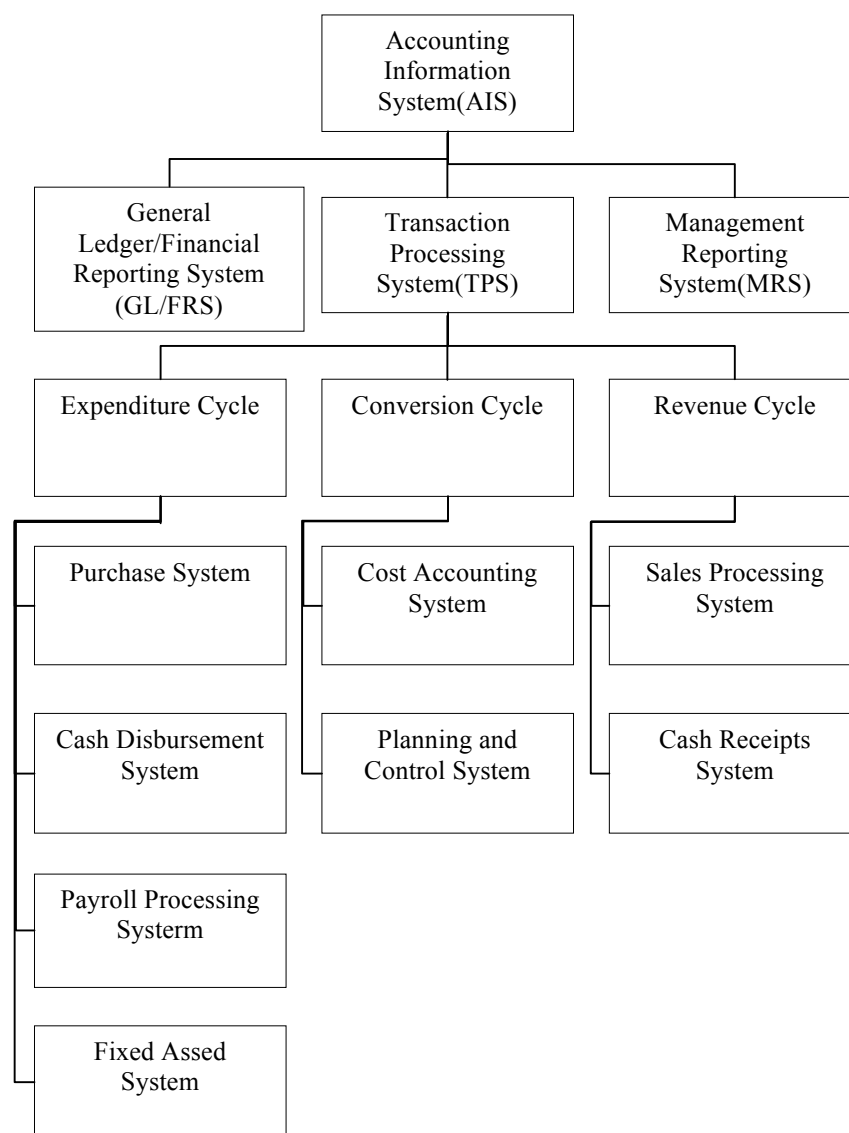
Figure 1: A framework for accounting information system

Source: Hall (2011, pag. 8) [5]

1)   Transaction processing system has an especially important role for the overall function of the system by converting economic events in financial transactions, in registration of financial transactions in the accounts of the entity (logs and records), and the distribution of financial information essential for operating personnel can perform routine, day-to-day operations; business events occurring, moreover, frequently. In a single day, a trade entity, for instance, can process thousands of transactions and for effective management of such a volume, similar types of transactions are grouped together in cycles of transactions. Thus, in the opinion of the author, the transaction processing system consists of three cycles: cycle of trading revenue, expenditure cycle and conversion cycle; each cycle captures and processes different types of financial operations.

Thus, at economic entities in general, and those in the trade, in particular, each buying-selling operation involves workes in exchange of goods/products purchased costs (cycle), providing an added value through goods/ manufactured goods or rendered services and sold (conversion cycle) and the receipt of income from external sources (revenue cycle).

Even though each of the three cycles meets different specific tasks and supports different objectives, however, they also have common characteristics. For example, at trade entities, all three cycles of processing of transactions, captures financial transactions, records the effects of the transactions in the accounting records and provide information about the transaction, to the users in support of their daily activities. In addition, transaction cycles produce much of the raw data from which are derived the discharge reports and statements. At the same time due to their

financial impact on the entity the transaction cycles requires an increased attention on the part of accounting department within the trade entities, for instance.
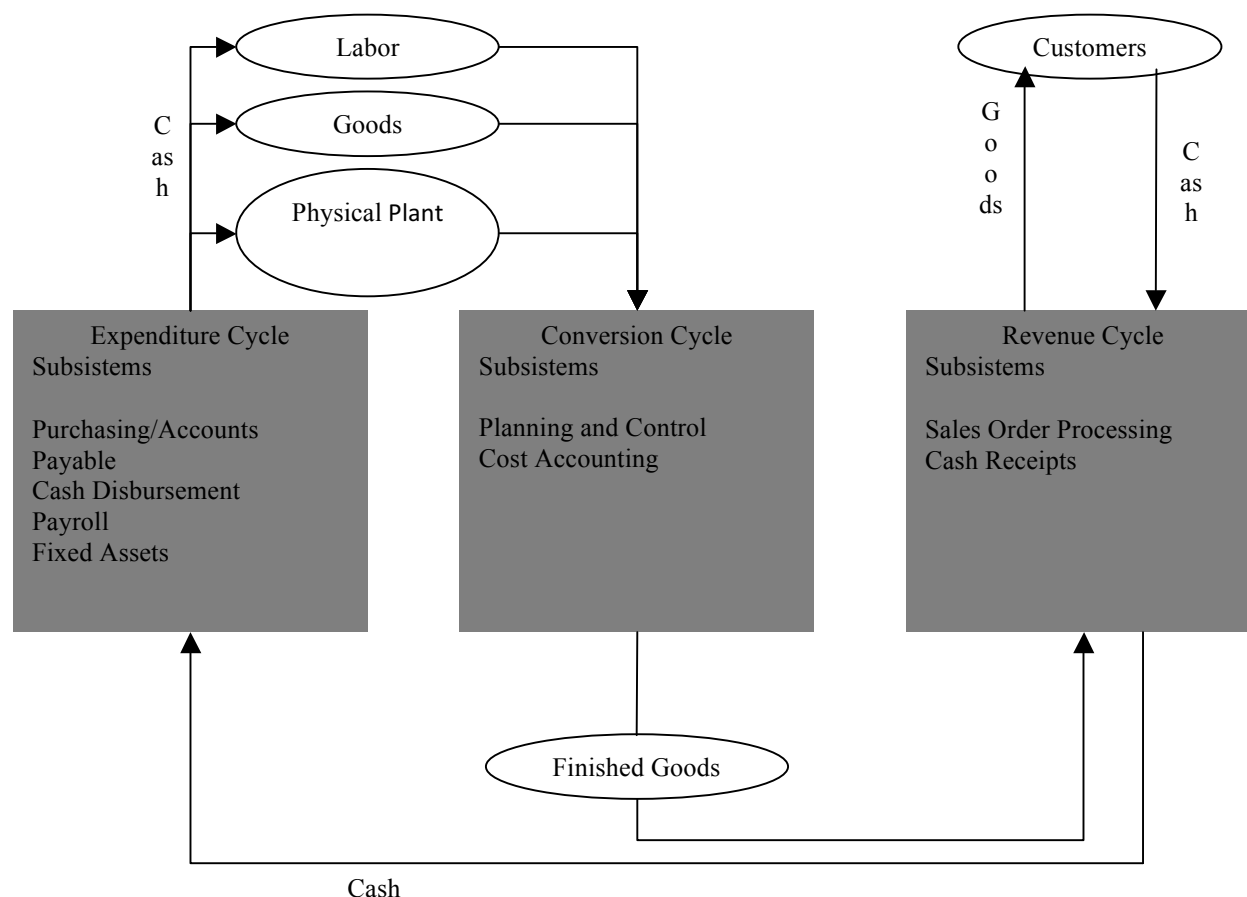

Figure 2: Relationship between transaction cycles

Source: Hall (2011, pag. 42) [5]

Expenditure cycle

At economic entities in general, in the opinion of the author, and to those in the trade, in particular, in our opinion, the commercial activity begins with the acquisition of goods/merchandise or services in exchange for a sum of money so that most transactions within the framework of the expenditure shall be based on a credit relationship between the parties involved in the transaction, the actual payment of a sum of money takes place at a time of receipt of the goods/merchandise or services. In reality it may take days or even weeks between these two events; thus, from a perspective of systems, in the author's opinion, this transaction has two components: a physical component (acquisition of goods/merchandise) and a financial component (the supplier payment).

Hall (2011, pag. 43) [5] considers the spending cycle within an entity is formed, at its turn, by four systems, as follows:

•   The system of procurement/supplier account creation system. This system recognizes the necessity /need to acquire, buy physical inventory (such as goods- in the case of trade entities), after the exercise of the function of inventory control which has the effect of authorizing the acquisition, as well as placing a purchase order initiated to the seller. Where the goods/merchandise are received, the acquisition system records the event by receipt of goods merchandise, namely increase of inventory and the establishment of a vendor account to be paid at a later date.

•   Payment system. Once the obligation has been created in system acquisition, payment system authorizes payment, allocates the necessary funds and records the transaction by lowering accounts availability.

•   Payroll System. Payroll system collects data, including those with respect to timekeeping and time worked for each employee, calculates payroll and draw salaries of employees.

•   Fixed asset system. The system of fixed assets processes transactions relating to the acquisition, maintenance and disposal of fixed assets as well as by sale or disposal.

Conversion cycle

Conversion cycle is composed of two major subsystems: the production system and cost accounting system. Production system involves planning, programming, and control of physical product in the manufacturing process. Cost accounting system keeps track of the flow of information related to the production cost. As the author also states, conversion cycle, as a rule, is not observable at trade entities; these entities do not process normally, activities through subsystems conversion cycle.

Revenue cycle

Revenue cycle transactions also have a physical component and a separate financial statement which are processed as follows:

• *Processing of sales orders*. The economic entities in general, in the author's opinion, the sale activity is made on credit and involves tasks such as preparing the sales order, the granting of loans, transport of products (service provision) to customer, customer billing, and the recording of the transaction in the accounts (accounts receivable, inventory, expenses and sales);

• *Proceeds from the sales*. For sales on credit can pass periods of time ranging from days to weeks, from the time of the sale and to get the money. Collection process involves collecting cash, depositing cash at Bank and record these events in accounting (accounts receivable, and availability).

2)   Journal Register system and the system of financial reporting are in the author's opinion, two closely interrelated subsystems. However, due to their operational interlinkages, these are generally considered as a single integrated subsystem.

The largest part of entries in the system registry log coming from transaction cycles. Thus, in the author's opinion, the summaries of the trading cycle activity are processed by the registry log to be processed through the system journal register in order to be updated the journal control register accounts. Other, less frequent events, such stock exchange transactions, merges and processes on the roles of courts are also entered in the logbook system but through alternative sources.

At economic entities in general, and those in the trade, in particular, the financial reporting system measures and reports the status of the entity's financial resources as well as changes, communicating this information to external users. At the same time the author calls this type of reporting non-discretionary, because entities generally have few variations in terms of choosing the format and the information it provides. Much of this information is contained in the financial statements, tax declarations, and in other legal documents.

3)   Management reporting system provides the necessary internal financial information in order for a business to be managed. Thus the trade entities managers, for instance, faced with the many and varied daily problems that we must solve, and whose operations to control them, require different information for different types of decisions they must make. Classic regular reports drawn up by the management reporting system include budgets, reports, analysis of the variation in cost-volume-profit report based on current cost data, etc.. These kinds of reporting are named by the author as discretionary report because each entity may choose what information to report and how to present them.

Hall (2011, p. 10) [5] presents a general model for accounting information system applications. It is a general pattern for that in the author's opinion, this model describes all computer systems, regardless of their technological architecture, and elements of this model are the following: final users, data sources, data collection, data processing, database management, data generation and feedback information nevertheless.
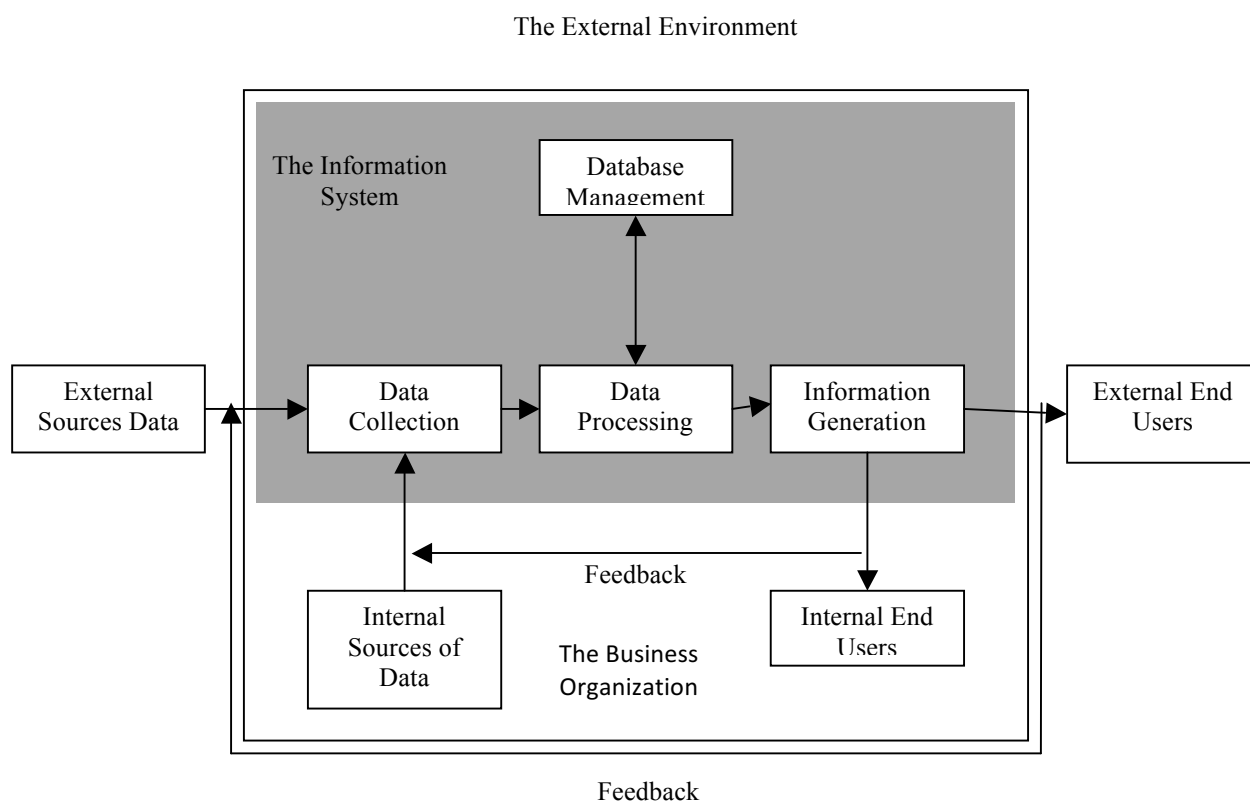
The External Environment

Figure 3: General model for accounting information system

Source: Hall (2011, pag. 11) [5]

Final users can be divided into two general categories: internal users and external users.

External users include creditors, shareholders, potential investors, regulatory agencies, tax authorities, suppliers and customers. Institutional users such as banks, regulatory agencies, tax authorities and internal revenue service receive information in the form of statements, tax statements and reports on other entities also have the legal obligation to make them, to produce them. Trading partners, for their part, as well as customers and suppliers receive transaction-oriented information such as requests for proposals, and billing, transport documents, etc..

Internal users include the management at each level/sector of the entity, and operating personnel. In view of the foregoing, I also believe that, in contrast with external reporting, at internal reporting the entity has considerable freedom in terms of the way that meets the needs of domestic users, in terms of internal information because although in practice there are some well-established conventions and accepted, however internal reporting is regulated primarily by what needs to be done depending on the needs of internal users.

In the same context, the author considers that the systems designers and also accountants must balance the wishes of the internal user, of internal information, against the legal and economic concerns, that they may have or may generate by means of appropriate control and security methods, through the corresponding responsibility and not least by the cost of providing alternative forms of information.

Finally, I am and I concur with the author who concluded that internal reporting is a challenge less structured and generally more difficult to achieve than an external reporting which, by the way, most of the time, is regulated, legislated through different reporting rules.

At economic entities in general, and those in the trade, in particular, **the data sources** are considered financial transactions which may come into the information system of the entity from both internal and external sources. If external financial transactions represent the most common source of data for most of the entities, and at trade entities, for example, examples may include sales and purchases of goods/merchndises and services, collection of payment from clients, suppliers payment or wages, then the internal financial transactions, in turn, involves exchanging or shifting resources within the entity, and the examples may include moving the goods from one place to another within the warehouse the transfer from storage in the store, etc..

Collecting the data is the first operational phase within the information system of an entity, in general, and the objective is to ensure that the entering data in the system are valid, complete, and material error-free. In many ways, according to the author, this phase is the most important phase of the system because the errors in trading shouldn't

pass through the data collection phase undetected, because otherwise the system can process certain errors that may generate erroneous output and/or unfeasible.

Otherwise *the relevance and efficiency* are two basic rules that govern the design of data collection procedures and information system should capture relevant data so that only a fundamental task of the designer of the system is to determine what is and what is not relevant for the system, of course by analyzing the users' needs. Finally, we may affirm strongly that only data that might help, eventually, to obtain relevant information, and data collection stage should be designed to be able to filter out irrelevant facts in the system.

From the point of view of efficiency, the efficient procedures of data collection are designed to collect data once. This data can then be made available to multiple users, so capturing the same data more than once may result in the duplication of data and lack of consistency. Information systems, for instance, have limited capacity for collecting, processing and storing data. At its turn the redundancy data load/bring facilities but reduces the overall efficiency of the system so that an inconsistency between the redundant data elements can result in the author's opinion, in improper actions and bad decisions.

With regard **to the processing of data**, these once collected, usually calls for a sustained processing in order to produce information, but in the author's opinion, data processing tasks in a stage set in the range from simple to complex. In this sense, at trade entities, in our case, the examples may be different mathematical algorithms (such as linear programming models) used for goods supply planning applications, statistical techniques for sales evidence, and the procedures for registration and consolidation used in the accounting applications.

With respect **to database management**, the author argues that the entity is generally a physical repository for financial and non-financial data within the respective entity. In practice the term is used in the database sense generic because it can be a closet-warehouse or computer disk, but regardless of the physical form of the database, we can represent its contents into a logical hierarchy, so that, as the author claims, the levels in the hierarchy of the data, may be recording and the attributes of the files.

The economic entities in general, and those in the trade, in particular, the attribute is potentially useful data elementary in the database because an attribute is a characteristic of a logical and relevant supplier or client, for example, which captures data entity. Thus, each attribute is relevant because it contributes to the information content of the entire dataset, and can stand as proof that the lack of any single attribute, relevant, may diminish or destroy the information content of all iremediabil data set, so adding irrelevant or illogical data would not improve the information content of the entire data set.

In terms of registration, this is a complete set of attributes for a single supplier or client, for example. But every record in the database of an entity must be unique in at least one attribute in order not to create confusion.

With regard to **the generation of information** the author states that it is the process of compilation, settings, formatting, and presentation of information to users. The information may be an operational document, such as a purchase order or sales, a structured report, or a simple message on the screen of a computer, but, regardless of physical form, appropriate information must have the following characteristics: *relevance, accuracy, timeliness, integrity, summariz*e *and feedback.*

Relevance

The contents of a report or a document must serve a specific purpose, for which they were issued. Considering that these documents or reports are a support which sustaines the decision of a task manager or another user, we can consider that only relevant data to a user's action also contained information. Therefore, in the author's opinion, the information system should submit only relevant data in its report. At the same time it should be noted that some reports contain also irelevances which are not productive for the users, because the irelevances reduce the attention from the initial message, and may lead to incorrect decisions or actions.

The actuality

In the opinion of the author, the period of information is a critical factor in determining their usefulness. So that the information must not be older than the time action you can handle. At trade entities, for example, where a manager's day-to-day decisions to purchase products/goods from a vendor on the basis of a report of inventory, the information in this report should not be older than one day.

Accuracy

The information must not have significant errors. However, the threshold of materiality is a concept difficult to quantify, he does not have an absolut value . This, in the author's opinion, means that, in some cases, the information has to be very precise, in other cases, the level of precision can be set lower. There are significant errors in case the amount of inaccuracy in information makes the user to take bad decisions or not to take the necessary decisions. Users sometimes have to sacrifice absolute precision in order to obtain information in a timely manner, so that many times the perfect information is not available within the time frame required for the user to be able to take the decision. Therefore, I agree that, in providing the information, designers of systems should find a balance between information

which has to be as accurate as possible, and the time in which it should be provided in order to be useful in a timely manner.

Completeness

No component part of essential information for a decision or a task, should not be missing. So at economic entities in general, and those in the trade, in particular, for example, a report should provide all necessary calculations and present your message clearly and unambiguously.

Summarizing

The information should be grouped according to the user's needs. Thus, lower-level managers tend to ask for information that is very detailed, but as information flows going into entity toward a higher level of managing them, the information should be increasingly summaries, more concise.

Feedback

Feedback is a form of exit through which the information is sent back to the system as a data source. Thus, feedback can be internal or external and is used to initiate or modify a process. At trade entities, for example, a report regarding the the inventory situation, reports to the manager or person in charge of the control of the inventory that the inventory items have decreased to a certain level, or below their allowable levels. In this case the internal feedback of this information will initiate the process of inventory command in order to replenish stocks. Similarly, for example, external feedback regarding analytical accounts of unearned clients can be used to adjust policies to grant credit to a particular entity.

3. Conclusions

Today weak competitive environment, determines economic entities, including those from trade, to identify, assimilate and exploit all the resources available to them and to enable them to optimise the activity, to reduce the costs while increasing performance, reducing response time to market changes and the legal framework. Among the instruments to assist in the attainment at economic entities are named the assimilating information technology solutions offered by incorporating them into their own accounting information systems.

To thrive, at economic entities in general, and those in the trade, specifically (in my opinion), are required to integrate applications into a powerful infrastructure, so that at trade entities, an integrated system, represents a combination of business management practices with information technology, whereby the business processes of an entity are integrated within the computer system, in order to achieve specific business objectives.

In conclusion, I consider that it is a must requirement that the accounting information system of trade entities to comply with the above requirements, to ensure the functioning of the maximal parameters of these and also to ensure, at the same time, fulfilling under the conditions of maximum effectiveness of its objectives and functions.

4. References

[1] **ACHIM, Sorin, Adrian.**, Sistemul informaţional contabil al transporturilor locale de călători. Editura Risoprint, Cluj-Napoca, 2009.
[2] **CAPRON, M,.** Contabilitatea în perspectivă. Editura Humanitas, Bucureşti, 1994.
[3] **DUMITRU, Valentin, Florentin**., Sistemele informatice integrate: rolul şi impactul acestora în procesele de afaceri. Editura InfoMega, Bucureşti, 2009.
[4] **EPURAN, Mihail, BĂBĂIŢĂ, Valeria**., Bazele contabilităţii. Noul sistem contabil. Editura de Vest, Timişoara, 1994.
[5] **HALL, James, A**., Introduction to accounting information system - seventh edition. Cengage Learning, Canada, 2011.
[6] **OPREAN, Ioan**., Bazele contabilităţii agenţilor economici din România, ediţia a IV-a. Editura Intelcredo, Deva, 2001.
[7] **RADU, Florin**., Globalizarea sistemelor informaţionale şi influenţa asupra contabilităţii. Editura Bibliotheca, Târgovişte, 2011.