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Differentiation and integration of accounting information system (AIS) in African industrial firms: The track record of the Cameroon experience

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Abstract
This article aims to provide theoretical and empirical insights into the situations of differentiation and integration of accounting information systems within industrial enterprises in Cameroon. Building on the work of El Orf (2012), theories of contingency, the theory of integration differentiation (Lawrence and Lorsch, 1967), the systemic theory associated with the socio-technical current and the structurationist current, this study questions five accountants of Cameroonian companies on the organization of their accounting information system in terms of differentiation and integration. The results from the analysis of the data collected from the main actors of the accounting system of the companies studied reveal the existence of a variety of accounting organizations and categorize them according to the observed degrees of differentiation and integration.

Keywords: accounting information system – differentiation – integration – industrial organization

Introduction

Today, the need for trustworthy financial information requires the reinforcement and perfection of means of control so as to guarantee a faithful image of the firm. Because of this an accounting information system that responds to the information needs of the user has to be constructed. An accounting information system is ''any information system based on accounting, history or forecasts that covers financial accounting, management control, financial analysis, the elaboration of accounting balanced score cards'' (Lassoued and Abdelmoula, 2006) [36]. It represents the global management of information (strategic and operational) and means (technological, organizational and human) put in place (Chapellier & Mohammed, 2010) [16].

Several authors in many countries with different contexts have shown that the adoption or an improvement of the accounting information system increases performance, profitability and efficiency of operations (Lacombe-Saboly, 2000; Lavigne and St Pierre, 2002; Sajady and al, 2008; Chapellier & Mohammed, 2010; Al duais, 2013) [35, 37, 48, 16, 2]. These studies were carried out in different sectors of activity. However, exploratory and descriptive studies on the quality of accounting information systems in industrial firms are rare (Ghorbel, 2012; El Orf, 2012) [26, 24]. In addition, with the evolution of accounting, the advantages of accounting information system can be perceived today only if the accounting process is differentiated and integrated (El Orf, 2012) [24]. Accounting has all the characteristics of an information system, making it the ancestor of information systems (Lemoigne, 1973). It appears not only in its function of representation of the activities of an enterprise but also in its function of organization given the role that it plays in the management as a tool that helps in decision making. All the users of accounting are out for pertinent information since low quality information can have an adverse effect on decision making (Clikeman, 1999) [18].

This exploratory and descriptive study is aimed at identifying the state of accounting information system (AIS) in industrial firms in Cameroon by describing the state of differentiation and integration. The results have mainly showed that size and the environment are greatly important in the process of differentiation and the choice of the mechanism of integration. The procedure adopted in this study consists to:

- Distinguish the differentiated accounting sub-systems;
- Determine the contribution of information and communication technology to accounting via integration;
- Categorize the cases of firms according to their differentiation and integration situation.

The major interest of this research is to identify the differentiation and integration mechanisms of accounting information systems (AIS) carried out in industrial firms in Cameroon.

Theoretical elements on differentiation and integration of accounting information systems

Information occupies an important place in competition of firms since their success depends on the ability to capture information and knowing how to relate it to the market that is becoming more and more complex and turbulent. Accounting practices are characterized by the multiplication of users, the diversity of needs in accounting information and the evolution of data treatment technology. In order to be performing, accounting information systems have to be divided into units and interconnected such that the objectives of the organization should be achieved (Samara 2004, El Orf 2005, El Orf and Tort 2006) [49, 22]. This implies the differentiation of accounting systems and the integration of differentiated accounting sub-systems.

Several previous studies (Lawrence and Lorsch, 1967; Blau, 1970; Mintzberg 1982; Kalika, 1988) [11, 43, 32] that were carried out with the main objective of knowing the different situations of differentiation and integration of accounting sub-systems have shown that:

- The more complex, turbulent and uncertain the

environment, the more the need to differentiate the organization. But the more differentiated it is the more the need to put in place powerful integration mechanisms;
- Organizations that succeed in integrating and differentiating at the same time.
- Size is the most contextual differentiating factor of organization.
- There is a very significant correlation between the size, differentiation and integration. Accounting, production and commercial management always almost exist for firms of more than 50 employees. The management control services, quality control, purchases, methods, research and development appear regularly with an increase in size.

The general question in this study can be formulated as follows: what are the different situations of differentiation and integration of accounting systems that exist in industrial firms in Cameroon? In order to answer this question, we are going to visit some theories that guide the fragmentation of the accounting system and then proceed to an empirical study in which we study five cases of industrial firms.
Several theories suggest the division of the enterprise in differentiated and integrated sub-systems. They are mainly the contingency theories, the socio technique school of thought, the systemic theory and the structuration theory.

The contingency theories: the importance of the context and the role of actors
An enterprise is a social system made up of different units with different constraints. The contingency theory that focuses on different modes of organization is therefore needed. As for the contingency theories, there is no optimal structure but organizational configurations that adapt to the effects of their environment. Structural contingency analyze the manner in which an organization adapts to its environment (Burns & Stalker, 1963; Lawrence & Lorsch, 1967; Woodward, 1965; Chandler, 1966; De la villarmois & Tondeur, 2003) [52, 15, 20], and are based on elements of structure such as size, age or technology. Behavioural contingency on its part focuses on the role of individuals and the importance of the internal context of organizations (Trist *et al*, 1963; Child 1972; Crozier et Friedberg, 1977; Pettigrew, 1987, Ouchi, 1981) [51, 19, 46]. In order to clarify organizational theory so that it should be used for decision making, Lawrence and Lorsch (1967) put in place a differentiation/integration theory with the following hypothesis: "an organization differentiates its methods of operating according to the degree of instability of the environment and as such integration mechanisms have to be anticipated''. This theory highlights the interaction between differentiated sub-systems of an organization. Several studies were carried out in enterprises to confirm the validity of this theory (Woodward, 1965; Burns & Stalker, 1961) [52]. El orf (2012) [24] tried to understand the mode of differentiation and integration of accounting systems of enterprises using four cases of firms in Tunisia. The results of his study show that the modalities of differentiation and integration of accounting systems vary from one enterprise to another. The economic and socio-cultural realities of Cameroon being specific, it would be interesting to carry out a theoretical and empirical finding in the context of Cameroon.

The socio-technical school of thought: Interdependence between man and technology
The objective of this school of thought is to establish the relation between the human and technical dimensions of the organization. The socio-technical hypothesis is that "an enterprise is an open system that is made up of a technical system and a social system and its efficiency depends on the joint optimization of these two systems: technology defines and imposes all the work constraints that have to be treated and organized according to technical and social rules'' (Emery and Trist, 1960) [25]. In a socio technical vision, the enterprise is considered as an adjunction of a number of functions related to man and technology. These two components are interdependent within the framework of permanent interaction that conditions organizational efficiency and determines the manner in which an organization responds to market constraints. Cabrera *et al* (2001) [13] distinguished a technical structure and a human structure that is necessary for the putting in place of corporate strategies:
- The technical structure offers technologies and modes of organization necessary for the realization of the activity process;
- The human resources who constitute the bedrock of the social structure participate in the definition of organizational practices that respond to the needs of the organization.

As such, a good mastery of new technologies of information and communication is necessary for the growth and maintenance of enterprises on the market. Appropriate technological resources that correspond to the objectives of the organization are also required. As for normal typing operations, the functionalities developed by software are impressive (programming of standard writings, the system of giving letters to accounts, possible types of writings, the automation of dates and labels, safeguard of data, etc …) (April, 2007).

The structuralism school of thought: The role of technology and a rational approach of accounting
The theory of structuration of Giddens (1984) [27] establishes relations of duality were the actor and the structure are interdependent. It proposes an appropriate theoretical framework for the analysis of the role of technology in an organization via three fundamental principles: the reflexive control of action, structural duality and spatio-temporal factors of action. This theory also offers a framework for a pertinent analysis to link the actions and interactions of managers to the characteristics of the structure (institution). Beldi, Cheffi and Wacheux (2006) [8] highlight the three dimensions of the analysis proposed by Giddens: the significance, domination and legitimization which combine with the three levels of analysis (structure, modality of structuration and the actor-individual) give a guideline for analysis so as to understand the actions or interactions of managers. The duality of structure which is the fundamental notion of structuration is made up of ceaseless back and forth between individual levels (actors or agents) and the collective level (social systems). Social practices constituting the activities in an enterprise can be analyzed as the results of the competence of actors and as an expression of structural properties of interaction systems. Seen from this angle, the accounting information system is a common base to facilitate interactions and communication between

actors belonging to different professions and having distinct languages and cultures in the enterprise. It is a system that nourishes activities and the perceptions individuals on the evolution of the activities of the firm, the actions of individuals and their performance with information that it produces.

The systemic theory: between openness and regulation of the enterprise system

The systemic approach is made up of theoretical, practical and methodological approaches relative to the study of what is recognized as very complex to be approached, a reductionist manner and raises organizational borders problems, internal and external relations, structures, laws and emerging properties characterizing the system as it is. The hypothesis of this school of thought is that « an organization is an open system with interdependence among its constituents and regulation procedures to put in place » (Von bertalanfy, 1956; Kast, Kahn, & Forrester, 1960). This school of thought tries to decompose the complexity of an organization so as to simplify it and provide tools for the resolution of practical problems. The systemic approach enables to identify and formalize five characteristic elements:

- The differentiated elements (functions and services of the enterprise)
- The frontier of the system with the environment (structure of the enterprise)
- The environment (partners)
- The objective of the organization (long term survival)
- The regulatory procedures (strategy, mode of coordination)

The consideration of these different schools of though over the years has led to the evolution of Accounting.

Evolution of Accounting

Accounting does not only has as function the representation of the activities of the enterprise but also a function of organization given the role that it plays in management as a tool that assists in decision making. All the users of Accounting look for pertinent information since low quality information can have adverse effects on decision making (Clikeman, 1999) [18]. The changes that have taken place in the Accounting model (Chendall & Morris, 1986; Abdel Kader & Luther, 2008) [17, 1], the development of information and communication technology and the objective of value creation have led to the necessity of adopting two organizational tendencies: (1) the differentiation of units so as to confront new aspects of the environment and (2) the integration of differentiated units so as to render them coherent.

The differentiation of Accounting

According to the systemic theory, an enterprise is a system that can be subdivided into several entities. In order to characterize this system it has to be differentiated. Differentiation is the division of the service of the enterprise into distinct sub-systems (Lawrence et Lorsch, 1967) [38]. Differentiation refers to the division of Labour of the classical school and enables each unit to measure its performance. An industrial firm has an Accounting system that can be represented as shown below:

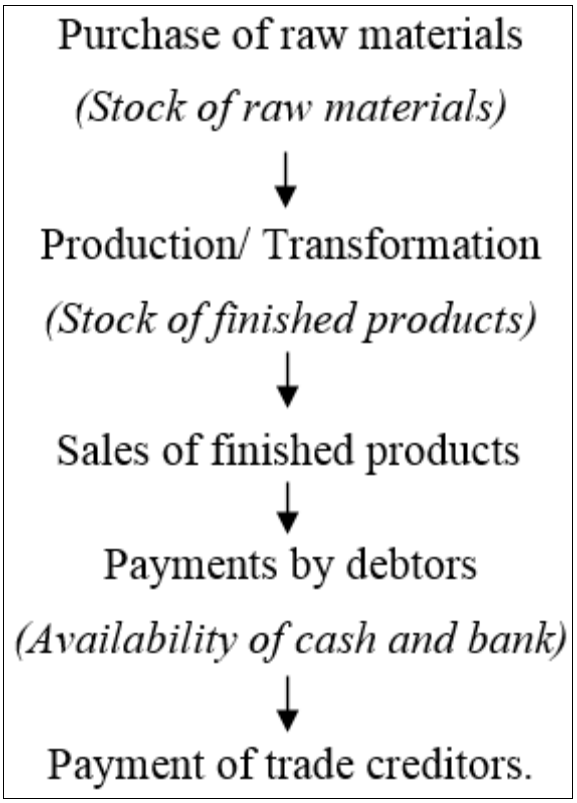

Fig 1: Representation of the Accounting of an industrial firm

The Accounting information system can be divided into several sub-systems (purchases, sales, customers, suppliers, entry of operations, budgets, management control, etc), according to the activities, size, volume of information and the environment of the enterprise. The Accounting sub-systems take hold of this information and select those that they can use since each sub-system attributes different levels of importance to each information or variables. Each

enterprise has to face its environment by putting in place a differentiation of its Accounting activities. The differentiation of the Accounting information system can take several forms such as an increase in the number of positions in the accounting service or the diversification of the sources of information. This differentiation is made possible by the development of new information and communication technologies (NICT) of that have enabled to increase storage capacity and spread data. According to size, the environment and structure of the enterprise (Markus & Robey, 1983; Sabherwal & Kris, 1994; Chan *et al*, 1997) [41, 47, 14], the accounting information system of an industrial firm will be more or less differentiated in as many sub-systems as possible: purchases, sales, customers, suppliers, etc. The fragmentation of the enterprise into differentiated sub-units naturally implies the development of varied Accounting sub-systems (supplier, customers, bank, payment, etc). This is a systemic principle that is put into evidence here: for a system to survive it needs some degree of openness with its environment so as to evolve.

The integration of accounting information system

Differentiation cannot be dissociated from integration. Integration is defined by Lawrence and Lorsch as being « *the quality of the collaboration that exists between the departments that have to unify their efforts to satisfy the demands of the environment and organizational strategies to attain its goals*»[1]. It is the combination of the different sub-systems that is used to create value. The accounting information system has to therefore be endowed with integration dispositions that use computers. The autonomous sub-systems of accounting transmit information to the finance and accounting department so that it can treat and forward it to the management team for decision making. Communication between sub-systems can be done:

- Manually: the same data is retyped in several applications
- By interface: the role of an interface is to transport the data from one sub-system to another
- By integration: all the sub-systems share the same data base.

We can distinguish several integration mechanisms:

- Integration by the hierarchy: these are the modes of coordination
- Integration by the socio technic disposition
- Integration by information system (computerized accounting integration)

Thus, the accounting information system is a management and differentiation tool through the coordination and execution of tasks and a tool of integration via information and the coherence of tasks with the context (El Orf, 2012) [24]. The appearance and parallel evolution of differentiation and integration of AIS justifies the fact that they are complements. These differentiation and integration mechanisms have to be adapted to the context of the enterprise.

The differentiation and the integration of the accounting information system (AIS): leverage for the confirmation of the plurality of situations of accounting organization in industrial firms in Cameroon

This section articulates on the description, interpretation and categorization of integration and differentiation practices of accounting information systems of industrial firms in Cameroon.

Protocol for the putting into evidence of the plurality of situations of accounting organization related to differentiation and integration of AIS in firms in Cameroon

The putting into evidence of the plurality of situations of accounting organization related to differentiation and integration of AIS requires study of several empirical cases which most often require qualitative methods including semi-directive interviews (Huberman & Miles, 1991; Yin, 1989) [31, 53]. Five cases of enterprises with different accounting organization situations were surveyed via a semi-directive interview, direct observations and documentary research. The following contingency factors were surveyed and analyzed:

- **Size:** the number of employees, turnover, number of accounting departments of the enterprise, etc.
- **The environment:** the intensity of competition, the reaction of firms to this competition, the existence of mechanisms that can forecast the reaction of competing firms.
- **The differentiation of the accounting information system:** the number of accounting departments, the diversity of activities and products, the keeping of accounting registers, the preparation of financial statements, the speed of obtaining accounting information.
- **The characteristics of the current accounting information system:** the effectiveness and the complexity of the accounting information, internalization/externalization of accounting, treatment of accounting documents, the importance of non-financial information, the methods of determining profit/loss, etc.
- **Technology and the integration of computerized accounting:** the computerization of accounting and the extent of this computerization (size of the computerized package, the importance of investment in computer science, the security of the computerized system, the level of mastery of the usage accounting softwares by employees in the accounting department, the accounting software used and the functions sort in this software, the mechanisms of data integration (transfer or communication of data between the different departments), etc

The cases studied were selected in the secondary sector (industries). This selection took the repartition of industries by region into consideration (Douala and Yaoundé hosting more than 70% of industrial firms[2]), the typology of enterprises (very small enterprises, small enterprises, medium sized enterprises and large enterprises), the representativeness of the sector and the accessibility of management. The interviews were carried out with five enterprises as presented in table 1 below:

[1] Lawrence P. and Lorsch J. (1967), *Organizations and environment: Differentiation and Integration*, Boston, Harvard University Press.

[2] National Institute of Statistics, General Survey of enterprises 2016

Table 1: Description of the empirical cases studied

Case	A	B	C	D	E
Type of enterprise	**VSE**	**SE**	**ME**	**LE**	**LE**
Sector	Industrial (private)	Industrial (private)	Industrial (private)	Industrial (private)	Industrial (private)
Branch	Building material, Metallurgy, foundry	Wood industry, paper, printing and editing	Wood industry, paper, and editing	Grocery, beverages, tobacco	Groceries, beverages, tobacco
Representativeness of the branch	8,2%	9,3%	9,3%	5,9%	5,9%
Location	Douala	Douala	Douala	Douala	Yaoundé
Subsidiaries	No	No	No	No	Yes
Person interviewed	Administrative director	Administrative officer	Management Controller	Human ressource manager	Administrative assistant
Other attributions	In charge of accounting, human resource manager	Calculation of the cost of turn, internal control, follow up of orders, internal accounting	Accounting, taxation	Internal control, bank reconciliation, keying in of data	
Age (in years)	03	11	12	07	25
Size (number of employees)	05	14	40	98	350
Capital	1 000 000	10 000 000	10 000 000	100 000 000	1 000 000 000(2014)
Turnover in 2015	2 000 000 (an increase)	70 000 000 -75 000000 (an increase)	100 000 000 (a fall)	4 500 000 000 (an increase)	22 000 000 000 (an increase)
formal accounting service	No	No	Yes	Yes	Yes
Number of employees responsible for accounting	01	03	06	10	10

Source: author

Description of accounting systems

The description of the accounting system is articulated around differentiation, outsourcing, the process of validation and control of documents, budgetary practices, the method of determining profit/loss, taking the environment into consideration, the method of propagation of accounting information.

- **Differentiation of the accounting information system**

The accounting information system of firm A and B is not differentiated, since differentiation has to be translated by the existence of a formal and identifiable accounting service; on the contrary firms C, D and E have a differentiated accounting system. The accounting information system of A receives information and controls the information. It is seen that in the case of D and E the size and the external environment influence differentiation since it correspond to the rules given by Nyenguè Edimo (2007) [45]: « *any activity of capital importance for the realization of the objectives of an enterprise gives birth to a strategic organ* ». This declaration is similar to the view point of Lawrence and Lorsch (1967) who showed that an enterprise becomes differentiated because of its growth. This differentiation is manifested by the size. We have also seen that the higher the number of employees in an enterprise the more likely there will be division of labour in the accounting department. This is materialized by the fact that to better attain the objective and identify all the facets of the environment (purchases, sales, stocks, control, budgets, etc …), accounting adopts a differentiation strategy so as to reinforce its efficiency in the enterprise (Chandler, 1966) [15]. In the particular case of firm E, any accounting activity gives rise to a department. This differentiation that is observed obeys the systemic theory that is aimed at decomposing the complexity of an organization so as to simplify it and get tools that will help in the resolution of practical problems. The absence of differentiation in A and B is no doubt due to two factors: the size of the enterprise and the volume of accounting activities. But the case A has the characteristics of a very small firm (VSE), thus, the need for differentiation does not seem to be of interest to its managers. The size of the firm is an important factor of differentiation.

- **The outsourcing of accounting**

The complexity of accounting operations can play on the need to outsource. Firms A and B have less complex operations involving mostly buying and selling. B and C have control procedures whereas D and E present very complex operations due to their volume of activity. In fact, the smaller the enterprise the simpler it's accounting information system (AIS) and the lower the sophistication (Abdel Kader and Luther, 2008) [1]. But the larger the size of the firm the more diversified and complicated are the management tools (Bajan-Banaszak, 1993) [7]. In addition to the accounting of firm A that is internally centralized, the other firms have a mixed accounting: internally centered for some operations; and the rest is outsourced. During a study on 86 Cameroon firms on the outsourcing of the accounting function, Nyenguè (2007) [45] presents a typology of the outsourcing of the accounting function. He also distinguishes four types of outsourcing of the accounting function: strategic outsourcing with disintegration, strategic outsourcing, traditional outsourcing with disintegration and outsourcing. Figure 2 below illustrates the result of the transposition of this typology to the empirical cases analyzed in this study:

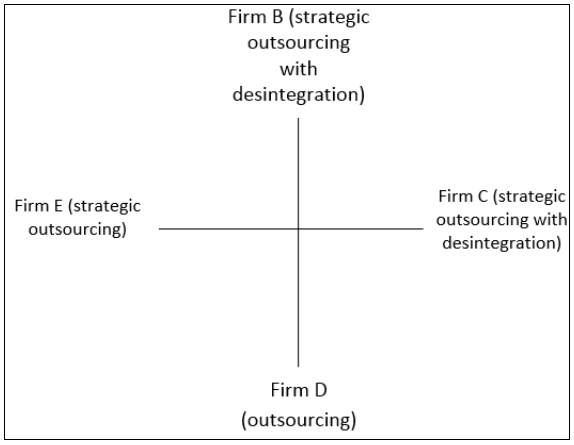

Fig 2: Typology of the outsourcing of the accounting function according to our cases

Meyer and Rowan (1977) [42] studied the influence of the institutional environment on the organization and discovered that outsourcing is a means of attaining legitimacy, avoiding the sanctions of the state, the rejection of the firms carrying out the same activities and a way of showing partners that they follow technical evolution. Di Maggio and Powell (1983) [21] consider the resort to outsourcing as an imitation phenomenon. Gosse *et al* (2002) [28] think that outsourcing is strategic and that it enables amongst other to create value and synergy, to minimize/optimize costs, to focus on the heart of competencies. In most of our cases the outsourcing of the accounting function is guided by the search of external expertise as to obtain high quality information; it is also a means of achieving legitimacy.

- **Process of validation and the control of documents : centralization/decentralization of powers**

The differentiation of accounting is also accompanied by a well-organized hierarchy. Thus, during the processing and treatment of accounting documents, the three firms CDE have a control process and the validation by managers. This process is put in place once the size of the accounting service increases. In structures such as A and B the distance between the general manager and accounting service is very short. When the AIS is less formalized and complex, the frequency of control falls since there are few documents. This makes the manager to concentrate on financial data (Berthelot and Morill, 2006) [9]. When there are many employees in the accounting service, the process of validation and control of entries and documents is long. This justifies that fact that the more differentiated accounting is the more decentralized is the power of signature. However, when the imputations concern important sums of money, signatures are centralized since it requires the responsibility of the manager. This validation process is affected by hierarchy and structure; this responds to the logic of unity and homogenization of objectives (Lawrence & Lorsch, 1967). According to the structuration theory of Giddens, accounting is an institutionalized organizational practice that has interpretative schemes, propagates norms and provides control facilities used on a daily basis in the activities of the organization. In this validation process of accounting documents we see that the accounting information system is a common basis that facilitates interaction and communication between agents with different languages in the firm.

- **Budgetary practices**

At the level of budgetary practices, firms A and B do not elaborate budgets. According to the managers, this absence of budgeting raises a problem of structure and confidence between the managers and subordinates. It also slows down decision making and this confirms that the manager/proprietors of the small firms do not respect all the principles of good management (Holmes and Nicholls, 1988) [30]. On the contrary, firms C, D and E have formal budgets; this existence of budgets corresponds to differentiation of accounting service. In fact, according to the structuration theory, institutional orders represent principles that rely on systems. For example the existence of a budget corresponds to the significance system. The significance system refers to the mutual knowledge shared by individuals. Individuals rely on the significance structure to communicates with others and propagate ideas. In this way budgets are used by managers as a means of communicating on the objectives (Lyne, 1988) [39]. Thus budgeting imposes a common financial language to the firm.

- **Methods of determination of profit / loss**

The method of determination of accounting profit is different from one case to another. In firm A, the method is profit = Income – expenses +/- unforeseen expenses. Firms B and D determine the profit automatically using ratios. In firm E the result takes the cost accounting results into account and the variances. In firm C, it is more complex, since there are unforeseen expenses and consequently the method of calculation anticipate hazards. That makes the managers to leave the results so as not to frighten the shareholders. The method of determination of results can induce losses or profits since any firm would like its accounting to create value. In this way the domination system highlighted by the structuration theory of Giddens offers insight via the allocation of authority. In our five cases, the administrative director, the management controller and the human resource manager become responsible for the financial performance of the enterprise. Thus accounting becomes a resource in the relations of authority in the firm (Mc Intosh & Scapens, 1991) [40], since it offers principles and standards representing the manner in which objectives have to be attained.

- **Taking the environment in to consideration**

The accounting information system of firms C, D, E is in relation with other functions of the enterprise, since in these cases an important place is given to non-financial information (external environment, needs of customers, etc). Firms A and B on the contrary, do not grant any importance to non-financial information. As highlighted by Lawrence and Lorsch in their study on 10 industrial firms, the influence of the environment on the enterprise is a function of its branch of activity. The food processing industry and the printing industry evolve in very unstable environments and their foodstuffs are perishable; in order to perform very well firms of this sector have to associate quality, the delivery time and costs.

- **Methods of propagation of accounting information**

When an enterprise is small in size, the information is solely

destined to the manager. But when the size is big the information is addressed to all the accounting sub-system. In order to arrive at good results, accounting information has to be easily transmissible, fast to access via appropriate methods. Firms A, B and D have a preference for telephones and letters whereas C and E have more refined means such as the detailed monthly notes periodic presentations (each term). In addition to this all the firms prepare activity reports. This manner of proceeding makes reference to the legitimization system on which the structuration theory of Giddens is based. The system of legitimization refers to the norms of action that enable to justify actions. The method of diffusion of accounting information through activity reports and exposers enables the accounting service to legitimate its existence, justify or increase its differentiation, to claim a larger budget or have more importance in the firm given its efforts in attaining the objectives of the firm (Arwidi & Samuelson, 1993) [5].

Description of the computerized accounting system

The description of the computerized accounting system is articulated on the motivations of computerization, an examination of the motivations of computerization, the integration of the computerized system and the usefulness of the computerized system.

- **Motivations of computerization**

Firm A has a computerized system that we can consider to be elementary (3 computers). In fact the motivations of this computerization are that the firm wants to carry out detail accounting and it wants to give good impression to customers (Avril, 2007) [6]. Firm B with 07 computers considers that a computer is the first working tool of an enterprise. Firms C (12 computers), D (11 computers), E (more than 40 computers), give mostly the same reasons: automation of work, centralization of data, history of problems, and information on a real time basis. These motivations corroborate with Gringas and al (1989) [29] who estimates that new information and communication technologies (NICT) enable the control of operations. With the help of this tool firms use raw data (purchase and sales invoices) to produce other information. By enabling information on a real time basis and by supplying the history of problems encountered, the accounting information systems of firms C, D and E enable them to be effective and competitive.

According to the structuralism theory, technology is a physical artifact with material characters, its conception and its usage are a social construct. This consideration is similar to that of the socio technical school of thought that stipulates that technology defines and imposes working constraints that have to be treated and organized according to social and technical rules. In this sense technology cam then be an integration tool (integration via the computer system or computerized accounting integration as proposed by Lawrence & Lorsch). At the accounting level, this integration is done using software.

- **Integration of the computer du system: decision system / information system**

Firms A, B, C and D have a computerized system that is based on the information system theory or value theory (Lemoigne, 1973). The hypothesis of this theory is that the needs of decision makers are known and assumed to be homogenous and stable. In these cases, the role of accounting is to satisfy specific and stable needs. Thus there is need for dimensional typing of events (in debit/credit). Information is gathered and restituted in the form of aggregates (balance sheet and the profit and loss account) to all decision makers. This makes the information system to become a decision system since it is via the data that they restitute that managers take (Sajady *et al*, 2008; Nicolaou, 2000) [48]. In this tendency we have two computerization approaches: the approach by needs and the process approach. Cases A, B, C and D have a process approach that is accounting is computerized process by process (purchase file, sales file, payment file, etc). Among these cases firm C has created its own software whereas firms A, B and C prioritize the use of the sage saari 100 software. The use of the 100 version of sage gives rise to automated possibilities of transmission of data via standard interfaces between the different users so as to avoid the retyping of data.

Thus, sage 100 is not integrated software since its data bases are autonomous. An accounting that uses on the sage 100 software in addition to autonomous software such as excel is an accounting system that is centered on administrative management. Firm E has its specific software and can be considered in the logic of event of Sorter (1969). The hypothesis of this theory is that the needs of the decision makers vary and are evolving, consequently unpredictable. In this case the role of accounting is to satisfy different needs. To attain this objective a multidimensional typing of events is necessary (debit, credit, quantity sold, hours of labour …). The data is stored but the restitution is differentiated since the concerns are diverse. Here, the information system is distinct from the decision system. This logic of events is appropriate for firms with delocalized subsidiaries. It is the case of banks which have several branches (Bidan, 2003; Samara, 2004) [, 49]. Firm E which is a large firm with branches all over the country and the Central African sub-region use a multidimensional accounting system. In this case the data base computerization approach is used, that is a common data base for all the users (purchases, sales, production).

- **The security of the computer system**

Firms B, C, D and E have a network accounting system that is accessible with a pass word. In order to protect data the firm resorts to the locking of computers. This enables to prevent access to accounting information by those who do not have the right. There are access codes and pass words that are used to unlock the computers. In addition to this some firms put in place technical dispositions. It is the case with firm D that uses inverter to secure its computers. The security is also accompanied by safeguarding systems to recover data after a breakdown.

- **Utility of the computerized system**

Even if all the firms are well furnished with computer materials and accounting software, the computerization challenges are not the same. As for firm A that is located in a conflicting internal environment the challenge is the security of data. Firms B and D use a computerized system to follow up their debtors and this enables them to have few doubtful debtors at the end of the period. As for firm C the elements supplied by the computerized system are useful in the decision making process. Firm E uses software conceived specifically for its needs enabling it to give

appropriate response. Even though the perceived utilities are different, technology enables the five firms to carry out their activities.

At the end of this analysis, we can henceforth classify the five firms in three categories according to their differentiation, computerization and integration situation. This classification is based on the study of Samara (2004) [49] that lead to the categorization of information systems in the accounting organization of banks. This typology was refined by El Orf (2012) [24]:

Firm A: Bi dimensional classic accounting information system

Undifferentiated and non-integrated accounting information system (AIS), stable environment, elementary computerization, low corporate culture, no management control, rudimentary cost and management accounting, production of a low volume of data, control based on the respect of production deadlines and technical norms.

Firm B: Bi dimensional classic accounting information system

Undifferentiated and non-integrated accounting information system (AIS), stable environment, well organized computer system poor management culture, no budgetary management, production of a low volume of data, centralized structure, rudimentary cost accounting, control based on the respect of manufacturing deadlines and technical norms.

Firm C: Bi dimensional classic accounting information system

Undifferentiated and non-integrated accounting information system (AIS), unstable environment, well organized computer system, centralized structure, strong accounting culture of the manager, out sourcing, production of a small volume of data, important role of financial accounting very useful cost accounting and the existence of management control.

Firm D: Centralized quasi integrated accounting information system

Differentiated and integrated accounting information system, stable environment, organized computer system, very computerized accounting, centralized structure, outsourcing, all the dimensions of accounting are useful, diversification of products, strong management culture of employees, integrated software (ERP), interface software (sage 100), autonomous software (excel), production of a large volume of data.

Firm E: Multidimensional accounting information system

Highly differentiated and integrated accounting information system, unstable environment, multidimensional and extremely computerized accounting, strong management culture, production of a large volume of data, decentralized structure, put sourcing, delocalized average sized subsidiaries, very strong competition, all the dimensions of accounting are very useful, control focused on planning of investments and infrastructure, dispositions for storage and verification of multiple data.

These different categories can be classified into three groups such that:

- **Firms A, B, C : Bi dimensional accounting information system**

The bi dimensional classic information systems are specific to small and medium enterprises (El Orf, 2012) [24]. In some of these structures, the manager has a weak accounting culture and the role of accounting boils down to administrative management. Management control and cost accounting have a less important place. Being classic means using computer software in the accounting of these firms which have as role to satisfy known and stable needs whereas the bi dimensional nature refers to the keying in of operations in terms of debit and credit. This type of information system is present in firm A with the absence of differentiation and integration, firm B with a stable environment and low production of data and firm C with low differentiation / integration in a very unstable environment.

- **Firm D: Hybrid accounting information system**

The hybrid information system is characterized by the coexistence of two dimensions and integration. This is common with medium and large firms with decentralized or centralized structure. This hybrid nature is frequent in startups which configure their information system themselves and this practice is referred to as the urbanization of information system (El Orf, 2012) [24].

- **Firm E : Multidimensional accounting information system**

This system can correspond to medium sized firms managed by persons having a strong management culture. Budgetary management and management control are high in these structures. Almost all the administrators are graduates in accounting, finance, control and audit. Integration refers to the presence of enterprise resource planning software that is appropriate in the management of decentralized and delocalized structure.

Conclusion

This researchaes to respond to the question of knowing the different situations of differentiation and integration of accounting information system that exist in industrial firms in Cameroon? The response to this question began by a literature review that presents the theoretical framework made up of several theories such as:

- The contingency theory which in this research explains that organizational change is regulated by external factors such as size, technology and the environment.
- The systemic theory whose contribution in this research was to classify accounting sub-systems and to propose differentiation and integration mechanisms.
- The socio technical school of thought which by presenting the firm as being made up of a technical and social system has shown that a good coordination is needed between these two so as to have good returns in workshops.
- The structuration theory that has provided a techno-economic and rational approach of accounting in this research.

Then we have carried out an empirical study via semi directive individual interviews with the respondents of the five industrial firms. These interviews that were based on an interview guide enabled us to see the reality of Cameroonian practices in terms of differentiation and integration of accounting information systems.

Finally, the data from these interviews enabled us to come out with a typology of our five cases of firms. Thus, we elaborated three categories

- The bi dimensional classic accounting information system
- The hybrid accounting information system
- The integrated accounting information system.

The importance of this research is that it capitalizes paradigms and highlights a specific theoretical domain which is the organization of accounting systems. However, these implications for managers/proprietor mean taking information needs into consideration, the differentiation required by the accounting information system and their effective implementation. Thus practically managers would be aware of the information needs of the firms and take measures to improve their accounting information system.

The evolution of accounting has made it to acquire the role of value creation. Being conscious of this new attribution it becomes necessary to proceed to the evaluation of the impact of the quality of accounting information system on the performance of firms. This would lead us to ask for example if the mode of organization of accounting information systems observed on the field that enable the achievement of the performance of the firms studied. This question is a prolongation of the study of performance of accounting information system and thus participates in the debate.

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