THE INTEGRATION OF FINANCIAL ACCOUNTING, MANAGEMENT ACCOUNTING AND CASH FLOW ACCOUNTING: THE USERS' OPINION

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ABSTRACT

Integrating financial accounting and management accounting is already a well-established practice in large businesses, which in France took up this type of approach in the mid-1980s. In small and medium-sized companies, however, separation is generally the rule. Priority is given to financial accounting, which is considered the "official" accounting system; management accounting is kept at the same time, integrated to a greater or lesser extent with financial accounting; and finally, a cash flow analysis is obtained by adjustment of the trial balances, or from changes in balance sheets. It takes the form of a statement of cash flows, and is often disconnected from the accounting system.

This separation of management tools is harmful to the life of the company, having several possible undesirable effects: for example, lack of interest in the reports generated by the financial accounting system, establishment by the management of reports based on non-accounting data, or the conviction that financial accounting lacks flexibility and is more relevant to the past than the present.

However, with the recent development of "off the shelf" software packages, companies which formerly had only a traditional accounting system, for reasons of cost or lack of resources, have now decided to install software which integrates financial accounting, management accounting and cash flow accounting.

This paper concerns only *integrated accounting* which is a specific form of accounting system integration being based on triple entry accounting.

The theoretical benefit of such an approach for small and medium-sized companies has been thoroughly described in French accounting literature but, to the best of our knowledge, no empirical validation of its actual usefulness has been carried out.

The purpose of this paper is to present the results of a survey of companies using the *integrated accounting* system. The users' opinion, as collected in the results of our survey, shows that *integrated accounting* has a dual impact: in terms of information (which becomes more reliable, because of unity of the data source and availability of this source, timely and relevant) and in terms of changes in the accounting business process.

INTRODUCTION: OBJECTIVE AND RESEARCH METHODOLOGY

Integrating financial accounting and management accounting is already a well-established practice in large businesses, which in France took up this type of approach in the mid-1980s. In small and medium-sized companies, however, separation is generally the rule. Priority is given to financial accounting, which is considered the "official" accounting system; management accounting [1] is kept at the same time, integrated to a greater or lesser extent with financial accounting; and finally, a cash flow analysis is obtained by adjustment of the trial balances, or from changes in balance sheets. It takes the form of a statement of cash flows, and is often disconnected from the accounting system.

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This survey concerns only *integrated accounting* as originated by Jean-Claude Dormagen (1979 and 1990): this is a specific form of accounting system integration. The theoretical benefit of such an approach for small and medium-sized companies has been thoroughly described in French accounting literature [2] but, to the best of our knowledge, no empirical validation of its actual usefulness has been carried out. That is the purpose of this survey of users' opinions.

1 - HYPOTHESIS: THE NECESSITY OF INTEGRATION

It is clear that currently in many businesses, especially small and medium-sized companies, the various information systems referred to above are completely separate. We believe integration is a necessity in this situation.

1.1 Observation: separation of information systems

The financial accounting system is often separate from management accounting, and furthermore does not generate information for direct cash flow monitoring.

1.1.1 Financial and management accounting

In many French and other European companies, particularly small and medium-sized businesses, the accounting system is often based on a separation of financial accounting and management accounting, reflecting the business activity from two different angles. Each of

[1] To simplify matters, in this chapter the expression "management accounting" will be used as if synonymous with "cost accounting": we are of course aware that several accountants and writers consider there are differences.

[2] See bibliography.

these approaches, the global (or aggregate) and the analytical, meets major information needs for the company manager [3].

The purpose of financial accounting is to record the transactions carried out by an organization, principally companies, with their environment, in order to summarize at regular intervals their financial position and assets, as well as the net profit or loss on operations. Financial accounting is often presented as if for external use, while in fact there are many internal users, not least the company managers, who should be the first persons with an interest in knowing the organization's financial position and profit or loss.

Cost or management accounting is a decision-support tool, since its supplies information which can be used for an overall analysis of the activity, for analysis of the products and sector of activity, or for analysis by organizational unit (i.e. division, department, etc.). It is principally for internal use.

Much thought has been devoted to this separation of information. For example, a long time ago the French Accounting Plan introduced the idea of *comptes réfléchis* (reflected accounts) which are used to record in management accounting inventories, expenses, revenues and net income from the financial accounting. The items are recorded in both sets of accounts as if "reflected" in a mirror (see appendix 1).

This solution has the advantage of "accounting-based": in other words it represents an inter connection between the two systems of accounts, in the sense that it does not create a distinction between financial and management accounting while at the same time respecting the autonomy of each system. However, in practice it has been considered unwieldy and over-complicated.

In large corporations, the two systems are sometimes connected through a management information system known in French as a SIG (*Système d'Information de Gestion* or *Système d'Information Groupe* - Group Information System)[4]. In small and medium-sized companies which have management accounting systems (this is not always the case), a special table, separate from the financial accounting documents, is generally used to reconcile the systems, in order to arrive at the financial accounting results, on the basis of the management accounting data [5].

1.1.2 Financial accounting and cash flow

Cash flow monitoring is nearly always "disconnected" from financial accounting. In large companies, it is the treasurer's job. Cash monitoring is part of the daily cash management tasks, based on cash budget forecasts and the actual results recorded in the company's cash account. In small and medium-sized businesses, cash flows are determined on the basis of complementary data and are recorded in statements of cash flows or statements of changes in financial position. This is generally done annually, after the year-end. The information supplied by these statements is interesting, of course, but of a historical nature, and therefore potentially out of date.

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[3] B. Esnault and C. Hoarau, 1994, p.1.

[4] As an example, C. Cardot (1995) describes the standardisation of accounting systems within the PSA Peugeot-Citroën group.

[5] Which student has not learned how to do this type of reconciliation in management (cost) accounting courses?

1.2 Integration of accounting systems: a necessity

Integration of the different accounting systems (financial accounting, cost accounting and cash flows) should, in our opinion, mean that accounting as a whole would become a decision-making tool and a basis for the long-term management of the business. We believe there are several arguments for integration.

1.2.1 Elimination of unwieldy reconciliation work

There are many links between the two systems: although management accounting needs financial accounting, where the basic information is entered, it is also true that financial accounting use data from management accounting, particularly the calculation of costs used to value certain balance sheet items such as finished product inventories, work in process, self-produced assets and capitalized R&D.

The move from financial to management accounting, as we stated earlier, requires reconciliation work which can be particularly complicated. Not only is it time-consuming, it is also difficult to carry out satisfactorily, because many errors are possible at this stage.

If we accept that both systems (or techniques), with a few exceptions, work from the same information source - i.e. the company's transactions with third parties and also with internal parties such as employees - at the very least, the possibility of obtaining financial and management accounting from just one entry for the same transaction needs considering. A closer link between the two systems would provide information more rapidly, more reliably and more cheaply.

1.2.2 Income statement by nature or function

Financial accounting has often been contrasted with management accounting, as if the two systems were in opposition to each other. An illustration of this is the debate concerning the comparative merits of the income statement by nature, which follows the presentation laid down in the 1982 French Accounting Plan for company financial statements, and reflects a financial accounting-based approach, and the income statement by function (or destination) which shows the cost of sales and the margin on the cost of goods sold. This is the traditional approach in Anglo-American countries and is used by some French companies in their consolidated financial statements, in accordance with French law. It reflects a more analytical, management-accounting based approach.

This debate arose from the observation that the official Accounting Plan did not sufficiently answer companies' management needs [6]. Arguments raged for several years over the advantages of the margin on cost of sales as opposed to the concepts of value added or gross cash surplus from operations (*excédent brut d'exploitation)*.

To us, it seems unproductive to oppose the two, as both presentations of the income statement are useful to the company and all users of accounting information, in the following ways:

[6] The debate organised on this theme by the *Revue de Droit Comptable* in 1987 reveals the differences between French accounting and "Anglo-Saxon" accounting (see Collectif - 1987).

· the income statement by nature measures the company's financial and economic performance by reference to the concepts of value added and gross cash surplus from operations. Financial analysis of the business, both internal and external, is based on a now widely-used tool: a multiple-step income statement or in France, the *tableau des soldes intermédiaires de gestion* (table of intermediary results).

· the income statement by function relates more directly to the needs of business managers, particularly through the concept of margin on cost of goods sold, which can be broken down by product or by sector of activity and thus used to measure the performance of the operational managers in these sectors.

1.2.3 Calculation of cash flows in real time

Company managers can make more efficient decisions if they are informed in real time of cash flows and their origins, with a breakdown of the changes in cash between the three functions of operating, investing and financing activities. This information enables them to take better-adjusted financing decisions (in terms of the choice between short or long term), to finance investments better, even if this means challenging a former financing decision, and to improve management of cash flow from operations by taking action regarding those components of working capital requirements related to the operating cycle, such as inventories, accounts receivable, and accounts payable.

In practice, it is far from easy to determine and analyze cash flows, especially in small and medium-sized companies. For this reason, the ideal solution would be to have the means to monitor cash flows directly, basing calculations on the accounting entries, the primary source of information.

2 - OBJECTIVE OF THE SURVEY

As already stated, the French approach, concentrating on financial accounting, has often been contrasted with the Anglo-Saxon approach which focuses more on management (or cost) accounting.

The purpose of this study is to show that the two approaches are not mutually exclusive. For instance, the French approach does not preclude giving priority to management information needs or cash flows. Indeed, in France, we find that companies of various sizes, operating in various industries, have accounting systems which are primarily concerned with management information requirements. To achieve this, some of these companies apply the concept of *integrated accounting*.

3 - NATURE OF THE SURVEY

This survey took the form of collection of qualitative data through interviews and management information reports (*tableaux de bord*).

Our sample comprised nine companies [7]; we do not believe it appropriate to apply the term "case study", as in our opinion case studies go into further detail. For our study, one semi-

[7] One of the sample companies, STLP, which had installed *integrated accounting*, has been absorbed by the TB Group, and the parent company now wishes to adopt this method. For this reason, we refer in our report to STLP or TB, depending on the data obtained.

directive interview was carried out per company (the interview guide is included in appendix 2). Responses were individually analyzed, then compared with the others to bring out any recurrent reasons for adopting an *integrated accounting* system.

The problem with this type of research lies in the difficulty of generalization. To what extent can the results of a given sample be deemed representative of a much larger population of businesses? What are the limits of that population? The validity or otherwise of generalization is determined by the characteristics of the sample, and these are therefore described in detail below.

4 - THE SAMPLE

4.1 Selection of companies

4.1.1 Selection criteria

The aim of collecting data was to obtain users' opinions of *integrated accounting*, and we needed one criterion on which to base our selection. We therefore identified an accounting software designed for *integrated accounting*, and contacted users of this software. The choice of users also took into account our requirement for diversity (in terms of activity, size, and ownership).

As a result, the survey only covered businesses which had already adopted the *integrated accounting method*[8]. We propose that the results for the sample can reasonably be extended to other companies using the same method, but not to all forms of integration of financial, management and cash flow accounting mentioned above, such as those based on the French SIG or Group Information Systems.

4.1.2 Establishment of a diversified sample

The sample used for the survey presents sufficient diversity in terms of activity and the way owners or shareholders exercise control over management. We shall examine the sample below from two angles: the ownership structure and the size of the organization, as defined by annual sales figures.

The ownership structures vary widely. For example, one of the companies in the sample (TB[9]) is owned by the members of a single family, others (BDF and SFE) are publicly traded and one (SF) is an oil group subsidiary. There is also one non-commercial organization: the hospital HSC.

All of the businesses in the sample are small or medium-sized, but with variations: KI, MD, STLP and RSAP are all small, TB, SF, LO and HSC are larger while SFE and BDF are medium-sized companies (see table 1 below).

The activities covered by the survey also vary. The sample includes industrial companies (automobile subcontractors and mustard production), and service sector companies (transporters, distributors, health). They all have a relatively short operating cycle, which

[8] This method is presented in detail in the first part of the paper.
[9] For reasons of confidentiality, the companies visited are not named but referred to by initials (see table 1 below).

means that the results cannot be generalized to include activities with long operating cycles, i.e. over one year or involving two financial years.

We did not study directly any very small companies.

4.2 The interviewees

Data was collected from interviews with the persons in charge of bringing in the new system. Two types of people were thus interviewed: employees in the accounting/finance departments, in cases where the company manages its accounts internally (7 organizations) and external accountants in cases where the accounts are kept externally [10] (SFE and MD).

The employees interviewed had different "labels": head of management control at LO, accountant at TB and head of finance at KI and SF. Their degree of experience was variable, but none had less than 5 years experience in a finance function, except for the head of finance at KI (2 years). It can therefore be assumed that the decision to use an *integrated accounting* system was made by people with the necessary level of competence. Their knowledge of the activity, which is vital in designing information systems, was also variable.

The interviews lasted from half an hour to two hours. Notes were taken and in some cases audio recordings were made. We obtained photocopies of computer-generated reports, and direct access to the system in operation in the company enabled us to verify the current state of affairs.

Company		Person interviewed	Activity	Sales
1	SFE	Mr B. Independent public accountant in charge of externalization	Assembly and distribution of spectacles	2 billion F Listed on RM[11]
2	LO	Mr A. Head of management control	Distribution of optical instruments (branches + franchises)	160 MF[12]
3	STLP	Mr L. Accountant	Transport	16 MF
	TB		Transport (Agencies)	153 MF
4	SF	Mr D. Finance manager	Fuel distribution (agencies)	1 500 MF
5	Hospital HSC	Mrs S. Accounting and finance manager	Health, non-commercial	Budget 271 MF
6	KI	Mr C. Finance manager	Subcontractor - precision engineering	50 MF
7	MD	Miss X. Member of independent public accounting firm	Production and distribution of mustard	20 MF
8	RSAP	Mr Y. Independent public accountant, Mr T. General Manager	Logistical management and services to accounting and auditing firms	9 MF
9	BDF	Mr L. Accounting manager	IT and capital goods leases	Listed on *second marché*[13]

Table 1 - Characteristics of the sample

[10] A company is said to have the accounts kept externally when it contracts out the whole process of producing accounting information, from entering data to producing the final accounts which can be used without modification. There is no accounting department within the company.

[11] Monthly settlement market.

[12] Excluding franchises, which also generate 160 MF in sales.

[13] This French securities market carries fewer reporting obligations than the main official listing.

We also believe it is useful to place the companies in their economic context, which often explains the choice of an *integrated accounting* system and the nature of the information generated by the system (see table 2).

	Company	Context
1	SFE	Expansion Externalization
2	LO	Financial difficulties
3	STLP	In receivership (before takeover by TB)
	TB	Expansion
4	SF	Standardization
5	Hospital HSC	Reorganization
6	KI	In receivership
7	MD	Taking over a company in liquidation
8	RSAP	Report to the executive committee
9	BDF	Standardization Expansion

Table 2 - Context in which *integrated accounting* was introduced

Prior to the presentation of interview results (in part two), we consider it appropriate to give a relatively simplified description of the *integrated accounting* method used by the participants in the survey (this follows in part one).

PART ONE - PRESENTATION OF *INTEGRATED ACCOUNTING*

The method known as *integrated accounting* (§ 1) is founded on a basis of several innovations: triple entry accounting, the concept of business cycles and the concept of events (§ 2). It can integrate financial accounting with cost or management accounting (§ 3), and integrate financial accounting with cash flow accounting (§ 4).

1 - *INTEGRATED ACCOUNTING*: A TECHNICAL SOLUTION

1.1 First attempt: the crossed system

Although, as already stated, major companies have been developing tools for several years, the world of small and medium-sized businesses has not as far as we know attracted much research. Jean-Claude Dormagen (1979), the former Accounting Manager of the L'Oreal group, is therefore considered a pioneer in the field. As early as 1979, he presented a system called the "crossed system", which aimed to unify financial and management accounting by modifying accounting entries. This system could be used in all types of company, including those at the smaller end of the scale, and was used in some L'Oreal subsidiaries from 1974 to 1982. In 1989 it was presented to the French National accounting council (*Conseil national de comptabilité*).

Technically, this system required economic facts to be recorded by means of the same entry being made in two separate accounts (hence the term "double" double entry). This is equivalent to entering expenses and revenues in financial and management accounting simultaneously. A set of "transit" and "translation" accounts also existed, so that both the management and the financial approach could be processed at the same time. The results were shown in many double entry statements.

The crossed system differs from the "reflected accounts" system described in the introduction in two major ways:

· the crossed system is based on "double" double entry, meaning that a single entry comprises two debits and two credits, whereas reflected accounts have two separate and distinct entries, which may even be recorded by different departments.

· the crossed system's "double" double entry does not contain any reflected accounts.

1.2 *Integrated accounting*

Aware of the limitations of the crossed system (largely caused by the complexity involved in recording entries, and the fact that the system's account charts are not neutral and require careful ordering of items), Jean-Claude Dormagen improved on his system by inaugurating *integrated accounting* (1990 - a), which has been in use in certain L'Oreal group subsidiaries since 1983.

This method is based on the following principles: (a) addition of a third dimension, resulting in triple entry accounting; (b) the concept of business cycle; and (c) the concept of event.

To implement this system, a company must: (a) have the appropriate IT equipment; and (b) create standard or automatic entries.

Integrated accounting alters the way accounts are recorded, considerably simplifying entry techniques and decentralisating the actual data input procedure. Thanks to these technical innovations, which are further described later in this paper, *integrated accounting* is able to overcome two major difficulties, and, in the words of W. Nahum, in his preface to the work of R. Deboux, J.-C. Dormagen and M. Ternisien (1995), to provide the immediate solution to two points of discord which have troubled the accounting world for a long time.

The first of these points, the debate over income statements by nature or function, was referred to earlier. *Integrated accounting* enables the company to move from the income statement by nature to a function-based presentation. In doing so, it puts an end to the debate over the merits of the Anglo-Saxon accounting system in relation to the French system, as *integrated accounting* can simultaneously supply both types of information, which can each be considered vital to the business.

Furthermore, due to its third dimension, *integrated accounting* is able to unite the accounting transaction and its monetary effect on cash flow. It thus provides a truly unified cash flow accounting, where operating receipts and expenses can be calculated from the accounting entries: this corresponds to the "direct" method of constructing cash flow statements. There puts an end to the debate over the choice of a direct or indirect method (the latter determining cash flow from operations by adjusting the net profit or loss on non-cash items, particularly depreciation and provisions) [14].

While defenders of cash flow accounting (such as T. Lee - 1987) saw this type of accounting as an alternative to accounting for transactions, *integrated accounting* can reconcile the two approaches.

[14] This point is covered in more detail in § 4.

2 - THE BASIC PRINCIPLES OF *INTEGRATED ACCOUNTING*

The purpose of *integrated accounting* is to improve the traditional accounting system. It is based on several concepts: triple entry accounting, the notion of business cycle and event, and standard entries. It is a new technique and as such raises certain questions.

2.1 Improving the traditional accounting system

Traditional accounting has both strengths and weaknesses in the provision and formulation of financial data.

2.1.1 The strengths of double entry

Double-entry bookkeeping is a rational and consistent system whose structure, operating rules and objectives correspond to the needs of producers and users of accounting and financial information. In addition, double entry involves an implicit internal check, which ensures reliability of entries.

The universal nature of money makes it possible to enter nearly every transaction pertaining to corporate business. In addition, the principle of double entry indicates the relationships between: (a) a "source" entered on the credit side of an account, and (b) the "use" of the same amount, entered on the debit side of the related account.

It is possible to distinguish between: (a) receipts and payments, thus determining cash variations, and (b) revenues and expenses, thus determining the income.

2.1.2 Weaknesses: the organization of accounting entries

The diagram overleaf illustrates how the double entry system works and shows its limitations. The example used is that of a purchase on credit of an item for a value of 100 F, followed by payment of the debt. The third party account ("Accounts Payable") in this case provides the link between the two entries.

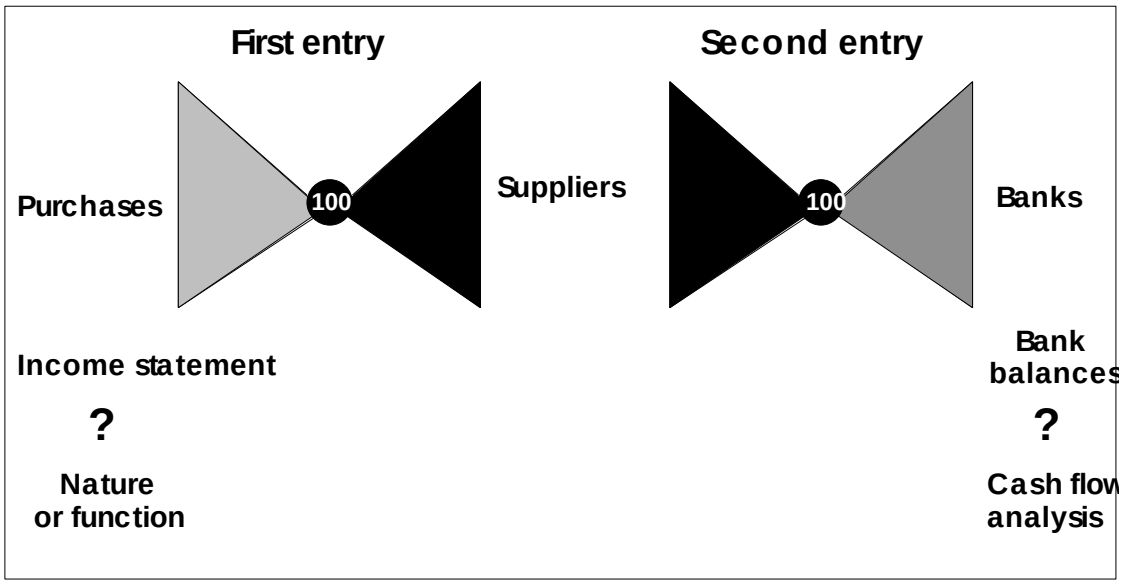

Table 3 - Limits of double entry accounting

Two limits can be observed.

· The first entry (income statement/third party account) records a transaction relating to revenues or expenses, with a corresponding entry in the third party accounts. This structure forces the company to make a choice regarding classification of revenues and expenses: either natural or functional (the management accounting approach). If natural classification is adopted, financial accounting will not supply the "cost of goods sold".

· The second entry relates to cash operations, but by giving priority to the "Bank" heading, information on the cash flow destination is lost, and it is impossible to trace the original transaction from the cash account.

Apart from this, more than two transactions relating to one account heading may be covered by a single entry, which prevents direct reconciliation of sources and their corresponding applications. For example, one entry may be made in "Accounts receivable" to record the total of an invoice, with corresponding entries under "VAT" and "Sales excluding VAT".

Consequently, preliminary analysis of the purpose of transactions reflected in the accounts is necessary before a statement of cash flows can be drawn up. Similarly, changes in inventory, particularly those affecting work-in-process, require separate management accounting and reconciliation with financial accounting.

2.2 The characteristics of triple entry or "three dimensional" bookkeeping

2.2.1 The third dimension

In *integrated accounting*, a triple entry system is used, introducing an extra dimension into the recording of each transaction. As well as the application (debit) and source (credit), the nature, i.e. the purpose or *raison d'être* of the operation (its "causal relation" in the words of B. Colasse - 1993, p. 134). In view of its third dimension, this type of entry can be considered "triadic", a term used in this context by J. Cohen-Scali (1990).

To illustrate this innovation clearly, a triadic entry can be represented as suggested by R. Deboux, J.-C. Dormagen and M. Ternisien (1995), in the form of a three-bladed propeller whose axis represents the link between the three dimensions. The three blades correspond to the entry's three dimensions as follows:

· use/debit
· source/credit
· purpose.

The following diagram shows this principle, applying it to our initial example (purchase on credit of an item from a supplier, then settlement of the invoice).

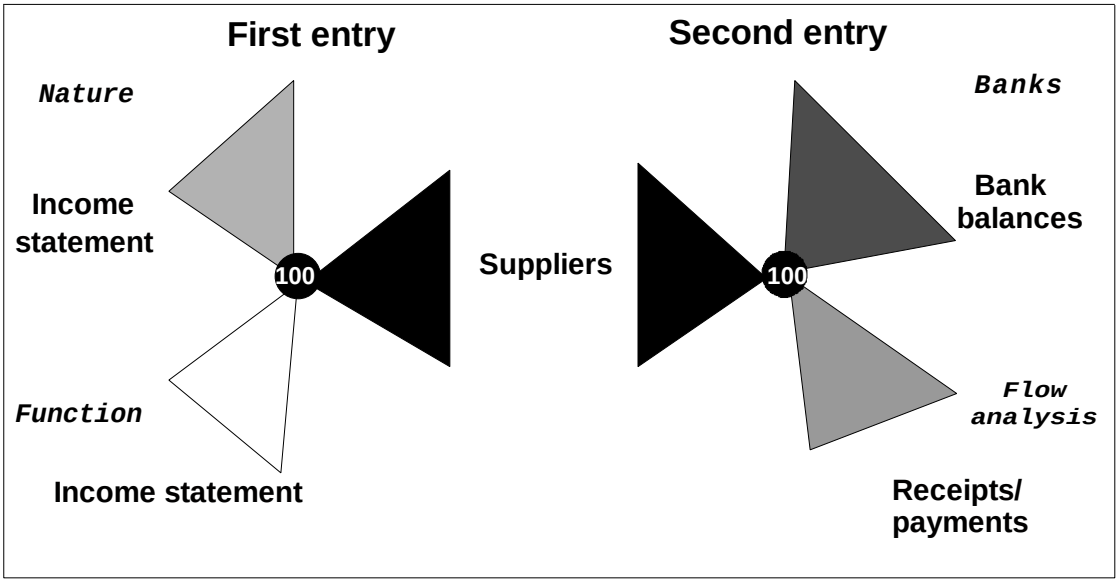

Table 4 - Triple entry (or "three dimensional") accounting

Looking at the first propeller (on the left), it can be seen that the third blade (bottom left) classifies revenues or expenses by function: this is the new element compared to double entry bookkeeping. This dimension provides identification of the function of the invoiced purchase, for management accounting purposes, without requiring the complex procedure of reflected entries set forth by the 1982 French Accounting Plan.

The second, right-hand propeller shows the second innovation of the triadic entry (bottom right): the classification of direct cash flows as receipts or payments.

In theory, the propeller could have many more than three blades. The principle of multidimensional accounting is discussed below (§ 2.6.).

2.2.2 Purpose

It must be understood that the concept of purpose, which reflects the reason for the transaction's existence, corresponds to the third (the new) dimension of the entry, additional to the two standard components of an accounting entry, debit and credit.

The content of the purpose thus varies according to the type of entry generated. It represents functional classification for revenue and expense entries, and cash flows for receipts and payment entries. Internal transactions should also be considered, bringing the total possibilities to three.

A - Expense or revenue on credit

The purpose of the transaction corresponds to its functional classification.

1st dimension: functional classification Debit: Class 6 Expenses (eg "purchases of raw materials")	
	2nd dimension: Third party accounts Credit: Class 4 Third party accounts (eg "accounts payable")
3rd dimension: functional classification (purpose) Debit: Expenses by function (eg "cost of goods sold")	

Table 5 - Recording an expense item

	1st dimension: natural classification Credit: Class 7 Revenues (eg "sales of finished products")
2nd dimension: Third party accounts Debit: Class 4 Third party accounts (eg "accounts receivable")	
	3rd dimension: functional classification Credit: Sales or other revenues by function (eg "sales of product A" or "sales of product B")

Table 6 - Recording a revenue item

As stated above, in the case of revenues and expenses, the existence of the third dimension makes it possible to generate an income statement by function, or even by sector of activity, in real time. This will be discussed in further detail in paragraph 3.

B - Settlements

This concerns all transactions related to settlements of invoices: these are flows with an immediate impact on cash flow. Here, the purpose is given by entering the item in the cash flow, with definition of the nature of the flow concerned.

1st dimension: Cash account Debit: Account 512 "Cash at bank"	
	2nd dimension: Cancellation of third party account Credit: Class 4 Third party accounts (eg "accounts receivable")
3rd dimension: cash flow Debit: Cash flow (eg "cash receipts from sales")	

Table 7 - Recording a receipt ("cash receipt from sales")

	1st dimension: Cash account Credit: Account 512 "Cash at bank"
2nd dimension: Cancellation of third party account Debit: Class 4 Third party accounts (eg "accounts payable")	
	3rd dimension: cash flow Credit: Cash flow (eg "cash payments to suppliers")

Table 8 - Recording a payment ("cash payment to suppliers")

Under the old approach, only the first two dimensions would have been recorded. The innovation lies in the third dimension which, as already stated, means that a statement of cash flows can be established in real time, resulting in better cash monitoring.

C - Internal transactions

Internal transactions principally relate to the various stages of product preparation along the manufacturing process. They are typical of a manufacturing company, where items are transferred from the warehouse to the workshop. The accounting entries are necessary to monitor the increase in cost within the business' various manufacturing processes.

Internal transactions may also be internal movements and non-cash flows which are never recorded in the cash accounts, or operations which only concern certain balance sheet items (such as acquisition of fixed assets). For this type of entry, the third dimension can explain why the transaction is only internal. For instance, for an acquisition of fixed assets, the entry would break down as follows:

1st dimension: Debit: Class 2 "Fixed assets"	
	2nd dimension: Third party accounts Credit: Class 4 "Fixed assets - accounts payable"
3rd dimension: internal nature of transaction "Purchase of fixed assets"	

Table 9 - Recording an acquisition of fixed assets on credit

Entries recording internal transactions are vital for *integrated accounting* to work properly and coherently.

2.3. Business cycles

In its most recent version, *integrated accounting* is based on a division of business life into cycles. A cycle comprises a group of economic and financial operations carried out within the clearly defined economic space of the company.

We thus talk of sales cycle, purchase cycle, inventory cycle, personnel cycle, cash flow cycle, and others. This concept is not new to accountants, and has become widely used since introduced into the standards of the profession. The authors are not convinced that these are really "cycles", strictly speaking, since it is not easy to define the beginning, the end and the beginning of a new cycle. The term actually corresponds more closely to a division of operations by theme [15].

From an educational standpoint, recording the company's operations in cycles makes an important contribution to understanding how a business works, as this approach links the accounting aspects more closely to the economic reality of operations. In other words, the cycle-based view bears a closer relationship to the actual life of the company than the ledger-based approach (sales, purchases, banks, miscellaneous, etc.), which is more conventional but often only accessible to professional accountants.

The most recent version of the system originally designed by J.-C. Dormagen is organized around ten cycles: (a) the "cash" cycle, (b) six operating cycles: "sales", "purchases", "expenses", personnel", "VAT", "inventory", (c) the investment cycle: the "fixed asset" cycle, (d) the financing cycle: the "borrowings/loans" cycle and (e) the cycle of net income-related operations: the "net income" cycle.

[15] However, for convenience's sake, we shall retain the term "cycle".

2.4 The concept of event

To facilitate recording of operations, and in particular to make it possible by non-accounting system users, the operations are called "events" and reclassified by cycle. This use of the term "event" can be ambiguous: for the inventors of *integrated accounting*, event and operation are synonymous terms, an example being "the payment made to settle the electricity bill". However, this does not correspond to the definitions given by the promoters of "event accounting" (see § 2.6 below).

In the *integrated accounting* data base, an event (operation) is constructed in three stages:

· the relevant cycle is identified (for instance, for payment of a maintenance invoice, the user would choose the "cash" cycle),
· the event is then selected within that cycle (operating activities, "payment of expenses")
· details of the operation are then added ("maintenance" heading).

It is no longer necessary to know the account codes.

2.5 Standard entries

2.5.1 The principle

At first sight, triple entry accounting may seem more cumbersome than double entry accounting. Behind this comment lie two concerns: as regards the system itself, there is a fear that data input will be more complex; and psychologically, there is a risk of alienating accounting staff who are used to double entry. For these reasons, *integrated accounting* has several standard entries designed to reduce complexity. These standard entries can be modified, copied or created to cope with a company's specific needs. They relate to events, and in practice, a standard entry does not eliminate the three dimensions, but makes one or two of those dimensions implicit. Explanations are given below.

For example, when a maintenance invoice is received from the head office (administrative departments), the entry is as follows:

. debit the "maintenance expense" account
. credit the "accounts payable"
. for the purpose (3rd dimension), the relevant account is "administration function: expenses".

When the entry is made under the event (operation) heading "maintenance expenses", the system understands that the relevant financial account heading is "repair and maintenance". The user then only has to enter the two other dimensions: the functional account and the accounts payable.

When the invoice is settled, the entries are made under the event (operation) heading "payment of maintenance expenses" and for the corresponding bank; from this the system records the bank account credited and the cash flow "payment of expenses". All that remains for the user to do is to debit the accounts payable.

During the first phase (when the invoice is registered), the user enters two of the three dimensions. In the second phase (payment), only one of the three dimensions is entered by

the user. This example shows that triple entry bookkeeping is not incompatible with a relatively user-friendly and down-to-earth system. It gives us a glimpse of the importance of correct positioning within the event/operation cycles.

Although this technical innovation can be seen by accountants as reducing the level of monitoring throughout all stages of a transaction, the fact remains that it is more flexible to use, and non-accounting specialists are likely to appreciate it.

2.5.2. Treatment of VAT

We have not yet discussed the treatment of VAT. In practice, VAT is recorded with the relevant asset or liability account, but with a negative sign. This is an innovation in terms of accounting rules.

For example, a maintenance invoice (administrative and sales departments) on credit including VAT at 20.60% will be recorded as follows:

Debit		Credit		3rd dimension	
Maintenance expenses	100	Accounts payable Deductible VAT	120.6 -20.6	Administration function Sales function	60 40
	100		100		100[16]

Table 10 - Entry of an item with VAT

To simplify matters, we will ignore VAT in the rest of this paper.

2.6 Questions concerning *integrated accounting*

The introduction of *integrated accounting* raises certain questions which require attention.

2.6.1 Is it really an innovation ?

At a theoretical level, following J.-G. Degos (1991), it must be stressed that neither *integrated accounting* nor the crossed system really constitute innovations. The objective of much research work on multidimensional accounting and matrix-based accounting (see S. Leech - 1986 and M. Mepham - 1988), and the work of Y. Ijiri (1982 and 1986) was to "go beyond" double entry bookkeeping, in order to meet the needs of companies where there was an interest in the accounting system's usefulness as a decision-aid tool.

Nevertheless, most attempts to improve or go beyond double entry (see J.-L. Malo - 1990) have not been very successful in practice. Two explanations are possible:

. Some proposals present not inconsiderable conceptual difficulties. One example will suffice as an illustration: the theory of Y. Ijiri (1986), presented by J.-L. Malo in 1987, which is based on triple entry and the concepts of "wealth", "revenue", "action", "time" and "force". We believe that practitioners have no great inclination for this sort of theory.

[16] Of course, one substantial difficulty remains: where did the 60/40 breakdown come from? Integrated accounting does not aim to answer this question. It simply reflects the breakdown calculated by the company's management accounting system.

. Above all, many of the proposed solutions, especially matrix-based accounting or multidimensional accounting, required a type of IT equipment that was not often found in small and medium-sized companies at that time, or, where it existed in large companies, was not very flexible.

Therefore, as B. Colasse says (1993, p. 130), we have had to wait for recent advances in technology, particularly in IT, to catch a glimpse of practicable alternatives to the traditional accounting method.

In our opinion, J.-C. Dormagen's *integrated accounting* is indeed an innovation in practical terms, as it is now possible to bring to life many of the ideas of the American and French researchers named above.

2.6.2 Doesn't it complicate operations?

One criticism is often heard in relation to triadic entry accounting: isn't triple entry bookkeeping more cumbersome than double entry? For us, the answer is no, for the proposed system actually lightens the burden of recording transactions through its use of standard entries, which make the process largely automatic (see above, § 2.5).

While triple entry may be a new arrival in the software of small and medium-sized companies, the same is not true in large groups. C. Cardot (1995, p. 9) states in the introduction that the change in accounting activities and tools is noticeable in medium-sized and large companies, where accounting entries can be generated automatically based on the economic events taking place in the company.

2.6.3 Is it an event accounting method?

The connection must be made between *Integrated accounting* and the Event Accounting approach, initiated by Sorter (1969) and followed by Johnson (1970), and by Lieberman and Whinston (1975). It is true that each statement prepared separately by the chief accountant, the management accountant and the cash manager, i.e. (a) the income statement (natural classification), balance sheet and notes, (b) the income statement (functional classification) and (c) the statement of cash flows, is based on data concerning the same events.

Gensse (1984 and 1983), Augustin (1986) and Stepniewski (1987) remind us that, traditionally, American writers make a distinction between the "needs" approach (or "value approach"), and the "events" approach which records all economic events affecting the company on a gross basis, allowing the user to aggregate the information as he sees fit.

Integrated accounting and event accounting do not operate on the same level. Whilst event accounting aims to record all events, *integrated accounting* provides a structure to the input of these events. *Integrated accounting* is therefore a means of processing event accounting, in the same way that Mepham (1986), commenting on an article by Leech (1986), and Degos (1991), foresaw the use of matrix-based accounting in conjunction with relational data bases and event accounting [17].

[17] It should be noted that Kucic and Battaglia (1981) demonstrated how to use Matrix Accounting for preparation of a Statement of Changes in Financial Position.

In other words, the reasoning by Degos (1991, p. 27) concerning matrix-based accounting can be applied, in our opinion, to *integrated accounting*: in a data base event accounting system, users extract and process records as required but they may encounter difficulties in creating the image they want. *Integrated accounting,* as with matrix-based accounting, should allow this difficulty to be overcome by providing a way of processing events.

On the basis of this reasoning, it is clear that *integrated accounting*, although it uses the concept of event, is not strictly speaking a type of event accounting.

3 - FINANCIAL ACCOUNTING AND MANAGEMENT ACCOUNTING

One of the objectives of *integrated accounting* is to provide a tool which, using the accounting entry described above in § 2, can directly establish an income statement by natural or functional classification. It may be of use to give a brief summary of these two approaches to the income statement.

3.1 Two approaches to the income statement

Several approaches to the income statement currently exist. We will describe two of them, each based on a different reasoning, with its own inherent advantages and disadvantages.

3.1.1 Income statement by nature

The presentation of financial accounting in the form of an income statement by nature shows the economic value added (production less consumption) and explains how it is distributed between employees, the State, lenders, etc.

	Production
-	Consumption (purchases consumed)
=	Value added
-	Internal expenses
=	Net income

Table 11 - Approach by nature or "financial" approach

3.1.2 Income statement by function

The presentation of management accounting in the form of an income statement by function, shows the make-up of the margin (sales less cost of goods sold) and provides details of the functions (production, sales, etc. or machining, order acceptance, etc.) benefiting from it.

	Sales
-	Cost of goods sold
=	Margin
-	External and internal expenses (other than production expenses)
=	Net income

Table 12 - Approach by function or "management" approach

3.1.3 The debate

Financial accountants are principally interested in the company's financial position and the income statement by nature, because they are working for the benefit of external users, who must not have the same degree of knowledge of the company's wealth-creating processes as internal managers. Meanwhile, to keep these processes going, the internal managers need an in-depth understanding of all the company's workings, and so management accountants aim to explain the net income by destination or function. There has been much discussion of whether financial accounting or management accounting should take priority: this is equivalent to asking whether it is possible to bridge the gap between the two branches of accounting in many French (and European) companies.

This debate appears pointless to us, for in reality the two approaches are complementary, providing different, but coherent presentations. Thanks to *integrated accounting*, it is no longer necessary to go from one system to another, as it is now possible to achieve natural and functional classification from the same entry.

3.2 Towards integration

There are several methods for integrating financial and management accounting.

3.2.1 First approach

A simple example will illustrate a first approach to the move from an income statement by nature to an income statement by function.

Over a given period, a company purchases merchandise for 60 F and pays a supplier 48 F. It sells part of the merchandise for 110 F and receives 95 F from clients. Personnel charges of 38 F are entirely allocated to the sales function. At the end of the period, the company undertakes a physical inventory and observes that the inventory, which amounted to 10 F before all these operations, now has a value of 30 F. The summarized triple entries are shown in appendix 3.

The two types of income statement are then established.

Sales of goods purchased for resale	110
Purchases of goods for resale	-60
Inventory change of goods purchased for resale	20
Personnel expenses	-38
Net income	32

Table 13 - Income statement by nature (based on use/debit and source/credit)

Sales	110
Cost of goods sold (-60 + 20)	-40
Margin	70
Commercial expenses	-38
Net income	32

Table 14 - Income statement by function (based on purpose/third dimension)

But this method is not entirely satisfactory, for the cost of goods sold is determined by the following equation:

Purchases ± Inventory change = Cost of goods sold

This approach is typical of a periodic inventory method, which is specific to financial accounting. The functional approach, on the other hand, is based on a perpetual inventory method. Generally, the inventory change is determined as the difference between the amount of purchases and the cost of goods sold.

Purchases ± Cost of goods sold = Inventory change

The aim here is to calculate the cost of goods sold based on the quantities removed from the inventory, but this is impossible to record in financial accounting.

It is therefore useful to organize entries so as to connect the two approaches, and thus be able to calculate either of the following using existing data based simply on the entries:

· cost of goods sold, from purchases and inventory change,
· inventory change, from purchases and cost of good sold.

3.2.2 Second approach

"Purchases" and "inventory change" can be linked to "cost of goods sold" by creating a "junction account[18] for "merchandise in warehouse". This account is used to record inventory movements, in other words, it facilitates the connection between the periodic inventory method and the perpetual inventory method.

We will use the same example as above, with the value of merchandise sold at 40 F. The entries can also be represented as in appendix 4.

The income statements by nature and by function are established simultaneously from the same entries.

[18] Expression coined by J.-C. Dormagen (1990) but no longer used.

Sales of goods purchased for resale	110
Purchases of goods for resale	-60
Inventory change of goods purchased for resale (30 - 10)	20
Personnel expenses	-38
Net income	32

Table 15 - Income statement by nature (based on use/debit and source/credit)

Sales	110
Cost of goods sold	-40
Warehouse (beginning inventory)	*-10*
Warehouse (purchase)	*-60*
Warehouse (delivery)	*+ 40*
Warehouse (ending inventory)	*+ 30*
	0
Commercial expenses	-38
Net income	32

Table 16 - Income statement by function (based on purpose/third dimension)

We find it important to stress that the entry, as adjusted to the principles of *integrated accounting*, contains both the structure of the periodic inventory method typical of French accounting (at least in many small and medium-sized companies), and the structure of the perpetual inventory method, used in France by some smaller companies and many large ones, and also in Anglo-American accounting.

As an illustration, we will take the entries studied above, with the accounts relating to the French (periodic inventory) system or American (perpetual inventory) system shown in bold type (see appendix 5).

It should be remembered that, as stated in the first paragraph, the actual recording of data is simplified by the existence of standard entries.

4 - FINANCIAL ACCOUNTING AND CASH FLOWS

Since, as indicated earlier, we consider that management accounting is generally only little used in small and medium-sized companies, these companies are likely to be interested, at least initially, in *integrated accounting*'s "cash flow" aspects. Their appetite should be further whetted by one of the system's principal innovations: the capacity for monitoring cash flows directly from accounting entries, without having to record any additional information [19].

[19] A « mémoire d'expertise comptable » (CPA dissertation) written some ten years ago by one of the authors compared the methods of establishing the statement of cash flows (H. Stolowy - 1986 and 1987). At that time, most software designed for small and medium-sized businesses required non-accounting data to be recorded. Only one software established the statement of cash flows based on financial accounting entries,

It is now possible to establish a statement of cash flows by a truly direct method thanks to the third dimension of the entry, the purpose. A brief example follows to illustrate how the statement is drawn up.

4.1 Preparation of the statement of cash flows by the direct method

The statement of cash flows analyses changes in cash position by distribution between three activities: operating activities, investing activities and financing activities.

There are two ways of determining cash flows from operating activities (the first function on the statement): the *direct method* and the *indirect method*. The direct method presents receipt and payment flows separately for each category of operating activities: receipts from sales, payments related to purchases, salaries, etc.

In practice, we would draw a distinction between two types of direct methods:

· a "semi-direct" method, where accounting flows are still adjusted to give cash flows (for instance, cash received from customers equals sales less changes in accounts receivable);
· a "true" direct method, where cash flows are entered directly into the Statement of Cash Flows from an information source to be defined, for example the general accounts [20].

Then there is another way of determining these flows: the indirect method, which adjusts the net income on non-cash items included in the calculation (e.g. depreciation expense, etc.).

In taking the two methods of reporting cash flows from operating activities, the direct and the indirect methods, Stolowy and Walser-Prochazka (1992) carried out a comparative study on the application of both methods in countries having adopted standards or exposure drafts dealing with the *Statement of Cash Flows*. They demonstrated that practices varied and that there were real differences of opinion regarding the choice of which method to use.

Supporters of the direct methods claim that its presentation system is more consistent with the objective of a Statement of Cash Flows, i.e. to show how operating cash flow has been generated. They also contend that the incremental cost of assimilating the operating cash receipts and payments data is not significant. Then, as R. Trout, M. Tanner and L. Nicholas (1993, p. 24) have indicated, comprehension of the adjustments made to net income to arrive at operating cash flows requires substantial accounting knowledge which most operational staff do not have.

But an important truth must be faced: some company managers openly admit that the direct method gives away too much information to the reader, and that is why they prefer the indirect method.

The FASB (1987, § 109) referred to the difficulties in implementation of the direct method while the IASC (1991, § 23) felt that "many enterprises may not be able to report gross

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but this required development of the chart of accounts, more complexity in entries and input of additional information in order to monitor the flows (see E. Gawtarnik and H. Stolowy - 1986). The method proposed by the *integrated accounting* system reflects the ground covered over ten years.

[20] *Integrated accounting* implements this second method.

operating cash flows without incurring substantial costs that may outweigh the benefits of the information to external users" [21].

The opposition between the two methods thus derives from arguments that are both technical (degree of difficulty in obtaining the necessary information) and political (the nature of the financial data disclosed). We believe that the direct presentation (obtained either directly or by adjustment of revenues and expenses) is preferable, in that it shows the way the cash flows are formed. However, it must be admitted that the information contained in traditional accounting entries is insufficient to determine cash flows. *Integrated accounting*, by modifying the structure of accounting entries, makes the necessary data available, and a statement of cash flows can be established by a truly direct method.

4.2 The purpose: the key to cash flows

The concept of purpose, integrated into the third dimension of the entry, will allow the system to specify the nature of a cash inflow or outflow. Flows are broken down into three main types of activity (operating, investing and financing) to ensure a certain coherence with the presentation of the statement of cash flows.

4.3 Illustration

A simplified example follows to demonstrate the working of the system.

Opening balance sheet (in KF)

Assets		**Liabilities and stockholders' equity**	
Fixed assets	15	Capital stock	14
Less accumulated depreciation	- 5	Retained earnings	5
Inventories	10	Long-term debt	4
Accounts receivable	3	Accounts payable	8
Cash	8		
Total	31	Total	31

Over a given period, the following transactions are recorded (in KF):

. Purchase on credit of goods for resale: 60.
. Payment to suppliers: 48.
. Sales on credit of goods purchased for resale: 110 (at cost: 40).
. Receipts from customers: 95.
. Personnel expenses (commercial): 38.
. Purchase on credit of fixed assets: 18.
. Payment to suppliers for fixed asset purchases: 14.
. Payment of financial costs: 1.
. Depreciation expense of the period (administrative expenses): 4.
. Sale of fixed assets. Purchase cost: 5; Accumulated depreciation: 3.
. Disposal proceeds: 7.
. Issuance of long-term debt: 10.
. Repayment of long-term debt: 1.
. Closing inventory: 30.

[21] Interestingly, this comment was withdrawn from the standard's final version, adopted in 1992.

First of all the opening balances must be recorded (see appendix 6), then the transactions for the period are recorded in triple entry (see appendix 7).

The statement of cash flows, in conformity with the models established by the *Ordre des experts comptables* in France (recommendation n° 1.22), the IASC (revised standard IAS 7) or the FASB (standard SFAS 95), can then be established on the basis of purpose (receipts and payments) (see appendix 8).

PART TWO - THE BENEFITS OF *INTEGRATED ACCOUNTING*: USERS' OPINIONS

The opinions of *integrated accounting* users as collected in our survey show that the system has a dual impact: primarily in terms of information (§ 1), but also in terms of business organization (§ 2).

1 - IMPACT ON INFORMATION

The companies involved experienced a clear improvement in the quality of information, which was both more reliable and more relevant following the adoption of *integrated accounting*.

1.1 Improved data reliability

The system improves the reliability of information for two reasons. Firstly, all information comes from a single, unambiguous source. Secondly, it is more often available, i.e. more frequently and more rapidly.

1.1.1 Single data source

In an unintegrated system, where the financial accounting information circuit is separate from the management accounting circuit, the parallel existence of two different chains of information requires periodic connections between results. In the words of Mr B., the independent accountant working for SFE, "Nobody can tell what the company's results really are", and it is not possible to isolate cash flows for separate processing.

With *integrated accounting*, the cost calculation networks are no longer independent. Once entered, a single item is processed simultaneously for the purposes of financial accounting, management accounting and cash flow accounting. Mr B. confirms this: "Cross-processing of a financial transaction, which is also taken into account for the management and cash flow accounting, multiplies the potential information."

Consequently, the problem of coherence no longer exists, and the periodic connections between the information chains are no longer needed. Importantly, the autonomy of data entry does not prevent processes being truly independent. Mr L. from STLP states that "the advantage of the system is that you can if you wish separate the financial and management aspects, but data is only entered once".

1.1.2 Up-to-date information

Information is generated by an *integrated accounting* system much sooner than by other systems. Previously, data was obtained after an unacceptably long period, generally three months after the year-end, and the presentation was standardized to the format of the French Accounting Plan. For example, LO (optical distribution company) produced its quarterly balance sheet 45 days after the end of each quarter, and one income statement per shop was established from different sources. Today, monthly reports are produced *one week after the end of the month*, at the latest.

At RSAP (which provides management and logistical support services to accounting and auditing firms), the balance sheet and income statement by nature were produced once a year. This practice did not comply with the company's own by-laws, which required an annual budget and a monthly report to be produced for a management body called the executive committee. The *integrated accounting* system adopted supplies monthly reports in two versions, based on revenues and expenses or by cash flows.

Mr B., in charge of installing *integrated accounting* for SFE, observed "a great reduction in the time it takes to send information to the management. The structure of cash inflows and outflows for each month is now generated sooner, on the second day of month M+1 for month M, which is an advantage of *integrated accounting*". Mr C. (from KI - precision engineering subcontractors) now has "management accounting at the end of the month, using a subscription system" instead of one set of annual financial statements. Mr L. at STLP (transport) adds: "We no longer have to wait for the year-end to have a statement of cash flows".

The table 16 below summarizes the improvements brought about by *integrated accounting* to the reliability of information.

	Company	Before	After
1	SFE	Separate financial and management accounting	Financial and management accounting Cash flow statement for company
2	LO	Financial accounting with quarterly balance sheet produced D+45 days	Monthly financial and management accounting for each shop (D+7 days) Monthly cash flow statement for company
3	STLP	Natural classification accounting	Natural and functional accounting, and cash flow statement
	TB		Functional accounting being designed
4	SF	Financial accounting Management accounting	Natural and functional accounting
5	Hospital HSC	Financial accounting (low reliability)	Financial accounting and cash flow statement
6	KI	"Standard" financial accounting	Financial accounting and functional income statement
7	MD	External accountant	Monthly financial accounting, monthly management accounting, cash flow statement
8	RSAP	Financial accounting (annually)	Financial accounting (monthly) Management accounting (monthly) Monthly cash flow statement
9	BDF	Large computerized system: financial and management accounting	Financial accounting, detailed management accounting

Table 16 - Impact on information

1.2 Improved data relevance

As well as meeting financial accounting requirements, which are the same in all companies, *integrated accounting* can take account of three variable constraints through its management and cash flow dimensions.

The first of these constraints is the nature of the activity, which determines the structure and therefore the vertical divisions of the income statement. The second constraint is the business strategy: whether the company is in a period of growth, stagnation or difficulty determines the segmentation of information, i.e. the horizontal divisions in the income statement (information on products and clients), and also sets the cash flow indicators. The third constraint, which encompasses the other two, is the final user of the information. By taking these into account, the system produces information that is not only reliable but relevant too.

This was confirmed in our interviews, which showed that *integrated accounting* allows the company to obtain information concerning the following:

· results for management purposes such as production costs, margins by client, margins by product, results by shop or by region,

· and cash flows by section, bank or overall.

The three constraints are thus satisfied. We shall analyze the system's contributions in terms of information at three levels: management accounting, cash flow, and indirect impact.

1.2.1 Direct impacts: the management information aspect

The *integrated accounting* system supplies four types of management information: (a) data concerning production cost; (b) data concerning the results of decentralized units; (c) data concerning margins; and (d) data concerning geographical sectors.

A - Detailed information on production costs

The choice of this sort of system means that from the same data as that used by financial accounting, highly detailed information can be obtained and used to directly monitor production costs, which have to be controlled for the company to survive. In the automobile subcontracting business sector, for instance, companies are under pressure from principals and must propose acceptable sales prices.

An *integrated accounting* system can monitor costs by section in detail. For Mr C. of KI, a precision engineering subcontracting company, "this tool enables us to have reliable management results at the end of the month in a form that is really useful, rather than just a trial balance". The breakdown of expenses is also appropriate to the industry. Mr C. can consult the "sales by management divisions for the most important items: subcontracting and raw materials". Above all, the system can provide a breakdown of items: "The important thing is to be able to look at the details - full details of all expenses by section." For example, there is "instant access to all materials invoices if the materials ratio is abnormal". For the time being, there is only one management accounting level, made up of five production divisions (including the activities of rotary moulding, cutting and industrial assembly), and six administration divisions.

The company does not consider a third level (by client) to be useful. Mr C. told us that "as things stand, that information would not be necessary given the configuration of the industry". He believes that "subcontracting, unlike purchase-and-resale businesses, needs general monitoring of the activity rather than of profitability per client".

B - Management reports to monitor decentralized operational units

In order to manage a chain of opticians' shops like SFE, total management accounting is required, covering administration and the company's shop activities, in other words one statement per shop. The objective is "to show the results per shop, with a summary by region". The system provides one income statement by nature and one income statement by function for each of the four main sections: personnel, general management, laboratory and the shops. The results by activity and shop represent more than 100 pages on paper, and this information is used by the internal control department.

LO (optical distribution company) is currently in a period of stagnation. Its activity is the purchase of lenses and frames, followed by resale after assembly. This is a commercial activity and the most important indicator is the contribution by the shops. The problem is how to manage the margins, as purchases of lenses account for 60% of sales figures. The *integrated accounting* system now supplies the margin for each shop, with the objective of developing a margin for each product family.

C - Margins by vehicle type and journey in the road transport industry

STLP, which has been absorbed by another company, was a small transport company (25 vehicles, 30 drivers and sales of 16 million francs) in deficit. It adopted the *integrated accounting* system after being placed in receivership: unprofitable journeys had to be identified rapidly in order to stop them. As Mr L. says, "We needed to find out where we were losing money, in terms of client and journey, as the vehicles were not always used on the same runs."

The company was taken over by a larger, expanding company called TB, where activities are decentralized, with branches all over France. The required management indicators were similar. Operational management is the responsibility of each decentralized branch, and these branches want management results by vehicle type (tractors, large carriers, small carriers) as each has different cost structures.

D - Information by sector

After going into receivership, MD, the mustard-producing company, recently changed ownership. Its new shareholders wish to develop the products with the greatest production volume, but the company was unable to identify which products were the most profitable, and a client-based analysis was required. The company informed us that "there were no figures on what the company sold, and no details of products...". Sales breakdown indicators were needed.

For each product, there were four ledgers according to destination. Miss X told us, "We now have information, thanks to the *integrated accounting* system, that we would not otherwise have; we produce management information reports based on purchases over the

year". All the data used comes from financial accounting, and there is a real improvement in information quality.

The *integrated accounting* system supplies the following information in addition to financial accounting:

- changes in monthly sales (in KF, monthly and accumulated figures);
- comparison of monthly changes in sales, with breakdown by function and family, and detailed breakdown by family and product;
- comparison of monthly changes in quantities sold, with breakdown by family and detailed breakdown by family and product;
- breakdown by client: comparison of monthly changes of sales, with distribution of sales and product quantities between the major clients;
- breakdown of purchases by product; monthly changes in purchases in French francs, and monthly changes in quantities purchased;
- monthly breakdown of cash, by bank.

In addition to this management information aspect, which is a considerable improvement in itself compared to the data a non-*integrated accounting* system can supply, there is the cash flow aspect. Its usefulness is examined below.

1.2.2 Direct impacts: the cash flow aspect

Integrated accounting's cash flow aspect is used in two sorts of decision: (a) investment-related decisions; and (b) operations-related decisions.

A - Cash flow as an indicator of financial health

As an indicator of financial health, cash flow can be used to support decisions concerning the company's fixed asset investments.

In addition to management accounting, SFE (which assembles and sells spectacles) needed cash flow management, i.e. permanent analysis of its capital consumption. The company is currently growing, and opening new shops. Consequently, it needs figures to "analyze the financial requirements for the opening of a shop... and ... plan the company's development in accordance with its financial capacities". Cash requirements are managed at the head office, as "the shops' operating structures are sufficiently similar not to require cash flow information for each individual shop".

To manage the growth of TB (transporters), the general management wishes to have information on the major movements. The investments are considerable, with one tractor costing over 500,000 F (fixed assets amount to the equivalent of 16 months' gross sales). The company has also just acquired another company of the same size, and it is vital to know whether the operations can finance investments. "Looking at cash flows as well as financial accounting items enables us to determine the working capital before the year-end."

B - Cash flow as a specific indicator of activity

More detailed cash flow indicators are used in making decisions regarding operations.

As STLP was undergoing financial difficulties, its primary objective was to identify a positive or negative cash flow from a financial standpoint. In practice, the reconciliation of margins with cash flows allowed the company to stop certain lines, without threatening its existence as a going concern. As Mr L. said during the interview, "We were able to sacrifice sales without danger to the cash position" thanks to the cash flow data provided by the *integrated accounting* system.

RSAP is a firm in the form of a partnership, and handles the activities of 30 auditing and consulting firms, either subsidiaries or franchises. The coordination center has two types of activity: it manages the "network" activities, principally quality control and methodology, and it is also in charge of training. The cycle of activity is seasonal with training taking place mainly in the second quarter. For this company, indicators were developed to analyze the cash position, in order to reconcile cash and direct costs at all times.

The management at LO (optical distribution) wanted to "understand why the cash is at its particular level", in addition to information on margins. To achieve this, monthly cash flow management is carried out at company level rather than for each shop, as most payments are global (for personnel charges and purchases).

For the mustard manufacturer MD, *integrated accounting*'s cash flow aspect is used "to see where the cash is going". The system can generate a monthly cash flow statement by bank.

The cash flow dimension of the *integrated accounting* system was the very reason why the hospital HSC adopted it. In the French health and social services sector, the standard accounts include an analysis of cash flow sources, and Mrs S. of the hospital told us that many management information reports in this sector "are to analyze cash flows". Apart from this sector-specific constraint, cash management is also a priority for the hospital's management: "What the management want is future payment forecasts."

At KI (precision engineering subcontractors), cash data is recorded but not yet used. In the near future, the financial director wants to use cash data to analyze cash requirements by management division. As he says, "We have the data, now we need to turn it into information."

Although these indicators are not revolutionary, they are all generated from the same initial data used to establish the accounts, and this is a real step forward. Only one of the companies interviewed, SF, the fuel distributor, admitted that it does not use the cash flow aspects of the system.

The company managers participating in our survey are thus aware of the usefulness of *integrated accounting*'s three dimensions. However, they do not always use the system's capacities to the full. There are two possible ways of interpreting this situation. Firstly, the *integrated accounting* systems covered by the survey are all recent, the oldest dating from 1995. The inherent bias is tolerable for a study of an exploratory nature, but it would be interesting to carry out another survey in a few years. The second possible reason is simply the cost of obtaining information.

1.2.3. Indirect impacts: use of the information produced

Integrated accounting produces information that is perfectly appropriate to the company's strategies and management methods. This information is used for forecasts, and for reports.

A - Forecasting

Information is used to establish budgets and cash forecasts.

Primarily, the information is used for budget management. In most cases, the budget is not in the *integrated accounting* system, but uses the same structure, so that the budget framework can be based on financial accounting. For example, the monthly budget position report takes its data from the financial accounting system. The hospital HSC is publicly-funded, and has four functional budgets: personnel, medical expenses, general budgetary expenses and depreciation, provisions and financial expenses. Budget items are attributed in accordance with account items. The hospital states that "all class 6 and class 7 items appear in the monthly budget position".

In general, the budget framework follows the breakdown structure used for operations. At KI (precision engineering subcontractor), "actual" items are calculated directly by the *integrated accounting* system and used for forecasting. Although the budget remains independent of accounting, Mr C. makes a connection between budget and accounting in order to produce "a monthly budget comparison for each item, by management division".

Integrated accounting may result in a transfer of skills where the budget is concerned. BDF (IT and capital goods leases) has decentralized its budgets. Mr L., who was previously in charge of all budgets, says the fact that each subsidiary now has access to its "actual" figures on a monthly basis means the budget can be updated in the subsidiaries each month.

Apart from budgets, information from the *integrated accounting* system can be used for cash flow forecasts. The initial reason the director of the hospital HSC wanted to monitor cash flows was to establish cash flow forecasts, while at MD (mustard manufacturer), cash forecasts are drawn up once a month. Mr B., in charge of installing *integrated accounting* at SFE (assembly and sales of spectacles), also uses the system in managing his own accounting firm. A monthly statement of cash flows reflects what is actually happening in financial terms.

B - Reports

All this information can also be used by the operational departments. The accounting data can supply information of use to sales management, since "all the information is there in the accounting system", in the words of Miss X, working for MD the mustard manufacturer. Their newly engaged sales director uses the management information report produced by the system: "It gave him a basis to work on." Cash flow information is used in developing ageing statements for MD's sales department, which sends out customer reminders every week. This is possible provided the accounts are up to date, i.e. that settlements of accounts payable and receipts from customers are entered on a weekly basis.

Similarly, the general management of RSAP must be able to report to its management committee on monthly results at any time. *Integrated accounting* has enabled the company

to fulfill its obligations as stated in the by-laws and the management committee now receives a monthly report.

To sum up, the improved relevance of information derives from two sources:

. the intrinsic nature of the information produced by the system in the form of breakdown reports (see § 1.2.1. above) and cash flow information (§ 1.2.2). This is the direct impact of *integrated accounting*.
. the use made of this information (§ 1.2.3.) which is the indirect impact of *integrated accounting*.

The following table summarizes the direct and indirect impacts on management resulting from adoption of an *integrated accounting* system.

	Company	Information obtained Direct impact	Use of information Indirect impact
1	SFE		Forecasts
2	LO	Margins	Management of shops' contributions and forecasts
3	STLP	Margins by vehicle, journey and driver	Profitability of journeys
	TB		
4	SF	Margins and breakdown of expenses	Reporting Management of branches
5	Hospital HSC	Realized figures by account item Monthly cash management	Budget by nature Monthly cash budget
6	KI	Cost of production by section	Cost control Budget
7	MD	Margins by product Monthly cash flows	Sales management Reporting
8	RSAP	Direct cost and actual cash position	Budget Reporting
9	BDF	Monitoring sales teams' costs	Forecasts Budget by department

Table 17 - Impact on management

2 - IMPACT ON THE ORGANIZATION OF ACCOUNTING

The concept of *integrated accounting* implies an upheaval in the organization, and its implementation is a vector of organizational change. Not only is *integrated accounting* used as justification for an anticipated change, envisaged in advance, but its introduction also brings about change in itself.

2.1 The move from an accounting approach to a management approach

When *integrated accounting* is implemented, it introduces a management approach in the place of an accounting approach. The final users' needs must be taken into account as early as the design stage, which in practice implies an event-based approach and a reduction in the cost of obtaining future information.

2.1.1 A new vision of accounting systems within the organization

Mr C. from KI (precision engineering subcontractors), when talking about their *integrated accounting* software, says that "it is not an accounting software which also covers management, but the opposite: it is a management software which also does financial accounting. The first thing it does, or enables us to do, is management: it is constructed for managers. All constraints such as knowledge of account codes are removed, and from that point of view, this software is transparent".

The new system can only start up after an in-depth design phase. According to Mr B. (independent accountant for SFE), the method is difficult to implement because "everything is completely different". To begin with, "the production of information must be clearly analyzed". Mr L., from BDF (capital goods leases) did not want staff to learn intermediate procedures during the development. He says, "Installation is longer and more complex, until the system starts working successfully." The system can only begin operating once it is certain that the developed product is the final product - a more gradual approach results in failure. Miss X (at MD) admitted: "I started all over again; the first approach was right but needed improving."

Setting the parameters requires a major investment in time and resources. At STLP (transport), Mr L.'s original specifications failed to work correctly. He is of the opinion that "the design must be validated before the system is installed". For an appropriate design, prior knowledge of the activity is necessary, indeed is a critical success factor in specifications for an integrated system. The comments of Mrs S. (from the hospital HSC) on design errors confirm this: "I didn't know the activity well enough and was too concerned by details... we were going into the system without always taking a sufficiently objective view." All the interviewees agreed on the importance of correct parameters.

Right at the beginning of the project, then, the manager must define the information he wants from the system and the resources available to obtain it. For instance, Mr C. of KI did not consider it necessary to develop a "profitability by client" dimension, because "There are other ways of knowing the margin by client, such as the hourly rate, which is supplied by our computer-assisted production management system."

2.1.2 The practical implications of integrated accounting

A - Event-based data entry

The new system brings about the change from accounting entries to event-based entry. In a double entry system, data input follows the French chart of accounts, with the breakdown entered subsequently. In an *integrated accounting* system, only one (triple) entry is required, before the accounting process. It is triggered by an event, with a threefold code attributed to the number recorded: one for financial accounting, one for management accounting and one for cash flow. Mr B. found that the problem with event-based entry lies in "defining an event that makes it possible to monitor transactions from the start, so that the processing chain is subsequently simplified". There are two problems to be solved: the inflexibility of the input environment, and its possible decentralization. Although these may seem easily overcome, they involve major changes.

B - Event flexibility

As the events are defined before data is entered, the system is slightly less flexible than its predecessor. Miss X (for MD) agrees with this when she declares, "The events tend to fix things." Nevertheless, she adds that the approach does facilitate day-to-day use: "When events are blocked... no errors are possible and there are very few "miscellaneous" items." Mr L. of BDF observes that before adopting *integrated accounting*, items were recorded twice, once in the accounting department and once in the finance department, whereas now, the event-based approach "avoids multiple entry of the same item, which used to lead to errors. It also means the information is more reliable".

In practice, business activity is too diversified for every eventuality to be covered by a certain event, and some "open" events are needed for functional reasons. Mr C. states that "Standard events allow us to have a regular breakdown of expenses by management section, but some "open" entries are needed. Not everything can be planned, and certain items are impossible to categorize." Mrs S. similarly opts for a "strong but not too rigid framework", since the event-based approach requires "permanent development capacity".

C - Extent of decentralization

Data input is decentralized to varying degrees: some interview statements suggest that this is the first step towards total decentralization. For example, Mr L. of TB (transport) considers that *integrated accounting* brings about a shift in responsibility where input is concerned: "Financial accounting takes second place, and in the event of error, the cause is no longer the accountant, but the use of the system; there is a shift in terms of the activity." However, in our view, this opinion rather oversimplifies the situation.

In practice, decentralization of data entry is subject to two boundaries. First, there is the question of power sharing, with the finance manager wishing to retain control over figures; some already believe that decentralization, in the sense of data being entered in the operational departments, is an illusion. As Mr C. remarks: "There will always be entries made by the accounting department. When a person records inventories and subscriptions, he or she really understands what is going on. As financial manager, I want to keep control over my figures."

The second boundary concerns the reliability of information, which goes hand in hand with the responsibility of the person making the entry. Input of accounting items has remained centralized for reasons of reliability. Mr L. from BDF claims that "the more decentralization there is, the more work there is for the broom wagon (i.e. the accounts department)". Above all, the operational staff who are supposed to input data in a decentralized system must be willing to do so, and nobody wants to take the risk of having data entered in the operational units. One interviewee told us "the sales managers don’t think it’s the sales department’s job to enter data, and don’t want their staff to do it."

2.1.3 Reduction in information production costs

In spite of the high initial investment for the design phase, the unit cost of information is eventually reduced in terms of system operation [22]. Time savings on auditing and control are the benefits to be gained from a planned-in-advance system of data acquisition. As

[22] Taking the initial investment into account.

information production is quicker, more time is devoted to using the data: at least, this is the opinion of our interviewees. To the best of our knowledge, there has been no detailed survey of *integrated accounting*'s impact in terms of cost.

2.2 An instrument of organizational change

2.2.1 Impact on skills

A - Fragmentation of skills

Skills are fragmented by the new system, whose installation causes a split in accounting skills between the design and operation of the system. Mrs S. at HSC declared that an objective view is necessary, and that developments in the system are difficult to combine with day-to-day work.

During the design phase, knowledge of the organization is required, but of a kind that goes well beyond accounting matters. In other words, the vision of the company must encompass more than just the accounting aspects, and detailed knowledge of the activity is also necessary. Mr B. states that "at the outset, you need to define what information is useful and describe the organization to obtain results".

Later, during the operation of the system, accounting know-how is no longer necessary because data entry does not always follow an accounting-based logic. Mr B. thinks that "Some basic level staff can be used for data input; as the system is highly structured, students with no accounting training can do the job." Furthermore, "this means we can change the input staff". There is a "despecialisation" effect on data entry work.

B - Learning tool

Integrated accounting is a learning tool at two levels. For the lowest levels of the hierarchy, it provides a change from the specific task, and a chance to discover the company as a whole. Junior employees thus better understand the activity and the reason for their work. Mr L. at BDF says "The aim is to foster staff development, by giving them display access to all menus."

The system can also increase small and medium-sized business managers' awareness of flow-based management. Mr B. states "in a small company, *integrated accounting* can provide information on flows that can be understood by the company manager". Miss X, who works for a firm of accountants, uses statements of cash flows to help MD's employees understand the concept of cash flow.

2.2.2 Impact in terms of organizational change

The adoption of an *integrated accounting* system may be the sign of a desire for change, as at the hospital HSC. According to Mrs S., "It is not a neutral decision, but a general will for change, a reason (or justification) for examining everything." The move from one to another implies a total rethink of document circuits, and thus of the underlying organization. For example, for HSC, the accounts payable circuit was originally chronological, but is now organized by account payable. The document classification methods also change.

Two of our sample companies already had *integrated accounting* systems, and were thus in a position to obtain supplementary information. They nevertheless opted for the new *integrated accounting*, seeing it above all as an instrument to harmonize their decentralized units' accounting systems. It was thus a true desire for change, rather than information needs, that led them to adopt *integrated accounting*.

Integrated accounting may also be used as a pretext to introduce standard report formats. The BDF group is currently in a phase of external growth; it is acquiring companies with different accounting systems and needs to harmonize them. *Integrated accounting* is thus a pretext for harmonization. In the words of Mr L., accounting manager at BDF: " *Integrated accounting* made it easier to consolidate our new subsidiaries, and standardized our accounting systems." A French oil group, wishing to harmonize financial reports at its five distribution subsidiaries in France, also adopted *integrated accounting*. Finance manager at one of the subsidiaries, Mr D. interprets this choice as "the desire to change, in order to have a standardized information system in all five subsidiaries". In this case, the adoption of the new system appears to be the justification for change.

CONCLUSION

Our research confirms the theories expressed in accounting literature: *integrated accounting* makes it possible to run financial accounting by nature at the same time as management accounting "moulded" to the activity, and cash flow monitoring by activity.

In all cases in our sample, the major factor behind the decision to introduce an *integrated accounting* system was the system's capacity to generate reliable figures in a reasonable timescale, based on indicators that meet management needs. This need for information is generally felt at a critical phase in the company's development: it may be in difficulty (MD and KI are in receivership, while LO and HSC have cash flow problems) or the company may be facing a period of rapid growth (as are SFE, BDF, and TB). The second reason given for adopting the system was the desire to standardize subsidiaries' information systems (as at BDF and SF). In third place, for all companies in the sample, *integrated accounting* provides more reliable data than a standard accounting system.

The question of accounting is primarily a problem of system design, rather than accounting model. In general, the following are considered incompatible: (a) ash flow versus accrual accounting (revenues and expenses), where the concept of wealth gain between two year-ends is concerned; (b) accounting by nature (financial accounting) versus functional accounting (management accounting), for the breakdown of this increased wealth.

In fact, these are not mutually exclusive, but may even be complementary, and *integrated accounting* can combine the different approaches.

However, we must not ignore *integrated accounting*'s limitations. Firstly, decentralization, and simplification of data input is likely to bring accounting into the field of activity of "non-accounting" personnel, and this could be seen by company accounting staff as a loss of power. Another difficulty lies in resistance to change. Thanks to the IT system, triple entry bookkeeping can be introduced in a very flexible, «painless" manner. It nevertheless remains a major change, and may come into conflict with the habits of more than a hundred years. Finally, the simplifications brought about by the use of standard entries has the disadvantage of slowing down the user's reflexes; he no longer has to adapt the entry to the company's specific characteristics.

Despite these few limitations, the *integrated accounting* system is likely to impose (or bring back?) Accounting as an element of strategic and long-term business management.

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APPENDIX 1 – REFLECTED ACCOUNTS

Example: purchase of raw materials:

Financial accounting				**Management accounting**			
Accounts payable		Purchase of raw materials		Purchases, reflected		Raw materials inventory	
	x	x			x	x	

APPENDIX 2 – INTERVIEW GUIDE

0 - What are your company's activities ?

Characteristics: size, personnel, activity, other.

1 - How was the integrated accounting system introduced?

Analysis of situation: Who decided to adopt the system?
How was the accounting organized before the new method was installed?
How does the new organization work?
What were the stated objectives ?

2 - What is the role of the integrated accounting software?

What information is obtained using the method?

- Income statement by nature of function?
- Historical accounting data, actual and forecast figures?
- Historical cash flow, actual and forecast cash flow?

3 - How has the system contributed to decision-making?

Do the department staff know why the accounting system collects these data?
What are the system-produced indicators used for?
Are these indicators a "plus" in the light of your company's specificities?

4 - What were the difficulties encountered in introducing the method?

Technical, human and organizational difficulties.

APPENDIX 3 - INITIAL APPROACH TO INTEGRATION
Schematic presentation of triple entries

Use/Debit	Source/Credit	3rd dimension (Debit or Credit)	Amount
Purchases of goods for resale	Accounts payable	D/ Cost of goods sold	60
Accounts payable	Cash	C/ Payment to suppliers	48
Accounts receivable	Sales of goods purchased for resale	C/ Sales	110
Cash	Accounts receivable	D/ Cash receipts from customers	95
Personnel expenses	Personnel	D/ Commercial expenses	38
Inventory of goods purchased for resale	Change in inventory of goods purchased for resale	C/ Cost of goods sold	20

N.B.: In most cases, only one account is debited and one credited per entry, and this is why the amount is only stated once in our examples. When L'Oreal first introduced *integrated accounting*, this was the general rule, since recording a single transaction in the same entry made it possible to reconcile each source and its corresponding use directly. However, when an entry contained more than one debit or credit, it had to be broken down into several single entries. For example, for a sales with VAT, the accounts receivable had to be debited twice, once with the sale on the credit side and a second time with VAT on the credit side. In principle, this was done automatically by the system used by L'Oreal at the time. Today, this constraint no longer exists and the entry can be recorded normally.

APPENDIX 4 – SECOND APPROACH TO INTEGRATION
Schematic presentation of triple entries

	Use/Debit	Source/Credit	3rd dimension (Debit, Credit or Neutral[23])	Amount
A	Change in inventory of goods purchased for resale	Inventory of goods purchased for resale	D/ Warehouse: goods for resale (junction)	10
B	Purchases of goods for resale	Accounts payable	D/ Warehouse: goods for resale	60
	Accounts payable	Cash	C/ Payment to suppliers	48
	Accounts receivable	Sales of goods purchased for resale	C/ Sales	110
C	Cost of goods sold	Warehouse: merchandise	N/ Customer delivery	40
	Cash	Accounts receivable	D/ Cash received from customers	95
	Personnel expenses	Personnel	D/ Commercial expenses	38
D	Inventory of goods purchased for resale	Change in inventory of goods purchased for resale	C/Warehouse: merchandise	30

A Initial inventory is entered. The third dimension activates the "warehouse: merchandise" account and this initializes the perpetual inventory.
B Purchase during the period. The balance of the warehouse account is now 10 + 60 = 70 F.
C Delivery during the period. The cost of goods sold being 40 F, the company records the outgoing by crediting the "warehouse" account through debiting the "cost of goods sold" account, and the internal transaction is recorded by entering an absolute value of 40 in the delivery account. The balance of the warehouse account is now 10 + 60 - 40 = 30 F.
D The "warehouse" account is closed.

The purpose account "delivery" has no impact on net income, as it concerns an internal transfer between two management accounting, hence its classification as "neutral". It is extremely useful for analysis, as it can be used to identify items leaving the inventory for customer delivery.

[23] The item can be treated as a debit or a credit. However, for transfers between balance sheet or income statement items, the purpose does not have a specifically "credit" or "debit" nature, and we classify it as "neutral".

APPENDIX 5

COMPARISON OF FRENCH ACCOUNTING AND AMERICAN ACCOUNTING

Use/Debit	Source/Credit	Purpose (Debit, Credit or Neutral)	Amount
Change in inventory of goods purchased for resale	**Inventory of goods purchased for resale**	D/ Warehouse: merchandise (junction)	10
Purchases of goods for resale	**Accounts payable**	D/ Warehouse: merchandise	60
Accounts payable	**Cash**	C/ Payment to suppliers	48
Accounts receivable	**Sales of goods purchased for resale**	C/ Sales	110
Cost of goods sold	Warehouse: merchandise	N/ Customer delivery	40
Cash	**Accounts receivable**	D/ Cash received from customers	95
Personnel expenses	**Personnel**	D/ Commercial expenses	38
Inventory of goods purchased for resale	**Change in inventory of goods purchased for resale**	C/ Warehouse: merchandise	30

French accounting (periodic inventory system) (in bold)

The fifth entry (cost of goods sold) is theoretically not used with the periodic inventory system.

Use/Debit	Source/Credit	Purpose (Debit, Credit or Neutral)	Amount
Change in inventory of goods purchased for resale	Inventory of goods purchased for resale	D/ Warehouse: merchandise (junction)	10
Purchases of goods for resale	**Accounts payable**	**D/ Warehouse: merchandise**	60
Accounts payable	**Cash**	C/ Payment of purchases of goods for resale	48
Accounts receivable	**Sales of goods purchased for resale**	**C/ Sales**	110
Cost of goods sold	**Warehouse: merchandise**	N/ Customer delivery	40
Cash	**Accounts receivable**	D/ Receipt on sales of goods purchased for resale	95
Personnel expenses	**Personnel**	**D/ Commercial expenses**	38
Inventory of goods purchased for resale	Change in inventory of goods purchased for resale	C/ Warehouse: merchandise	30

American accounting (perpetual inventory system) (in bold)

The first and last entries are not used in American accounting, where the account for merchandise in the warehouse (using the perpetual inventory system) is not closed, since this is considered equivalent to the "inventory of goods purchased for resale" in the periodic inventory system.

APPENDIX 6

RECORDING OF OPENING BALANCES[24]

Use/Debit	Source/Credit	Purpose (Debit or Credit)	Amount
Fixed assets	Counterpart of opening balance	Adjustment for opening balance	15
Counterpart of opening balance	Accumulated depreciation	Adjustment for opening balance	5
Inventory of goods purchased for resale	Counterpart of opening balance	Adjustment for opening balance	10
Accounts receivable	Counterpart of opening balance	Adjustment for opening balance	3
Cash	Counterpart of opening balance	Adjustment for opening balance	8
Counterpart of opening balance	Capital stock	Adjustment for opening balance	14
Counterpart of opening balance	Retained earnings	Adjustment for opening balance	5
Counterpart of opening balance	Long-term debt	Adjustment for opening balance	4
Counterpart of opening balance	Accounts payable	Adjustment for opening balance	8

[24] The opening balance may also be entered directly, which avoids having to record the opening entries.

APPENDIX 7

ENTRIES OVER THE PERIOD

Operations	Use/Debit	Source/Credit	Purpose (Debit, Credit or Neutral)	Amount
Creation of opening inventory in perpetual inventory	Change in inventory of goods purchased for resale	Inventory of goods purchased for resale	D/ Warehouse: merchandise	10
Purchase of merchandise on credits	Purchases of goods for resale	Accounts payable	D/ Warehouse: merchandise	60
Payment of accounts payable	Accounts payable	Cash	C/ Payment of purchases of goods for resale	48
Sales of merchandise on credit	Accounts receivable	Sales of goods purchased for resale	C/ Sales	110
Outgoing merchandise	Cost of goods sold	Warehouse: merchandise	N/ Customer delivery	40
Receipt from customers	Cash	Accounts receivable	D/ Receipt on sales of goods purchased for resale	95
Personnel expenses (sales staff)	Personnel expenses	Personnel	D/ Commercial expenses	38
Purchase of fixed asset on credit	Fixed assets	Fixed assets accounts payable	D/ Purchase of fixed assets	18
Payment to fixed asset suppliers	Fixed assets accounts payable	Cash	C/ Payment on purchase of fixed assets	14
Financial expenses payable	Financial expense	Interest payable	D/ Administrative expense	1
Payment of financial expenses	Interest payable	Cash	C/ Payment of financial expense	1
Depreciation of the period	Depreciation expense	Depreciation of fixed assets	D/ Administrative expense	4
Sale of fixed assets (book value)	Book value of fixed assets sold (2)	Fixed assets (5) Accumulated depreciation (- 3)	D/ Administrative expense (2)	2
Sale of fixed asset (sale price)	Fixed asset receivable	Sale of fixed assets	C/ Administrative expense	7
Sale of fixed asset (receipt of sale price)	Cash	Fixed asset receivable	D/ Receipt on sale of fixed assets	7
Subscription of long-term debt	Cash	Long-term debt	D/ Receipt of loans	10
Repayment of long-term debt	Long-term debt	Cash	C/ Payment of loans	1
Closing perpetual inventory balance	Inventory of goods purchased for resale	Change in inventory of goods purchased for resale	C/ Warehouse: merchandise	30

It should be noted that the recording of financial expenses has to be broken down into two entries, with the inclusion of a theoretical account, "interest payable". This is due to the fact that the entry reflects an expense paid cash, which in fact requires four dimensions: financial expenses and banks (normal debit and credit), expense by function (third dimension) and cash flow (fourth dimension).

APPENDIX 8

STATEMENT OF CASH FLOWS (DIRECT METHOD)

OPERATING ACTIVITIES	
Cash received from customers	95
Cash paid to suppliers	-48
Payment of financial expenses	-1
Cash flow provided by operating activities (A)	46
INVESTING ACTIVITIES	
Proceeds from sale of fixed assets	7
Purchase of fixed assets	-14
Cash flow used in investing activities (B)	-7
FINANCING ACTIVITIES	
Increase in long-term debt	10
Decrease in long-term debt	-1
Cash flow provided by financing activities (C)	9
Net increase in cash and cash equivalents (A + B + C)	48
Cash and cash equivalents at beginning of year (D)	8
Cash and cash equivalents at end of year (A + B + C + D)	56