

# The implementation of the UVA method – a comparison with ABC

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**Abstract:** The GP cost analysis method was developed half a century ago and is still diffused as the UVA (Unité de Valeur Ajoutée) method. The aim of this paper is to compare the procedures used by the UVA method with those of ABC method. The comparison of various studies done on the ABC method to observations of all UVA method applications during the past 10 years illustrate the advantages of each of these methods.

## INTRODUCTION

In France, the past decade of research into management accounting has been characterized by the debate over the contribution made by ABC (Lebas and Mevellec, 1999). The limitations of the homogeneous sections method have been revealed and the means to remedy them proposed. Yet, ever since its conception, the homogeneous sections method has been criticized and alternatives put forward, in particular during the 1950s index methods. Equity methods (CNPF, 1957) and characteristic numbers (Audoye, 1955) are examples of index methods, but the most successful is the GP method (Perrin, 1962).

This method, developed by George Perrin, at the end of the 1930s is still advocated by consultancies. It was formerly called the UP (Unité de Production) method but is now known as the UVA (Unité de Valeur Ajoutée) method in order to make a break with earlier references to the notion of production (Fiévez *et al.*, 1999). The main advantage of the GP method, and later developments in it, was simplification of costing. This is based on the principle of “hidden constants” formulated by Georges Perrin (1962). Even now, the main argument of promoters of the UVA method lies in the possibility of calculating, by realistic means, the return on each of a company’s bills (Fiévez *et al.*, 2001).

A synthesis of the literature relating to the implementation of ABC will lead to the suggestion of an analytic grid of the adoption<sup>1</sup> process of a method of cost analysis. A presentation of the conditions behind the emergence and development of the GP method will enable the scope of the case studies that is, all the applications of the UVA method, to be precisely delimited. Later, a practical application of the method will have the objective to recall its fundamental principles.

The implementation procedures used by the UVA method with the 13 identified users will be described in 3 phases: adoption, implementation and assimilation. Finally, the comparison of the procedures observed to those described in studies on ABC will allow the advantages of each method to be identified

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<sup>1</sup>This ambiguous notion of adoption will be defined later.

## 1. IMPLEMENTATION OF A COST ANALYSIS METHOD

During the past decade, ABC has been the object of most of the research into management accounting. This work enables the stages in the process of implementing a cost analysis method to be identified<sup>2</sup>.

### 1.1. STAGES IN THE IMPLEMENTATION OF A METHOD

A simplified view of the organizational innovation process consists in distinguishing its introduction from its establishment (Damanpour,1991). Previously, Daft (1978) had identified four stages: conception, proposition, adoption and establishment. Whatever classification is adopted, it is a complex process that must be put into context. Thus Damanpour (1991) refers to types of organization and innovation and the extent of the innovation. These reflections have been transposed to the implementation of management accounting.

Anderson (1995), in order to study one case in depth, retains the following six stages: introduction, adoption, adaptation, acceptance, routinization and assimilation. During the introduction stage (1), internal needs and competitive pressure encourage change and a search for new solutions. Adoption (2) covers the choice of a solution and the decision to commit resources to facilitate change. Adaptation (3) makes it possible to face the unexpected and to overcome the limitations of the initial proposal. Acceptation (4) is the minimum needed for using and maintaining the method in order for it to “survive”. The complete replacing of former methods constitutes the stage of routinization (5). There is assimilation (6) when the method is used, often in an unexpected way, to improve performance and when it is perfectly integrated into other systems.

Most of the work devoted to the implementation of ABC (Krumwiede, 1998) adopts a classification in accordance with one held by Anderson (1995) or simplified (Bjornenak, 1997). Gosselin (1997) distinguishes three stages particular to the implementation of ABC: an analysis of activities, an analysis of costs by activity and cost analysis. This work tries to associate the factors of success or failure to one or more of these stages.

The literature gives little detail of the different stages in the process, with the exception of the adoption stage. Some justifications can be put forward. For the introduction stage, the only cases observable are companies that have adopted the method or companies knowing of the method but choosing not to adopt it. The ambiguity of the notion of knowledge makes the study of this stage particularly difficult even for such a widely diffused method as ABC. For the next stages, it is difficult to distinguish precisely adaptation from acceptance and routinization as an overlapping of stages is inevitable. It is for this reason that we have decided on a simplified classification of the process into three stages: adoption, implementation and assimilation.

### 1.2. DETERMINANTS OF ADOPTION

Adoption here is defined as the decision taken to install, that is to say a stage in the process of the implementation of a new method of cost analysis. This definition is made clearer by Rogers (1995): the adoption of an innovation is the process by which a decision-maker goes from the simple awareness of an innovation to an opinion based on it, to the decision to accept or reject it and to the implementation and confirmation of this decision. Gosselin and Pinet (2002), in their review of the literature relating to the empirical research devoted to ABC, distinguish three

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<sup>2</sup>In view of the diverse interpretations of the ABC model, Gosselin and Mévellec (2003) emphasize one important angle of research: the parameters of conception. This approach is unnecessary in the case of the UVA method as applications are clearly identified and carried out by consultants who respect the initial model.

principle types of factors: size, environmental pressures and the complexity of the production process.

Size is the most frequently identified factor influencing the adoption of ABC/ABM (Activity Based Management) (Gosselin and Pinet, 2002). The method has been adopted by large-sized enterprises (Ask and Ax, 1992 ; Bright *et al.*, 1992; Drury and Tayles, 1994; Innes and Mitchell, 1995; Krumwiede, 1998; Clarke *et al.*, 1999; Innes *et al.*, 2000 even if some work exists whose conclusions are opposite (Malmi, 1999).

When relationships are less obvious, only complex statistical models (structural equation models) permit a refined analysis of the phenomena, as Gosselin and Pinet emphasize (2002).<sup>3</sup> For example, the influence of environmental pressure is difficult to grasp in view of its impact on organizational factors.

Malmi (1999) and Anderson (1995) account for the adoption of ABC by the degree of competition. In the course of studies on environmental factors (essentially strategy) influencing the choice of control systems (Govindarajan, 1984; Govindarajan and Gupta, 1985; Simons 1987, 1988, 1990; Govindarajan and Fisher 1990), Gosselin (1997, 2000) makes a link between the adoption of ABC and the strategies described according to the typology of Miles and Snow: the adoption of accounting by activity is more frequent among businesses with a prospector-type strategy.

According to Krumwiede (1998), Cinquini *et al.* (1999) and Groot (1999) the complexity of the technology of production would be favourable to the adoption of ABC. These confirm Shim's results (1996) that product diversity favours the adoption of more sophisticated cost analysis methods.

Most of the research mentioned above adopts an oversimplified view of the implementation of cost analysis methods, limited far too often to the sole decision to adopt while the process is much more complex.

### 1.3. IMPLEMENTATION

Research distinguishing the different stages in the process of implementation is rare as Gosselin and Pinet (2002) emphasize (Gosselin, 1997, 2000; Krumwiede, 1998). Here, implementation covers the stages of adaptation, acceptance and routinism as defined above (Anderson, 1995).

Gosselin (1997) distinguishes three stages specific to the ABC method: the analysis of activities, the analysis of cost inductors and accounting by activity. Krumwiede (1998) identifies factors such as, among others, the involvement of management or the size of the company as having an impact on the development of these stages.

The lack of interest in these stages led to a lack of knowledge of the technical details for implementing the methods; Anderson's in-depth study (1995), which took a keen interest in the human aspects, included. This led Mévellec (2003) to propose an analytic grid distinguishing spatial parameters (perimeter, analytic mesh and a number of discharge levels), human parameters (construction of an analytic mesh, accounting responsibility and information gathering) and logical parameters (causality, traceability and the principle of rationality).

### 1.4. ASSIMILATION OR THE USE OF INFORMATION

The principal business expectations, related to the implementation of new costing techniques, are: improvements in profitability, cost reduction and improvement of the information system

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<sup>3</sup>One must not however forget, that such tools require data that is rarely available.

(Bright *et al.*, 1992). However, the results from the many surveys relating to the use of these costing techniques occasionally differ.

Most of the studies are concerned with total costs and, for the most recent among them, with ABC. Total cost methods are the most used, either on their own or complementing partial cost methods. For example, in Sweden, Ask and Ax (1992) point to the domination of total costs; 60% of businesses implement total costs only and 30% with partial costs. The same applies in Italy (Cinquini *et al.*, 1999). In French small and medium-sized firms, according to Nobre (2001), costing and pricing methods are also, more often than not, total costs only or with others in 60% of cases.

The main uses of methods for determining cost prices are: product pricing, the strategic analysis of their profitability, improvements in cost control, the profitability of customers, the identifying of cost inductors in the budget process, a better understanding of the origin of costs and improvements in output. Production costs, especially total costs, play an important role in determining selling price. The uses of cost management techniques, according to the survey made by Bright, Davies, Downes and Sweeting (1992), principally concern: cost control, sales pricing, investment choice and performance management. This survey confirms those of Mills (1988) in the United Kingdom and of Govindarajan and Anthony (1983) in the United States. Other studies, in different countries, have come to similar conclusions, for example, in Finland (Lukka and Granlund, 1996), in Sweden (Ask and Ax, 1992), in Japan (Yoshikawa *et al.*, 1989) and in Belgium (Theunisse, 1992).

However, some differences between countries can be revealed in the importance given to the different uses made of cost prices. Bescos *et al* (2001) using a cross-section of 598 firms (106 Canadian, 111 French and 371 Japanese) came to different conclusions according to which country was using the ABC/ABM method. In France, the main use was product pricing followed by reducing costs. These results confirmed those of Bescos and Cauvin (2000) in France. They point out that ABC/ABM enable many decisions to be taken both on an operational and a strategic level. Calculating cost prices and margins permit decisions, such as to discontinue certain products to be taken, but also for decisions on subcontracting, organizational rethinking, the accepting of orders and the drafting of budgets. According to Nobre's work (2000), previously mentioned, French small and medium-sized firms are strongly focussed on production costing. The cost price plus a margin remains the first means of setting prices (alone in 37% of cases and, in 22% of cases, when compared with the market price). This is explained (Bescos and Cauvin, 2000) by a conception of pricing that is less market-oriented than in the other previously mentioned countries. French companies are more inward looking when assessing selling prices based on total costing unlike in Japan, Canada and Britain (Innes *et al.*, 2000) where firms are more customer-oriented and where other uses are promoted, such as cost reduction, analysis of customer profitability and budgeting.

## **2. THE UVA METHOD: EVOLUTION AND PRINCIPLES**

This is not meant to be an exhaustive historical background of the GP method and its most recent development (the UVA method) as this has already been related (Levant and de La Villarmois, 2000). However, a short account is necessary to put into context the case studies that is, all the applications of the UVA method.

The aim of presenting all the applications is less ambitious than it first seems. There are, in fact, between 150 and 200 applications of the GP method and its development. They are essentially the work of Georges Perrin and his consultancy, *La Méthode GP*. But, other applications also

need to be taken into account such as associate consultancies (set up after Georges Perrin's death) as well as 'unofficial' applications<sup>4</sup> and developments of the method (the UP and UVA methods).

In practice, the cases presented are limited to those in place since 1995 when the term, 'the UVA method', was first adopted. A background history of the method is rapidly outlined in order to clarify this. Then the fundamental principles are presented by means of an example. Here, terminology is emphasized, as a grasp of this is needed to fully understand the descriptions of the case studies.

## 2.1. FROM THE GP METHOD TO THE UVA METHOD

The GP method was developed by Georges Perrin in the 1940s<sup>5</sup>. He used his own initials when naming it. He created his consultancy, *La Méthode GP*, in 1946 and in order to promote the GP method published articles in professional journals and gave lectures on it. His most well-known, entitled "The principle of unifying production measurement in the management of multi-manufacturing industries", was made to the Society of Civil Engineers on 16 November 1953. He ran his consultancy with his wife Suzanne, whom he had married in 1930, until his early death on 5 February 1958. His widow continued to run the consultancy and in 1962 the Dunod publishing house published Perrin's work: *Prix de Revient et Contrôle de Gestion par la Méthode GP* (Perrin, 1962) as well as other articles.

Perrin's death aggravated the recurrent difficulties of the consultancy whose work focussed only on the diffusion of the GP method. The consultancy ceased activity at the end of 1969 but Suzanne Perrin tried to continue her husband's work through various partnerships. Jean Fiévez signed an agreement with her on 1 August 1975 to develop the GP method. The method remained unchanged until 1994, with one or two applications a year in small industrial firms.

Most of the *Ingénieurs Associés*' work was productivity consultancy in French industrial-based groups. Most of these were quite satisfied with their cost accounting systems until the late 1980s. 1987 however, marked a turning point with the publication of Johnson and Kaplan's work. This in turn led to a number of publications aimed at American users and which were then translated into French (Cooper and Kaplan, 1989; 1991). A debate on the contribution made by the Activity Based Costing (ABC) method was fuelled by several books (Lorino, 1991; Mévellec, 1991), by articles in the *Revue Française de Gestion* and by the management accounting page of the *Revue Française de Comptabilité*.

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<sup>4</sup>For example, the case of Jean-Louis Perrin, Georges Perrin's son, who applied the method within the firm he ran. A few applications were set up using only published material and without resorting to consultancies in order to limit setup costs.

<sup>5</sup>The historical background has been written using the archives of *La Méthode GP* consultancy and the Ecole Centrale, Paris and from an interview with Jean-Louis Perrin, Georges Perrin's son.

At the same time, the economic recession of the early 1990s led to a fall in *LIA*'s turnover resulting in a restructuring of its business in 1992. Jean Fiévez participated in several think-tanks specialized in management accounting (AFGI, CEREDE, ECOSIP) in order to re-launch his consultancy activities. He suggested to Robert Zaya that they develop the UP method and gradually its field of application expanded. Some of these applications led Jean Fiévez and Robert Zaya to no longer concentrate solely on production costing. In particular, from 1987 to 1988 one assignment was carried out in the transport division of a subsidiary of *Koenig* a Swiss group. Another, at Dassault-Falcon-Service, dealt in spare parts. As a result, the UP method developed from a method simply analyzing production costs to one analyzing almost all of the costs within a company<sup>6</sup>. The name of the method was changed, in April 1995, in order to end the reference to production alone. It then became known as the UVA (Unité de Valeur Ajoutée) method.

All the case studies presented in this paper are applications of the UVA method since 1995 and are taken from the work of *Les Ingénieurs Associés* (LIA) and associated consultancies. This delimitation is based on two arguments:

- It is difficult today to look at all the applications of the GP method and its development since the Second World War without introducing a sense of bias. It would be very difficult to find the archives of companies that had ceased trading many years ago;
- One of the points of our research is to try to understand why a method developed more than half a century ago, and that could seem to be out of date, is still being used in some companies.

We will now present the main principles of the UVA method.

## 2.2. THE FUNDAMENTAL PRINCIPLES OF THE UVA METHOD

The best way to explain the UVA method is by an example, remembering a formalization has already been proposed (Levant and de La Villarmois, 2000).

The UVA method, according to its promoters, is interesting because it takes into consideration all the functions of a company including support functions. This concern was present in Georges Perrin's reflections (1962) so much so that there is little significant difference between the GP and UVA methods.

It must be pointed out however, that the proposed example respects the principles of the UVA method,

the most recent development of the GP method. The UVA method is the result of wide practical experience that has enabled some of Georges Perrin's inaccuracies or awkwardness to be corrected. The example of the GP constants is very eloquent. As their name suggests, they should be fixed in time but this is not the case. This is why Fiévez *et al* (1999) prefer to use the expression **UVA indexes**.<sup>7</sup>

Examples of applications of the UVA method have already been published.<sup>8</sup> Nevertheless, three arguments help to explain the interest of this presentation:

- to enable the case studies below to be understood;
- to draw up propositions that will be compared with observations;

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<sup>6</sup>As with the ABC method, there are always costs that cannot be earmarked. These represent less than 5% of a company's added value according to Jean Fiévez's experience in the field.

<sup>7</sup>All the terms in bold type have a particular significance, unique to the UVA method.

<sup>8</sup>Some of these are to be found in the bibliographies of Fiévez *et al*. (1999) and Levant and de La Villarmois (2000).

- to contribute to stabilizing a constantly changing terminology that will be unique to the UVA method.

The proposed example is taken from industry in order not to betray the state of mind of its creators, even if the transposition to services does not, on the face of it, pose a particular problem. Nevertheless, support functions will be mentioned as they are one of the main contributions. The implementation of the UVA method can be broken down into four stages that will be dealt with successively: activity analysis, the choice of the base article and its index, the calculating of UVA indexes and production measurement.

These stages have as their aim “to share out” all indirect costs in relation to final cost objectives (for example, products, orders or customers). Direct costs will be reinstated during the final stage of evaluation.

### Analysis of posts

The first stage consists in a precise examination of each expense item and of each operation. An inventory is taken of the different expense items and basic work operations. A basic operation corresponds to a workstation or to part of a workstation whose costs can be spread over the production processes or manufactured items.

*“The theoretical basic work operation is understood as an operation broken down into the smallest detail. For example, in an operation using a lathe, it is necessary to specify the type of machine, the toughness of the metal, the nature of and honing of the tools, the speed and depth of the cutting etc. One difference in any of these specifications constitutes a new operation.”*

The total of the **imputable costs** of a basic work operation or post is the rate of the post.<sup>9</sup> This analysis is carried out for the reference period which is usually at the last financial year.

<b>Workstation</b>	Press Z 16
<b>UVA post</b>	Press Z 16 in production
<b>Common unit of measure</b>	Hour

	Job unit <sup>10</sup>	Quantity	Unit rate	Total
Team leader	H	1	17.39	17.39
Operators	H	2	13.92	27.84
Control	H	0.25	15.43	3.86
Workshop	H	0.35	21.76	7.62
Quality	H	0.15	16.18	2.43
Maintenance	H	0.80	15.77	12.62
Electricity	KW	76	0.09	6.84
Compressed air	cu. M	92	0.25	23.00
Area	sq. m	78	0.0087	0.68
Assets	K Euros	8,200	0.0019	15.58
Technical depreciation	K Euros	8,200	0.0046	37.72
<b>UVA Post rate</b>			Euros/hour	155.57

Table 1: Evaluation of the rate of a post

The **job unit** relates to a particular type of resource whereas the **common unit of measure** relates to the post.<sup>11</sup>

It is a question of identifying the resources expended by the different posts and not of sharing out company costs between the posts. This is why the distinction between **imputable costs** and **non-**

<sup>9</sup>According to the promoters of the method, the difference with the homogeneous sections method results from a more detailed analysis. In fact, several of the basic operations, each with different cost structures, can coexist within the same homogeneous section. This is made possible by simplifications introduced by the method: this analysis is for the reference period only.

<sup>10</sup>Job unit of imputable costs

<sup>11</sup>This distinction is comparable to that made between resource inductors and activity inductors.

**imputable costs** held by the method's promoters is not the most judicious. Indeed, in the end, a number of costs will not be allocated. They represent, in general, about 5% of the total costs.

#### The choice of the base article

The next stage is to choose the **base article**. This is defined as a real or imaginary article supposed to most closely represent the activity of the company. This representativeness can be found in the predominance of the article in the production process and in the technologies used in the company. In theory, any article could be used. In practice, the choice could have an impact on the reliability of the method.<sup>12</sup> Also, from a practical point of view, it is more encouraging for the workforce if it corresponds to a product that can serve as a reference.

The **rate of the article** is obtained by adding up the cost of each operation performed during the production of the base article. By definition, it is equivalent to an **added value unit (unité de valeur ajoutée)** or **UVA**. It is the production effort required to produce the base article:

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<sup>12</sup>This point is never evoked by the method's promoters. The choice of an atypical article could lead to errors in costing in the case of price variations and proportions in the different types of costs. This needs to be the object of further research.



UVA posts	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Rate in Euros/ Common unit of measure	180	120	260	90	200	150	380	320	135	235

Operations carried out on UVA posts	Number of common units of measure (1)	Rate of post (Euros/ common unit of measure) (2)	Rate of operation (Euros) (1) x (2)
P2	0.214	120	25.68
P7	0.171	380	64.98
P1	0.129	180	23.22
P9	0.342	135	46.17
P4	0.018	90	1.62
<b>Rate of base article (1 UVA):</b>			<b>161.67</b>

Table 2: Evaluation of rate of base article

These calculations are made for the reference period.

### Calculating UVA indexes

Once the **base article** is fixed and its **rate** calculated, the **UVA indexes of the posts** are formed by dividing the indexes of these by the base index. For example, for the posts mentioned above, the following results were obtained:

UVA post	Rate of post euros/ common units of measure (1)	Rate of base article euros (2)	UVA index of post UVA/h (1)/(2)
P1	180	161.67	1.1134
P2	120	161.67	0.7423
P3	260	161.67	1.6082
P4	90	161.67	0.5567
P5	200	161.67	1.2371
P6	150	161.67	0.9278
P7	380	161.67	2.3505
P8	320	161.67	1.9793
P9	135	161.67	0.8350
P10	235	161.67	1.4536

Table 3: Evaluation of indexes of posts

The method is based on the stability of these indexes in time.<sup>13</sup> To avoid any abuse, and to ensure the stability of the indexes and thus of the UVA method, two rules for the maintenance of the method must be respected:

- annual maintenance (this enables technical changes and eventual improvements in production to be taken into account);t
- he analytic stage of the posts must be repeated every five years<sup>14</sup> in order to reassess the UVA indexes of the posts.

<sup>13</sup>These are the hidden constants evoked by Georges Perrin.

<sup>14</sup>This is the time limit recommended by the method's promoters.

These rules guarantee the reliability of the method. Most of the observations made by Georges Perrin<sup>15</sup> and the LIA<sup>16</sup> consultancy showed that during the five-year re-evaluations there were in fact not many abuses.<sup>17</sup> There was no need for a technical freeze to ensure the validity of the method. The differing evolution of cost factors (excluding the raw material directly attributed to the product and not included in the UVA) had little practical impact, despite different periods of observation and different economic contexts.

### Measuring production and cost evaluation

The overall activity of a company can be monitored and measured by the total number of UVAs produced during the period under study. For this, product ranges are used to valorize in UVAs all the articles and services produced<sup>18</sup>:

	Number of common units of measure	UVA index of post	UVA equivalent of operation
P2	3.00	0.7423	2.23
P3	2.50	1.6082	4.02
P7	0.12	2.3505	0.28
P10	6.00	1.4536	8.72
UVA equivalent of Product H			15.25

Table 4: Calculating the UVA equivalent of a product

For each work operation, the **partial equivalent** is the number of UVAs necessary to achieve it. This is obtained by multiplying the constant of this operation by the number of common units of measure.

Here, product H requires a production effort 15.25 times more important than for the base article. Remember that these calculations do not include raw materials and specific expenditure which will be mentioned below; in other words, it only includes indirect costs expended by the product. For the period under study, taking into account both articles and services, the production in UVAs amounts to:

	Quantity (1)	UVA equivalent (2)	UVAs produced (1) x (2)
Product A	1,230	2.34	2,878.20
Product B	345	3.71	1,279.95
Product C	765	0.75	573.75
Product D	123	1.02	125.46
Service A	45	2.34	105.30
Service B	1,678	0.08	134.24
Production in a given period			5,096.90

Table 5: Calculating production in a given period

This indicator enables the activity of the company to be observed through time by neutralizing the effects of inflation. The measurement of production by a common unit (UVA) is not linked to any monetary unit.

In order to obtain the UVA value in Euros, one needs to divide the total of the **imputable** and **non-imputable** costs of the company (excluding **raw materials** and **specific costs**) by the number of UVAs produced during the given period:

<sup>15</sup>From his personal archives.

<sup>16</sup>Interview with members of the LIA consultancy.

<sup>17</sup>This has also been noticed in a case study: A. Delebecque: "La méthode UVA, exemple de mise en place dans une entreprise de production", Finals thesis, ESC LILLE, 2000.

<sup>18</sup>The significance of the results relies on the accuracy of these product ranges and their updating in case of changes.

Total operating costs	1,114,752.98
-Cost of raw materials	128,932.14
- Specific costs to customers	<u>87,645.12</u>
= Added value costs	898,175.72

Added value costs (1)	Number of UVAs produced (2)	Cost of UVA (1) / (2)
898,175.72	5,096.90	176.22

Table 6: Calculating the cost of a UVA

One can follow through time the cost of a UVA: the 176.22 Euros have to be compared with the 161.67 Euros of the reference period. The effect of inflation has to be neutralized in order for productivity gains to be calculated.

As the cost of the UVA for the given period has been calculated, it is now possible to valorize products, services or, as here, a bill:

	Number (1)	UVA unit (2)	UVA Total (3) = (1) x (2)	Added Value in euros (4) = (3) x 176.22	R M and S C <sup>19</sup> in euros (5)	Total in euros (4) + (5)
<b>Product A</b>	25	0.3247	8.1175	1,430.47	1,300.00	2,730.47
<b>Product B</b>	40	1.6413	65.6520	11,569.20	8,400.00	19,969.20
<b>Sales costs</b> 0.182 UVA/ Keuros	25.525	0.1820	4.6456	818.64		818.64
<b>Administrative costs</b> Entering of orders	1	0.2175	0.2175	38.33		38.33
Payment of orders	1	0.3150	0.3150	55.51		55.51
<b>Logistics costs</b> Packaging Preparation		0.1620			32.00	32.00
Dispatching	2	0.3480	0.3240	57.10		57.10
Transport (carriage paid)	1		0.3480	61.32		61.32
					580.00	580.00
				<b>Cost of sale</b>		<b>24,342.56</b>

Table 7: Calculating the cost of a service

The numbers of UVAs that have been retained in this example are standard values. This was the solution systematically retained by *Les Ingénieurs Associés* to simplify calculations. Georges Perrin, in his book (1962) and in other printed materials used to apply the method, recommended the use of real values. This solution supplied complementary management indicators by enabling comparisons to be made between UVAs expended and standard UVAs. Whatever solution is adopted, the cost obtained is always the total cost, all costs being shared between all the company's products and services.

### 2.3. ADVANTAGES AND LIMITATIONS OF THE METHOD

While with traditional approaches it is necessary to reassess the costs of each centre of responsibility or activity for each period; one of the advantages of the UVA method lies in the allocation of costs for the reference period alone. Thus, it is possible to adopt a more refined

<sup>19</sup>Raw materials and specific costs.

breakdown of costs on posts; this is done once every five years. (Fiévez *et alii*, 1999). The following table summarizes the tasks to be carried out for the two categories of methods:

Tasks to be accomplished	ABC or homogeneous sections methods	UVA
In $t_0$	Function of the number of activities or sections	Function of number of posts
During each period	To record the number of units of measure expended by each product or activity. To allocate costs to the activities or sections.	To record the number of units of measure expended by each post <sup>20</sup> .

Table 8: Comparison of traditional costing methods with the UVA method

The simplifying proposed by the UVA method is based on what Georges Perrin (1963) called hidden constants. However, as these constants can vary in time, the promoters of the UVA method preferred the term UVA index. These must be regularly updated (every five years) to take into account changes in technology or in cost structure.

The fine breakdown of the activity enables an accurate analysis of costs to be made which results in the possibility of assessing the profitability of each bill. This is the main contribution of the method<sup>21</sup> for its promoters whereas we prefer to insist on the simplifying of the management accounting system.

Whatever system is chosen, the accuracy of the cost analysis is a function of the number of posts or activities, the postulates being identical for all methods. The setting up of an approach such as the homogeneous sections method (or ABC) necessitates, for each period, the allocation of costs to each of the posts. Starting from the principle of cost structure stability, the UVA method only requires one breakdown until the next reassessment of the posts' indexes. It is possible then to envisage a more refined analysis of costs.

In a more general way, the analytic grid proposed by Bouquin (2000,pp.56-59) enables the advantages and limitations of a management accounting technique to be identified.

Evaluation criteria	ABC method	UVA method
Information seeking	Comparisons between real and standard costs are possible at all levels: activity, product ... Comparisons between expended and standard common units of measure are also possible.	The method supplies different information. It is not possible to have information on real costs as imputations are made only for the reference period. On the other hand, for each post, it is possible to compare the number of UVAs expended with the number of standard UVAs. The number of UVAs produced by post is another indicator of appropriate activity.
Imputation of indirect and fixed costs	One of the fundamental principles of ABC consists in identifying common units of measure or inductors of the most pertinent costs whatever the activity.	The UVA method, rather than ABC, permits a more refined analysis as charging is only done once.
To model cost performance	With ABC, the level of analysis is not as refined as with the UVA method as there are fewer activities than posts. On the other hand, standards can be updated if they no longer correspond to reality.	This is one of the strong points of the method: starting with the production range it is easy to carry out simulations (new products or re-organization of production).
To understand the causes of costs	This understanding will be independent of the method used. However, it will be facilitated by an accurate knowledge of cost performance.	The analysis carried out when the method was set up is a means of understanding the reasons for costs. However, the absence of follow-up of real consumption acts as a brake on this understanding.

Table 9: A comparison of the ABC and UVA methods

<sup>20</sup>It is necessary to point out that in all the cases, the users of the method were content to use standard values. This simplifies the technique even more. Despite this approximation, the method still enables the total cost to be calculated, all costs being imputed to products through the cost of the UVA.

<sup>21</sup>The method's promoters use the expression "profit graph" to describe this analysis.

The UVA method represents a real alternative when compared with the homogeneous sections method and its development. Nevertheless, index-based methods present a certain number of problems. For example, any anomaly in a particular post has repercussions on the whole company through an increase in the cost of a UVA, without it being possible to localize the anomaly. Before answering these questions more precisely, we must ask ourselves about the pertinence of the hypothesis concerning the stability of UVA indexes in time. For each method of cost analysis there are, according to Bouquin (1997, pp 163-171), levels of homogeneity and stability of the production process. The UVA method would thus repose on the stability of the processes whereas ABC would only require stability of activities.

Having set out the method and its associate terminology, we must interest ourselves in its applications and verify if the advantages put forward by the theory are confirmed by observation. As the brief historical summary reminds us, the setting up of the UVA method, in fact, comes down to presenting all the settings up of the GP method since 1995 (excluding the ‘unofficial’ settings up mentioned earlier).

### 3. METHODOLOGY

The promoters of the GP method and its later developments, whether they be Georges Perrin and his wife Suzanne or Jean Fiévez and Robert Zaya today, multiplied their publications. These aimed to present the method and in order to illustrate this, usually had a quite detailed example of its application.

In comparison with these contributions, the aim of the case studies that were carried out was to take a more neutral look at the method. This was not a question of studying the purely technical aspects that have already been explained in detail. But rather a question of studying the conditions into which the method had been introduced and more especially of specifying what information was obtained and the uses made of it.

The cases have been identified in collaboration with Jean Fiévez of the *LIA* consultancy. A breakdown of the sources of information is summarized in the following table:

	Consultants	Two telephone conversations with the person responsible for setting up the method	Face -to- face meeting with the person responsible for setting up the method	Number of actors personally met (apart from the consultant but including the manager)	Face -to- face meeting with the manager	Cross-check with consultant who had set up the method
Case 1	LIA	X	X	3	X	X
Case 2	LIA	X	X	3	X	X
Case 3	Other	X	X	3	X	X
Case 4	LIA	X				X
Case 5	LIA	X				X
Case 6	LIA	X				X
Case 7	LIA	X	X	2	X	X
Case 8	LIA	X	X	1		X
Case 9	LIA	X				X
Case 10	LIA	X	X	5	X	X
Case 11	Other	X	X			X
Case 12	Other	X	X			X
Case 13	Other	X	X			X

Table 10: Summary of the methodology

In all the cases, the information obtained has been validated by consultants from the *LIA* consultancy who ensure the quality of applications that are not directly linked to their consultancy. The thirteen case studies represent all the applications of the UVA<sup>22</sup> method and all the settings up of the GP method since 1995; the two methods being based on the same principles. It is always difficult to ensure that these are exhaustive. There are a very few firms that have developed tools using published examples. Nevertheless, there is very little chance that these tools conform to the spirit of the method whose installation rests on that very rare competence, that is, engineers aware of management techniques and expert in time analysis.

Compared with the very detailed description of the process of adoption of a cost accounting method

used by Anderson (1995), the analytic grid finally retained is divided into three stages:

- (1) adoption: characteristics of the user firm, of the pre-existing management accounting system and identification of the factors put forward in order to justify the decision;
- (2) implementation: setting up of the method and the means mobilized;
- (3) assimilation: uses of the tool and the different implications for the company.

The restricted size of the sample prevents the compilation of sophisticated statistical data but does however enable an opinion to be reached on the context in which the method is applied as well as on its contribution<sup>23</sup>.

#### **4. APPLICATIONS OF THE UVA METHOD**

Applications of the UVA method will be described through the three principle stages: adoption, implementation and assimilation.

##### **4.1. ADOPTION: EXPLANATORY CONTINGENT FACTORS**

Four criteria have been retained to characterize the companies that have adopted the UVA method: their independent legal status, their sector of activity, their size and the management accounting system in use before the UVA method was adopted.

###### **Independent legal status**

The users of the method, in nine cases out of thirteen (69%), are independent firms. This situation enables a company to make imaginative choices without having to convince too many interlocutors or to free itself from the effects of fashion. Other user firms belong to business groups.

In all the cases, the chief executive plays a very important role in the choice of the method. In view of the means to be committed (these will be mentioned later), the decision cannot be taken by the finance director alone.

###### **Sector of activity**

Eleven of the thirteen firms operate in the industrial sector, the remaining two being an agricultural cooperative and a merchant. This situation is explained by the engineering background of the method's promoters: Georges Perrin at its origins and today, Jean Fiévez and Robert Zaya.

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<sup>22</sup>At the start of the study in 2001.

<sup>23</sup>Three of the case studies have already been presented in greater detail (Levant and de La Villarmois, 2001).

This observation does not limit in principle the scope of the method; it is quite understandable for its promoters to favour their own preferred domain, industry. Furthermore, one of the major contributions of the UVA method is the study of all a company's functions, including support functions. This illustrates its ability to analyze administrative and service activities.

## Size

The two criteria chosen to assess the size of user firms are staff size and turnover:

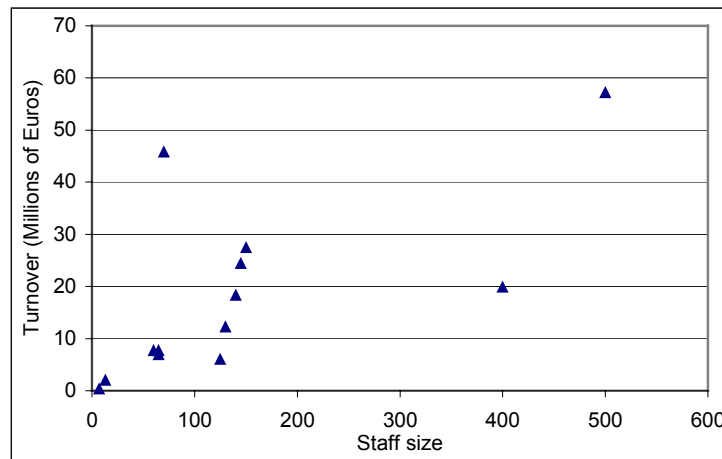


Figure 1: Staff size and turnover of user firms of the method

They are small and medium-sized companies of a relatively important size: seven out of thirteen have more than 100 staff and seven have an annual turnover of more than ten million Euros. These small and medium-sized companies could quite easily be operational units of larger groups. There are none in the population under study, but for example, SNECMA of Le Creusot is one of the users of the UP method, the former name of the UVA method (Fiévez *et al.*, 1999).

## Pre-existing management accounting system

Before describing the pre-existing management accounting systems, it is necessary to state the obvious:

if managing directors had been satisfied with their company's management accounting systems then they would not have opted for another.

In four of the case studies, there was no management accounting system before the UVA method was set up. In the other cases, the system in use was unsatisfactory: the very rudimentary breakdown of costs did not allow for the refined analysis needed when decision-taking. The management

accounting systems were as follows:

- costs broken down according to the absorption capacity of the products;
- the application of a margin of error to the direct costs;
- the breakdown of costs by industrial site;
- a rough estimate of total costs.

One factor alone was systematically put forward to explain the decision to implement the method: profitability. Four of the cases mentioned making a loss, two others a balanced result and in the other seven cases, very low profits. For those companies within groups, it was a means of reaching their fixed objectives.

Two companies put forward complementary factors:



- low turnover leading to problems in pricing;
- large industrial projects: cost awareness was a means of making better investment choices.

It is not surprising that profitability appears as one of the chief concerns of the chief executive when making the choice to adopt the UVA method. This criterion occupies an important place in the sales pitch of the UVA method's promoters: the aim of the method is to obtain a 'profit graph' that mirrors the result of each invoice issued by the company.

#### 4.2. IMPLEMENTATION

Remember that the meaning of implementation here covers the stages of adaptation, acceptance and routinization. Implementation will be analyzed through the adaptation of the method, the means brought into play and the maintenance procedures adopted, essential to the proper working of the method.

As stated earlier, the companies in the study are relatively small so that the processes observed have little in common with those described by Anderson (1995) at General Motors. The range of means mobilized (in view of the size of the companies), the strong involvement of management, the restricted size of the in-house team responsible for the project and the experience of outside consultants ensure that all the conditions required for a successful project are met. Thus the stages of adaptation, acceptance and routinization run simultaneously: from the beginning of the mission, routinization appears as one of the chief concerns of the project manager.

##### Adaptation

The factor triggering the adoption of the method was very low profits so the final objective is the improvement of these. However, this objective is sometimes accompanied by intermediary objectives. They must not be confused with the use which will actually be made of the information produced by the method.

The expectations of the chief executive, when the decision was taken to introduce the UVA method, can be classified into five categories:

- to reorganize the portfolio of customers or the product portfolio by discarding (1 case);
- customers and discontinuing activities (1 case);
- to make investment choices (1 case);
- to draw up quotations (1 case);
- to evaluate the profitability of sales and customers (2 cases);
- to get to know administrative and marketing costs (1 case).

The main consequence of these expectations was to encourage consultants to provide the tools to meet them as quickly as possible. This did not require fundamental adaptations of the approach.

On the other hand, applications to companies operating outside the industrial sector required undeniable efforts of adaptation, which did not however put into question the fundamental principles of the method. In one case, the willingness of a consultancy along with a trade association, to develop a tool adapted to a field of activity, required substantial effort. This was seen as an investment by the consultancy.

## Means

The UVA method requires considerable means to put it into place but its utilization requires fewer of them. Each month, one half day per man, enables the cost of the UVA to be calculated and a management chart to be published.

A breakdown of the time (in months) taken to set up the method is as follows:

First quartile	8	Minimum	7.5
Median	12	Maximum	24
Third quartile	18	Mean	12.8

Table 11: Time (in months) taken to set up the method

Some explanations are needed in order to explain this time period. In the case of the agricultural cooperative where installation took 18 months, the nature of the business was such that it required considerable efforts to achieve this. Moreover, the consultancy in charge of this (not the *LIA* consultancy) was thinking of opening up this particular market and so wanted to do its best. It was an investment that could become profitable in subsequent installations.<sup>24</sup>

In three other cases, three different consultancies, not *LIA*, were called in. It is surprising to note that for these three cases, installation times were the shortest; eight months at the most. Two explanations can be put forward: either *LIA* worked more slowly or, most likely, their working methods were different. One should not forget that *Les Ingénieurs Associés* are experts in time analysis, so much so that one could rightfully think that their applications are more refined and more precise than those of other partner consultancies.

Installation time can be broken down into two parts: analysis (comparable to adaptation) and operationalization (comparable to routinization). On average, 52% of time was given over to analysis, that is to identifying ‘posts’ and to establishing the means expended by each of them. The remaining 48% was given over to operationalization. This consisted of setting up data bases (mainly production ranges) and of computerization that facilitated use of the method. The project was considered finished when profitability per invoice had been calculated thus enabling the ‘profit graph’<sup>25</sup> to be drawn. Here is an example:

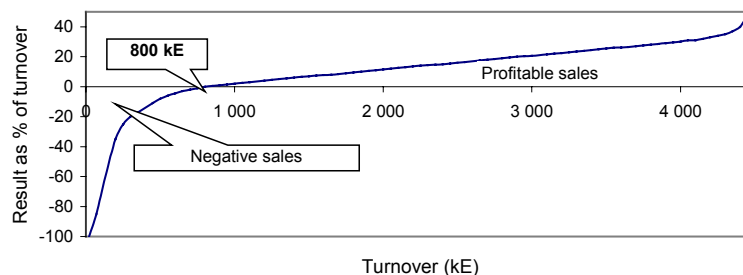


Figure 2: Example of a ‘profit graph’

In order to reduce installation costs, consultants were only present one or two days a week so as to supervise the work done in-house. People were the chief means mobilized in-house.

On average, 1.13 people worked full-time, in-house in order to set up the method. They were, in equal proportions, accountants or production ‘engineers’. Here is a breakdown of the cases:

- in 7 cases, one person was full-time;
- in 3 cases, two people were full-time;

<sup>24</sup>This refers to the case mentioned in the paragraph concerning adaptation.

<sup>25</sup>This is the term employed by *Les Ingénieurs Associés*.

- in the last 3 cases, one person was part-time.

In three of the cases, one person was specifically recruited to see the project through. This last point illustrates the importance of the project for the company. The other noticeable point was the fact that this was a project situated at the frontiers of production and accounting.

Acceptation and routinization: assessment of costs and maintenance

Maintenance of the method is indispensable in order for the adopted model to always be relevant to the technical and economic realities of the company. In two cases, after six years' use, the analysis was repeated in full to prevent it from losing direction. Six firms have not yet experienced this as they have been using the method for less than 18 months. In seven cases, there has been regular maintenance in order to take into account any new technological choices or new products. These maintenance operations reflect a certain form of assimilation of the method: users play an active role in the development of their own costing systems.

#### 4.3. ASSIMILATION: CONSEQUENCES OF THE ADOPTION OF THE UVA METHOD

Two types of consequences have been distinguished: the use of the method and its induced effects. The two notions are difficult to distinguish, but it is a question of separating the information produced by the method from the management decisions that it induces. In conclusion, the perennality of the method and its organizations.

The uses of the information produced by the method

The uses<sup>26</sup> mentioned spontaneously are divided into seven categories:

Use	Number of cases
Pricing	9
Drawing up quotations	5
Calculating cost prices	4
Simulations	2
Budgets	2
Investment choices	2

Table 12: Uses of the information produced by the method

Their use inevitably depends on the company's line of business. In the case of jobbing production, the main use was for drawing up of quotations whereas for standard products, the UVA method enabled an appropriate pricing scale to be adopted. Pricing here was used in its broadest sense; it not only concerned products but also associated services such as order taking, preparation, invoicing... This improved understanding of costs has generated some decision-taking.

We should point out that the possibility of comparing the number of standard UVAs to the number of UVAs really expended, has never been tested. The method is not only a tool for calculating costs but it can also be used as a management control tool.<sup>27</sup> This can be explained by the wealth of information produced which represents a radical development for users of management information. So, the marginal contribution of management control by the UVA method would appear weak compared with its contribution in the domain of calculating costs.

Many induced effects

The information produced by the method was similar from one business to another. However, the management decisions that it induced were varied:

Use	Number of cases
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<sup>26</sup>As several uses can be stated simultaneously, the total exceeds the number of cases under study.

<sup>27</sup>The title of Georges Perrin's inaugural book was *Prix de revient et contrôle de gestion par la méthode GP*.

Restructuring of the product range	6
Modifying price lists	5
Modifying industrial processes	4
Discarding customers	4
Discontinuing activities	3
Restructuring administrative services	2

Table 13: Effects created by the setting up of the method

These were spontaneous responses. Radical decisions were taken in all the cases. It is very difficult to come to general conclusions about the usefulness of the method. The companies under study were for the most part in a very worrying financial situation and did not have an appropriate management tool. The UVA method enabled their expectations to be fulfilled. However, we must note that the nature of the decisions taken illustrate the confidence managers had in the information produced by the method.

### Perenniality of the method

To begin with, we need to remember that some of the companies that had chosen to adopt the method were often in financial difficulty when the method was being set up.

Situation	Number of cases
Still uses the method	4
No longer uses the method following the company's integration into a group	4
No longer uses the method following changes in the information system <sup>28</sup>	2
Termination of business (one liquidation and one transfer of activities following a takeover)	2
Change of chief executive	1

Table 14: Perenniality of use of the method

Only 4 out of the 13 companies (31%) are still using the UVA method. The difficult situation in which they found themselves when they adopted the method increased the probability of radical changes such as a buy-out. Once again, this illustrates the managing director's involvement in the process: if he/she was to leave, there is an increased risk of the method being abandoned. We must, however, note that this implies that the reasons for abandoning the project are exterior to the UVA method.

## 5. DISCUSSION: A COMPARISON OF ABC/UVA

It is interesting to make a comparison with the research results from other methods and in particular the ABC method. Even if the analytic levels or the research questions are different, lessons can be learnt for each of the three distinct stages: adoption, implementation and assimilation.

### 5.1. ADOPTION: THE PIVOTAL ROLE OF THE CHIEF EXECUTIVE

The adoption stage (in the most restrictive sense of the word) of a method of assessment is the most studied and supplies many elements of comparison. The review literature devoted to determinants of the adoption of ABC reveals two main explanatory factors: size and strategy.

The users of ABC are principally large organizations. It is essentially small organizations, even if the criterion of size is difficult to explain, that adopt the UVA method. This is consistent with the proposal set out when the advantages of the method were presented. In fact, the largest organizations are frequently a result of the grouping together of much smaller structures. Among the users of the UVA method, there is one company that operates on several sites but these sites employ only line managers.

<sup>28</sup>The two firms have not totally abandoned the idea of using the UVA method.

Thus, within groups of atypical structures, it is possible to envisage the adoption of a method such as the UVA method. This eventuality is illustrated by the case of the SNECMA factory in Le Creusot.<sup>29</sup> On the other hand, for large organizations which are only duplicates of 'small' identical structures, a formalization by the setting up of an ERP is pertinent. This enables the adoption of a cost accounting method to be envisaged. One that does not resort to 'guesstimates' linked to production equivalents.

The second explanatory factor in the adoption of ABC is strategic behaviour: prospectors use it more than defenders. This result can seem surprising: businesses which privilege innovation at the expense of control by costs are the ones that adopt the ABC method. In the case of users of the UVA method, there are two dominant characteristics: they operate in mature markets and they look for the means to rationalize their working methods in order to improve their profitability. This last point is illustrated by the use made of the information produced by the UVA method: the problematics of rationalization largely dominate the problematics of simulation and the aids to innovation. So, unlike ABC users, users of the UVA method have strategic behaviour closer to the defender type<sup>30</sup>.

In addition to the main explanatory factors of size and strategic behaviour, three other factors can be put forward. (1) Users of the UVA method were overwhelmingly industrialists; this situation is explained by the background of the method's promoters. (2) Their costs structure included a large share of the indirect costs that were at the origins of the dissatisfaction with pre-existing costing systems, when there was one. (3) Finally, the pivotal role of the chief executive must be emphasized. Two possible explanations can be suggested: the speeches of the method's promoters were aimed not at accountants but at decision-makers and the scope of the project. Thus, the chief executive took the decision to implement the method and was involved in the implementation process.

## 5.2. IMPLEMENTATION: REQUIREMENT FOR SUCCESS

In view of the difference in size between the users of ABC and of the UVA method, a comparison of implementation processes is difficult. It is however possible to compare the stages of analysis of the activity, of costs by activity and of cost accounting as described by Gosselin (1997) for the ABC method with the two stages identified for the UVA method: analysis (the identification by post of the means expended) and operationalization (the construction of data bases and automatic data processing).

Contrary to what has been observed for the ABC method (Gosselin, 1997), all the projects for setting up the UVA method have been brought to completion, that is to say that the analytical stage has always been followed by an operational stage. Two interdependent explanations can be suggested:

- the installation process is substantial and expensive because it generally requires considerable formalization (for example the creation of a products file, production lines and of classifications);
- management is always very involved in the project. It is waiting for information in order to take decisions and has heavily invested in the project.

We should avoid swift interpretations of the weightiness of the step (Meyssonnier, 2003): the setting up of the UVA method is often more than just the simple addition of a management

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<sup>29</sup>This is not part of the population under study.

<sup>30</sup>Miles and Snow (1978) characterize the defender as having a narrow and stable sphere of activity, a position of excellence in terms of price or quality, a tendency to be ignorant of developments outside his own sphere and with prudent and incremental growth more internal than external.

accounting module to a pre-existing production management. In effect, the project generally includes the setting up of production management which explains its weightiness.

### 5.3. ASSIMILATION: FEW DIFFERENCES WITH ABC

This is the final stage of installation. It seems difficult to make differences between the uses of ABC noted by Bescos *et al.* (2000) and those of the UVA method observed in our study. The two methods enable a variety of decisions to be taken, as much strategic as operational, in order to improve profitability. One of the common main uses is cost pricing leading to re-organization in price lists and inducing the discontinuity of products and / or discarding of customers. This corresponds moreover to the motivations behind the implementation of new techniques for costing in general (Bright *et al.*, 1990) and of ABC in particular (Shim, 1996). On the other hand and no doubt related to the small number of UVA users, it does not, unlike the results of Bescos *et al.* (2000), refer to decisions related to subcontracting. Equally there is little impact on the re-organization of processes and the use of UVA for budgetary control is not mentioned much by its users. Budgetary control is however, not very relevant in these small structures.

The use of UVA confirms the work of Bescos *et al.* (2000; 2001) and of Nobres (2000) giving prominence to total cost when determining sales price, in France and particularly in small and medium-sized firms. Hence the conclusion that the GP/UVA method provides modest size organizations with the means of much bigger organizations. On the other hand, the development of this technique and its use as a management tool are limited. Management control based on UVA does not exist.

## CONCLUSION

In view of the limited number of observations carried out, we must be wary of drawing swift conclusions, even if some major trends emerge. The UVA method is an alternative cost assessment method,<sup>31</sup> adopted by small organizations, whose use in France is comparable to other costing tools. These conclusions must, however, be cautiously drawn.

The observations carried out show three marked biases. (1) It is rather difficult to come to any conclusions about the advantages of adopting a cost assessment method, as the corporate executives who had chosen to invest in such a step were inevitably convinced of its appeal. (2) In view of the extent of the means invested, it is difficult to admit to a possible failure. (3) The prospecting method of the UVA method's supporters, based on "the profit curve" and directed towards executives, leads to the selection of specific users.

Having stated these reservations, the observations carried out confirm the advantages given prominence during the analysis of the method when comparing it with traditional approaches (See Tables 1 and 2). The UVA method enables small-sized organizations, that do not have a management control service, to assess their costs. The firm's accountant can, after a period of training, propose each month, within a few hours, an accurate assessment of costs. This information is then systematically used to establish the company's pricing policy (sales list or quotation). From this point of view the advantages of the method appear self-evident.

The ABC method gives supplementary data, especially concerning the amount of resources used by activity. The UVA method, using the principal of hidden constants supplies information close to standards which donot allow an identification of the drifts of resources used by workstation. This is why GP method advices budget control to identify these drifts. However this method

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<sup>31</sup>As illustrated by the debate on the contribution made by it (Mévellec, 2002; Meyssonier, 2003).

never allows the origin to be identified large firms will use a more substantial method: the ABC method. The additional costs of use of this method will be covered by the hoped for gains due to the supplementary data produced. Finally, it must be taken into account that even if these observations were seen in France, nothing opposes the transposition of those conclusions to other environments.

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