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A TYPOLOGY OF COST ACCOUNTING PRACTICES BASED ON ACTIVITY-BASED COSTING –

A STRATEGIC COST MANAGEMENT APPROACH AND A CASE STUDY

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ABSTRACT –

This paper examines cost accounting methods containing one or more activity-based costing (now ABC) like dimensions. The research reviews these methods since the early stages of ABC. The objective is to analyze cost accounting proposals with, in part, a philosophy reminiscent ABC. For all the methods examined, ABC is a starting point at least one important component.

The research purposes are to analyze the strategic dimension of the methods described and to build a typology useful for managers. Factors of usefulness are considered in the paper. The discussion leads to a four-dimensional typology based on three strategic objectives assigned to the cost accounting systems.

The foundation of the research is the strategic cost management theory from which emerges the ABC philosophy. The methodology applies is an academic and professional literature review.

The typology designed shows common points and similarities of the methods observed and their strategic dimensions. This typology could be useful for firms willing to reform their costing system. Some of the methods studied are more or less useful for practitioners,

according to the situation of their companies. By company type, a cost accounting model based on ABC is more or less suitable. A case study illustrates this usefulness.

The paper first introduces several developments that have emerged since the beginning of ABC. The first part presents the close relationship between strategic cost management theory and ABC.

The second part develops a typology of cost accounting systems linked to ABC. The typology emerges from three objectives associated with ABC and highlights four perspectives. A case study illustrates the developments of the paper with a French firm using a cost accounting system in connection with several of the typology's perspectives.

Key words – Strategic cost management, Activity-based costing, Typology, Case study

TYOLOGY OF DEVELOPMENTS AROUND ACTIVITY-BASED COSTING – A STRATEGIC COST MANAGEMENT APPROACH AND A CASE STUDY

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study illustrates the developments of the paper with a French firm using a cost accounting system in connection with several of the typology's perspectives.

1. THE ACTIVITY-BASED COSTING METHOD: A GREAT DIVERSITY OF APPLICATIONS

The first part introduces several developments that have emerged since the beginning of ABC. The strategic cost management theory constitutes the background of these developments.

1.1. The activity-based costing method: Origin and developments

The first paragraph presents the strategic cost management theory and the second paragraph recalls the principles of the ABC method.

1.1.1. The strategic cost management theory

The conventional approach to management accounting (Anthony, 1993) reveals a conflict among the processes of strategic management, management control and operational control. Johnson and Kaplan (1987) explain that coordination between these processes is difficult to achieve. The strategic management accounting theory is a concept and a set of practices devised to overcome this difficulty.

There has been a growing interest in strategic management accounting since the early 1980s (Simmonds, 1981). In a firm, a strategic management accounting instrument connects strategic and marketing decisions with operational ones and brings a multi-dimensional approach of performance (Mike & Yi, 2009). For instance, Simmonds (1981) and Bromwich (1990) suggest using qualitative and external measures with three dimensions of analysis:

products and customers (e.g. their level of satisfaction), competition (level of penetration), and the environment. Scholars (Wilson, 1995) have studied the strategic management accounting concept in depth over time (Wilson, 1995).

Strategic cost management is one dimension of strategic management accounting dedicated to cost management in relation to strategy. Several scholars have been promoting the benefits of strategic cost management (Anderson, 2007; Cooper & Slagmulder, 2003; Freeman, 1998; Shank and Govindarajan, 1989, 1994; Wong, 1996), so that there are three ways to approach the theory:

- A restrictive way. Cost management scans the range of strategic options and control the strategic hypotheses. It is an ex post approach.
- An intermediate way. Cost management validates the strategic hypotheses. It is a more dynamic approach that requires a more detailed analysis of strategic assumptions. They are key success drivers that cost management sets up along the company's value chain. Shank and Govindarajan (1989, 1992) explain that the key value drivers are cost drivers that ABC is able to highlight.
- A broad approach where costing is a fundamental part of the strategy. With this approach, cost management should be interactive (see the concept of interactive control developed by Simons, 1995). According to strategic situations and environmental uncertainties, managers choose relevant cost management instruments to become interactive, using them to articulate the strategic and operational processes and to identify new strategic opportunities.

Intermediate and broad strategic cost management imply more participation of employees. They require a knowledge-based approach to management as developed by Argyris and Schön (1978) through the organizational learning theory. In this context, value creation is the result of an increase in resources (resource-based view approach, Penrose, 1959) and competencies (core-competencies theory, Hamel and Prahalad, 1990). In this way, in order to

be an efficient strategic decision-making tool, a strategic cost management system must closely follow each step in the implementation of strategy and the achievement of pre-defined objectives.

If Tomkins and Carr (1996, p. 165) explain that “there is still no agreed comprehensive conceptual framework for what strategic management accounting” and Sha et al. (2011, p. 5) that “empirical evidences so far are not very strong to lead us to a convincing belief that strategic management accounting will deliver all that it promises today”, Hoffjan and Wömpener (2006, p. 248) point out that several strategically oriented cost management tools are well developed in firms such as: customers profitability cost management, target costing and ABC. Likewise, Cinquini and Tenucci (2006) present the results of an empirical study about medium-sized Italian firms. Most of them use strategic cost management instruments.

Is the ABC method able to drive each step of the strategy and to control the achievement of strategic goals? Is it also able to validate the strategic hypotheses and to engender new strategies? In this paper, we first demonstrate that ABC is a strategic cost management instrument.

1.1.2. The Activity-Based Costing method, a way to drive strategically the costs

This paragraph demonstrates that strategic cost management is the theoretical base of ABC. First, a brief reminder of what ABC represents is proposed.

Several American scholars and practitioners designed the ABC method during the 1980s (Cooper and Kaplan, 1988). ABC emerged in an increasingly complex environment leading to higher overhead costs. ABC is a refined cost system enabling first to classify more costs as direct, second to expand the number of indirect-cost pools and third to identify cost drivers. ABC favors better cost allocations using smaller cost pools called activities.

A sophisticated cost assignment approach, which assigns resources to activities and then costs

to costs objects, is at the heart of the method. Using cost drivers, the costs of the activities are the basis for assigning costs to cost objects such as products or services. Since the seminal work of Johnson and Kaplan (1987) on the “Relevance Lost” of management accounting practices, several management accounting developments based on the strategic management accounting stream emerged. The historical research of Johnson and Kaplan makes us understand the context from which ABC arose. Looking for management accounting methods which could clarify the decision making process, they first suggest a more in-depth analysis of the activities and processes and, second, a closer link between strategic and operational management. These proposals prefigure the development of the balanced scorecard (Kaplan and Norton, 1996) and a strategy-oriented ABC.

The structure of ABC makes us understand its natural strategic direction: the central role of the cost driver concept as a variable which explains costs consumption and describes value chains materializes the link between strategic and operational management. A process approach is at the heart of ABC and the company is seen as a network of horizontal, flat, and transverse structures where the activities depend on market requirements.

To correct misleading overhead allocations was the first objective when designing ABC. It was a response to the inaccurate American standard costing methods. However, several academics, like Lebas (1999) in France, explain that ABC rapidly gained managerial (activity-based management) and strategic dimensions. Jones and Dugdale (2002) point out the links between ABC and the strategic cost management theory. Shank & Govindarajan (1989) developed an operational model with the definition of key success factors, determined using a competitive analysis of the environment and an analysis of the internal processes, with the help of ABC. This ABC is a strategic cost management system with a life cycle and value chain perspective. Using the works of Porter (1985), Shank et Govindarajan suggest integrating the customer and supplier dimensions within the cost allocation system.

To synthesize, ABC makes it possible to decipher organizational architecture, the links between strategic and operational management, to question strategic hypotheses and lighting new ones.

An historical background shows that firms have experimented several cost management tools based on ABC. The next section presents the diversity of costing methods based on ABC.

1.2. A great diversity of cost accounting methods based on ABC

This section presents developments observed during the last twenty years. The section focuses on the most diffused technics. The next section completes the list.

First, academic and professional literatures put a strong emphasis on ABC developments taking into account stakeholders¹ as costs objects and more especially the customers. Through a customer profitability analysis (Horngren, 2005) using an activity-based approach, the managers try to optimize the customers' relations processes. The literature offers numerous developments on the customer dimension of cost management. Otley (2003) reviews the evolution of management accounting. He describes the fact that the notion was originally associated to economic rationality, internal control and a shareholder view. He explains that later on, due to a changing environment, the attention shifted from internal control to value chain management. This evolution reflects the need to coordinate internal and external processes.

Other contributions also focus on expanding cost management to customers analysis: Brignall and Ballantine (1996), Ballantine et al. (1998), Brignall et al. (1999), Ittner et al. (2003) and Cugini et al. (2007). ABC is particularly suited to a customer perspective. Value chain analysis and cost drivers, at the heart of ABC, emphasize the role of customer relations in value creation.

¹ See Freeman (1984) for the stakeholder theory.

Second, companies can use ABC to obtain more accurate future costs and budgets. Horvath (1998), Antos and Brimson (1999), Cokins (2002) and CAM-I studies (Consortium for Advanced Manufacturing International²) have developed the activity-based budgeting and activity-based planning and budgeting models.

Third, taking into account critics about ABC (Datar and Gupta, 1994; Malmi, 1997) Keys and van der Merwe (2002 a & b) develop the resource consumption accounting (RCA) method, looking for a refinement of ABC at the resources allocation process level. The RCA method adds another allocation phase from the resources to pools and systematically distinguish variable from fixed costs. The RCA method proposes a more refined task architecture, a more rationalized allocation process of resources to activities and statistical approaches to correlate the consumption of resources and activities with the cost drivers.

Fourth, by contrast, experts have developed simplified ABC that can be suitable for simplified and/or intangible processes, as part of service activities for instance. The activity can be an excessive level of detail in sectors with a lot of intangible processes. When the process complexity is low or intangible, a simplified ABC is adapted, combining several activities into one meta-activity or into a process with a single cost driver. The time-driven ABC (TDABC, Kaplan and Anderson, 2007) is the most famous method of that kind.

As mentioned at the beginning of the section, the list is not exhaustive but makes it possible to highlight certain characteristics conducting to a global typology presented in the next section.

1.3.Proposal for a typology

The proposed typology is the outcome of an academic and professional reading review. Developments in the following section after table 1 details several of the practices observed.

² See www.cam-i.org/

The literature review highlights three strategic objectives in relation to the developments observed:

- Diversifying the cost objects (not only to products but also to customers, services, processes, suppliers, environment, etc.),
- Broadening the scope of cost analysis (spatial and temporal extension),
- Determining the relevant level of cost analysis complexity: refinement or simplification of cost calculations.

These three objectives converge towards a single one: to provide strategic direction for cost calculations in accordance with the strategic cost management theory. These objectives fall into the four perspectives of the typology. Figure 1 shows links the links between the objectives and the perspectives. A first observation is that an objective can be associated with several categories. For example, a simplified ABC (relevant level of cost analysis) can conduct to analyze customers’ profitability (cost objects diversification) and/or future costs (cost scope broadening). The case study shows combinations like this.

Figure 1 – Links between cost accounting objectives and typology perspectives

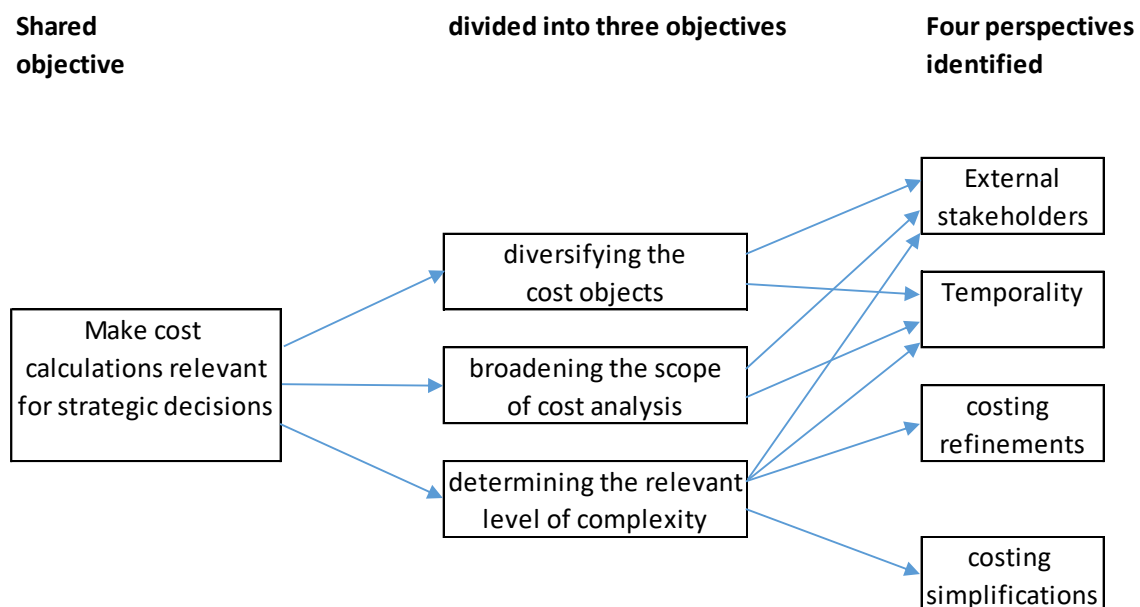


Table 1 presents the four perspectives and gives some details about the practices observed.

Table 1 – Perspectives and cost accounting practices identified

Perspectives	Practices identified
<p><u>1st perspective: External stakeholders</u></p> <p>Feature: trends towards extending the scope of cost analysis to external stakeholders</p> <p>Extension to customers, suppliers, partners, environment and other stakeholders</p>	<p>ABC & customer-driven cost accounting</p> <p>ABC & supplier-driven cost accounting</p> <p>ABC & environmental cost accounting</p> <p>Inter-organizational cost management</p>
<p><u>2nd perspective: Temporality</u></p> <p>Feature: costing methods focused on future costs to facilitate forward-looking & life-cycle analyses</p>	<p>ABC & strategic planning, long-term programming</p> <p>Activity-based budgeting, Activity-based planning</p> <p>Beyond budgeting</p> <p>ABC & life-cycle costing</p> <p>ABC & project cost accounting</p> <p>ABC & target-costing</p>
<p><u>3rd perspective: Costing refinements</u></p> <p>Feature: cost accounting with analytical refinements</p> <p>Refinement of the resource allocation stage</p> <p>Diversification of cost drivers</p> <p>Mathematical approaches</p>	<p>ABC & resource consumption accounting</p> <p>ABC & feature costing</p> <p>multivariate drivers, costs modularization</p> <p>mathematical programming</p>

4th perspective: Costing simplifications	
Feature: Cost accounting with simplifications	Simplified ABC
Depending on the context and type of company:	Time-driven ABC
Simplification of the resource allocation stage	ABC & other equivalence methods
Reduction of activities & number of costs drivers	ABC & process costing
Cost accounting methods focused on processes	ABC & lean accounting

Table 1 distinguishes four perspectives. A cost accounting system can use one or several of the perspectives described.

- The first perspective focuses on external stakeholders³. Taking into account external stakeholders in its cost accounting systems, a company can experience a positive impact on its decision making process.
- The second perspective focuses on future-cost oriented methods to contribute to the prospective and life-cycle analyses.
- The third perspective regroups attempts to refine costing systems on different aspects: resource allocation, cost drivers diversification and mathematical approaches.
- The fourth perspective regroups attempts to simplify costing systems.

2. ANALYSIS OF OBSERVED PRACTICES IN LIGHT OF THE FOUR PERSPECTIVES AND CASE STUDY

Based on the previous developments, this part analyzes in more detail the content of the typology. A case study illustrates the analysis.

³ See Freeman (1984) for the stakeholder theory.

2.1. Detailed analysis of the four perspectives

Since the beginning, ABC has promoted an improvement in managerial decision support. But, industrial companies seemed to be more adapted to the ABC methodology than firms in other sectors (in services, mass distribution or the media). It is easier to break down industrial processes into activities and cost drivers are easier to express in physical values: labor and engine hours, number of batches, volume of production orders, numbers of fabrication orders, volume of setting minutes, etc. However, value creation also results from what happens outside the company, through the customer or supplier relationship.

2.1.1. First perspective: external stakeholders

Since its early stages, researchers point out the usefulness of ABC to take into account the value of customers (Lebas, 506-507, 1999).

The principle of customer profitability analysis mixed with ABC, is to reorganize the costing architecture to focus on customers, markets or other commercial and marketing aspects as cost objects. Kuchta and Troska (2007) explain that ABC is a good method for profiling customer profitability. They believe that a customer-driven ABC "...can help determine which products and customers are the most profitable, which activities are customer-focused, whether processes are customer value-added or not, and where efforts toward customer-related improvements should be made" (p. 18).

Several researches analyze other external stakeholders. This is the case with environmental costs through an ABC methodology. Tsai et al. (2011) use ABC to assess the performances and benefits generated by the adoption of green manufacturing systems. In another study, Tsai and Hung (2009) integrate ABC into a value-chain to optimize supplier selection to obtain a green supply chain.

With an extension of the scope of cost analysis to customers, suppliers, partners and

environment, ABC focuses on optimizing the company's external performance. Cooper and Slagmulder (2004) describe a methodology they call "interorganizational cost management (IOCM)" that comes from observing Japanese practices (see also Agndal & Nilsson, 2009 & Fayard et al., 2012). Researchers have also reported studies elsewhere than in Japan. Chiarini and Vagnoni (2015) show with the example of the Italian company Fiat that ABC, combined with an IOCM process, can be useful for calculating wastes and losses in the production process. Sohn et al. (2015) describe an IOCM system in a Korean distribution company.

Within an IOCM perspective, the costs calculations include at least two firms. ABC makes it possible to describe the value chain between them. With target costing, the leading firm of the value chain identifies an estimated price that customers are willing to pay and then, with the supplier part of the value chain, a target cost to earn the desired profit is determined. One important question is what costs should be included in the target calculations? Cost reduction efforts often need to be extended to all levels of the value chain, from research and development to customer service, including the search for the lowest prices for materials and components. ABC helps determine which activities and costs fall into value-added or non-value-added categories. It also identifies costs along the value chain and analyses the effects of, for example, a change in product design on costs. Cooper and Slagmulder call this process the "costs interorganizational investigation". With an IOCM process, relevant costs can be future costs because target costing favor long-term analyses, considering the life cycle of a project for instance. In that case, an IOCM practice can also refer the second perspective of the typology.

2.1.2. Second perspective: Temporality

Concerning the second perspective of the typology, the strategic dimension is quite obvious. The common objective of cost accounting systems from this perspective is to analyze future

costs. The practices described here seek to extend the temporal scope of cost analysis. This is the case with activity-based budgeting (ABB: Antos and Brimson, 1999), activity-based planning and budgeting (Sandison et al., 2003), beyond budgeting (Bourmistrov & Kaarboe, 2013)⁴, life-cycle costing ABC (Tsai et al., 2015) and target costing ABC (Horvath et al., 1998). The managerial dimension is more important with the first three methods cited with planning, programming and budgeting processes. One point to emphasize is that at certain levels of the process, the practices cited include an ABC approach. Costs drivers become “activity triggers”, tracking accurate future costs thanks to a refined assignment process.

2.1.3. Third perspective: Towards costing refinements

The third and fourth categories of the typology group together methods to find the relevant level of granularity to analyze costs, according to the strategic and organizational specificities of the company. In some cases, the level of complexity is significant. A method such as “resource consumption accounting (RCA, see Clinton & van der Merwe, 2008; Al-Hebry, 2017) completes ABC with a more in-depth analysis of resources. Within complex organizations the variety of resources is important, which requires a large number of resource drivers, and more complex allocation processes. With RCA, resources are classified in pools, which makes it easier to assign them to activities. RCA tries to improve the allocation process so that managers have a clearer vision of the consequences of their strategic decisions. RCA systems try to provide decision-makers with more detailed analytical information than ABC. RCA adds a distinction between variable and fixed costs to ABC, making short-term marginal calculations possible. One or more driver can be deployed per pool, resources are assessed on a quantitative basis and there are more cost centers. RCA has several similarities with ABC: they both use a value chain analysis, charge manufacturing and non-manufacturing costs to

⁴ Activity-based planning and budgeting and beyond budgeting have been promoted by CAM-I (Consortium for Advanced Management International: <http://www.cam-i.org>)

costs objects using cost drivers and exclude non-traceable costs. They both can use cost drivers that could be volume and non-volume related. RCA has also several differences with ABC. ABC focuses on activities whereas RCA mainly on resources. ABC does not distinguish between fixed and variable costs, the costs of capacity are rarely measured, historical cost depreciations are favored and financial reporting feed the cost system. Differently, with RCA, the fixed and variable costs are separated, managers keep an eye on cost centers, the measure of unused capacities by cost center is easy, replacement cost depreciations are favored and the cost system and financial reporting are integrated. The major advantage of RCA is that it makes it possible to combine strategic analyses with shorter-term ones. But the main difficulties with RCA are that it is time consuming and difficult to implement. It requires investment in a powerful enterprise resource planning (ERP).

Feature costing (Brimson, 1998; Cokins, 2002) introduces a new level of analysis to ABC: the features of a product. With this general idea, a cost accounting system can complement ABC with characteristics relating to the industrial process of a product, a service or a category of customers. Researchers propose other types of refinements such as Park and Simpson (2008), with cost modularization (costs map to individual parts in the product family), or Bazrafshan and Karamshahi (2017) with multivariate drivers, pools categories and costs behavioral modelling. Other proposals tend to refine ABC with mathematical programming at different levels such as Khataie et al. (2009) for the supply-chain level, Tsai et al. (2014) for life-cycle and environment costs or Zhuang and Chang (2017) who combine TDABC and programming modeling.

2.2.4. Fourth perspective: Towards simplifications

In other situations, the process is less complex so that standard ABC is oversized. Solutions

to simplify ABC then emerged.

Several proposals include combining ABC with:

- Process cost accounting (Horngren et al., p. 594 s., 2005),
- Lean accounting (Maskell and Bagaley, 2003),
- Value-stream costing (Abuthakeer et al., 2010).

Time-driven ABC (TDABC, Kaplan and Anderson, 2007) is today the most renowned method of simplifying ABC. TDABC is classified in the category of “equivalence methods”. With this technique, the division into activities can be simpler (as with process costing and lean accounting approaches). The principle of TDABC is to translate costs drivers into time equivalents (in standard of working hours). Changes in production conditions lead to a revision of standards. TDABC is a way to introduce standard costs in an ABC model

Here is an example of a sales department with three activities: order processing, client complaints and invoice payment. Instead of cutting the department into three distinct activities and allocating their costs with relevant drivers, a time equation based on standards is defined such that: $T = 8 \text{ min} \times X1 + 44 \text{ min} \times X2 + 2 \text{ min} \times X3$

With:

Min = minutes,

X1 = number of orders to process,

X2 = number of complaints,

X3 = number of invoices.

The literature now offers a wide variety of TDABC case studies. Santana and Afonso (2014) analyze 20 studies published in the ISI database showing that TDABC has been implemented in different countries and sectors such as distribution (Everaert et al., 2008), health care organizations (Balakrishnan et al., 2007; Keel et al., 2017) or manufacturing companies (Öker & Adıgüzel, 2010).

TDABC is based on a strong assumption: working time consumption correlates with cost generation. This is the case in certain circumstances, notably when processes and services are standardized, such as for supply chains, hospital activities or bookstores. This is why Hoozée et al. (2012) explain that firms using TDABC would benefit from using transaction-level data to test the relevance of time-drivers.

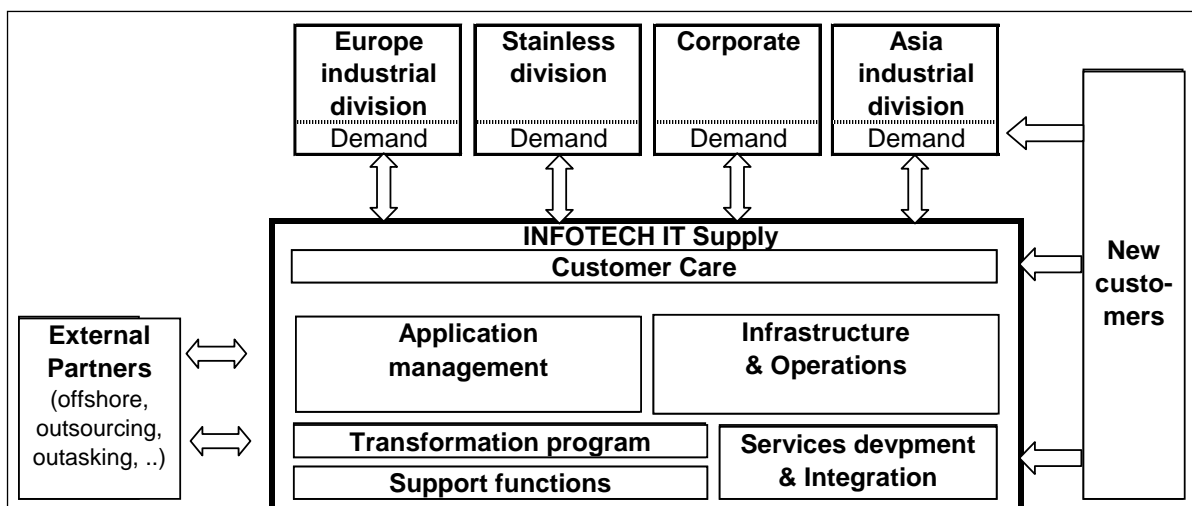
The next section illustrates the typology thanks to an ABC experiment in France.

2.2. Illustration

The case study takes place in the IT division (Infotech) of a French industrial and diversified group. Figure 1 describes the links between Infotech and the other divisions of the group. Infotech is a profit center which sells IT services inside and outside the group. Within the group, it is a supply chain process for the various IT activities: hardware, software and services (hotline, ...)

Management decides to implement ABC for IT process.

Figure 1. Infotech organization



The old analytic model, based on cost center P&L (profit and loss), did not easily report Infotech data for a specific activity and did not explain relationships between costs and

activities. So, in order to establish links between costs of resources given by the SAP system and services defined by the sales teams, a new tool was required.

The financial controller of Infotech then decides to develop an ABC system to calculate more accurately the costs of the different activities of his division. He is convinced that ABC is appropriate to the situation.

The main objective of the ABC project is to define relevant prices for the IT services offered.

The project is divided into six steps:

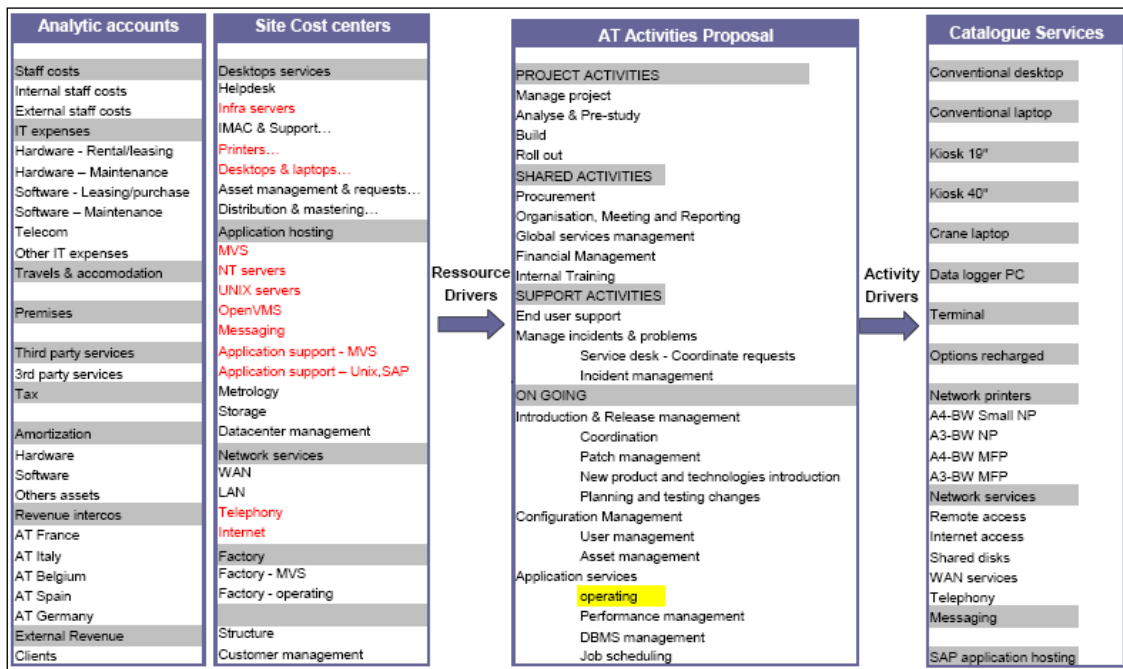
1. Diagnosis, planning, and project team constitution.
2. Activities identification with managers' interviews. The activities identified refer to the strategic objectives of the division which is declined in key processes.
3. Activity cost calculation with elaboration of a timesheet.
4. Definition and collection of activity drivers and calculation of full costing. This is a fundamental step, which links strategic objectives to activities.
5. Profitability calculation.
6. Validation, corrections and analysis of results.

The methodology allows:

- The allocation of dedicated and shared resources to activities.
- To manage activities as basic components of processes.
- To track costs of services which are aggregation of all components of the activity nomenclature.
- To be definitively focused on process improvements rather than on structure improvements.
- To facilitate benchmarking.
- To drive partnership performance by improving common processes.

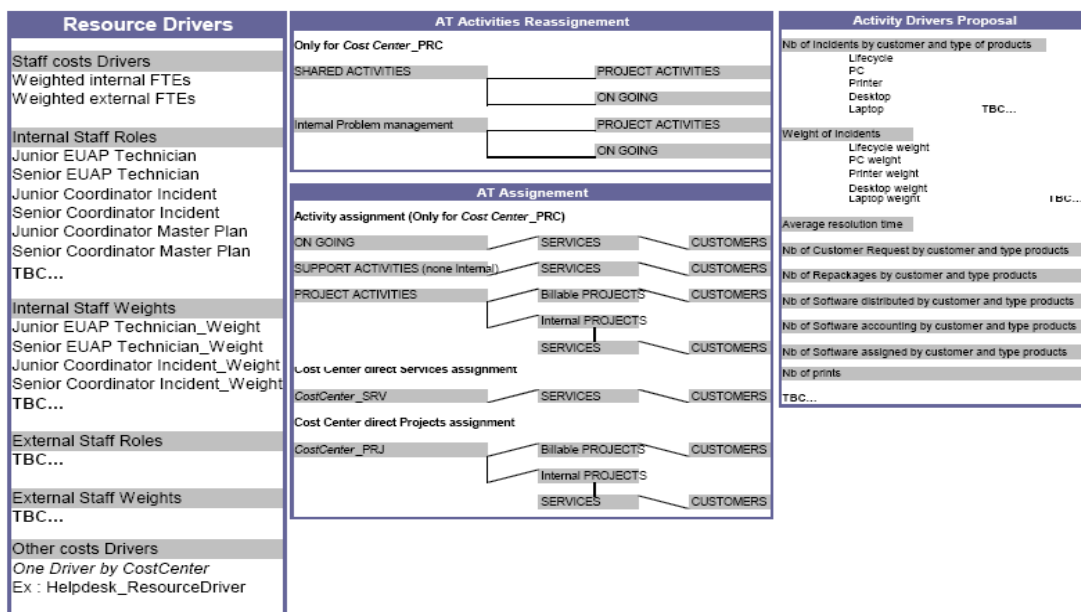
Figure 2 shows an extraction of analytic accounts, costs centers, activities and services catalogue. In reality, the ABC model include about fifty activities.

Figure 2. Extraction of analytic accounts, cost centers, activities and services catalogue



The extraction distinguishes project, shared, support and on-going activities. For instance, the costs of “incident management” activity is allocated to cost objects based on the number of incidents observed according to the type of services delivered. The cost allocation of the “helpdesk” activity depends on the number of times a customer calls the service desk. Figure 3 shows resource drivers and activity assignment logic.

Figure 3. Resource drivers and activity assignment



To set up ABC, Infotech selected ALG software and a tool called EPO (Enterprise Performance Optimization). Figure 4 presents the EPO summary dashboard.

Figure 4. EPO dashboard



With EPO, the financial controller extracts profit and loss statements by customer, region, service type and process.

The case study illustrates the typology of Table 1 and the strategic dimension of ABC. The ABC model described combines several characteristics:

- A customer-oriented ABC (first perspective of the typology) because customers are an essential cost object.
- An inter-organizational approach to costs (first dimension) with the integration of external clients into the ABC architecture.
- A time-driven dimension (fourth perspective) with a timesheet used to build several resource drivers.
- A simplified ABC, the number of activities and drivers remaining limited.

Even if there is a large variety of drivers, the total volume is reduced.

The project group quickly understood the strategic dimension of ABC. It is a transversal ABC

with meta-activities that can span several cost centers. They are more meta-activities. Working time is an important resource driver because IT experts are the main value drivers. The company's main customers can have a look at ABC calculations to understand the price of a service (open-book accounting perspective). The Infotech ABC model also allows internal and external benchmarking analyses.

Conclusion

This paper examines strategic cost management with a focus on cost accounting methods in relation to ABC. The typology designed classifies strategically oriented cost accounting practices from four perspectives.

The developments and case study show that the ABC philosophy can be a good way to improve costing systems and drive strategic decisions. The French case study confirms the usefulness of the typology. The ABC model described is strategy and process oriented, combines customer and supplier dimensions, and use working time as resource driver.

Other case studies will complement the research in the future.

References

- Abuthakeer, S.S., Mohanram, P.V. and Mohan Kumar, G. 2010. Activity Based Costing Value Stream Mapping, *International Journal of Lean Thinking*, 1 (2), (online).
- Agndal, H. and Nilsson, U. 2009. Interorganizational Cost Management in the Exchange Process. *Management Accounting Research*, 20, 85-101.
- Al-Hebry, A.A. (2017). Proposed framework to determine appropriateness of cost accounting methods. *Cost Management*, March/April, 6-15, 2017.
- Anderson, S. W. 2007. Managing costs and cost structure throughout the value chain: research on strategic cost management. In C. S. Chapman, A. G. Hopwood, & M. D. Shields

- (Eds.), Handbook of management accounting research (p. 481). Oxford, UK: Elsevier.
- Anthony, R.N. 1993. La fonction contrôle de gestion [The Management Accounting Function], Paris: Publi-Union.
- Antos, J. and Brimson, J.A. 1999. Driving Value Using Activity-Based Budgeting, New-York: John Wiley & sons.
- Argyris, Ch. and Schön, D.A. 1978. Organizational Learning. Readings, Addison-Wesley Publishing Company.
- Balakrishnan, R., Pugely, A.J. and Shah, A.S. 2017. Modeling Resource Use with Time Equations: Empirical Evidence. *Journal of Management Accounting Research*, 29 (1), 1-12.
- Bazrafshan, S. and Karamshahi, B. 2017. Examining the Disadvantages of Activity Based Costing (ABC) System and Introducing the Modern (Behavior Based Costing) (BBC) System, *International Journal of Management, Accounting and Economics*, 4 (2), 163-177.
- Bourmistrov, A. and Kaarboe, K. 2013. From comfort to stretch zones: A field study of two multinational companies applying “beyond budgeting” ideas, *Management Accounting Research*, September, 196-211.
- Brimson, J.A. 1998. Feature Costing: Beyond ABC. *Journal of Cost Management*, January-February, 6-12.
- Bromwich, M. 1990. The Case for Strategic Management Accounting: The Role of Accounting Information for Strategy in Competitive Markets. *Accounting Organizations and Society*, 15 (½), 127-146.
- Caglio, A. and Ditillo, A. 2008. A Review and Discussion of Management Control in Inter-Firm Relationships: Achievements and Future Directions. *Accounting Organizations and Society*, 33, 865-898.
- Chiarini, A., and Vagnoni, E. 2015. *International Journal of Production Research*, 53 (2), 590–606.

- Cinquini, L. and Tenucci, A. 2006. Exploring the Relationship between Strategy and Strategic Management Accounting Techniques, Working Paper Series, Social Science Research Network.
- Clinton, B.D. and van der Merwe, A. 2008. Understanding resource consumption and cost behavior – Part II, *Cost Management*, 22 (4), 14-20.
- Cokins, G. 2002. Integrating Target Costing and ABC. *Journal of Cost Management*, July-August, 13-22.
- Cooper, R. and Kaplan, R.S. 1988. Measure Costs Right: Make the Right Decisions. *Harvard Business Review*, September-October, 96-103.
- Cooper, R. and Slagmulder, R. 2003. Strategic cost management: expanding scope and boundaries. *Journal of Cost Management*, 17, 23-30.
- Cooper, R. and Slagmulder, R. 2004. Interorganizational Cost Management and Relational Context. *Accounting Organization and Society*, 29, 1-26.
- Cugini, A., Caru, A., and Zerbin, F. 2007. The cost of customer satisfaction: a framework for strategic cost management in service industries. *European Accounting Review*, 16(3), 499-530.
- Datar, S. and Gupta, M. 1994. Aggregation, Specification and Measurement Errors in Product Costing. *The Accounting Review*, 69 (4), 567-591.
- Everaert, P., Bruggeman, W., Sarens, G., Anderson, S. R., and Levant, Y. 2008. Cost modeling in logistics using time-driven ABC: Experiences from a wholesaler. *International Journal of Physical Distribution & Logistics Management*, 38(3), 172–191.
- Fayard, D., Lee, L. S., Leitch, R. A. and Kettinger, W. J. 2012. Effect of internal cost management, information systems integration, and absorptive capacity on inter-organizational cost management in supply chains. *Accounting, Organizations and Society*, 37(3), 168.

- Freeman, R.E., 1984. *Strategic Management: A Stakeholder Approach*. Boston: Pitman.
- Hamel, G. and Prahalad, C.K. 1990. The Core Competence of the Corporation. *Harvard Business Review*, 68 (3), 79-92.
- Hoozée, S., Vermeire, L. and Bruggeman, W. 2012. The impact of refinement on the accuracy of time-driven ABC. *Abacus*, 48 (4), 439–472.
- Freeman, T. 1998. Transforming cost management into a strategic weapon. *Journal of Cost Management*, 12, 13-26.
- Hoffjan, A. and Wömpener, A. 2006. Comparative Analysis of Strategic Management Accounting in German – and English – Language General Management Accounting Textbooks. *Schmalenbach Business Review*, 58, 234-258.
- Hornigren, C.T., et al. 2005. *Cost Accounting – A Managerial Emphasis*. 12th edition, Upper Saddle River, New Jersey: Pearson Education.
- Horvath, P., et al. 1998. Linking Target Costing to ABC at a US Automotive Supplier. *Journal of Cost Management*, 12 (2), 16-24.
- Johnson, H.T and Kaplan, R.S. 1987. *Relevance Lost: The Rise and Fall of Management Accounting Systems*. Boston: Harvard Business School Press.
- Jones, T.C. and Dugdale, D. 2002. The ABC Bandwagon and the Juggernaut of Modernity. *Accounting Organizations and Society*, 27, 121-163.
- Kaplan, R.S. and Anderson, S.R. 2007. *Time-Driven Activity-Based Costing*. Boston: Harvard Business School Press.
- Kaplan, R.S. and Norton, D.P. 1996. *The Balanced Scorecard - Translating Strategy into Action*. Boston: Harvard Business School Press.
- Keel, G., Savage, C., Rafiq, M. and Mazzocato, P. 2017. Time-driven activity-based costing in health care: A systematic review of the literature, *Health Policy*, 121, 755–763.
- Keys, D.E. and van der Merwe, A. 2002 a. The Case for Resource Consumption Accounting.

Strategic Finance, 83 (10), 30-36.

Keys, D.E. and van der Merwe, A. 2002 b. The Case for Resource Consumption Accounting. Strategic Finance, 83 (11), 41-47.

Khataie, A., Defersha, F.M. and Akif Asil Bulgak, A.A. 2010. Multi-objective optimisation approach for order management: incorporating activity-based costing in supply chains, International Journal of Production Research, 48 (17), 5007–5020.

Kuchta, D. and Troska, M. 2007. Activity-Based Costing and Customer Profitability, Cost Management, 21 (3), 18-25.

Lebas, M. 1999. Why ABC? Accounting Based on Causality rather than Activity-Based Costing. European Management Journal, 17 (5), 501-511.

Malmi, T. 1997. Towards Explaining Activity-Based Costing Failure: Accounting and Control in a Decentralised Organization. Management Accounting Research, 8, 459-480.

Maskell, B.H. and Bagaley. 2003. Practical Lean Accounting. A Proven System for Measuring and Managing the Lean Enterprise. Productivity Press.

Öker, F. and Adıgüzel, H. 2010. Time-Driven Activity-Based Costing: An Implementation in a Manufacturing Company. The Journal of Corporate Accounting & Finance, 22 (1), 75–92.

Park, J. and Simpson, T.W. 2008. Toward an activity-based costing system for product families and product platforms in the early stages of development, International Journal of Production Research, 46 (1), 99–130.

Penrose, E. 1959. The Theory of the Growth of the Firm. Oxford UK: Oxford University Press.

Porter, M. 1985. Competitive Advantage: Creating and Sustaining Superior Advantage. New York: The Free Press.

Roslender, R. and Hart, S.J. 2003. In Search of Strategic Management Accounting: Theoretical and Field Study Perspectives, Management Accounting Research, 14, 255-279.

- Santana, A., and Afonso, P. 2014. Analysis of studies on time-driven activity-based costing (TDABC), *The International Journal of Management Science and Information Technology (IJMSIT)*, Special Issue: 2014 Spanish-Portuguese Scientific Management Conference, 133 - 157.
- Sandison, D., Hansen, S.C. and Torok, R.G. 2003. Activity-based planning and budgeting: A new approach, *Journal of Cost Management*, March/April, 16-22.
- Shank, J. and Govindarajan, V. 1989. *Strategic Cost Analysis: The Evolution from Managerial to Strategic Accounting*. Illinois: Burn Ridge Inc.
- Shank, J. K., and Govindarajan, V. 1992. Strategic cost management: the value chain perspective. *Journal of Management Accounting Research*, 4, 179-197.
- Shank, J. K., and Govindarajan, V. 1994. *Strategic cost management*. New York, NY: The Free Press.
- Simmonds, K. 1981. Strategic Management Accounting. *Management Accounting*, 59 (4), 26-29.
- Simons, R.L. 1995. *Levers of Control*. Boston: Harvard Business School Press.
- Sohn, S.K., Shin, I.H., and Park, S. 2015. Implementation of interorganizational cost management and its infrastructure: the case of a Korean 'Chaebol' firm, *Asia Pacific Business Review*, 21 (2), 228–250.
- Tomkins, C. and Carr, C. (Eds) 1996. Special Issue on Strategic Management Accounting. *Management Accounting Research*, 7, 165–167.
- Tsai, W.H., and Hung, S.J. 2009. A fuzzy goal programming approach for green supply chain optimisation under activity-based costing and performance evaluation with a value-chain structure. *International Journal of Production Research*, 47 (18), 4991–5017.
- Tsai, W.H., Chena, H.C., Liub J.Y., Chen, S.P., and Shen, Y.S. 2011. Using activity-based costing to evaluate capital investments for green manufacturing systems. *International*

Journal of Production Research, 49 (24), 7275–7292.

Tsai, W.H., Tsaur, T.S., Chou, Y.W., Liu, J.Y., Hsu, J.L. and Hsieh, C.L. 2015. Integrating the activity-based costing system and life-cycle assessment into green decision-making, International Journal of Production Research, 53 (2), 451–465.

Wilson, R.M. 1995. Strategic Management Accounting. In Issues in Management Accounting (Eds., Ashton, D., et al), New York: Prentice Hall, 2nd ed.

Wong, M. 1996. Strategic cost management. Management Accounting, 74(4), 30.

Zhuang, Z.Y. and Chang, S.C. 2017. Deciding product mix based on time-driven activity-based costing by mixed integer programming, Journal of Intelligent Manufacturing, 28, 959–974.