A contribution to the theoretical frameworks guiding management control system design\textsuperscript{1}

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Abstract:
The answer to the questions of management control tool selection and, more broadly, system design and implementation, cannot be found in books that are tantamount to a user’s guide: systems are being described for themselves, without any reference to a “theory” of management control, i.e. a conceptual framework that would allow for an understanding of their pros and cons. General managers are thus in search of guides to better manage new tool implementation. Agreeing with Otley (1999) amongst others, our claim is thus that existing frameworks are insufficient. Our work is based on two cases involving the new implementation of management tools. These cases analysis show that important issues of management control include solving co-ordination, incentives and learning problems simultaneously. We thus propose to contribute to the building of a conceptual framework for management control by including co-ordination of action plans to the goals of management control systems, beside incentives and learning and by concentrating on the paradoxes between these goals. We show that the description of the objectives of a new tool using this framework could help its implementation. Moreover, we show that this could lead to an in-depth renewal of the design of management control systems and to a better analysis of proposed tools by applying this framework to analyse well known tools such as BSC, EVA or budgetary procedures.

Keywords: Management control theory, Control system implementation, co-ordination, incentives, organisational learning.

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1 Introduction

When designing their management control systems, managers have a choice of a variety of tools, all of which are supposed to enable them to achieve improvement in performance. And yet, it is difficult to believe that each tool is suitable for every context and capable, in and of itself, of improving performance.

The answer to the issues of tool selection and, more broadly, system design and implementation, cannot be found in books that are tantamount to a user’s guide. Indeed, in our opinion, such books describe either the tool’s procedure or else its construction – but they do not specify its expected effects. One example is the way in which many management control textbooks deal with budgetary procedures. Often they describe the advantages of budgetary procedure and how it should be organised (Horngren et al. 2000). There is no comprehensive presentation of the goals and conflicts between these goals that could explain the difficulties of the budgetary procedure and the criticism against it (see § 4).

Often, the expected effects of a tool or system are presented through cases that only provide a partial vision of the total framework, and which therefore preclude any generalisation of the findings (i.e., Kaplan & Norton’s treatment of BSC - 1996 and 2000, or Stewart’s handling of EVA - 1991). In these two cases, one of the main arguments justifying such new tools is the description of the example of a firm that had suffered from low performance before the tool’s implementation (and which achieved high performance thereafter). Tools are thus being described for themselves, without any reference to a “theory” of management control, i.e. a conceptual framework that would allow for an understanding of their pros and cons. It is thus difficult to assess the success the implementation of a new tool or to be able to compare the actual functioning of the tool with the objectives in order to learn about it.

Agreeing with Otley (1999) amongst others, our claim is that existing frameworks are insufficient. It is therefore paramount that they be improved, and their scope enlarged, so that they may become relevant and useful in the design or choice of management control tools. The goal of the present paper is to enrich existing frameworks by observing difficulties found in real situations.

Our work is based on two cases involving the new implementation of management tools. The first relates to the management of a vertical relationship such as the one existing between a holding company and its subsidiaries; the second one concerns the design of a
management tool for various workshops within a single plant. The analysis of these two cases has already been done separately in two previous papers (Ponssard & Saulpic, 1999; Saulpic & Tanguy, 2004). The goal was then to highlight which of their operational objectives turned out to be relevant in a thought-action cycle framework (Kaplan 1998). We come back here to these analyses in order to highlight their similarities and to discuss their potential input to the management control framework. The overall perspective is still the thought-action cycle i.e. to go towards discovering new operational solutions, implementing them and reverting to the framework after having observed these new implementations.

These cases show that one important issue of management control is to solve co-ordination, incentives and learning problems simultaneously. This goal is difficult to achieve because, as some microeconomic models show, paradoxes exist in the solutions that are usually found for some these problems. Moreover, we show that the description of the way the tools aim at solving these problems can be fruitful for implementing them.

We thus propose to contribute to the building of the conceptual framework of management control by emphasizing co-ordination (both of action plans between them and with the global performance objective) beside incentives and learning and by concentrating on the paradoxes between these goals.

We show that this could lead to an in-depth renewal of the design of management control systems and to a better analysis of proposed tools by applying this framework to analyse well known tool such as BSC, EVA or budgetary procedures.

The paper is organised as follows: in the next section, we present our methodology (2.) and the two case studies (3.). We then discuss how they lead to a contribution to the management control theoretical framework (4.). Finally, we conclude by advocating that the paths proposed to solve the actual problems encountered in the cases suggests to develop the links between incentives theory, team theory and organisational learning theory.

2 Methodology

The general framework for the present study is a thought-action cycle. New management tools, based on existing theories and practices, are suggested and then implemented. This implementation should in return enable an enriching of the initial ideas and theories, that is, of the thinking upon which the tools had been based. Kaplan (1998) conceptualised this methodological process, calling it innovation action research.
In the present paper, we will primarily be deriving meaning from the attempt to implement two new management control procedures: one concerning the group’s different SBU’s, and the other the relationships between each SBU and the group. The new procedures proposed expand upon other research that has been done on the role that models play in management control (Ponssard and Tanguy, 1993).

We shall therefore be deriving meaning from specific experiences. Yin (1984), Eisenhardt (1989), and more recently Langley (1999), working with the theory of processes have highlighted the suitability of developing theory on the basis of particular examples.

More precisely, we come back here to the ex post analysis we did of these experiences from the perspective of intervention research (Hatchuel and Molet, 1986), that is aimed at exhibiting and analysing the organisational modifications that resulted from the implementation of a management tool.

Here, we will carry out more concisely this initial analysis again. Since Eisenhardt (1989) stressed that any research project that is based on specific case histories runs the risk of creating theories which are too elaborate, given that they comprise an attempt to explain a highly detailed situation. This is why, to overcome this deficiency, we chose to avoid describing the case in great detail and to try to highlight those ideas that are crucial for theoretical thinking.

This analysis is based on an inductive process. Indeed, though the proposals had roots in previous work, they were also largely elaborated during the intervention. The objective was not to test the relevance of tools that would have been designed before the intervention. Thus, though we knew well what was at stake in the organisation, allowing us to understand better the effects of such a system by following its implementation, our analysis contains an intuitive component. But Weick (1989) claims that this intuitive component cannot be completely overlooked and Langley (1999) even advocates it as being useful.

Finally, since our goal is to enrich the management control framework, we chose to present two different instruments and to apply our framework to existing more generic cases in order to demonstrate its relevance and its potential broad significance. The presentation of two different cases is also justified by the fact that in one case the coordination stakes deal more specifically on vertical coordination (coherence of local

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3 As it is the case in the constructive research approach (Kasanen et al., 1993)
action plans with global objectives) and in the other on horizontal coordination (coherence of actions plans with one another).

3 Cases

Both case studies concern the design and the implementation of new management tools in an international building materials’ world wide leader in which we have been implied: introduction of a measure of value in the monitoring of the different business units of the group (3.1.) and implementation of a new set of key performance indicators in the cement-making units (3.2.)

3.1 Value measure

3.1.1 Context and objectives

This case draws on the first intervention in an international building material group. The goal of this intervention was to diagnose management control processes in order to explain the relatively low profitability of the firm compared to the expected profitability of the investments made, to suggest new procedures and to test them on two pilot business units (BUs). Once these tests was done, the procedure was generalized to all the BUs, but this step was not part of the intervention. It was thus led by the firm without the research team. Nevertheless, we have been able to get some information on this step through informal interviews of the firm’s managers.

The research team was composed of two researchers and one PhD student. The project was led by this team under the supervision of a steering committee including the COO, the CFO and the VP Strategy and planning of the group. The project team included one corresponding manager at group level and in all the BUs. About 30 firm employees were involved in the project at one time or another. The mission lasted two years and represented around 140 working days for the research team. About two thirds of this time was spent in the firm either in interviews, data collection, meetings with the project team, strategic reviews or steering committee meetings.

3.1.2 Diagnosis and recommendation

The firm procedures were relatively standard and the diagnosis showed typical problems:

- Of over-investment, due to the lack of link between the investment choice procedure and performance evaluation procedures.
- Of difficulties for making the link between the investments and the strategy.

Starting from this diagnosis, the initial idea was to include the investments in the performance measure of the BUs. Therefore, a performance measure based on the discounted value of future cash flows seemed relevant since it was coherent with the calculation made to assess the investments profitability ex ante. This idea was based in previous work by the research team that had led to clarify the role of models for planning (Ponssard & Tanguy, 1993) and to develop new ideas on objective reforecasting (Kervern & Ponssard, 1990).

The proposed procedure based on the diagnosis and on these ideas was the following: a value objective is negotiated at the beginning of the relation between the holding and the BU. The latter elaborates and take on a strategic plan, quantified as projected free cash flows, that is, consistent with the objective. (FCF = free cash flows$^4$).

*Figure 1: Description of the plan*

\[
\text{Value of the plan}^* = \text{Objective} \\
\text{Target value}^{**} \\
\text{Trajectory}
\]

*The value of the plan is calculated by discounting the free cash flows and the target value at average cost of capital.

** The target value can be calculated by discounting a continuous flow corresponding to the last period of the plan (with more or less sophisticated hypothesis on the decrease of the growth rate or the free cash flows beyond this period).

The following year, the realized results are assessed and the value objective is updated according to the capital cost and the results obtained the first year with the following formula:

$^4$ The free cash flow is here the cash available for the fund providers, after the upkeeping investments have been financed. The discounted value, at the stabilized average cost of capital, is equal to the value of the debt and the equity.
updated objective = initial objective \((1 + \text{capital cost})\) - realized FCF.

The yearly objective is considered attained when the subordinate is able to present a new strategic plan consistent with the previous one (i.e. the target is unchanged, with a few exceptions, as shown below) and agreed on by his superior, and which value will equal the updated objective.

*Figure 2: Monitoring phase*

The system can be initiated in several ways. If the firm has just been acquired, the objective will naturally be based on the purchase value. If the negotiation conditions of this value are such that the buyer considers he has paid the value at a price lower than the value he could gain, the initial objective will be higher than the price paid. The initial plan has to be drawn up to meet the objective. If the activity has been operating for a long time, the negotiation of the initial plan will determine the value to be taken into account as the objective\(^5\).

The agreement’s consistency in time is provided by a special structure of the strategic plan, the emphasis being put on the strategic target, which should correspond to the strategic position at the competitive level, considered as relevant for the holding and as feasible at the operational level. The period between the plan elaboration and the target is called trajectory. It is highly important to control the explanation and the understanding of

\(^5\) Several internal negotiation processes of this initial value can be considered: For example a competition among managing candidates.
the target. Nevertheless, the manager is responsible for the choice of trajectory. Significant variations can occur in the trajectory, but the target can only be modified in case of a serious event in the competitive context. In this case there should be a new audit and a new negotiation.

This proposal consisted in introducing the notion of value (discounted FCF), well-known in corporate finance and in economics, as a management tool for structuring not only the capital budgeting process of the company but more generally the strategic planning and performance appraisal system of the different business units. Indeed, although everyone agrees on this notion of value, nobody uses it as a management tool for delegation and control.

This may be due to the fact that this proposal where performance assessment is based on forecasts raises a major problem of possible excess due to an always renewed promise that the future will be consistent with the objectives. In the incentives theory framework, this problem can be analysed as a loss of incentives due to the possibility to renegade on the objective contract (Hart, 1995).

It is thus necessary to mitigate the drawbacks of the renegotiation. The discussions at the time of the conception of the system were focused on that issue. This is why the proposed procedure creates two possible renegotiation levels: a current renegotiation on the trajectory and another exceptional renegotiation on the target that requires an audit and thus an in depth discussion on the reasons of the change. Considering the renegotiation on the strategic target as exceptional is supposed to create a rigidity that mitigates the negative effects on incentives of the possibility to renegade on the objective.

This procedure differs from the usual use of the Net Present Value (NPV) as an investment profitability measuring tool. Indeed, what is at stake here is not only the ex ante bus performance measure (as in the usual use of NPV), but also the measure of their realised performance. The discounted cash flows are used both in the planning process and in the performance analysis process.

3.1.3 Implementation

This procedure has been successfully applied for the building of plans in the two Bus that had been chosen as pilots for this project.  

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6 It also differs from the multi year budgets because of the way the target is set and realised performance is measured.  
7 See Saulpic and Tanguy (2001) for a detailed analysis of these cases.
- in the Ready mix concrete business unit, the use of this procedure led to reconsider the strategy of competitors acquisition that used to be implemented by the local entities because it allowed the holding to show that this strategy led in fact to value destruction. Each acquisition was typically justified by a NPV calculation, the profitability being explained by a local price increase after the acquisition because of main competitor neutralization. But since the entry barriers are low on this market, new competitors had appeared later, reducing the profitability of the acquisition to a level where the NPV was in fact negative. The new procedure allowed the holding to discover this mistake because the objective that resulted from previous investments (obtained by updating the calculation made before these investments) was too high and there was no plausible strategy that could allow the BU to reach it.

- In the cement business unit, implementing this procedure led the management to give its agreement to an investment in the replacement of a factory that had previously rejected it several times. Though it has not been ex post proven that this decision was value creating, the behaviour change that led to this decision was positively considered by the managers of the firm.

Based on these pilot experiences that were considered satisfactory, the decision was made to generalize the system to all the BUs. We did not participate in this phase, but we could get some information by informally interviewing different managers of the firm. According to them, the procedure has been used for a couple of years, but the focus was fast put on the discussion of financial figures (cash flows forecasts) to the detriment of the discussion about the target. It was thus considered as too technocratic and did not have the effects and the success that could have been extrapolated from the pilot experiences.

### 3.1.4 Analysis

The analysis we made from an academic perspective of these pilot experiences (Saulpic & Tanguy, 2004) shows that beyond the value notion introduction as a basis for management by objective, the input of the procedure also lied in the renewal in the hierarchical dialog about objectives it allows.

Indeed, in the cement unit case, the change in the evaluation of the investment in a new plant was due to the work to define the target – done in terms of market share, base product price, base product cost, sustaining investments and growth investments – and the fact that the discussion between the BU and the group was focused on this target. Though this type of process reminds us of the generally admitted good practices, the planning procedures are often criticized because they are more or less restricted to a negotiation of
financial objectives. BU’s managers’ interviews have confirmed that the dialog on the target was favoured by the specific structure of the procedure and of the contract by lengthening the horizon on which incentives can be effective.

In the Ready mix concrete unit, the memorisation of the expected value thanks to local competitor acquisition led to an objective that appeared unrealistic. The group thus asked for a strategic analysis that led to the conclusion that the hypothesis on which these acquisitions were founded neglected the new competitors entry.

In both cases, it is the hierarchical dialog on the target, that is on the strategy and the objectives deriving from it, that led to reassess the common representations of performance, that is to a collective learning. This dialog had been facilitated by a change in incentives structure. In particular, group’s managers thought that an in-depth dialog about the target could limit behaviours that would aim at making optimistic forecasts in order to have a bonus. Moreover, the interviews of the concerned managers showed that this procedure had been useful for their knowledge of their subordinates’ skills.

This ex post analysis led us to present the expected objectives of the procedure as follows (Saulpic & Tanguy, 2004):

- An important issue is to solve vertical coordination issues, that is strategic alignment of action plans. The answer is based on the focus put on the definition and the discussion of the strategic target and the coherence of action plans with this target;

- Moreover, the discussion of the target and the memorization of the objective aim to favour the learning of performance conditions and relevant strategies throughout the hierarchy. This learning issue also turns out to be an important one (but is often neglected by management control literature which is mainly focused on incentives).

- Finally, by setting a long term objective and favouring the discussion about the target, this procedure aims at taking into account the difficulty of setting a relevant short term objective when the context is uncertain. Since the performance measure is based on forecasts, there is a risk of lowering the incentives. This risk must be mitigated by the limitations put on the possible changes between two successive forecasts (a change of the target induces an in depth audit) and compensated by the

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8 See for instance the criticism of the budgetary procedure in Hope & Fraser (2003)
benefits linked to learn strategy, performance conditions and managers’ skills better.

Thus, though the initial objective did not mention it, the implementation showed that an important issue was the paradox between vertical co-ordination - that is the definition of both the relevant objective and action plans - and learning on the one side and incentive on the other.

This presentation of the expected objectives forms what we could call the procedure’s « rational myth » as it is possible to formulate it after the experimentation phase, that is an idealised (myth) but at the same time rational presentation of the procedure’s objectives. The interest of this “rational myth” is then that it can guide organisational changes based on the analysis of the differences between this myth and actual use of the procedure. It is thus not our purpose here to pretend the procedure will operate as presented, but to facilitate the management of this procedure’s implementation in different contexts.

This rational myth emphasizes the means used to do a compromise between coordination and incentives, in particular improved learning. This justifies the hierarchical dialog reinforcement. Indeed, for justifying the choice of a superior's more important involvement, it makes the assumption that this involvement allows the two parties' mutual learning of the relevant objective and the different ways to reach it, that could compensate the associated loss of incentives. Furthermore, it also supposes that the new shared knowledge will limit the BUs possibilities to over renegotiate their objective. The proposed solution is then a way to limit the drawbacks of incomplete contracts on incentives (Hart, 1995) with the help of two mechanisms: The memorisation of the value objective, which structures the possible new negotiations, and a differentiation between “ordinary” new negotiation about the trajectory and "exceptional " new negotiation about the target. Here it is like introducing an intermediate level of re-negotiation, which may “complete” the initial contract without making it rigid.

**3.2 Implementation of a new set of key performance indicators**

**3.2.1 Context and objectives**

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9 Le concept de mythe rationnel est né dans le contexte de la recherche opérationnelle. Les travaux de Hatchuel (Hatchuel & Mollet, 1986, Hatchuel & Weil, 1992) ont montré que l’intérêt des modèles de RO n’était pas de fournir la « bonne décision », mais résidait dans le fait qu’ils constituaient des représentations rationnelles des processus de décision dont le rapprochement avec les processus réels peut permettre de faire évoluer l’organisation vers une plus grande efficacité.
The second case with which we are concerned here relates to the cement-making units of a major international group. This management experience consisted of renovating the existing *tableaux de bord* battery of performance indicators in order to improve operational control. The project head's mission statement mentioned two objectives:

- "to have a shared information system for the more than 20 cement units that the group operates across the world;
- to design and implement a battery of performance indicators that will enable the managers of these units and the different hierarchical echelons of the organisation to dispose of key indicators which will allow them to measure their performance and to better pilot our activities."

Behind these two operational objectives, one detects an interest in internal benchmarking, a desire to reinforce the common culture (notably by facilitating the new units’ integration), and more generally an attempt to capitalise upon existing know-how.

Two operational units were selected to take part in the project's design phase (formulation of performance indicators, method of utilisation, etc.). The pilot committee included the two operational heads from these two activities, a group level function manager (in this case, the CFO is his role as head of information systems), and the project manager, who was assisted by an outside consultant (the author of the present article).

The actual carrying out of the project basically involved a mobilisation of the cement units' internal resources. Between the project's conception and the beginning of its implementation, two years elapsed.

The mission was led in four phases. As mentioned in the mission statement, the objective was to overcome previous system deficiencies. The first phase thus consisted in a rapid diagnosis of these deficiencies. The second phase involved the design of new « tableaux de bord » - i.e. sets of performance indicators - and of the procedures to use them. These new indicators were then implemented in the two pilot BUs. This implementation was finally extended to all the BUs of the cement branch. We participated in the first three phases but were not involved in the implementation outside the two pilot BUs.

### 3.2.2 Diagnosis and proposal

The diagnosis underlined two main typical problems: the lack of a link between operational management and financial management on the one side, and excessive compartmentalization of the operational entities on the other, the focus on local objectives
leading among others to problems redesigning action plans collectively when a unforeseen situation occurred.

This diagnosis led us to refer to the ideas conveyed by the BSC, particularly the association between financial and non financial indicators and the design of a causal model linking these indicators. Indeed, these ideas seemed relevant to overcome the problems identified by allowing one to measure the financial consequences of operational decisions. Thus, although the project was not talked about as if it were an implementation of a BSC approach, this reference progressively became a useful way of conceptualising what was happening (specifically during internal presentations). The BSC link was particularly evident in light of the simultaneous integration into the indicators of elements that had been previously analysed in an independent manner, or which had simply been neglected (tracking of fiscal indicators, budget control, monitoring of safety and environmental issues, following up on investments, etc.). BSC’s reference to causal links between the different indicators also proved to be an important element in the elaboration of the new system.

We will now focus on those aspects of the project that are directly related to our discussion.

The first phase of the project consisted in the definition of the relevant indicators for the different entities of the unit: the goal was to include both financial and non financial indicators and to define the causal model between these indicators.

Rapidly, we realized that it was not possible to define the performance model of the BUs with a top-down approach. Indeed, on the one hand this model had to be specific to each of the entities; on the other hand, the fact that co-ordination was difficult in practice proved that the model that could overcome these difficulties was not known by the people concerned. Indeed, had it been known, it would have been possible for the manager of the SBU to explain the relevance of a change of action plans to the different entities by showing their positive impact on the entity performance. To overcome this difficulty, it was decided:

- To define a set of standard indicators common to all the BUs;
- To authorize the definition of specific indicators in each entity;
- and to establish a regular re-forecasting procedure of both non financial and financial indicators
The idea was the following: the regular reforecasting exercises were thought to allow the operational managers to explicit the consequences the decisions they made on their action levers (measured by a non financial indicator) have on other non financial parameters and, finally on financial performance. To put it differently, the reforecasting procedure concerning both operational and financial parameters was supposed to be the place of the progressive construction of the performance model, that is of the causal links between the indicators.

Though this is not the purpose of the paper, in order to make the description clearer, we can underline the main differences of the proposed procedure with existing ones. Compared to BSC, this procedure suggests that the performance measure at decentralized levels should not be defined ex ante with a top down approach, but progressively emerges from the discussions between operational managers during the reforecasting exercises. Indeed, at these levels, the goal of such a model is not as much to increase each manager’s understanding of the strategy\textsuperscript{11}, but to favour coordination between these actors. Thus, the required detail level does not allow the ex ante explicitation of the model. On another hand, if the idea of re-forecasting is not a new one (Barret and Fraser, 1977), the fact of making a re-forecast at the same time on non financial and financial indicators and to allow for objective revision is to our knowledge newer.

### 3.2.3 Implementation

Once the proposed indicators were validated, they have been tested in a pilot unit together with the reforecasting procedure. During this test, we have observed how the simultaneous reforecast of financial and non financial indicators allowed for a modification of common representations of performance.\textsuperscript{12}

This result was observed among others in the following situation: because of changes in the prices of the different fuels that could possibly be used to heat the kiln, the fuel preparation workshop manager proposed a change in the fuel that was supposed to reduce significantly the costs. This proposal had been agreed on by the manager of the entity. Once it had been implemented, it led to unforeseen quality and yield problems at kiln stage. One month later, these problems were partially solved: yields had been improved but remained below target and quality was satisfying though at a lower level than during

\textsuperscript{10} For a broader description of the case, see Ponssard and Saulpic (2002)
\textsuperscript{11} What is one main objective of BSC in its designers’ mind (Kaplan & Norton)
\textsuperscript{12} For a more detailed description of the way the system led to these changes, see Ponssard & Saulpic (1999).
the previous months. Because of the problems encountered, the production cost was higher than before. Everything seemed coherent and led them to decide to come back to the previous fuel. However, the reforecasting procedure encouraged the manager of the entity to make forecasts on technical and financial parameters at the end of the year if the new fuel were to be kept. The forecasts showed that if the yield, and thus the capacity, would remain below the target, the costs would be reduced (though less significantly than what was expected at the time of the initial economic study of the fuel change). According to the fact that, among others, the firm was rather in an overcapacity situation, it was decided to keep the new fuel. The technical and financial reforecast thus led to a common representation of performance that differed from the local ones (which would have led to follow local technical objectives and to the abandon of the new fuel) and to a better understanding of the links between the different operational and financial parameters (for instance between the fuel and the yield).

However, this case showed that in order to follow the logic through and prevent local interests from outweighing the global one, it was necessary to make it possible to update the manager’s objectives whose operational performance is negatively affected by the change under consideration. In the opposite case, it would be difficult to gain these manager’s agreement. For instance, since the yield was lowered by the new fuel, if the kiln manager’s yield objective was not revised, he would have easily found numerous technical arguments justifying a return to the previous fuel, which his hierarchy could not easily discuss. In the case of the pilot experimentation and for this particular decision, the objectives were revised.

This experimentation being satisfactory, the general management made the pilot committee responsible for the generalisation of the system. This committee designed a training kit presenting the system and its objectives. This kit included a pedagogical case based on the pilot experience that aimed at demonstrating these objectives.

We were involved in this phase. Since we had identified the objective revision issue, we suggested that the pilot committee submit this idea to the general management. This suggestion was finally not accepted and the generalisation of the system dealt with the new indictors and the reforecasting procedure implementation. This implementation came up against typical information system problems. Moreover, as in previous case, we were aware through later informal interviews that the system had become bureaucratic or at least that the objective of improved dialog had not been reached in several units.

### 3.2.4 Analysis
The analysis of this intervention led us to present later the expected effect of the procedure in the following manner (Ponssard et Saulpic, 1999):

- The instrument aims at encouraging co-ordination mainly horizontal (between the local action plans): the association between financial and non financial indicators, the regular objective reforecasting and the possibility to update the objectives aim at creating an opportunity for action plan co-ordination at the operational level (and thus prevent compartmentalization). Therefore, it aims at providing a discussion forum for all of the operatives who are involved in this exercise, in order to create the opportunity to revise the action plans. By demonstrating the overall economic impact of local decisions, it aims at making it to avoid local performance optimisation behaviours. Moreover, to prevent changes from being blocked because of individual interests, reforecasting exercises should lead to updating the objectives

- favouring learning: The re-forecasting procedure, which simultaneously covers operational and financial elements, indirectly causes operatives to demand decisional aid tools that can help them to formalise the technical-economic relationships and interfaces which exist between the firm's main departments. It therefore creates a basis for collective learning about the conditions in which performance can be achieved. This learning revolves around the existence of a widespread type of know-how that cannot be formalised outside of the boundaries of an action process that can be capitalised to enable greater organisational responsiveness.

- while limiting the weakening of incentives: However, to keep the incentive power of objectives, the updating possibilities must be limited. Since one main goal is to favour coordination, the only decisions that can lead to revise an objective are those that are proposed by an entity and have a negative impact on another entity’s performance. Moreover, the fact that reforecasting exercises aim at creating a shared representation of the performance levers and the interactions between these levers could, in return, limit excessive opportunistic behaviours.

As in the previous case, the above presentation of the objectives constitutes in fact the ex post formulation of the system rational myth as it derives from pilot experimentations. The analysis shows again that coordination is an important issue, but that it is difficult to solve this issue without excessively weakening incentives. The proposed compromise
between these two issues emphasizes the importance of limiting objective updating possibilities and of collective creation of common knowledge.

4 Discussion

Beyond the solution proposed, analysis of these cases shows that:

- Both tools can be described in terms of their effect on:
  - Coordination (both vertical, i.e. between local action plans and global performance and horizontal, i.e. between the action plans at one level)
  - Incentives
  - Learning (about performance levers and conditions, about strategy, about relevant objectives and means to reach them …)

- Using this grid allows one to explain tools non trivial “rational myths” that can serve as a basis for learning about these tools.

- It is difficult to find solutions to these three problems at the same time. This difficulty is linked to an intrinsic paradox between co-ordination and learning on the one side, and incentives on the other: coordination and learning require increased dialog, whereas to be efficient, incentives require hierarchical distance as the expression “arm’s length relationships” suggests, and fixed objectives, that is complete contracts\(^\text{13}\).

This is the reason why, vertical co-ordination, is usually obtained \textit{ex ante} and objectives that derive from this coordination are fixed. However, too high or too low objectives also weaken incentives or can lead to inefficient decisionx such as firing a good manager. And it is more and more difficult to set a relevant objective in a context where uncertainties grow. Moreover, when objectives are set \textit{ex ante} communication between the BU and the holding is not encouraged and the contribution of the holding is then unclear. Thus fixed objectives required by incentives reduce communication between the BU and the holding, that is learning about relevant objectives and action plans.

Making the assumption that control must simultaneously solve these different problems and starting from the hypothesis that the answer can only be imperfect because of these

\(\text{13 For a detail study of the effects of incomplete contract, see Hart 1995}\)
paradoxes can lead one to look for different solutions. In the cases above, the solutions emphasise learning as an output of dialog but also as a means to maintain high incentives.

### 4.1 Theory of management control

We think that these conclusions can help enrich the management control theoretical framework.

The theory of management control has long been an attempt to describe what it encompassed, that is what tools were to be included in the scope of management control (Giglioni and Bedeian, 1974).

Anthony’s (1965, 1988) well known frameworks aimed at broadening the scope of management control and at including behaviour into it (Otley, 1999). This tendency to enlarge the elements to be taken into account has been pursued. For instance, Flamholtz et al. (1985) argue that organisational structure, organisational culture and external environment are important to understand management control issues. These steps were necessary, in particular in order to have a broader view of control to allow for useful studies on interactions between traditional accounting tools and other areas. But all this leads to a broad definition of control on the one side and descriptions of management control tools or procedures on the other, with no “theory” to analyse these tools. This type of framework is thus not of much use when trying to answer the operational question of the choice or the design of relevant control systems.

Otley (1999) advocates that the systems for managing performance must answer five questions:

- the organisation’s objectives and their measurement,
- the strategies and plans, their implementation and the measurement of the performance of this implementation
- the setting of objectives
- the compensation
- the flow of information to enable learning

Though Otley claims that his goal is to develop a more complete framework than previous ones, we think that his approach also open the path to a framework based on a more problematic view of control. As he mentions, his framework is not normative or descriptive, it aims at evaluating actual or proposed system. This framework can be applied to formal control tools as well as others. We think that this type of approach must
be developed by completing the picture. On that point, the cases described suggest to emphasize co-ordination of the action plans.

Moreover, our analysis suggests defining more explicitly the objectives with no reference to the means to reach them. This means to speak of incentives rather than setting of objectives and not necessarily to associate learning only to the flow of information.

Finally, Otley underlines that the novelty of his framework is to integrate well-known questions in a single framework because theses questions are inter-related. We think that the inter-connection must be studied in detail in order to make the framework more comprehensive and more useable. For that purpose, two complementary paths are possible: observation of innovation as in the cases studied, and theory construction on which we will come back in our conclusion.

Our case study contribute to this study by showing that an important issue is to deal with the paradoxes between co-ordination and learning on the one side and incentives on the other. In particular, the search for a solution to co-ordination and learning issues cannot neglect the games actors play, which are structured (at least in part) by incentives.

The idea of potential conflicts between the different functions of management control tool is not new: It has been applied on budget by Barrett and Fraser (1977) and Samuleson (1985) and on performance measurement by Atkinson et al. (1997).

However:

- the importance of the functions have evolved. In particular, co-ordination was considered as a minor objective of budget by Barrett and Fraser and is now considered as the major source of performance improvement (Lorino, 1997). This is easy to link with the increase of uncertainties. Learning was also less emphasised and reduced to feedback control (Samuelson, 1985) or diagnosis (Atkinson et al., 1997)

- this idea has been develop to analyse specific tools but has not been advocated as a general framework for thinking of management control tools.

Moreover, the increasing speed with which new tools are introduced and the fact that they are more and more marketed and presented as the solution to create economic value emphasises the need for frameworks to analyse their advantages and their limitations.

Recognising that these three functions must be filled at the same time and that this can be paradoxical leads to look for new paths for attaining this goal. In the cases presented, the following new paths are suggested:
4.2 Application to existing tools

Trying to apply this framework to existing tools means answering the question of how this tool addresses the questions of co-ordination, incentives and learning.

4.2.1 BSC

Though BSC has much evolved and is now difficult to precisely define, one can argue that it does not address the question of incentives when co-ordination is an issue. This is why this reference, though useful, could not fit with the issues at stake in the case presented above.

Indeed, the originality of BSC, as proclaimed by its supporters, related to two fundamental principles: the multidimensional nature of performance, measured over a whole set of indicators that were combined into four separate perspectives (financial; customers; internal processes; innovation and learning); and the existence of an underlying model linking the various indicators to one another.

In their pre-2000 writings, Kaplan and Norton did not describe their know-how for eliciting a model of cause and effect. Moreover they did not say how the model was used and what were the consequences of BSC on target setting, remuneration or monitoring procedures (Otley, 1999; Lipe and Salterio, 2000).

Empirical research emphasises the design of the cause-effect model as the critical question for the implementation of BSC (Ahn, 2001). In fact many issues related to the design and the use of the model remain opened and seem particularly unclear in practice (Malmi, 2001, Ittner & Larcker 2003).

In their latest work, Kaplan and Norton (2001) tried to tackle these issues through the use of around 20 examples of BSC implementation - the approaches that had been followed, and the benefits thereof.

The major conclusions to be drawn from this latest book were that:

- It can be beneficial to reconsider the objectives on which incentives are based;
- This must be accompanied by new procedures that are intended to structure such renegotiations in such a way as to maintain a certain level of incentives.
- These procedures must be designed in such a way as to facilitate organizational learning.

Thus our framework leads to an in-depth renewal of the design of management control systems.
- BSC is an attempt to strengthen collective learning about the conditions in which a certain level of performance might be achieved.

- BSC’s effects are more significant when individual pay packages are linked to it.

- BSC must be broken down at the lower hierarchical levels.

On the first point, Kaplan and Norton underlined the role of the model of cause and effect, of which they gave detailed examples. Through these examples, they gave some details on how this model helps learning by top management on the relevance of the strategy. But its impact on the collective dimension of learning remains unclear: they only make the assumption that a better communication of the strategy will lead the employees to be more involved.

On the two other points, Kaplan and Norton provided some details on the link between BSC and remuneration at the business unit level but not at lower hierarchical levels. Their main observation was that BSC-related bonuses are usually related to collective targets. Kaplan and Norton briefly discussed the problem of free riding. In their opinion, it was possible that this problem had been overestimated, and in any event other mechanisms such as peer control dampened its effects wherever colleagues were able to observe each other’s efforts.

We can therefore summarise the control proposition that the Balanced Scorecard approach contains in the following manner:

- global objectives are broken down into local objectives as long as the interactions between the local entities involved are not too strong, and if models can be established linking local objectives to global objectives.

- wherever it is difficult to break local indicators down into their components due to an excessive interconnection of individual actions (i.e., wherever co-ordination problems are significant), control can be enacted via incentives that are related to shared objectives.

- Collective learning is improved by a better communication of the strategy.

The problem of narrow and functional thinking that Kaplan and Norton (2001, p.233) associate with traditional systems of management by objective seems thus solved by collective incentives. But as we mentioned in the introduction, though in some cases the pressure from one’s peers or the emergency of company’s situation can attenuate free rider problem, in many other cases this problem remains and one has to look for other more elaborated solutions to provide individual incentives.
4.2.2 EVA

A major assumption on EVA is that it is a good measure of value creation\textsuperscript{14}. It is thus assumed that bringing high incentives based on EVA will ensure vertical co-ordination, that is the choice, at decentralised level, of decision that will lead to value creation. This way, EVA is supposed to solve the problem of low incentives which may be due to the difficulty to find relevant performance measures at decentralized levels. Moreover, it is possible to add the EVA of different business units or different entities\textsuperscript{15}. It is thus theoretically possible to provide this type of incentives deep into the hierarchy (Stewart, 1991).

However, observations show that it is often used as a basis for collective incentives (Mottis & Ponssard 2001) which is contradictory to the objectives presented above. Our framework leads to the hypothesis that at lower level, horizontal co-ordination (between the different action plans at one level) and learning issues are important and that increasing individual incentives at these levels would be detrimental.

Then, as for BSC, the operational answer to the issue of providing incentives at individual level while allowing co-ordination and learning relies on collective incentives. Thus answer is based on the hypothesis that free riding problem is solved either by peer pressure or by a specific context, for instance of crisis, that lowers the need for explicit individual incentives because of the fear of loosing his job. This answer is far from the objective and does not bring answer to the numerous situation where it is important to provide individual incentives.

The point here is to underline that the analysis of EVA as a internal management tool, would benefit from a more detailed answer to the question of the inter-relation between incentives (individual or collective) and co-ordination.

4.2.3 Budgetary procedure and MBO

Though it is often claimed that the goals of the budgetary procedure are co-ordination, incentives and learning, the way these goals are attained in practice is, to our knowledge, rarely discussed\textsuperscript{16}.

\textsuperscript{14} This assumption is discussed (Biddle et al. 1997, Francis et al. 1997).
\textsuperscript{15} Which is not true for “traditional” financial performance measures like ROCE.
\textsuperscript{16} Apart from the discussions by Barrett and Fraser (1977) and Samuelson (1985) but who concentrate on part of these goals.
In the “classical” budgetary procedure, co-ordination of the action plans (both horizontal and vertical) is supposed to be obtained during the construction of the budget the forecasts going up and down between top and bottom of the organization in order to ensure this co-ordination. An objective is then set for each manager who is supposed to take appropriate decisions to reach this objective. Learning is based on the comparison between forecasts and actual results.

In fact, this often only leads to local adaptation to the evolution of the context and the procedure is thus criticised because of the rigidities it introduces (Hope & Fraser, 2003; Ekholm & Wallin, 2000).

As in the BSC case, the problem is thus to allow for flexibility and collective discussion while maintaining real incentives. Classical or new solutions are:

- giving some slack, but this is mainly discussed in terms of individual flexibility and the effects on incentives remain unclear (Van der Stede, 2000).

- making rolling forecasts and setting relative objectives, i.e; using benchmarks (Hope & Fraser, 2003). This proposal aims at favouring the discussion of action plans during the construction of the budget by disconnecting the objective setting from this construction, and at bringing more flexibility. Mais elles ne proposent aucune solution aux questions de coordination et d’apprentissage. Il est à cet égard frappant de constater que dans les exemples d’entreprises ayant supprimé leur budget cités par Hope & Fraser (2003), les enjeux de coordination sont quasiment inexistants. Ces exemples sont donc des cas particuliers difficilement généralisables.

The discussion of this procedure without taking into account the instruments used to measure the performance at all levels is difficult. However, it appears that the discussion on budgetary procedure and more broadly on forecasts would benefit from the integration of co-ordination, incentives and learning issues (on top of others such as anticipation). In particular, one could focus on how procedures are organised to facilitate co-ordination and learning when these issues are important.

This discussion illustrates how our framework can shed some light on actual procedures or tools and help to enrich their analysis.
5 Conclusion

This paper shows that enriching the theory of management control by trying to define and understand the roles of management control systems can be useful to understand proposed tools, to design ones that are relevant in a specific context and to help the follow up of the implementation of new tools.

Our view is that the idea of co-ordination (both vertical and horizontal), incentives and learning must be part of the framework

Then :

- management tools must be thought both as:
  - communication tools (Ponssard and Tanguy 1993) to structure a decentralised decision making and an organisational learning process (Ponssard 1994)
  - and incentive tools, which is the main focus of responsibility accounting.

- The explicit description of the expected effect of the tool on coordination, learning and incentives must be thought of as a rational myth of this tool.

Moreover, it is necessary

- to understand the paradoxes between these issues. This can be done by looking for practical solutions to mitigate these paradoxes. However, we also need to enrich the corresponding theories and link them. In particular, it would be useful to :
  - go further in the formalisation of organisational learning theory introduced and developed by Argyris and Schön (1978) to be able to more precisely define the processes by which learning occurs
  - introduce in more classical incentive theory models (Milgrom and Roberts, 1992) co-ordination issues, classically studied by team theory that ignores incentives (Aoki, 1986, 1994; Crémer, 1980, Bolton & Dewatripont 1994), and learning issues. This would necessitate to introduce the actual content of the knowledge of the mangers and to more precisely define monitoring\(^\text{17}\).

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\(^{17}\) The models of Burkart et al. (1997), B. Holmström, J. Ricart i Costa (1986), O. Cadot, B. Sinclair-Desgagné (1996) show that this path is possible
And to make the concepts on which the framework is based (coordination, incentives and learning) easier to understand by the managers.
References


Flamholtz


