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Designing Complementary Budgeting and Hybrid Measurement Systems that Align with Strategy

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EXECUTIVE SUMMARY

The authors identify the situations in which two cybernetic control systems, budgeting and Hybrid Measurement Systems (such as the balanced scorecard), can be combined in packages that complement each other and align with the broader strategies of differentiation and cost leadership.

As the economy continues to emerge from the Great Recession, it is time for companies to widen their focus on budgeting and financial controls and for management controllers to take a more proactive role in designing complementary Management Control Systems (MCS). Over the last two decades, MCS packages have evolved through the emergence of Hybrid Measurement Systems (HMS) and corresponding adjustments in budgeting systems.

Budgets and HMS are part of the cybernetic control system. The budget is the financial expression of a comprehensive plan that states the revenues and expenses planned for a year and that is used for performance planning and performance post-evaluation. Unlike budgets, and because they incorporate both financial and nonfinancial measures of performance, HMS do not focus solely on achieving financial outcomes. Their role is also to evaluate and monitor the drivers (quality, customer satisfaction, delivery time, skills development, etc.) of the financial performance. In recent years, the balanced scorecard has become the most dominant HMS. Because they offer two alternatives for performance measurement, budgets and HMS sometimes are perceived as incompatible.

The articulation of the control mechanisms that comprise an MCS package is one of the main challenges for controllers and business managers. Designing the control package requires defining the respective roles of each component so that the whole delivers the level and form of control that companies expect. This implies an understanding of how the components interact, especially when a new element is added.

The first objective of our study is to determine whether HMS and budgeting systems interact with each other and, if they do, to observe the form this interaction might take. The second is to evaluate how strategy influences the combined control packages. (See Figure 1.[1])

MCS Package and Strategy

The challenge in leading an organization consists of finding a coherent design between organizational components.[2] The same principle applies in designing Management Control Systems. Certain experts recommend that the different MCS generally implemented simultaneously in an organization should be "managed" so that the "the proportion of mix" varies and is adapted according to the needs and the constraints of the company.[3] MCS should include processes for formal control that are associated with tools that are structured in relation to each other in a complementary manner.

During the last few years, budgets have been greatly criticized for no longer being able to fulfill the expectations of companies faced with uncertain and complex environments. In reaction to the deficiencies of budgets, HMS, such as the balanced scorecard, have been developed. Yet the question of their interaction remains: Do budgets and HMS operate as complements or as competitive substitutes?

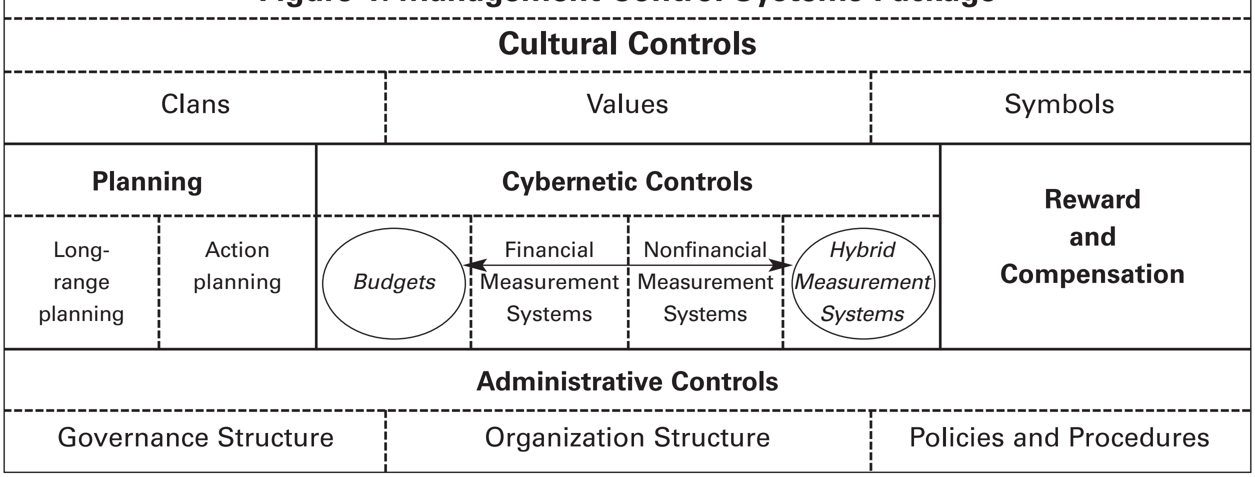
Numerous studies indicate that the type of strategy a company pursues impacts the MCS design.[4] It has been demonstrated that a cost leadership strategy is associated with centralized, standardized, and stable control processes while a differentiation strategy encourages innovation, customer responsiveness, or other activities responsible for product/service leadership by implementing decentralized, flexible, and less formal MCS.[5] In light of these findings, it seems appropriate to also study how strategy sets up the combination of the HMS/budgets package.

Data Collection and Measures

We collected data in two phases. During an exploratory phase, we interviewed 20 managers from different companies. They responded to questions concerning the way budgets and HMS were used. During the second phase, a survey questionnaire was sent to 400 management controllers in companies operating in France and ranging in size from 500 to 5,000 employees. These companies were selected randomly from the Kompass database.

We received 83 completed questionnaires (20.75%

Figure 1: Management Control Systems Package



Source: Teemu Malmi and David Brown, "Management control systems as a package—Opportunities, challenges and research directions," *Management Accounting Research*, December 2008.

response rate), and all were usable. Of those 83 companies, 33 (40%) were subsidiaries of international corporations. Therefore, the control practices observed in the sample could be considered generic since they were not specific to French companies. The majority (57%) were industrial companies, followed by service provider companies (24%), then wholesale and retail companies (19%). The majority of respondents (63%) were from business units, 30% from family businesses, and 7% from corporate offices. The companies that did not respond were not significantly different from our sample in size, sector, or structure.

The survey included questions on 10 budget and HMS items (see Appendix 1). We asked about the main features of budget systems, assigning an abbreviation to each category:

- The degree of participation managers have in establishing the budget, or the budget participation degree (BPART);
- The level of detail (BDET);
- The level of difficulty to achieve budget goals (BDIF);
- Frequency of updating and (BFU); and
- The degree to which budgets are used to evaluate and reward performance (BER).

We also asked about the most significant aspects of HMS systems, including the:

- Frequency of review (FR) and
- Level of significance of customer performance, internal process, learning and innovation, and evaluation and reward: CUST, IP, LI, and HER, respectively.

We evaluated each item on a five-point Likert scale where 1 equals very weak and 5 very strong (see Table 1).

Then we employed a statistical technique—factor analysis—to determine whether and how budget and HMS systems interact. Three interaction factors

Table 1: Factor Analysis Results for Budgets and HMS Items

Items	Factor 1	Factor 2	Factor 3
BUDGET			
1. Budget participation degree (BPART)	0.352	(0.248)	**0.665**
2. Budget detail degree (BDET)	0.387	**(0.485)**	**0.505**
3. Budget objectives difficulty degree (BDIF)	**0.697**	(0.093)	(0.201)
4. Budget frequency of updating (BFU)	0.092	0.238	(1.137)
5. Budget use degree for evaluation and reward (BER)	**0.772**	(0.439)	(1.118)
HMS			
6. HMS frequency of review (FR)	0.039	0.340	**0.593**
7. HMS use degree for evaluation of customer performance (CUST)	0.400	**0.590**	(0.216)
8. HMS use degree for evaluation of internal process performance (IP)	0.441	**0.621**	0.356
9. HMS use degree for evaluation of learning and innovation performance (LI)	0.340	**0.712**	0.180
10. HMS use degree for evaluation and reward (HER)	**0.785**	(0.168)	0.028
Variance explained (%)	**24.53**	**19.20**	**14.28**
Cronbach alpha	**0.78**	**0.81**	**0.75**

emerged. (See Figure 2.)

- We named the first one "Stretch Goals and Reward Package" because it indicated that three items are closely linked: difficulty of budget objectives, degree budgets are used to evaluate and reward performance, and degree HMS measures are used for evaluation and reward.
- We named the second integration factor "Non-Accounting Broad Scope Package" because it revealed close links between four items: HMS use for evaluation of customer, internal process, and learning and innovation performance, including a negative relationship with the degree of budget detail.
- We named the third integration factor "Interactive Piloting Package" because it shows close links between three items: degree of budget participation, degree of budget detail, and frequency of HMS review.

To determine the basic strategic orientation of the firm, we also asked respondents to rate the degree to which they agreed with eight items covering that topic. These items were derived from a previously published survey instrument.[6]

Our second factor analysis separated the eight items into two characteristic strategies: differentiation and cost leadership. The first factor linked the items related to a strategy based on quality, on-time delivery, customer responsiveness, and availability of products—all activities that can generate a differentiated, unique product/service leadership. The second factor linked two items that correspond to a cost leadership strategy.

In order to evaluate the impact of these two strategies on the three MCS packages we named, we utilized a different statistical technique—Partial Least Squares analysis (PLS)—because it is suitable for small samples.[7]

Results

The results show that budgets and hybrid measurement systems complement each other more than they compete with or substitute for each other. The first factor analysis revealed three control packages that designate three forms of complementarity between budgets and HMS.

The first package, "Stretch Goals and Reward Package," (Factor 1) is characterized by a high combined use of budgets and HMS to evaluate and reward performance. Companies that set high budget targets (stretch goals) and evaluate and reward performance against budget also use HMS information to evaluate and reward performance. This suggests that certain characteristics or functions of budgets and HMS are complementary, in particular those that concern evaluat-

Figure 2: The Three HMS/Budget Packages

Factor 1 STRETCH GOALS and REWARD PACKAGE	Factor 2 NON-ACCOUNTING BROAD SCOPE PACKAGE	Factor 3 INTERACTIVE PILOTING PACKAGE
Combination of high budget targets and intensive use of budgets and HMS to evaluate and reward performance	Combination of loosely applied budgets and nonfinancial indicators covering a range of performance domains (customers, processes, innovation, human resources, etc.)	Combination of a high degree of participation in the budgeting process, detailed budgeting, and frequent monitoring of HMS performance

ing and rewarding performance. They demonstrate that these two control tools do not compete with or substitute for each other but that they can be put in place simultaneously. In this way, companies are enlarging the criteria they use to measure and reward performance.

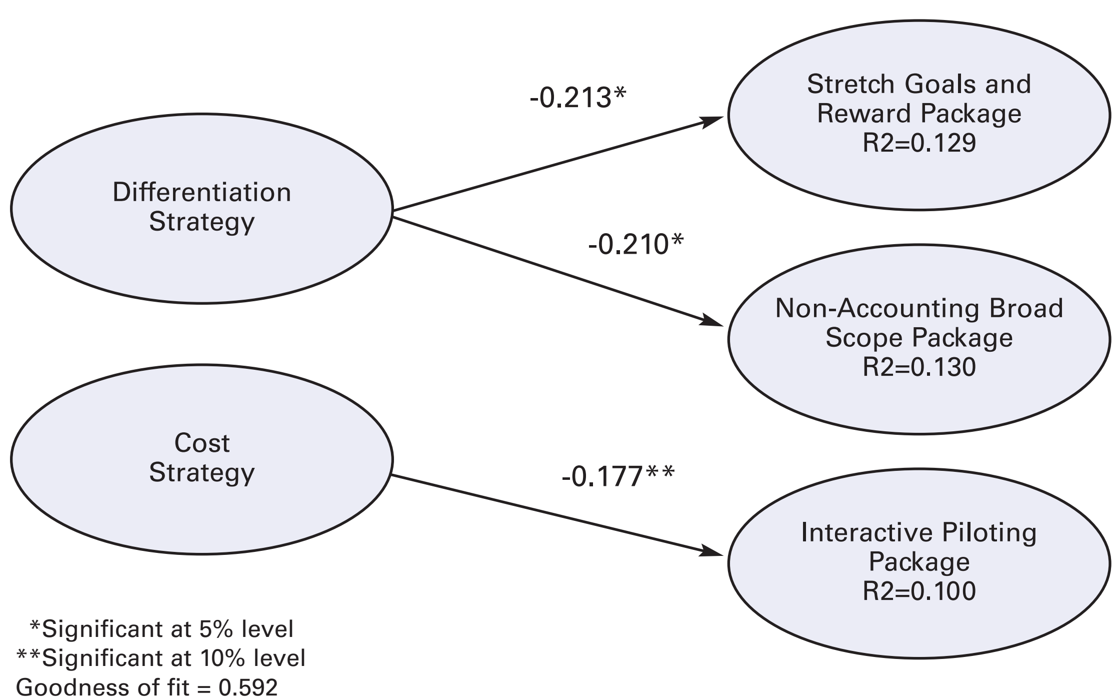
The second package, "Non-Accounting Broad Scope Package," (Factor 2) mixes nonaccounting budget style and broad scope HMS. A strong presence of HMS items covering a range of performance domains is associated with a very low level of budget detail (and vice versa). It suggests that the content of these HMS indicators is highly developed when companies use broad-brush budgets, i.e., when budgets are applied loosely. In the other direction, this result suggests that HMS items are little used in contexts where companies use "tight" budgeting discipline.[8] This first result shows that complementarity between budgets and HMS systems requires a certain degree of compatibility among their practices.

The third package, "Interactive Piloting Package," (Factor 3) characterizes an interactive use of budgets and HMS. HMS and budget indicators are monitored more often in companies that use detailed budgets and encourage managers' participation in setting objectives.

Our PLS analysis between strategy and control packages revealed a significant negative relationship between differentiation strategy and stretch goals and reward control package (see Figure 3). This result suggests that companies that pursue a differentiation strategy set low budgetary goals and make little use of budgets and HMS to evaluate and remunerate performance.

The PLS analysis also determined a positive significant relationship between differentiation strategy and the Non-Accounting Broad Scope control package (see Figure 3). Companies that adopt a differentiation strategy are associated with loose budgetary control (i.e., budgets are not very detailed). They also are linked with a highly developed HMS (i.e., there are many nonfinancial performance measures).

Figure 3: The Relation between Strategy and HMS/Budget Packages



Finally, the PLS analysis indicated that a cost leadership strategy is positively and significantly linked to an Interactive Piloting Control package (see Figure 3). Cost leadership companies favor participation in setting budgets and monitoring results frequently, particularly the financial results provided through HMS.

On the other hand, our results do not support any significant linkages between a Differentiation Strategy and an Interactive Piloting Control package nor between a Cost Leadership Strategy and either a Non-Accounting Broad Scope control package or a Stretch Goals and Reward Control package.

Managerial Implications

The first finding implies that complementarity between budgeting and HMS (such as the balanced scorecard) requires that these two control systems adopt compatible forms. For example, by associating tight and detailed budget controls to the Non-Accounting Broad Scope Package, it will be more difficult to implement a balanced scorecard (which measures other dimensions than just financial performance to encourage managers to concentrate on leading variables—customer, process, or innovation—that ultimately impact financial variables) because the managers will focus on the budget reporting items at the expense of nonfinancial indicators such as customer satisfaction. Likewise, the implementation of detailed budgets in order to monitor performance precisely would not work well without managers' active participation or without frequent monitoring of balanced scorecard nonfinancial variables (i.e., the Interactive Piloting Package). Finally, when putting in place high budget targets and evaluating and rewarding based on these targets, it is necessary to set balanced scorecard targets to evaluate and reward performance (as with the Stretch Goals and Reward Package). Without them, the balanced scorecard would lose its credibility in the eyes of the managers, so it would be more difficult to promote its use.

The second finding points to the originality of our research—namely, that with more advanced statistical techniques (factor and PLS analysis), it is possible to identify patterns of complementarity between budget and HMS systems and alignment of the complementary control packages and a company's strategy. A company pursuing a differentiation strategy (e.g., based on innovation) cannot achieve it with tight and detailed budget controls focused on financial performance results or without taking into consideration nonfinancial performance. For example, piloting a differentiation strategy will require a balanced scorecard associated with flexible budget controls (few detailed budgets) rather than the opposite. A manager would have difficulty achieving his or her objectives within a differentiation strategy if the control system were centered primarily on challenging financial budget objectives linked to rewards.

A company pursuing a cost domination strategy requires a high degree of precision and frequent monitoring of both financial and nonfinancial results. This strategy is implemented best with complete and detailed budgets and frequent monitoring of results without it being necessary to use a highly developed balanced scorecard with many indicators. Consequently, our methodological approach might be extended to discover additional patterns of complementarity between these two cybernetic controls and other administrative and/or cultural controls.

As an integral part of his or her mission, a controller should identify the most appropriate indicators to inform managers about their performance. There are several tools, including the balanced scorecard and budgets, that he or she needs to configure, taking into consideration the users, the organization, and the company's strategy. Therefore, a controller's competencies are not only technical and instrumental, but they should also be managerial in order to understand how to adapt these tools to the context and to the environment.

Our research results offer a timely reminder that management controllers have numerous options in designing control systems. During the past several years, companies needed to tighten financial controls to maintain performance. Now it is time to reconsider how to balance the budget and HMS packages to make them more complementary. Our study suggests that it is possible to implement them in a complementary way that is aligned with the company's strategy. ■

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Endnotes

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Appendix 1: Survey Instrument

Measurement of budgets					
To what degree do managers participate in establishing their own budgets?	Very weakly 1	 2	 3	 4	Very strongly 5
To what degree do budgets go into detail?	Very weakly 1	 2	 3	 4	Very strongly 5
How difficult is it to achieve budget goals?	Very weakly 1	 2	 3	 4	Very strongly 5
What is the frequency of budget updating?	Daily 1	Weekly 2	Monthly 3	Quarterly 4	Semi-annually 5
To what degree are budget results used to evaluate and remunerate performance?	Very weakly 1	 2	 3	 4	Very strongly 5
Measurement of HMS					
What is the frequency of monitoring and updating of measures?	Daily 1	Weekly 2	Monthly 3	Quarterly 4	Semi-annually 5
How significant are financial measures?	Very weak 1	 2	 3	 4	Very strong 5
How significant are customer measures?	Very weak 1	 2	 3	 4	Very strong 5
How significant are internal process measures?	Very weak 1	 2	 3	 4	Very strong 5
How significant are innovation and learning measures?	Very weak 1	 2	 3	 4	Very strong 5
To what degree are the results of nonfinancial measures used to evaluate and remunerate performance financially?	Very weak 1	 2	 3	 4	Very strong 5
Measurement of strategy					
How could you qualify the strategic priorities of your company during the past three years?	Strongly disagree				Strongly agree
Providing high-quality products and services	1	2	3	4	5
Ensuring short delays to provide services or products	1	2	3	4	5
Providing high-quality after-sale service	1	2	3	4	5
On-time delivery	1	2	3	4	5
Keeping low prices	1	2	3	4	5
Providing permanent availability of products	1	2	3	4	5
Achieving lower cost than competitors	1	2	3	4	5
Introducing new products or services	1	2	3	4	5