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**Management control for stimulating different types of creativity:
The role of budgets**

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Management control for stimulating different types of creativity:

The role of budgets

ABSTRACT: In this paper, we examine the role of budgets, as a central instrument within the management control system, in a creative context. In particular we investigate whether Simons' (1990, 1991, 1995) claim that stimulating creativity requires an interactive use of management controls, holds when differences in the kind of creativity are taken into account. We hereby distinguish between expected creativity (for open, self-discovered problems) versus responsive creativity (for closed, presented problems) (Unsworth, 2001). Based on a comparative study involving four creative organizations, we find indications that creative firms being mainly characterized by expected creativity use their budgets in a more interactive way. In creative firms in which responsive creativity is most important, the budgets are used in a rather diagnostic way. This study makes an important contribution to the management control literature by acknowledging that a diagnostic use of budgets does not per se stifle creativity. Instead, it is important to understand that the specific creative context might have implications for the way in which management control instruments are used to sustain the creative process.

KEY WORDS: expected creativity, responsive creativity, diagnostic and interactive budget use

INTRODUCTION

The purpose of this paper is to examine how budgets are used in different creative contexts. In this way, we investigate whether the overall claim that stimulating creativity requires an interactive use of management controls (Simons, 1990, 1991, 1995) holds when we acknowledge that there can be variation in the types of creativity required.

Recently, accounting researchers have become more and more interested in examining the relationship between management control systems (MCS) and creativity (Davila et al., 2009). In particular, understanding how an organization can use its MCS to support creativity has emerged as an important research question. Important, however, is that a general recommendation to increase the use of MCS in order to support creativity might be premature because of conflicting empirical evidence regarding its actual effects (Bisbe and Otley, 2004). On the one hand, Simons (1990, 1991, 1995) suggests that MCS help driving and supporting creativity. The main reason is that MCS may provide a priority agenda and a stimulating forum for the generation and implementation of creative ideas. On the other hand, a number of studies suggest that creative contexts do not require high levels of management control. Here formal MCS are seen as deterrents for creativity and for coping adequately with the uncertainty associated with, for example, product innovation (Abernethy and Stoelwinder, 1991; Amabile, 1998).

Some authors have pointed at the different styles of use of MCS (Ahrens and Chapman, 2004; Bisbe and Malagueño, 2009; Chapman, 1998; Davila, 2005; Simons, 1990, 1991, 1995) as explanations for these apparently inconsistent studies. In particular, Simons' framework contributes to explaining the contradictory findings regarding the direction and significance of the effects of MCS on creativity and innovation as reported in prior literature. Following Simons' reasoning, the studies finding that MCS hinder creativity are partial to the extent that they focus exclusively on thermostat-like diagnostic uses of MCS, and ignore the implications of interactive uses of MCS. On the contrary, the studies confirming that MCS act as facilitators of successful creativity are more comprehensive, in the sense that they capture the presence of interactive uses of MCS.

While Simons' framework (1990, 1991, 1995) provides insights that help understand how MCS contribute to creativity, his framework does not discriminate between *different types of creativity* that may require variation in the style of use of MCS. Similarly, even though accounting researchers have started to investigate the impact of control on creativity (e.g. Chang and Birkett, 2004; Kachelmeier et al., 2008; Kachelmeier and Williamson, 2010), few have treated creativity as a multi-dimensional construct (Ahrens and Chapman, 2004). In this paper, we use the framework of Unsworth (2001) to distinguish between *expected* and *responsive* creativity, which represents a dichotomy on the continuum of creativity problem types ranging from closed, presented problems to open, self-discovered problems. Prior accounting research supports the notion that an organization's MCS is contingent upon contextual factors (Langfield-Smith, 1997). Specifically in this regard, we examine in detail how budgets – which are an integral part of MCS – are used in different types of creative contexts, and with what consequence.

Our decision to focus on the use of budgets in a creative context is based on two reasons. First, budgets serve as the cornerstone of the MCS process and are linked to virtually every aspect of management

accounting. They are widely used due to their ability to provide a comprehensive overview of the many activities going on in an organization (Ferreira and Otle, 2009). It turns out that budgets belong to the basic sets of MCS (Sandino, 2007) and that they are among the first MCS instruments implemented in almost all types of organizations (Davila and Foster, 2005, 2007; Granlund and Taipaleenmaki, 2005). Second, it is entirely possible that the reliance on budgets will not necessarily diminish in importance in different creative circumstances, but that their role or use will be different. Differentiating budgets in terms of their usage (interactive vs. diagnostic) and creativity in terms of creativity types (responsive vs. expected) will then allow us to investigate more precisely the relationship between budgets and creativity.

A primary purpose of this paper is thus to investigate whether stimulating creativity requires an interactive use of budgets in different creative contexts (expected versus responsive) and to explore the nature of this creativity-budgetary control relationship. Our research method consists of a comparative case study involving four creative organizations with different levels of responsive and expected creativity. Our findings indicate that creative firms striving mainly towards expected creativity use their budgets in a more interactive way, while creative companies for which responsive creativity is more important use their budgets in a more diagnostic way. However, in contrast to what we expected based on Simons' work (1990, 1991, 1995), the diagnostic use of budgets in the context of responsive creativity does not stifle creativity, but can instead provide a clear stimulus to becoming more creative. We can conclude that it is important to know the specific creative context in order to correctly understand the way in which management control instruments are used to sustain the creative process.

In the following sections, we first review the relevant literature concerning creativity and budgeting, based on which we formulate two research propositions on the interactive versus diagnostic use of budgets in the context of various degrees of responsive to expected creativity. Next, we explain our research method, followed by the within-case analysis of the results. Finally, we discuss our cross-case findings and evaluate our research propositions. The last section draws our conclusions and provides suggestions for further research.

THEORY AND PROPOSITIONS

This section starts with defining the concept of creativity and introduces different creativity types, followed by an overview of the management control literature focusing on budgetary use. These reviews allow us to formulate two propositions on creativity type and budgetary use.

Creativity as a multi-dimensional construct

“Organizational creativity is the creation of a valuable, useful new product, service, idea, procedure, or process by individuals working together in a complex social system (Woodman et al., 1993, p.293).” An idea thus must have both novelty and usefulness to be considered creative (Amabile, 1988). According to Zhou and George (2001), creativity differs from organizational innovation in that creativity is the generation of new and useful ideas, whereas innovation involves the successful implementation of creative ideas. Thus, employees' creativity is often the starting point for innovation. While many accounting researchers have

suggested that creativity is important for the long-term survival of organizations (e.g. Kachelmeier et al., 2008), few have considered creativity as a multi-dimensional construct (Ahrens and Chapman, 2004). The fact that most authors treat creativity as a singular entity reflects their belief in homogeneity, but hinders a finer-grained analysis of the processes and the factors involved in creativity (Unsworth, 2001). The importance of such conceptual distinctions pervades management control research.

Outside of the accounting literature different categorizations have been developed to recognize the multi-dimensional nature of creativity. Sternberg (1999) defines eight types of possible creative contributions based upon their relationship to the field (e.g., forward incrementation or conceptual replication). A painting or invention or accounting paper would be categorized depending on how it propels or moves the existing paradigm. Similarly, Csikszentmihalyi's (1999) theory looks at the interaction between domain, field and person. In Csikszentmihalyi's theory, the domain, field, and person work interactively. If the field did not believe that the later work of Van Gogh was creative in the domain of art when he was still alive, then that means that his work was not creative at that time. These categorizations are useful, but as they focus upon the end product, they also lead to two problems (Unsworth, 2001). First, the sample of ideas becomes biased toward more successful ideas because only ideas that reach the end of the process are studied. Second, the categorization encourages retrospective analysis of the process, which may lead to bias in recollection.

To enable prospective analysis, Unsworth (2001) categorizes creativity based upon an individual's initial engagement in the creative activity. According to his framework, two questions underlie engagement in the creative process. First, why do people engage in creative activity? And second, what is the initial state of the trigger? The first question involves the drivers for idea generation (Unsworth, 2001). For example, a wish to be creative or a desire to achieve a goal state represents an internal driver for creativity. However, an individual may engage in a behavior because the situation requires that it be performed. Thus, job descriptions (for example given to a research and development scientist) or experimental requirements (for example to write poems) present external demands for creativity.

The second dimension of creative engagement is related to categorizing the problem itself (Unsworth, 2001). A true closed problem is one that is presented to the participant, when the method for solving the problem is known. Within the organizational arena, an example of a closed problem is a task requirement to make specific, well-understood changes. Open problems, on the other hand, occur when the participant is required to find, invent, or discover the problems (Getzels, 1975). Responses to a suggestion scheme illustrate outcomes of organizational open problems. Kachelmeier et al. (2008), for example, ask students to design rebus puzzles after being given instructional examples of how to solve such puzzles. Some students experienced this task as a true closed problem in the sense that they tried to submit rebus puzzles that stayed as close as possible to the puzzles discussed in the instruction phase. Other students saw this task more as an open problem, and came up with new perspectives and ideas to design rebus puzzles.

Using the two dimensions of driver type and problem type, Unsworth (2001) derives a matrix with four creativity types: (1) responsive creativity (responding to presented problems because of external drivers), (2) expected creativity (discovering problems because of external drivers), (3) contributory creativity (responding to presented problems because of internal drivers), and (4) proactive creativity (discovering

problems because of internal drivers). Given the exploratory nature of this paper, we are primarily concerned with the creativity types caused by external drivers for idea generation (i.e. responsive (1) versus expected (2) creativity), which we can observe in the context of "professional creatives", because these represent the most visible types of creativity in an organizational environment. Examples of professional creatives are architects, engineers, and R&D scientists, which all present the incumbent with *a demand for creativity*, in other words, there is an external driver for their engagement. Because we will specify the degree to which the problems are open or closed, we are able to classify particular instances as responsive or expected creativity.

However, this dichotomy can be refined, as gradations of responsive versus expected creativity might be present in creative contexts. Also, the same creativity outcome might represent different types, depending upon the specific situational circumstances in which it occurs. For example, a new product design might be classified as responsive if the designer was given explicit specifications and methodologies, but expected if the specifications were not formulated.

Style of budget use

Budgets¹ are an integral part of the MCS in most firms (Abernethy and Brownell, 1999; Davila and Foster, 2005, 2007; Granlund and Taipaleenmaki, 2005; Hansen and Van der Stede, 2004). Chapman (1998) suggests that budgets serve two important roles: as a tool for pre-planning activity (accountants monitor adherence to pre-determined courses of action) or as a tool to manage the business forward (accountants look for future possibilities and outcomes). Otley (1999) provides a framework for analyzing the operation of management control systems in terms of five central themes: (1) objectives, (2) strategies and plans for their attainment, (3) target-setting, (4) incentive and reward structures and (5) information feedback loops. When analysing the use of budgets as a control mechanism along these five themes, Otley (1999) finds that most of the performance variables and objectives are financial, with an emphasis on the profitability of the business. Further, budgets are based on the strategic action plan and give the best estimate for short and long term financial planning. Target setting is an important part of budgeting and the reward structure is often based on the attainment of budget targets. And finally, budgets allow feedback to be given in the short run (e.g. monthly) in the case where targets differ from what has effectively been realized.

In this paper we focus on the style of budget use. Based on Simons' work (1990, 1991, 1995), we distinguish between a diagnostic use of budgets and an interactive use of budgets. In a diagnostic role, "budgets serve the traditional purpose of evaluating performance and attributing responsibilities for outcomes to particular organizational functions or members" (Abernethy and Brownell, 1999, p. 191). This style of budget use implies a strong focus on financial targets, no evaluation of these targets is made during the year and bonuses for employees are based on the achievement of the preset targets. In that way, budgets are rather used on an exception base to monitor organizational outcomes and correct deviations from preset standards of performance (Bisbe and Otley, 2004).

¹ Horngren et al. (1999, p. 10) define a budget as "the quantitative expression of an action plan and an aid to the coordination and implementation of the plan".

In an interactive role, budgets are used to stimulate dialogue and play a role in maintaining or altering patterns of organizational activity (Bisbe and Otley, 2004; Langfield-Smith, 1997). According to Abernethy and Brownell (1999, p. 191), an important characteristic of interactive use of budgets is the continuous exchange of information between top management and lower levels of management, as well as interactions within various management levels but across organizational functions. Interactive use occurs when top management “uses the planning and control procedures to actively monitor and intervene in ongoing decision activities of subordinates. Since this intervention provides an opportunity for top management to debate and challenge underlying data, assumptions and action plans, interactive management controls demand regular attention from operating subordinates at all levels of the company.” (Simons, 1990, p. 136). In such a setting, budgets may activate organizational learning. Simons (1991), for example, shows that the interactive use of budgeting provides a vehicle to overcome organizational inertia, communicate new strategic agendas, establish and implement targets and ensure continuing attention to new ideas and strategic initiatives. Also, Abernethy and Brownell (1999) show that an interactive way of budgeting plays an important role in facilitating the effective implementation of a strategic change. In a product innovation context, Bisbe and Otley (2004) provide empirical evidence that through debate and dialogue, and evaluation of alternatives and integrated problem-solving, an interactive use of MCS introduces new and useful ideas to improve process efficiency and product effectiveness, eventually improving performance.

Although the studies above suggest that mainly an interactive use of budgets will foster creative outcomes, they do not incorporate a well-defined differentiation between different types of creative context, in which a different style of budget use might occur. In order to examine the implications of this creative context-control effect, this paper sets forth two expectations in which different relationships between creativity and the style of use of budgets are made explicit.

Linking the style of budget use to creativity

In this paper we investigate whether budget use is adjusted to different types of creativity that are strived for, given that the literature predicts an interactive use of the MCS in a creative context. In terms of the types of creativity, we focus on the problem type axis in Unsworth’s (2001) framework, which proposes a continuum from open to closed problem types. Getzels (1975) states that open problems, as compared to closed problems, require the problem to be formulated by the individual. However, before the formulation can begin, a problem must be identified. Therefore, creatively solving an open problem involves both scanning the environment to find a problem and then defining the problem in such a way that it can be solved (Unsworth, 2001). The processes of expected creativity, therefore, may involve more scanning and defining activities than those of responsive creativity, even though both types of creativity are triggered by external drivers for engagement (Unsworth, 2001). When fulfilling expected creativity tasks, the interactive use of MCS may introduce purpose and structure and eventually promote useful creative outcomes (Simons, 1991, 1995, 2000). Top managers use interactive control systems “to stimulate experimentation” (Simons, 2000, p. 218) and “to stimulate opportunity- seeking and encourage the emergence of new initiatives” (Simons, 1995, p. 93). Since they “encourage new ideas and experiments at all levels” (Simons, 1995, p. 92),

“interactive control systems help to satisfy innate desires to create and innovate” (Simons, 1995, p. 155). In providing an agenda and a forum for the regular face-to-face dialogue and debate needed, interactive budgets may therefore help “to collectively make sense of changing circumstances” (Simons, 1995, p. 218). After all, for expected creative tasks both the problem and the method for solving it, still need to be identified. According to Simons, top managers will then use interactive control systems “to communicate where to look” (Simons, 1995, p. 93). The interactive use of MCS is thus likely to act as an internal integrative capability (Verona, 1999) that addresses the parts-whole problem which emerges from the proliferation of ideas, people and transactions involved in the creative effort (Van de Ven, 1986). Collective sense-making through the interactive use of budgets may then allow people to make sense of messages in the environment in conversation and interaction with their colleagues, constructing “shared understandings” along the way. Specifically in an expected creative environment, we expect this interactive style of budget use to work out quite well.

In the context of responsive creativity tasks, however, individuals typically tend to face rather closed problems. A true closed problem is one that is clearly formulated and that has a known method for solution (Unsworth, 2001). Consequently, the participant’s autonomy in choosing tasks and developing problem-solving techniques is rather limited. Within the organizational arena, an example of a closed problem is a task requirement to make specific, well-understood changes. For responsive creativity, autonomy in choosing tasks and problem solving methods may therefore be limited. In such an environment, we expect managers to use budgets in a more diagnostic way since the creative problem and the method for solving are already presented to participants. Diagnostic budgets are then rather used as roadmaps in global outlining creative initiatives and procedures. As such, budgets will serve more as feedback systems to monitor creative outcomes and correct deviations from preset standards and known performance variables (Simons, 1995).

Following upon the arguments above, we believe that for a creative process to be successful, there must be a supportive context including supportive MCS. More specifically, the implications of an interactive and diagnostic use of MCS support our expectation that creative firms, striving mainly towards expected creativity, use their budgets in a more interactive and less diagnostic way than creative companies striven more towards responsive creativity. As such, we propose that:

Pa: The higher the degree of responsive creativity required, the more budgets will be used in a diagnostic way.

Pb: The higher the degree of expected creativity required, the more budgets will be used in an interactive way.

RESEARCH METHOD

We use case studies (Yin, 2003) to gain insight into the relationship between different types of creativity and budget use. Case research is a suitable method for exploratory research when gaining in-depth understanding is the primary objective and the phenomenon to be investigated is difficult to quantify, not

well understood and needs to be studied within its natural setting (Yin, 2003). This project forms a part of a larger case study project consisting of a number of different studies investigating the link between management control design and use and creativity. While not the original focus of these other studies, we were struck by the fact that budgets use appeared to be quite different amongst the cases. Based on the preliminary insights gained from this broad project, we contacted four additional professional creative companies for a more in-depth study, selected because their activities reflect the different types of creativity under study in this paper. Further, we have tried to keep other context variables as similar as possible. We have followed the selected companies over a period of two years. We call them FURNITURE, INTERIOR, TV and MEDIA because for confidentiality reasons we cannot disclose their real names. Figure 1 gives an indication of how the four cases can be situated relative to each other on the continuum ranging from the most responsive type of creativity at one extreme to the most expected type of creativity at the other extreme.

[Insert Figure 1 here]

Panel A of Table 1 provides a number of key characteristics of the companies. FURNITURE is specialized in tailor-made design furniture, INTERIOR is active in the interior architecture sector, TV is a production house of TV programs and MEDIA is a communication agency. All firms are relatively small in terms of their number of employees (less than 75) and are established for several years (between 5 and 35 years). All have a limited formal structure except for MEDIA which has recently developed to a more formal structure with five departments. When analyzing the cases and interpreting the results, we are aware of these contextual variables and their potential impact on the use of budgets.

[Insert Table 1 here]

Panel B of Table 1 provides an overview of the data sources used. For every case, we were able to have various interviews with the managing director and at least one creative employee. In two cases, we also interviewed the production leader, while in one case, we also interviewed the account manager (who was responsible for sales). Each interview took about one hour and a half, and was especially focused on obtaining information on the way budgets were used in the organization. Besides, we analyzed a large number of documents, ranging from the company's websites to articles about their creative activities and prizes won in specialized and popular media. We could also get hold of various PowerPoint presentations, explaining their way of working both internally and with customers.

The interviews were tape-recorded and literally transcribed. These interviews, complemented with the documents gathered, produced a large amount of information, which we analyzed in two stages. We first undertook a within-case analysis to gain insights in each particular case, followed by the cross-case analysis in the next stage (Eisenhardt, 1989; Yin, 2003). During the within-case and cross-case analyses we set up thematic matrices (Miles and Huberman, 1998) which helped us to present the most interesting issues in a structured way. The thematic matrices reflect the relevant themes incorporated in our coding scheme, based on our literature review presented in Section 2. In this coding scheme, we subdivided each code into several specific subcodes. Coding our interview transcripts and documents was supported by the software package QSR NVIVO 9. Using NVIVO 9 forces researchers to engage in a highly reliable research process. Working

in NVIVO was used to structure the coding process and to support the classification of the relevant themes when analyzing the raw texts. NVIVO also allowed us to insert analytical comments, or "memos", which were further analyzed together with the coded data. Once the data were coded, we used NVIVO's search and retrieve tools to bring back the text chunks coded along a particular code, so that we were able to think about the relevant issues based on all gathered information and could fill out the thematic matrices guiding our analysis. Table 2 provides summaries of the extensive thematic matrices used.

In terms of the quality of our study, we did not only pay attention to reliability but also to the validity of our study (Silverman, 2000). For obtaining high validity, triangulating the information is of crucial importance. As Yin (2003) emphasized, results get more convincing and accurate when they are confirmed by different information sources. As indicated above, we interviewed various informants in each company, in order to make sure to rely not on just one point of view. In addition, we triangulated our interview material with the document material gathered. Another way to increase the validity of this study was that researcher triangulation characterized our analysis process (Eisenhardt, 1989): the independent reading and analysis of the transcripts by all three authors, subsequently being discussed jointly, increased the depth of the analysis. Overall, our analytical process enabled us to keep our conclusions rooted in the participants' perceptions, and also to simultaneously benefit from the "big picture" view provided by the case summaries and the details embedded in our case material.

The interviews allowed us to check and categorize the creativity type and to reconstruct the budgeting process and the way budgets are used. To make sure we had a correct understanding of the creativity types (Unsworth, 2001) in each case, we examined for all cases the degree to which the problem has been formulated before the creator begins the process. The problem type ranges on a continuum from closed, presented problems to open, discovered problems. Further, particular emphasis was placed on understanding companies' use of MCS and more specifically on how budgeting is used. Some of these pieces of text described a budgeting system in an interviewee's words, while others represented the interviewee's perceptions of the reasons a particular mechanism was used. We captured the budget issues in each company by focusing on the five themes, discussed by Otley (1999) when analyzing the role of budgets as a part of the MCS. In other words, we paid attention to the role of budgets when setting objectives, for the development of missions, plans and strategies, for target setting, incentive compensation and reward structures, and information feedback loops. Based on this understanding, we evaluated the degree to which budgets were used in a rather diagnostic versus a rather interactive way. When systems are used interactively, four conditions are typically present (Simons, 1987): (1) information generated by the MCS is an important and recurring agenda addressed by the highest levels of management; (2) the process demands frequent and regular attention from operating managers at all levels of the organization; (3) data are interpreted and discussed in face-to-face meetings of superiors, subordinates, and peers; and, (4) the process relies on the continual challenge and debate of underlying data, assumptions, and action plans. Based on these four conditions we could categorize the cases on the continuum of diagnostic versus interactive use of budgets.

Since we had to classify the case companies in terms of the need for different types of creativity, and in terms of the budgeting process used, the analytical process was somewhat interpretive. However, we tried to

minimize the subjectivity by our researcher triangulation, and by moving back and forth between the interview transcripts and the documents, our own case descriptions, and our case summaries during the analysis.

WITHIN CASE RESULTS

In this section we present and analyze the four cases. After a short introduction of each case, we analyze its position on the creativity type continuum (Figure 1) using Unsworth's (2001) problem type characterization. Next, we study the use of budgets. More specifically, we describe budgeting practices in the case companies in terms of goal setting, incentive compensation formula, development of new missions and strategies, and planning guidelines and targets as important budget issues (Otley, 1999). Based on these descriptions, we evaluate the degree to which each of these companies use their budgets in a rather diagnostic versus rather interactive way. Table 2 summarizes the key dimensions and major findings. The order in which the cases are analyzed in the following paragraphs reflects how we classified them along the creativity-type continuum from more responsive to more expected creativity.

[Insert Table 2 here]

FURNITURE

FURNITURE creates and manufactures design furniture. The company was created between 5 and 15 years ago and employs between 25 and 50 people. FURNITURE's products consist of project-driven and customized design furniture. This creative sector is regarded as a tough business since design furniture is no basic need. FURNITURE plays a major role in the niche market of tailor-made design furniture because of its use of a unique technology allowing it to shape the furniture according to the desire of the customer. In addition, it tries to build up an open collection with more focus on sustainable designed and manufactured items. The company's strategy is thus based on two pillars. On the one hand, FURNITURE tries to surprise the world with a mix of technology and design – part of it is avant-gardism. On the other hand, it tries to provide a continuum on the production side by fostering product sustainability.

FURNITURE is an organization with an open culture, short communication lines and a flat structure. Since the company is relatively young and small in size, the formal structure of the company is rather simple and limited. As the managing director notes: "*We are light on organizational hierarchy*". Daily management of FURNITURE is in the hands of the managing director, who is responsible for administration, HR and sales management. Besides the general director, there is a creative director who leads the designers, architects, etc. The creative director is also heading a design cell of four account managers who continuously follow up the sales agents and customers. Their task is essentially to translate customer's demand towards the company's activities. Further, an accountant is responsible for financial management and one back office person is in charge of operational administration. Creativity is believed to be inherent to both the company and the people. FURNITURE is in the luxury position that it receives many job applications and that it can select the upper best candidates. From a financial performance point of view, since the financial crisis, FURNITURE is profitable again and more successful than its competitors.

Organizational creativity at FURNITURE

Products of FURNITURE are highly customized and tailor-made design furniture: projects for particular customers determine the design and development of the furniture. As the creative director comments: *“Once we tried to design something without a concrete question by a customer, but this was a commercial and financial fiasco. From that point on, all furniture in our collection was originally designed and developed for a certain project”* (creative director, FURNITURE). At the same time, some of the exclusive pieces become regularly incorporated as a part of the open collection. This open collection is made available to the broad public and consists of different pieces of furniture that are fine-tuned towards the broad public needs. Typically, such pieces are lower in cost, vary in sizes and colors and are produced in a more sustainable way. *“In 1999, we designed a very specific ‘piece of furniture’ using exclusive materials. While this ‘piece of furniture’ became our big break-through, one year later, sales dropped. A major reason for this was that it was too expensive. As a result, we started to look for some sustainable design solutions. Such solutions were however no rocket science as various sustainable design standards were increasingly being developed and promoted by a wide variety of educational and governmental institutions. As such, we informed ourselves and decided to reproduce the ‘piece of furniture’ using recycled materials which require little energy to process. As a result, the ‘piece of furniture’s selling price dropped and its life cycle significantly increased”* (production director, FURNITURE).

Altogether, initially FURNITURE customizes its products to the highly detailed requirements of its clients and the problem type the creative people are confronted with can be called closed. For example: *“We designed a theatre chair for a newly-built theatre. We worked three years on it, in order to make the functionalities and characteristics entirely match with the requirements and specifications of it, desired by the architect of the theatre, who was the principal of this project”* (managing director, FURNITURE).

The type of creativity is therefore definitely responsive and functional. The creative director confirms this view: *“Modern furniture design today tends to avoid furniture or ornaments that are not functional or that impair the client’s ability to use the room or space. To this end, we look for the perfect balance between different parameters: aesthetics, functionality, ergonomics, some regulations about fire safety, sustainability, and also the production cost. Depending on the context, this balance may be different. Anyhow, over time, we have mastered the design techniques that enable us to consider these parameters and to respond to the client’s requirements in an optimal way”* (managing director, FURNITURE).

Budget use at FURNITURE

Setting budgets at FURNITURE involves the managing director, the production head and the accountant. The managing director is responsible for the fixed cost budget; the sales agents are responsible for the sales budget. While the data originate from diverse parties in the organization, there are only limited standard procedures for the budgeting process: FURNITURE uses a budgeting module within its accountancy software package.

The main objectives of using budgets at FURNITURE are (1) to control costs (given the specific projects context) and (2) to structure and communicate the details of a sustainable open collection. With regard to the first objective, and as mentioned earlier, furniture pieces of FURNITURE's collection are rooted in specific projects in which the in-house creative team closely cooperates with different types of customers. Performance upon request is therefore an important driver of FURNITURE's business. In that specific, highly uncertain context, FURNITURE sets up budgets in a very conservative way. As such, the budgeting process is cost based, in that the managing director starts with considering which costs FURNITURE certainly needs to pay. Based on this information, he is able to set income targets. *"What we budget are the fixed costs. Based on these, we can make an estimation of what we need to get in for recovering these. For example, as the uncertainty was that high in 2009, we really had to lay off some people as we got too few assignments and people were sitting here doing nothing"* (managing director, FURNITURE).

Other budgetary items that are related to specific projects (sales, investments, ...) remain as variable as possible and are flexible throughout the year, because the speed at which projects can come in or are discarded again is very high: *"I try to make a budget in order to verify what figure should be on our account to keep on running, but more than this is impossible"* (managing director, FURNITURE). *"I can get an assignment tomorrow that doubles our turnover and I did not expect it yesterday. It is part of our business, you have to cope with these uncertainties"* (one of the account managers, FURNITURE).

FURNITURE's budgets are imposed top-down and do not explicitly reflect the development of new projects and strategies. Besides, budgets have limited guiding power as target setting within FURNITURE is conservative and based on historical data. Related to this, only the sales department, the production department and the logistics department have budget responsibility at FURNITURE. One important reason for this is that while cost control plays an important role for FURNITURE, at the level of special projects, management tries to make sure that cost concerns do not intervene with the interests of the creative designers. As the managing director remarks: *"Specific projects, like our 'piece of furniture' in 1999, can boost our business. In that sense, designers who are working on specific projects do not need to care about budgetary constraints. Instead, they need to care about fresh ideas, positive vibes and functional designs and make sure that we can design exactly what the client wants."*

Furthermore, and different from the sales people, creative people at FURNITURE have a fixed income. The interviewees did not consider financial incentives to be necessary to stimulate creative performances as most of these people are highly intrinsically motivated and get recognition inside and outside the firm.

These observations make us conclude that budgets are used in a diagnostic way. In addition, we observe that this diagnostic use of budgets can stimulate creativity. A good illustration of this is FURNITURE's strategic turnaround due to its breakthrough in the design furniture market in 1999 with its 'piece of furniture' (i.e. from a specific project piece to a sustainable collection item). Behind this strategic turn around, lies a 2000 ordered market study that showed the enthusiasm of the North-American and European market for a lower cost and a multi-color version of the FURNITURE 'piece of furniture'. Based on this study, management at FURNITURE decided to redesign and produce the original 'piece of furniture' in accordance to these market's needs and included therefore diagnostic budgetary goals (e.g., financial targets,

market share targets and business targets) in the 2001 budget. And while creative designers at FURNITURE were not responsible for the achievement of these budgetary targets, they got heavily involved in thinking and implementing sustainable design solutions that would re-vitalize the 'piece of furniture's success. As such these diagnostic budgetary goals created boundaries and focus which in turn stimulated the development of solutions. One such solution involved the creation of a 'piece of furniture' in recycled materials. In that context, people of production departments also searched more actively for manufacturing processes that require less energy, thus improving the production capacity of FURNITURE and lowering the cost price. After redesigning the 'piece of furniture', FURNITURE also started to examine other specific furniture pieces based on their redesign and reproduce potential. One such action might be redesigning a piece of furniture using different materials. As such, over time, FURNITURE succeeded to build up a global open collection consisting of more than 15 different furniture items. A diagnostic use of budgets in this closed problem context clearly positively impacted the level of design creativity by setting boundaries and creating focus to stimulate the development of solutions.

INTERIOR

INTERIOR is a dynamic interior architecture agency. The company is relatively young (exists between 5 and 15 years) and is small in number of employees (between 5 and 25 employees). The activities focus on the planning and designing of interiors for public, commercial, recreational, institutional and domestic buildings. Sometimes, INTERIOR is also responsible for the management of the implementation of such projects. In the upcoming years, INTERIOR has the desire to stay small and build up a portfolio of stunning developments.

Currently, INTERIOR is headed by only one manager, namely the managing director who is also responsible for sales. Next to him, there is one person who is responsible for project administration. The other employees are creative people consisting of interior architects and designers. The accounting function is outsourced. As the company is rather small, everybody works together and there is no formal hierarchy. The relations and communication are very informal. At INTERIOR, creativity is mainly the result of teamwork as all employees are involved in every project: they are required to think creative about the client's needs, come up with great designs, solve problems, criticize preliminary designs, etc. The final decision and responsibility, however, lies with the project leader (the project leader is most of the time someone senior from the creative cell). He or she is guiding the creative plans of the employees in order to make them more practical and efficient. At INTERIOR there is a continuous emphasis on guarding quality and make sure that all projects are delivered on time and within agreed price ranges. INTERIOR does not profile itself as the cheapest player in the sector, but it tries to compensate the higher cost for the customer with efficient work and highly creative designs. Over the last few years, INTERIOR has been awarded with various prestigious design prizes and it has grown exponentially as it has tripled its turnover. It is now at a stage in which it has strategically decided not to focus on further growth (and having to employ more people) but on staying small but exclusive. .

Organizational creativity at INTERIOR

At INTERIOR, young and creative people take care of design. They listen to the wishes and preferences of the customers, both in terms of a useful interpretation of the space and the materials desired. INTERIOR has developed some kind of a standard procedure when customers contact the firm for a new project: *“By listening to the customer, we get to know the program, the wishes and feelings of the principal. From that moment on, the assignment is considered through the eyes of the customer. A number of fundamental questions are asked so that the interior architects can grasp the possibilities in all areas. Based on this information, we start a rational analysis. We strive to find the essence of the assignment. Out of this, we start the design- and development phase”* (one of the interior designers, INTERIOR).

To come up with an initial design, the creative employees of INTERIOR use various tools which demonstrate two-dimensional and three-dimensional concepts of the space including specifications for the materials, color and form. In a continuous way, the project leader and his team not only examine the feasibility of the proposed design, they also verify whether the proposal is realizable within the limits of a realistic budget. As such, adjustments might take place on the use of space, materials, texture, colors, aesthetics, forms and visual emphasis. The proposed design is then finalized based on the customer's feedback. In a next phase, INTERIOR then translates the final design into drawings and specifications for construction, pricing and permitting. In sum, the creativity within INTERIOR is mainly responsive as its projects are required solutions to specified problems.

Budgeting at INTERIOR

Setting the budgets at INTERIOR happens on a project driven base. The customer will contact INTERIOR for a project and communicate the price he or she wants to pay for it. From a cost driven point of view, INTERIOR aims at earning a margin of 10% on this selling price. So when the client has a budget of €100.000, INTERIOR will budget the project for a cost of €90.000. Taking into account the purpose of the project space and the material preferences of the customer, the creative process for the creative employees starts. They consider specific products and materials and check whether these choices fit within the proposed budget. Most of time, there is no discussion about the size of the budget since this is determined and clearly communicated at the very beginning of the project. In other words, INTERIOR uses top-down budgets on a non-participative base, whereby the budgets provide planning guidelines for the budgetees. Further, the budgeting process is zero-based, although the project leader will always take into account the budgets of similar projects from the past. Budgets are crucial for target-setting. Target setting happens on a stretch base, although once targets are set, they are scarcely flexibly adjustable. Creative people have a fixed income and no variable remuneration is provided for obtaining budget targets. Nevertheless, obtaining the preset budget is crucial within INTERIOR. On an organizational level, and although the project leader was responsible for the continuous monitoring, the managing director considers performance in line with budgetary targets as a critical performance variable: *“It is absolutely important that they do not exceed the preset budget. For this reason, nor we nor our customers have ever faced surprises in terms of budgets. This is an important reason for INTERIOR's success. It is part of our culture”* (managing director, INTERIOR).

Based on the above discussion we can conclude that budgets at INTERIOR are mainly used in a diagnostic way. Budgets at INTERIOR, including cost and time estimations for every project, ensure important goals are achieved, but they are not used for developing new missions and strategies. One notable exception are big projects that have a high market visibility. As the managing director explains: *“Once or twice a year, we receive a big project request. From the past, we have learned that such projects typically result in budget overruns as they require a lot of resources. As such, from a short-term financial point of view, we should not accept this type of requests. However, in the long run and in the light of our reputation as an interior architect, I realize that such projects may significantly promote the market position of our company. As such, when accepting such projects, and given their potential for driving our company into a bankruptcy, I get personally involved. Budgets, in that context, play an important control device in that they ensure a continuous debate about assumptions and action plans”* (managing director, INTERIOR). Thus, in this specific context, budgets are used in a more interactive way as they focus attention on strategic uncertainties and ensure the manager’s personal attention in the decision activities of subordinates.

While creative persons at INTERIOR are heavily concerned with matching their creative proposal with the budget, we observe that these boundaries stimulate the employees’ ability to generate and implement powerful and creative ideas. As one of the interior designers claims: *“It is a big difference when a customer has a budget of €50.000 or €500.000. For us it is much easier to work with a budget of €500.000 as the design and implementation phases will face fewer constraints: we can use the best materials, the brightest colors, the newest technologies. If necessary, we can even demolish the room and rebuild it from zero. This is different from working with a budget of 50.000. Of course, when a customer only has a budget of €50.000 we cannot design a project of €500.000. Nevertheless, it’s our objective that both customers are equally satisfied. That means that for the budget of €50.000 we need to be more creative as we need to think twice about walls, ceiling and floor treatments, furniture systems, free standing furniture, accessories and plant and art locations”* (one of the interior designers, INTERIOR).

Besides, at INTERIOR, there is a “getting things done” mentality. As the managing director comments: *“The trouble with much creativity today, in my observation, is that many people with the ideas have the notion that the jobs are finished once the ideas have been suggested. It should be pointed out, however, that many of these people mistake an idea for a great painting with the great painting itself. They mistake brilliant talk for constructive action. In that sense, budgets in our company give our designers and architects at least some minimal indication of what their ideas involve in terms of costs, risks, manpower and time. That is the way, I believe creative thinking will be more likely converted into a success. After all, the proof of a brilliant idea lies in its implementation.”* In this context of stimulating creativity, the two interviewees were mainly referring to budgets from a diagnostic point of view, as the interactive use of budgets at INTERIOR had mainly the intent to reduce financial uncertainty with regard to big projects.

TV

TV is a production house for television programs, which exists since between 5 and 15 years and employs between 25 and 50 people. The formal structure of the company is rather limited: two directors head the

organization. Hereunder is an editorial department that thinks out the program, a cell of production managers who then make the program, and a cell with a few technical people. The next level consists of the production leaders, the producers and the production assistants on the one hand, and the editors in chief with their editorial employees on the other hand. TV's strategic goal is to make remarkable TV programs, in which the balance between the contents, the film/program set and the budget is right. Substance and form have to match. More than half of its projects, the so-called formats, are directly ordered by a television channel, which issues a briefing to this and other production studios. TV then prepares a project proposal to the television channel which is in line with content and budgetary requirements in the briefing. If the television channel attributes the contract to them, TV starts creating the TV program. Another part of TV's projects are developed on its own initiative and then offered to a potentially interested television channel. Content and budget are then determined by TV itself and need to be approved by the television channel.

TV has not felt the financial crisis, so even over the past years, TV has been financially healthy in contrast to various other production studios that had to stop for financial reasons. This financial success reflects its creative performance, in the sense that TV has been nominated for and awarded with various important television program prizes and that TV's programs have been sold worldwide.

Creativity in this organization is considered to be especially encouraged by the way in which the company is organized. A nice and open atmosphere is believed to be crucial in the process of producing creative products. The company therefore has an 'open' organization, meaning that TV tries to stimulate creativity and originate ideas from every angle in the organization: *"Creativity cannot be stimulated by a fixed structure... about five to six people will sit together to brainstorm, work out ideas etc... while in other television studios they have a separate creative cell. Here at TV no one is paid separately just to be creative, these are also the people who do the editing, or combine this with a running program, but we make time for this"* (production leader, TV). *"Production and editorial people, we even sit together at the same island. We like to know from each other what everyone is working on"* (creative employee, TV).

Organizational creativity at TV

The television programs made by TV originate in two different ways: the 'formats' are based on a general briefing by a TV channel, while other projects originate from the inspiration of the employees and are then sold to an interested TV channel. In the case of the formats, a television channel will brief the foreseen time slot, the type of program and frequency (like 'humor' or 'talk show'), and their budget. We call these formats closed-type problems as the programs are required solutions to specified problems. The expected output is defined in terms of the requested time, frequency and other program specifications. In other words, these projects relate to responsive creativity. The second type of projects include that people work out a creative idea, determine a budget for it and propose the whole package to a potential customer: *"What we like to do more and more, is to work something out on paper, ask a television channel whether we can come over to explain our ideas, see how they react, run a proof and, hopefully, go for it. This is quite difficult and not all studios are capable of this"* (managing director, TV). Or as the production leader explained to us: *"Apart from the briefings, we also often come up with our own project proposals. So this starts when one of our*

people has a nice idea, or we sit together with some colleagues and think about some nice idea we would propose to one of the television channels. And then we sit together and do not talk about money or so, we first just have some nice plan... we later work it out a bit more, you need to substantiate your proposal of course ... and then we have to see how the television channel reacts". These projects can be categorized as open problems, referring to expected creativity.

As a result, we categorize TV as halfway on the continuum (Figure 1), since it operates both in an expected and in a responsive creativity environment, depending on the concrete project.

Budget use at TV

Within TV, the budgeting process is barely formalized and is experienced as a trial and error process. Budgets are made per television program, with a high level of information detail: they contain financial (personnel cost, development costs, technical costs, logistic costs, hotel costs, etc.) as well as non-financial data (number of employees, production days, etc.). Every member of the project team can be involved as the formatting of the budget is very flexible. The budget is cost-driven for both open and closed problems: *"A classic example is always: 'Make sure there is an elephant in 'Talk show Z'. Then my first idea will be: I call the circus and ask the price. If this elephant costs €10.000, then it is for the producer to say to the editor in chief: 'Sorry, this is irresponsible'. So okay, then we look for an okapi, or for a cat ... but in the end it will be the producer who has to arrange this"* (managing director, TV).

For every type of TV program made, the production leader is responsible for the program budget. There is no standard procedure for setting budgets, as the production leader explains: *"There is no standard procedure; it is always starting from scratch. We know in which direction to go in terms of magnitude, but we always have to start from huge estimations"* (production leader, TV). Still, there are learning effects and experience in setting budgets gives direction to the budgeting process: the production leader, who has been involved in setting budgets for years, knows how to move money from one budget item to another when it appears a certain budget item gets too much or few money.

For the closed-type projects the budget is set in a rather top-down way, because TV needs to make a project proposal respecting the imposed budget: the overall budget amount is set unilaterally by the television channel, determined by the time frequency and other program details, and there is no room for negotiation. Each production house makes a project proposal within this imposed budget, which consequently induces competition between the production houses in attracting these assignments. At the same time, however, the budget is spread out over diverse budget items, which allows for a flexible budget within the required total budget set by the television channel. In this way, the budgeting process is not entirely top-down, but also involves a bottom-up process.

For the open-type projects, budgets are set by the production leader in a participative and consulting way. There is room for negotiating the budgets, but the television channel that buys TV's program idea will have to give its final approval: *"When we make a program proposal, we first look at the total budget and what is needed in terms of time and people. Sometimes we propose an adjustment of these needs as they are not realistic. The creative people do not think in terms of the program budget, but they will have to take this*

restriction into account. Then we go to the television channel with our program proposal. When they agree with the proposal and the price, then we did a very good job” (production leader, TV).

In terms of individual evaluation and rewards, creative people do not get individual budget responsibility for budget overruns, and they are not individually remunerated for coming up with successful new programs: *“They are motivated by the good atmosphere... what matters, is that they get the feeling that their contribution really matters towards the productions. We at TV do not believe in individual bonuses” (production leader, TV).* Instead, creative people are considered to be mainly driven by their internal motivation, the possibility to learn and by receiving more responsibilities.

In the open-type projects, budgeting is experienced as an instrument that gives direction: *“The budget invites for discussion and meetings between superiors and subordinates, because for the non-regular programs, we often decide to go over the budget... yes this happens when it leads to strategically interesting programs... the ones with which we can get a high visibility” (managing director, TV).* These open-type projects are shaped through a lot of interaction between the production and the editorial cell: they are involved in a continuous dialogue about the quality of the programs and the budget. They get together weekly to even daily when necessary. This discussion leads to a budget proposal that then needs to be well motivated before it can be communicated to potential customers. Budgets are therefore considered as important instruments for developing creative ideas, plans and strategy. They allow TV for some strategic planning and for judging how far they can go in developing own initiatives as compared to working with formats. They provide planning guidelines and targets. In other words, the interactive use of budgets is experienced as stimulating creativity in this context of expected creativity.

We observe a different way of stimulating creativity in the context of the closed-type projects. As indicated above, the budgeting process for the formats involves a relatively more top-down and diagnostic approach, setting targets that people have to respect. But people did not experience this process as hindering creativity. The project leader provided a nice example of how a limited budget for a talk show in a particular city led to an original and highly appreciated solution: *“We did not see any other solution than to send a trainee around the city with a photo camera. These pictures were inserted into the program, which gave it a bumpy, touristic flavor”.* Also the creative employee interviewed confirmed the inspiring power of the budget: *“We are, in contrast to what you probably hear, convinced that a clearly delineated, quite tight budgetary framework can stimulate creativity. Within this framework: let us do something funny, or invent something good, or something shocking... This actually happens often, if I may emphasize so”.*

Thus for both types of projects, the budgeting process at TV is experienced to stimulate creativity: *“In fact, the production people get involved in the creative process because of the budget. If the team members sit together and one of the presenters shouts: ‘I want to do something with five elephants’, the producer will react: ‘OK fine, but it will be only one!’ During the negotiations this might go to two, but finally one or another elephant will get into the program... Creative people often claim that there is too few money for the programs they create, but this often happens to be only an interpretation...By communicating about budgets everybody gets involved in the budgeting process and tight budgets frequently result in searching for and finding creative and low cost solutions...Given the fact that there are only limited resources, we have to find*

creative solutions ... the most important issue is that if the creative people want to work with five elephants, they manage to give the impression there are five elephants” (production leader, TV).

The interviewees recognize also that budgets might have an inhibiting effect on organizational creativity: *“Budgets can sometimes restrict creativity, but it depends on where you work. We know very well that people in production house Y get a lot more chances to express their creativity and get more time to develop high quality television programs”* (production leader, TV). In order to deal with this tension caused by the need to align great innovative and creative thinking with budget constraints, every employee of the organization is made aware of the tightness of the budgets, so communication plays an important role here.

We conclude that budgets – while used in a more diagnostic way for the closed-type projects versus in a more interactive way for the open-type projects – are overall experienced as stimulating creativity at TV: *“I cannot give any example of a situation in which the end product was damaged because of the budget decisions made... Budgets are used in a flexible way and absolutely in consultation with one another, and the people who need to be informed, are informed”* (creative employee, TV).

MEDIA

MEDIA is a communication agency aiming at upgrading brands and offering all kinds of communication. It employs between 50 and 75 employees and exists since between 25 and 35 years. The company is divided into five business units, each one headed by a partner. Each business unit has its own specific client oriented approach: ‘Brands’ (the rather classic advertising office within MEDIA), ‘HR’ (for recruitment communication), ‘Online’ (with a digital focus), ‘PR’ (for communication towards the press) and ‘Public’ (providing communication expertise towards governments and organizations). A particular business unit, like Public, works with a number of communication advisors (e.g. five people for Public) for the strategy, advice, communication, and gets the help of specialized creative staff (graphical designers, web designers, programmers). These specialized people form a pool of creative employees, from which project teams are composed in a varying way per task. Given the diversity of MEDIA’s business units, it is not surprising that its customers have diverse backgrounds: both small and international companies, national government, agencies of the European Commission, etc. MEDIA tries to convince its clients of its quality in a highly competitive sector. The strategic goal of MEDIA is to create impact for its customers through its media campaigns. In this context, *“creativity always has to serve the goal of the particular communication campaign or marketing goal, and should never be considered a goal in itself”* (managing director, MEDIA). The mission and vision of the company are determined by the team of partners. Independency and creativity are critical qualifications of the employees; however inspiring leadership is crucial in this organization. Creativity is stimulated by taking the time to listen to the creative people and by awarding sufficient time to the people to get fresh impressions and to explore new possibilities. Besides this, creativity is stimulated by brainstorming in group and developing new insights together. It is the interaction between people which leads to successful creativity and innovation. MEDIA has had a difficult time during the financial crisis, in which it was in a near break-even situation, but it has managed to survive the crisis and is financially healthy

now. In terms of creative performance, it does not want to participate in the circuit of awards, but MEDIA is recognized as a renowned brand both nationally and internationally.

Organizational creativity at MEDIA

Usually, companies contact MEDIA with rather open problems such as the need for a new imago, launching a brand or changing the communication strategy of the organization. For most projects, clients expect MEDIA to provide an innovative solution to their problem. Since clients have little insights in the required solutions, customer specifications are limited. In other words, there is a priori no known method for developing the solution to the problem. In other projects, creative workers at MEDIA are expected to actively search for potential customers and present their own solutions/ideas. The creative people's autonomy in choosing tasks and developing problem-solving techniques is rather unrestricted: *“Well, if you want to offer a total package, you need to be able to know something about everything. This is the charm of the job for me, we are in a way generalists. You know a bit about everything, and with all these bits you manage to come up with a nice campaign... and then with another one and again a new one... you always meet people that are passionate about their job and this leads to very inspiring experiences”* (one of the creative employees, MEDIA). We therefore classify the type of creativity at MEDIA as expected creativity.

Budgeting at MEDIA

At MEDIA, budgets are used more and more intensively and get the permanent attention of the partners. Setting budgets starts from the diverse business units: *“So we work in an adverse way, in a bottom-up direction. Per business unit we look for income expectations and an estimation of costs is made. This information is consolidated into the yearly budget”* (managing director, MEDIA).

This process leads to intensive discussions among the partners, the communication advisors and the other creative people. Stimulating the group dynamic is a crucial goal of the budget in this creative context: *“We also consider our customer-portfolio: we look at the financial and non-financial implications of losing certain customers and winning competitions for government communication, try to find out which customers do spend more or less than previous years and how we could react on this”* (managing director, MEDIA).

In this way, MEDIA is using the budgeting process to develop its plans and strategies for the coming years. *“Budgets serve as a compass to give direction towards the critical success factors... even in this creative sector you need to use the right tools if you want to run a business. If you want to do it well, you need to make proper use of your budgets...Budgets provide insights in the margins per business unit. So in this way we can make informed strategic decisions for the future”* (managing director, MEDIA). When certain strategic projects appear extremely interesting, deviations from the budgets are flexibly made.

The responsibility for setting the project budgets lies with account managers. The account managers do not give communication advice, but have to make sure that every project is delivered in accordance to the requirements of the client: the quality level needs to meet the standard, and timing as well as budget need to be respected. Besides the account managers, the communication advisors – employees with a more advisory job – are also responsible for guarding the budget of the project. The budgeting process is in that way

participative and consulting. The budgeting process is a highly formalized and standardized process: the company uses a web based application tool for the financial management of the organization and there are tariff agreements between the different business units. Budgets are set on an incremental basis: the figures of previous years form the starting points, taking into account the continuation of contracts and projects, the confirmation of existing clients that they will continue working together with the company, and the estimation of relevant market developments. As one of the creative employees explains: *“We never undertake the same job twice. ‘Every round new chances’, they say. But when a project is finished, we do a post-calculation to be able to evaluate what went well and what went wrong. In this way, things are discussed... And if two years in a row, there are difficulties in projects with the same customer, you have a problem... because these are things one needs to follow up, your customer would go to another communication agency”* (creative employee, MEDIA). During one interview, the managing director explained that thanks to such calculations, he gained the insight that he needed to focus more on recruitment communication and employer branding in one of the departments.

In terms of planning guidelines and targets, we observed that targets are set in a realistic way. With targets being set neither overly conservative nor optimistic, drastic adjustments are made when needed. The targets are thus adjustable in a flexible way: *“We don’t see the budget targets as a constraint. They are more like a compass to determine whether or not we are doing well”* (managing director, MEDIA).

The budgeting process is found to stimulate communication within the company. It forces people to take responsibility and business estimations are made. In this way, budgets have a positive effect on the motivation of both the account managers and the creative people. *“A budget forms a measurable item, where creativity in itself does not”* (creative employee, MEDIA). Budgets result, both on group level and on project level, into a certain appreciation for the performance and creativity of the employees.

Budgets are used for performance measurement only at partner level. Although there are timesheets per individual employee as budgets are assigned to every activity performed in the company, there is no systematic follow-up for the creative employees. The creative employees experience the budget responsibility as a joint responsibility. In contrast, budgets are used as a basis for compensating and rewarding a number of commercial people and account managers. In terms of information feedback loops, the company makes regular comparisons between the budgets and actual business performance in order to follow up the evolution over the years and to make the estimations for the next years.

The managing director admits that the presence of budgets in the company incorporates a tension between supporting organizational creativity and inhibiting it: *“There is always a tension between respecting the budget, which leads to less time to be spent on a project, and the time needed to be able to work out an idea in a creative way. You cause an enormous stress if you ask someone to create a logo in two hours. But if, generally speaking, a communication office does not work well, this often means that the balance between the time to be creative and the creative outcome is not right. This is an important challenge in our creative business”*... *“Creative people have to be aware that they sometimes have to deliver a creation of 80% finish grade instead of the perfect 100%. It really is a challenge to cope with the limited time and the required room for creativity”*.

That MEDIA manages to strike the right balance, is confirmed by one of the creative employee: *“I really do not experience budget constraints as problematic, they provide a framework which in a way provides shelter... to make good campaigns with the budgets that have become smaller in our sector in recent years, also has to do with fulfilling your job in an honorable way... There was a time that going to Spain for a photo shoot was normal, but this has changed. Now you have to think twice with often a better result. If you compare to the large budgets for these dull washing powder campaigns in the past, these made creative people just lazy”*.

Overall, we observe how the budget is used in highly interactive way in this case of expected creativity, as indicated by the permanent attention to budgets by top management, the bottom-up budget preparation and target setting, and the use of the budget as a communication device. The managing director interviewed concluded as follows: *“Yes our budget is used in a flexible way. If a new customer comes and says: we want to do a marketing campaign for € one million, we will not say no. For us the budget serves more as a compass to make sure we are on the right track, but it is definitely not a constraint. Our flexibility will not suffer, to the contrary!”*

DISCUSSION OF THE CROSS CASE RESULTS

Based on the within-case analyses presented above, we discuss our cross-case results. In order to investigate how budgets are used in different creative environments, we selected four cases that represent different degrees of responsive versus expected creativity. The interviewees described the budgetary process and budget use in their own words in each of the cases. In each case, we find indications of both interactive and diagnostic use, but the type of use that dominates determines our overall classification of budget use in each case company.

In the first place, we analyze the type of creativity and the degree to which budgets are used in a rather interactive versus diagnostic way for each case. FURNITURE produces design furniture at the request and along the requirements of particular customers. To respond to these requirements, they have developed and familiarized all employees with a number of (sustainability) design standards. We therefore classify FURNITURE as the case with the highest degree of responsive creativity in our study. FURNITURE’s budgets are focusing on controlling costs and imposed in a top-down way. In the first phase, management tries to make sure that cost concerns do not interfere with the creative activities, but in later phases budgetary goals are used to communicate the need to be creative towards sustainable design pieces. The budget is imposed based on the critical performance variables strived for, and corrective actions are taken when deviations from the preset standards are found. We conclude that budget use at FURNITURE is highly diagnostic.

At INTERIOR, interior designers and architects work towards what the customer wants: they develop concepts based on customer requirements, challenge and adjust materials and concrete lines within the project’s scope and finally champion the steps towards a modern and functional design using well established techniques. We therefore classify INTERIOR’s creativity as mainly responsive. Budgeting is a

crucial instrument at INTERIOR to couple high standing design with a realistic budget. The managing director and the project leader communicate the budget constraints in a top-down way to the creative employees, and budgets play a crucial role for target setting. Respecting the budget is a crucial key performance indicator at INTERIOR: the leadership by the managing director creates a culture in which every employee understands the importance of respecting the budget for INTERIOR's success. At the same time, the managing director from time to time decides to embark on more risky projects, at the condition that these can serve as a kind of show case for INTERIOR. For these rather exceptional projects, the budget serves as a directing control device that allows for a continuous debate between the managing director, the project leader and the creative employees. Based on post-calculations for the regular projects, the managing director and the project leader decide how far they can go in terms of embarking on the more risky projects. But overall, our data sources from INTERIOR show a dominance of the top-down, imposed budget use over the more exceptional, forward looking and communication stimulating use. We thus conclude that budget use at INTERIOR is largely diagnostic, with some indications of interactive use.

TV makes television programs, both on request by particular television channels which represent rather closed-type problems, and on its own initiative, which represent rather open-type problems. We therefore situate this case in the middle of the continuum between responsive and expected creativity. The budget is cost-driven for both the closed and the open problems. However, for the closed problems budget targets are imposed based on the available budget of the customer, while for the open problems the budget follows a bottom-up process emerging from initiatives taken by creative teams. The consequence is that the budgets related to the closed-type problems are imposed in a top-down way on the creative people, and that they need to be strictly respected. For the open-type problems, the budget process triggers a continuous dialogue in the creative team about the quality of the program in the context of a realistic budget to be proposed to the potential customer. At the same time, we note that even the budgets for the television programs directly assigned by television channels (the closed-type problems) stimulate an internal discussion in terms of the concrete working budgets, and on how much money to foresee for particular budget items. The flexibility that occurs here, involves some bottom-up feedback streams that we do not observe in the two previous cases. We conclude that the budget process at TV contains elements of both diagnostic and interactive budget use, with a relatively higher diagnostic use for the closed-type problems, and a relatively higher interactive use for the open-type problems.

MEDIA is a communication agency that receives very open assignments from its customers, and even sometimes develops a media campaign upon its own initiative. The creative people describe themselves as generalists, being allowed to come to the best possible solution in the way they themselves find most suitable. We therefore classify MEDIA as representing the highest degree of expected creativity as compared to the other cases in our study. The interviewees point at the intensive use of the budgets that are under the permanent attention of the managing directors. Budget targets are used as a compass to give direction towards the critical success factors, but at the same time they can be rapidly adjusted when this appears to be necessary. The budgetary process at MEDIA is experienced as a bottom-up process, which involves

individuals at all levels in the organization. We therefore conclude that budget use is highly interactive in the context of this communication agency.

These observations allow us to evaluate our research propositions. We find that budgets are used in a highly diagnostic way in the cases characterized by the highest degree of responsive creativity, which provides support for our first research proposition. At the same time, we observe that budgets are used in an increasingly interactive way the more the creative activity is described as expected creativity. This means that we find support for our second proposition as well.

In the second place, we are interested in the degree to which the particular budget use in each case is experienced as hindering versus stimulating creativity. We have indications that budget use in all four cases is experienced as stimulating creativity. In the cases with an expected creative context, this finding is in line with previous research that interactive controls seem to stimulate creativity (Simons, 1991; Abernethy and Brownell, 1999; Bisbe and Otley, 2004). Expected creativity, in contrast to responsive creative contexts, is characterized by open problems and unknown methods to solve them. To master such situations, an interactive use of budgets may serve as a “catalyst for debate” and thus help participants to flexibly adjust to this open environment to be able to reach a useful answer. In particular, and in line with Abernethy and Brownell (1999), budgets are seen as an integrative liaison device that breaks down the functional and hierarchical barriers that inhibit information flows and that stimulate new and creative ideas. For the open-type problems (the television programs on their own initiative) at TV, for example, the budget proposal triggers the interaction between the creative people involved. There is a continuous dialogue between the program managers around the budgets, and this leads to a bottom up communication towards the editors in chief, the production leaders and finally towards the managing directors. Similarly, in the MEDIA case, the budget is nicely described as providing a compass, which leads to intensive discussions between the top and the subordinates within the organization. Budget responsibility is considered as a joint responsibility, not inducing hindering constraints but rather providing a nice framework that push people towards creativity.

In contrast to the current literature, we do however observe that also the rather diagnostic use of the budget is described as stimulating creativity by the interviewees involved. At FURNITURE, we see examples of how creative people, although not being responsible for achieving budgetary targets, got intensively involved in thinking out sustainable design solutions. They describe how tight budget targets are experienced as setting boundaries that stimulate them towards creative solutions. At INTERIOR, we find that budget boundaries stimulate the creative people’s ability to generate powerful and creative ideas. The interviewees provide various examples of how they managed to reach a highly original interior design with a small budget, and this to the big surprise and high satisfaction of the customers. At TV, the imposed budgets of the closed-type projects force the producers and the editors to come up with creative and original solutions. Even this rather diagnostic use of the budget stimulates brainstorming and discussion within the creative team, since they have to find ways to respect the budget targets in the most creative way. Examples were given about how the creative employees were pushed towards creating a certain atmosphere in a highly creative way, and that this requirement to work within a restricted budget creates focus and leads to

sometimes more surprising television than what they would have reached with a larger budget that would not force them to think further.

We can conclude that interestingly, and despite the fact that the management control literature has given account of the problematic use of diagnostic management control systems, we find that the diagnostic use of budgets in the cases reflecting responsive creativity does not stifle creativity, but does in contrast seems to stimulate creativity. One important reason for this is that in such a responsive creative context, there is little ambiguity concerning customer's requirements and the nature of the creative work is relatively stable, with established well-understood methods for performing creative tasks. As such creative people are required to think within the framework provided by the budget.

Finally, we want to remark that in spite of our optimistic conclusions about the effect of different types of budget use on creativity, the hindering influence of a too tight budget has been expressed in all cases. The managing director of MEDIA stresses that for his sector, budgets are an expression of the time constraint, and that a too tight constraint would completely paralyze people. We observe the same idea at TV, where the time given for working out particular projects is compared to a more luxurious position at other television studios. Similarly, the managing director of FURNITURE emphasizes that no exceptional conceptual creative mind cares about costs in the first place, but he qualifies this statement by pointing at the biggest names in design furniture, which are the ones that are the best able to manage the tension between putting constraints like budgets and letting their minds work freely. Also at INTERIOR, the managing director explains that too tight a budget might make it impossible for his creative people to work, and that he does not accept unrealistic projects anymore.

CONCLUSION AND FUTURE RESEARCH

This paper investigates how different types of creativity (expected versus responsive) are supported by different styles of use (interactive versus diagnostic) of accounting-based budgetary controls. Our analysis draws on data gathered from a comparative case study involving four cases with different levels of responsive and expected creativity. More specifically, we started by analyzing how each case is positioned on the creativity type continuum using Unsworth's (2001) problem type characterization of open versus closed problems in the context of an external driver for engagement. Then, we analyzed the extent of interactive and diagnostic use of budgets for each of these case companies, taking into account five central themes: objectives, strategies and plans for their attainment, target-setting, incentive and reward structures and information feedback loops (Otley, 1999). By doing so, we test our propositions that creative firms, striving mainly towards expected creativity, may use their budgets in a more interactive way, and that creative companies for which responsive creativity is more important, use budgets in a more diagnostic way.

Although creativity is widely recognized to be important for the long-term survival of organizations, only recently accounting researchers have started to examine the relationship between management control systems (MCS) and creativity (Davila et al., 2009). This paper contributes towards enhancing our understanding of this relationship in two important ways. First, to our knowledge, we are the first to study different types of creativity in a management control context. Prior management accounting research

typically treated creativity as a uni-dimensional construct (Ahrens and Chapman, 2004), regardless of the type of idea, the reasons behind its production, or the starting point of the process (Unsworth, 2001). In this paper, we focus on "professional creatives" from which creative behavior is expected (i.e. an external driver for their engagement). Based on Unsworth's (2001) problem type characterization, we make a distinction between expected versus responsive creativity. Expected creativity is involved when participants receive external drivers for solving a closed problem for which the method for solving it is known. Open problems, however, occur when the participants receive external drivers to find, discover and solve the problems themselves. We study how each case is positioned on the creativity type continuum from more responsive to more expected creativity. Because we specified the degree to which the problems are open or closed, we are able to measure different levels of responsive and expected creativity. We believe that it is important to distinguish between these different types of creativity to advance the organizational control research on this topic.

Second, we relate these different types of creativity to different styles of accounting-based budgetary controls use (interactive versus diagnostic). Prior research is inconclusive about the relation between MCS (including budgets) and creativity (Bisbe and Otley, 2004). Simons (1990, 1991, 1995) has pointed at the different styles of use of MCS as potential explanation for these apparently inconsistent studies. He suggests that studies finding that MCS hinder creativity are partial to the extent that they focus exclusively on thermostat-like diagnostic uses of MCS and that studies confirming that MCS act as facilitators of successful creativity are more comprehensive, in the sense that they capture the presence of interactive uses of MCS. However, the results of our case studies indicate that in environments where responsive creativity is expected, also more diagnostic uses of MCS (in this study the budgets) can be observed. More specifically, we find support for our propositions that creative firms, striving mainly towards expected creativity, may use their budgets in a more interactive way, and that those creative companies for which responsive creativity is more important, use budgets in a more diagnostic way. We conclude thus that both interactive and diagnostic use of budgets may be observed in creative contexts, but that it is important to differentiate between different types of creativity that may ask for a different style of use of MCS.

Interestingly, we also find that budget use in all four cases is experienced as stimulating creativity. While this finding is not surprising in the context of the extant literature emphasizing the role of interactive controls for stimulating creativity (Simons, 1991; Abernethy and Brownell, 1999; Bisbe and Otley, 2004) it is quite surprising for the diagnostic use. We therefore conclude that researchers in this area need to make an effort to understand the specific creative context in which they investigate the role of management control for stimulating creativity, as this has implications for the more or less interactive/diagnostic way in which management control instruments are used to sustain the creative process.

The findings of this study are of interest to researchers and managers who want to gain a deeper understanding in the relationship between MCS use and creativity. However, we acknowledge that this study has a number of limitations, and want to point out directions for future research.

The findings are based on four case studies of organizations with different levels of responsive and expected creativity. Although we deliberately sampled firms with different levels of creativity, none of our

cases represent a firm in which the creative task is truly open. As a consequence, we have no case study for which the creativity is fully expected. Future research can elaborate our research by studying firms with creative tasks that represent truly open problems. Potentially interesting organizations to consider are firms that do not work on projects driven by specific customer demands, but instead independently create and launch products or services on the market. We have deliberately selected organizations with project-driven activities in order to keep other variables affecting the relationship between control and creativity as similar as possible. Future research may focus on organizations that are not project-driven and that represent truly open creative tasks. A related issue is that the four firms involved in this study are relatively small. Future research in large companies might show that different types of creativity are present in such companies.

Second, in this paper, we focus on "professional creatives" from who creative behavior is expected (i.e. external driver for their engagement). Future research may investigate what the impact is of MCS on internally driven creativity (i.e. if there is no external driver). More specifically, inspired by Unsworth's (2001) framework, it is interesting to study how MCS can create settings that stimulate contributory creativity (responding to presented problems because of internal drivers) and proactive creativity (discovering problems because of internal drivers). Unsworth (2001) suggests that factors that influence an employee's creditability (status, power, knowledge) or their selling skills (social skills, negotiation tactics) will affect proactive creativity and contributory creativity, but not responsive and expected creativity. Different factors, and thus potentially also different controls, might therefore be needed to stimulate proactive creativity and contributory creativity. Future research can even go one step further by not only making distinctions in terms of the type of creativity, but by also focusing on the different stages of creativity, going from idea identification to their implementation (Zhou and George, 2001).

Third, we focus on budgets and on the interactive and diagnostic use of these controls in different creative settings. We believe this is an important contribution as the literature had not yet investigated how budgets – the traditional management control tool – impact creativity (Davila et al. 2009). However, control systems encompass a range of systems from financial planning tools to incentive systems, structural controls, etc. More research is therefore needed on other specific types of controls and how they foster or destroy different types of creativity. Although this presents a broad area for future research, we present two specific ideas generated from our field research.

Future research is needed on goal setting in a creative context. Goals increase performance because they direct and sustain attention and effort toward goal-related activities (Locke and Latham, 1990). Goal content is usually divided into two attributes: specificity and difficulty. To be most effective, goals must usually be both challenging and specific, and accompanied by commitment and feedback about progress (Locke and Latham, 1990). Little attention has been paid to developing specificity and difficulty with nonnumeric measures. Additionally, difficult goals can vary in the extent to which they are expressed as numbers. Given the challenge of operationalizing some creative goals numerically, this is an important area for future research.

Another area requiring more research is incentive setting to stimulate creativity at the group level. We observe in each of our four cases that none of the creative individuals receive incentives or are rewarded on

an individual basis. This might mean incentives setting is directed at the group or team level. Creativity researchers have spent considerably less research attention to the group level as compared to the individual level. Group members, however, have the opportunity to build on each others' diverse ideas, which could enhance the creativity of individual inputs. Since this area is largely unexploited (notable exceptions are Chen et al., 2010; Roy et al., 1996) and given the importance of groups, future research should certainly address this research gap. Several interesting research questions with respect to the impact of group incentives and structures on creativity can be investigated: What kind of performance measures and compensation systems are used to promote these types of group creativity? What is the balance between group and individual performance and rewards? What is the balance between financial and non-financial rewards, between intrinsic and extrinsic rewards? More specifically, work is needed to carefully examine the range of incentives which should be taken into account to make the use of group work successful for creativity. It is not inconceivable that certain incentives which are found to stimulate individual creativity appear to have different or even no effects on group creativity.

To conclude, we would like to stress that the present study is the first to address the issue of how different types of creativity are stimulated by different styles of use controls. More academic research is needed on this topic as more and more firms are trying to stimulate (different types of) creativity while maintaining control.

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Figure 1: Cases categorized along the continuum of responsive vs. expected creativity

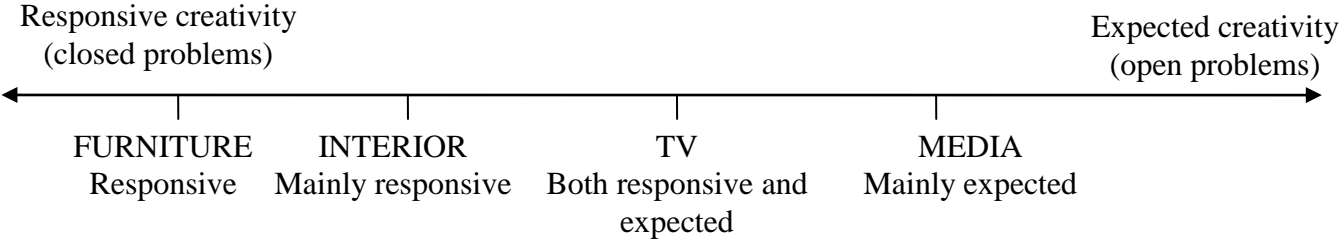


Table 1: Case description

Panel A: Characteristics of the creative companies

	<i>FURNITURE</i>	<i>INTERIOR</i>	<i>TV</i>	<i>MEDIA</i>
Industry/sector	Tailor-made design furniture	Interior design	Production house of TV programs	Communication
Type of activity	Project driven	Project driven	Project driven	Project driven
Number of employees	25-50	5-25	25-50	50-75
Age	5-15 years	5-15 years	5-15 years	25-35 years
Organization structure	Limited formal structure	Limited formal structure	Limited formal structure	Formal structure with five departments (business units) recently introduced

Panel B: Data sources per case

	<i>FURNITURE</i>	<i>INTERIOR</i>	<i>TV</i>	<i>MEDIA</i>
Interviews	Various interviews with the managing director, the production director, a creative employee and an account manager.	Various interviews with the founder/managing director and with a creative employee	One interview with the managing director, and various interviews with a production leader and with a creative employee	Various interviews with the managing director and with a creative employee
Documents	Company website, annual reports, organizational charts, brochures presenting FURNITURE's products, press articles related to the company and its designers, documentation on FURNITURE's industrial product design	Company website, annual reports, organizational charts, articles on INTERIOR in various newspapers and magazines, website links to prizes they won	Company website, annual reports, organizational charts, press articles on TV's awards won, new projects and future plans, speech by main customer	Company website, annual reports, organizational charts, blogs, slide presentations on various topics, newspaper articles on MEDIA's projects

Table 2: Budgets and creativity

	<i>FURNITURE</i>	<i>INTERIOR</i>	<i>TV</i>	<i>MEDIA</i>
ORGANIZATIONAL CONTEXT				
Strategy	Surprise the world with a mix of technology and design and build up an open collection with more focus on product sustainability	Stay small but develop exceptional designs	Make best possible programs, with balance between content and budget.	Create impact with media campaigns for our customers.
Structure	Limited formal structure	Limited formal structure	Limited formal structure	Recently formal structure with five business units introduced
Financial performance	Financially healthy company and performing better than average competitor	Financially healthy company and performing better than average competitor	Financially healthy company and performing better than average competitor	Financially healthy company and performing better than average competitor
Creative performance	Recognized as a design brand in the sector; asked by big companies for major projects	Have been awarded with various prestigious interior design prizes	Have been awarded with various important TV program prizes; programs have been sold worldwide	Internationally renowned.
ORGANIZATIONAL CREATIVITY				
Problem type	Custom-made design furniture	Interior design	Television programs	Media campaigns, communication office
Degree of predefined project specifications	Project driven. All design furniture objects come from a concrete question by a customer.	Project driven. Work towards what the customer wants: develop concepts based on listening what the customer wants and adjust materials and concrete lines towards what the customer wants.	Project driven. Two types: 1) 'Formats' based on a broad briefing by a TV channel and 2) projects originating from the inspiration of the creative employees that can then be sold to a TV channel.	Projects driven. Customers come with a very broad and vague request about their communication strategy and the company comes up with its own idea of what this might be.
= > Creativity	Mainly responsive	Mainly responsive	Responsive + Expected	Mainly expected

	<i>FURNITURE</i>	<i>INTERIOR</i>	<i>TV</i>	<i>MEDIA</i>
BUDGETING PROCESS				
Objectives	-Budgeting used as a cost management tool -Budgets used to structure and communicate the details of a sustainable open collection -Periodic attention by top management, but subordinates are not involved	-Budgeting is a crucial instrument to couple high standing design with realistic budget -Strict progress tracking towards goals by the project leader: comparing outcomes to expectations - In case of big projects, personal attention by managing director, discussing underlying assumptions and action plans	-Budgeting is considered as an instrument that gives direction -Permanent attention by the top management and it invites for discussion and meetings between superiors and subordinates -Flexible use and budget overrun allowed when this leads to strategically interesting results.	-Budgeting intensively used -Permanent attention by the top management; invites for discussion and meetings between superiors and subordinates -Budgets guide and stimulate the group dynamic
Development of new missions, plans and strategies	No role for budget to provide input for strategy	No role for budget to provide input for strategy (except in case of big projects, where budget input might lead to change in action plans)	Budgets important for developing strategy	Budgets important for developing the strategy in line with the critical success factors (also for the future)
Target setting	-Top-down budgeting -Conservative, incremental budgeting	-Top-down budgeting -Incremental budgeting	-‘Format’ projects: rather top-down -Projects based on employees’ own inspiration: a lot of interaction between top and subordinates -Budgets used in a flexible way	-Participative and consulting -Flexible, realistic targets -Every project is different, so targets are different too, but learning from the past based on analyzing budgets.
Incentive compensation and reward structures	-No financial rewards/compensation tied to budgets, but recognition -Only several non-creative people (e.g. sales agents) made individually responsible for budget attainment	-No financial rewards/compensation tied to budgets, but recognition -No individual budget responsibility because the company’s culture makes sure the budget is respected	-No financial rewards/compensation tied to budgets, but good atmosphere -No individual budget responsibility by the creative people	-No financial rewards/compensation tied to budgets, except for some sales and commercial people -Joint budget responsibility
Information feedback loops	-Only top-down flows -Subordinates only occasionally informed about budget objectives -Budgets are not adapted to new information - No learning based on budgets	-Mainly top-down flows	-‘Format’ projects mainly top-down flows, but for ‘own program ideas’ there is continuous dialogue -Budgets guide discussions and help to learn how to work out the project ideas	-Flexible budgets: adapted to new information /situations -Used to make prognoses and to follow up evolutions over the years -Post calculations to learn lessons from previous periods
= > Budget use	Highly diagnostic	Highly diagnostic – some indications of interactive use	Interactive + diagnostic	Highly interactive