A Work Project, presented as part of the requirements for the Award of a Masters Degree in Finance from the Faculdade de Economia da Universidade Nova de Lisboa.

The role of Management Accounting in the Process of Innovation: a field work perspective

João Manuel Duarte Canelas, mst16000153

A Project carried out on the Management Accounting course, with the supervision of:
Professor Inês Cruz

6th January, 2010

The role of Management Accounting in the Process of Innovation: a field work perspective

Abstract

Recent accounting literature (e.g. Granlund and Taipaleenmäki, 2005; Davila, Foster & Oyon, 2009) suggests that Management Control Systems can influence the process of innovation, especially when they are used interactively. Such work constitutes a rupture with the traditional and diagnostic vision of control where Management Control Systems only act at the process of strategy implementation, limiting their role in accommodating the environment of uncertainty that characterizes innovation (Amabile, 1998; Kanter, 2006). This work project provides contextualized evidence on the use of Management Control Systems and their influence on the innovation process at an information technology company with a research lab.

Keywords: Innovation; Management Control Systems

1. Introduction

The purpose of this work project consists in understanding the role of Management Control Systems (MCS) in innovation, by answering the following question: how are they influencing the process of innovation? Such work was developed in the form of a field work, performed at an information technology company called YDreams. The aim is to provide a contextualized view of the use of MCS in a company that creates unique projects based on the technology developed at the company's research lab.

The following report is divided in several sections to allow a better understanding of the theme under discussion. The **Literature Review** section raises the relevant extant literature on the topics of innovation, control and accounting from where this work departures. Then, in the **Research Method and Methodology section** there is a brief description of the main research strategy applied in this work and a justification for such use. The **Field Site** Section describes YDreams' core business and organization. The sections **Innovation at YDreams**, **Management Control Systems at YLife** and the section **Management Control Systems and the Innovation Process at YLife** discuss the definition of Innovation at YDreams and how its MCS influence the process of innovation at YLife (YDreams' production department). Finally, in the section **Assessment of the MCS at YLife: concluding remarks**, this work concludes about the relevance and the impact of MCS (whether interactive or diagnostic) on the process of innovation at YLife.

2. Literature Review

2.1. Innovation and Creativity

Innovation is the ultimate product of a generation of ideas that were brought to the surface by creativity (Davila, Foster & Oyon, 2009). Innovation as a concept can be defined in two ways: *radical*

and *incremental innovation*. *Radical innovation* consists in the development of a complete new technological/conceptual paradigm. It emerges from an idea of rupture with previously accepted solutions and concepts, although this does not mean a total divorce from previously acquired knowledge and experiences. Such type of innovation explores completely new creative ways to look at a given problem or need. In contrast, *incremental innovation* is completely structured on previous solutions and concepts. Innovation here comes from adding new input to, and shaping some features of, extant solutions and concepts. However, the basic technological and conceptual frame remains the same; there is no strategic shift (Koberg, Detienne & Heppard, 2003). A frequently cited example of incremental innovation is (already existing) product development.

Creativity as a concept can be defined by three elements: *expertise*, *creative thinking* and *motivation* (Amabile, 1998). *Expertise* comes from formal education, practical experience or interaction among individuals (for instance co-workers). *Creative-thinking skills* relate to people's flexibility and imagination in approaching and solving problems. *Motivation*, which determines what one will do and can be pushed in different ways, is of two types: *extrinsic* and *intrinsic* motivation.

Extrinsic motivation leads to safer and more rapid solutions. However self imagination is not pushed. This is because motivation is external to the person (it might come from cash rewards or hierarchical pressures). On the contrary, *intrinsic motivation* (which is the person's will to do something) persists with a longer investment of time, giving rise to more interesting solutions in a path characterized by a lot of trial and error. In this case, motivation is internal to the person. Consequently, intrinsic motivation is the strongest form of motivation and is directly influenced by the working environment surrounding the organization (Amabile, 1998).

Yet, Amabile (1998, p.77) argues that "creativity gets killed much more often than it gets supported". Managing the three components becomes critical as it can either kill creativity, or

otherwise enforce and spread it throughout the organization. Creativity is responsible to raise the ideas that ultimately generate innovation. In this sense, understanding and managing the creative efforts in organizations help to set part of the innovation process in a given organization (Davila *et al.*, 2009).

Recent accounting literature, such as the studies of Granlund and Taipaleenmäki (2005) and Davila, Foster and Li (2009), has been showing new perspectives on the influence of management accounting and control in innovation, particularly in entrepreneurial settings. Such work contributes to the already ongoing discussion on the role of management accounting in innovation, with particular emphasis on management control systems (MCS) and control theory. When discussing the role of management accounting and control in innovation, we need to distinguish between two paradigms. Firstly, there is the traditional control paradigm, which in essence considers control as harmful to innovation (Amabile, 1998; Kanter, 2006). Secondly, there is a new control paradigm, which contrasts with this negative idea about the impact of control on innovation (Davila *et al.*, 2009).

2.2. Control paradigms and the process of innovation

Similarly to other authors (Tuomela, 2005; Davila *et al.*, 2009), the concept of MCS adopted in this study is the one defined by Simons (1995), in which MCS are described as "formal, information-based routines and procedures managers use to maintain or alter patterns in organizational activities". This definition encompasses Management Accounting Systems (which refer to the set of Management Accounting practices like budgeting) as well as other controls such as personal or clan control (Chenhall, 2003).

The traditional control paradigm sees MCS as an instrument that guides the organization towards its pre-defined goals. As such, control only acts during the execution stage over deviations from goals that were previously established during the planning stage. Any deviation is seen as a negative event (Davila *et al.*, 2009). In this traditional vision, MCS fulfil essentially a diagnostic role. The idea is to build feedback mechanisms that control the process of strategy implementation – this is what is defined as management by exception (Simons, 1991; 1995).

In this paradigm, control is seen as "detrimental to innovation" (Kanter, 2006). MCS are simply considered too static and too formal (they are defined as "thermostats" of goal achievement) to play a role in the process of taking advantage of unexpected opportunities, uncertainty, trial and error, and risk that characterizes innovation (Davila *et al.*, 2009). For the traditional vision, control is based on explicit contracts, formal hierarchies and extrinsic motivation. This limits innovation to a logic of 'incrementalism', with no space for radical innovation due to the risk of failure. Such perspective of MCS ignores the existence of social and informal contexts that benefit innovation (Davila *et al.*, 2009). Hierarchies inside organizations evolve over the years and become tied up through complex social and performance links (which is the scope of responsibility accounting), and ignoring this creates perverse effects on intrinsic motivation (the strongest form of motivation). Traditionally, responsibility accounting has been based on predetermined goals, and formal control/accountability acts at an individual-level, ignoring the existence of shared accountabilities. The ability to reach a goal is no longer tied up to just one responsibility centre, but it might be an extreme management challenge characterized by a rivalry of goals where the decisions of one responsibility centre manager influence the performance of other responsibility centres (see Frow, Marginson and Ogden, 2005). Traditional budgeting has been particularly accused by this vision of control, as referred, for instance, by Frow, Marginson and Ogden (2006, p. 3):

"...budgets and innovation have long been viewed as antithetical". "They [budgets] are accused of encouraging stability, individualism and risk-averseness."

The new control paradigm distinguishes from the traditional control paradigm by adding an informal dimension to MCS. Instead of just acting in the phase of strategy implementation, MCS, when used interactively can help to identify the major strategic uncertainties (Simons, 1991; 1995; Davila *et al.*, 2009). Interactive MCS contrast with diagnostic MCS, because diagnostic MCS only act with a "thermostat" dimension (logic of monitoring and rewarding). On the contrary, the defenders of a new vision of control claim that MCS (formal or informal) can be used by different management levels in an interactive way, contributing for seeking new strategic opportunities, gathering information from other managers or from subordinates and promoting debate and dialogue.

The adoption of interactive MCS helps top managers to force personal involvement, intimacy with issues and commitment (Simons, 1991; 1995; see Bisbe & Otley, 2004). By promoting discussion and debate, such systems foster the creation of different kinds of bounds between members in organizations. In other words, a new environment characterized by a sense of belonging is created and shaped, contributing to intrinsic motivation (the strongest form of motivation already acknowledged as essential in creativity). The existence of debate also aids to solve part of the problem of shared accountabilities and partial controllability[1], since a promoted social informal interaction reveals managers' interdependencies and so expectations are realigned to resolve the tensions from conflicting goals. When these tensions cannot be solved informally, hierarchies and other forms of formal control mechanisms put an end to any conflict. Previous studies already showed that the formal recognition of social forms of accountabilities was critical to manage shared

---

[1] This is the scope of responsibility accounting and it was already brought to discussion when analyzing the traditional paradigm.

accountabilities, especially in companies with worldwide operations (Frow *et al.*, 2005; Davila *et al.*, 2009).

These interactive systems, apart from solving conflicts, also contribute to knowledge sharing. This is also critical to shape and define an environment for innovation, even though informal control per se is not sufficient to foster innovation. Managing innovation and creative efforts means to understand the process of innovation and leveraging it to all members in the organization. Formal control systems can act as the major drivers of this management task, even in moving from an idea to a project. Usually, project management systems are a vehicle to do this. Davila *et al.* (2009) define the innovation process as follows:
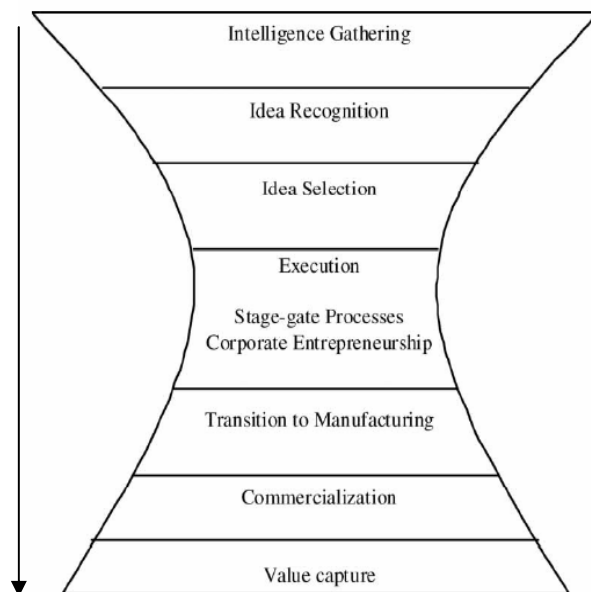

Intelligence Gathering

Idea Recognition

Idea Selection

Execution
Stage-gate Processes
Corporate Entrepreneurship

Transition to Manufacturing

Commercialization

Value capture

Figure I - The innovation process
(Source: Davila *et al.*, 2009; page 286)

It starts with the idea flow, followed by the project execution and ends with value capture. But even the activity of intelligence gathering requires an established procedure. In this initial phase lays the heart of creativity management in its three aforementioned components: expertise, creative thinking and motivation. The idea selection process is also associated with formal portfolio management tools.

The reasoning behind the definition of an innovation process and the use of formal tools ("adaptive frameworks and mental models") that structure the innovation process is to allow not only incremental innovation, but also radical innovation. However, those formal tools must be flexible enough to allow taking advantage of unexpected opportunities as quick as possible, without losing a strong sense of direction. This also enables to create a balance between extrinsic motivation and intrinsic motivation (Davila *et al.*, 2009).

In knowledge-intensive settings, formal control systems help to coordinate complex tasks and to integrate knowledge in a systematic and interactive way. Formal control mechanisms also help to define the beliefs and the boundaries systems responsible for framing the strategic domain of the company and defining the acceptable domain of activity (Simons, 1995; see Bisbe & Otley, 2004; and see Davila *et al.*, 2009).

Discussing MCS and innovation without considering the contexts in which these phenomenons interact, leads to poor conclusions about the relevance of MCS. The next sections of the work project identify and characterize the use of different MCS at YDreams, explaining how those MCS influence the process of innovation at YDreams' production department: YLife. The aim is to provide a contextual frame while answering the research question.

3. Research method and methodology

The topic of accounting and innovation has been empirically addressed through the use of different methods, such as surveys and case studies, in particular longitudinal when the latter are extended over a long period of time, like two or more years (Davila *et al.,* 2009). Case studies or fieldworks are especially recommended for the study of accounting and control in their practical setting (Ryan, Scapens & Theobald, 2002). A fieldwork method is also considered to be a good

research strategy whenever a 'how' type of question needs to be answered and the researcher is analyzing a contemporary event over which he exerts no control (Yin, 2009). In contrast, surveys must be favored whenever a 'what' or 'how many/much' question is enumerated (Yin, 2009).

Based on the purpose of the present study, the fieldwork method was considered the appropriate research method to be undertaken. By adopting it, a contextualized view of the role of MCS in the innovation process could be provided. As the imposed time frame to present the final conclusions of this work project was six months, it was impossible to develop a longitudinal case study.

This fieldwork intends to be explanatory, following a holistic orientation as this research takes into account management accounting and control practices in an organizational, economic and social context (Ryan *et al.*, 2002). The aim is not to make statistical inferences, but to understand how MCS are used in a real-life context and how they influence the innovation process. So, rather than performing statistical generalization, this study aims to perform theoretical generalization (Yin, 2009).

In order to elaborate the intended fieldwork, a single company called YDreams was chosen. This seemed a good choice because as an information technology company, YDreams is responsible to manage and commercialize unique projects based on disruptive technologies created at the YLabs (the research lab). The intention was to find a company that uses MCS to process the investigation developed internally. The main sources of evidence for the study were semi-structured interviews[2] and the analysis of press and institutional information online[3].

The research working procedure followed a systematic approach. First of all, some literature review was undertaken to find out the main gaps/issues in terms of the impact of management

---

[2] Semi-structured interviews are not limited to a set of questions. Such interviews must be flexible to allow exploring new themes brought up by the interviewee (defined according to previous fieldworks performed by the 'FAO of the United Nations'). An example of semi-structured questions asked during the interviews can be seen in Appendix 3.
[3] More details of the performed interviews done and the interviewees can be found in Appendixes 1 and 2.

control systems on the innovation process. Another important step was organizing, cataloguing and analysing all the evidence gathered in the company being studied. Regarding the procedural reliability, the majority of the interviews were tape-recorded, written notes were taken and all interviews were catalogued. In addition, all interview questionnaires were designed in a specific way to assess if the previous interviewee was credible. As well, different people in the organization were interviewed and some spoken information was assessed by comparing it with YDreams' information available online to the public. All of this was critical to perform what Yin (2009) calls *feedback loops*, i.e. a continuous confrontation of the information being analyzed. Finally, the conclusions were drawn based on this procedure.

The next sections depict specific information about YDreams and the final outcome of this procedural work.

4. Field Site[4]

The fieldwork was developed in Ydreams, a Portuguese information technology company set up in 2000 (back then called *Ideias Interactivas, S.A.*). YDreams' headquarters are located in Portugal, but the company has also sales offices in Spain (*YDreams Med*), Brazil (*Rio de Janeiro*) and in the USA (*YDreams USA*). The company´s organizational chart can be found in Appendix 1.

Nowadays, YDreams focuses mainly on the development of unique projects (managed at YLife – the production department) that combine customized architectural intervention, interior design and content interfaces. Such projects have mainly advertising, cultural, educational and entertainment purposes, and each one is unique and designed to fit the customer's needs. The application of YDreams' self developed technology helps the company´s customers finding new creative and

---

[4] Some of the information mentioned here was accessed in YDreams' web page: www.ydreams.com.

unique ways to communicate with their audiences. Previous clients include companies such as *Adidas, Vodafone, Nokia, TMN, Barclays, Coca-Cola, Santander, BBC* and *JCDecaux*.

The disruptive technology that YDreams applies in each project is the result of years of research, formally developed at the YLabs (the company's research lab). YDreams' strategy is built around the creation of "proprietary interaction technologies" (so far, 15 patents were already secured both nationally and abroad), particularly in the field of *Augmented Reality* (the "ability to combine on-screen real and virtual elements in real-time"). YDreams' technology includes software and hardware applications such as YVision and interactive surfaces (the scope of YInteractive, a future YDreams' spin-off). The development of such technologies is possible due to YDreams' highly qualified labor force from top universities worldwide like the *MIT* or the *Oregon Graduate Institute of Science and Technology*, combining of different areas of expertise such as computer programming, image processing, computer graphics, design and 3D manipulation.

YDreams' technology has also enabled the development of several products that were then shaped according to different applications in YLife's projects. However, YDreams' main strategic direction does not entail competition by products. So, in order to focus just on the development of new research and new projects, YDreams' intention is to make spin-offs of all the products created and the related research paths. A good example of this is the future creation of YInteractive.

5. Innovation at YDreams

In the Literature Review section the concept of radical innovation was distinguished from the concept of incremental innovation. Such distinction is important to understand innovation at YDreams, particularly because both types of innovation exist in the company. Radical innovation is exclusively driven by YLabs, YDreams' research lab. In such lab, YDreams develops its disruptive

and unique (i.e. tailored-made) technologies, creating new technological paradigms and new concepts. However, due to confidentiality reasons, it was impossible to move forward in the investigation of YLabs' process of innovation.

Regarding incremental innovation, its scope belongs to YLife (YDreams' production department). The teams at YLife do not develop 'pure' research projects as it is the case of YLabs. Instead, they work over the disruptive technologies developed by YLabs, and transform those technologies to provide unique projects (i.e. tailored-made) that fit the customers' needs. However, YLabs is not completely disconnected from generating incremental innovation. For instance, sometimes Ylabs improves the technologies it conceived and developed before to provide newer versions of such technologies to YLife.

6. Management control systems at YLife

YLife uses two types of formal management control systems: *Budgeting* and *Project Management System* (PMS). *Budgeting* has been evolving since the company started its operating activity in 2000. The evolution of budgeting at YDreams accompanied the development of its commercial areas and the increasing complexity of its operations. Currently, the main objective of the budgeting activity is to respond to all reporting needs of YDreams' financial department and this is done with the aid of an intranet. These reporting needs encompass the planning of the company's overall activity and the analysis, as well as, the understanding of the reasons for deviations from pre-established goals. In addition, the adoption of '*SAP Business one*' (a management software tool available in the market) enabled a better link between the project management information and the required information for internal budgeting and financial accounting and reporting.

YDreams prepares two types of budgets: one concerning the company's overall activity, henceforth corporate budgets (as they include not only the one forecasting the whole activity of the company, but also other budgets of the activity of each department); and another one focalized on projects. The company also prepares budgets to be presented to the customers, although the internal budgets focalized on projects are the ones that serve as a base for project control. Corporate budgets try to reflect the CEO's vision of running the company in a very "spartan" way (i.e. tight cost control). This requires an anticipation of the company's needs in terms of resources, in particular human resources as labor costs represent the biggest piece of total costs. Thus, corporate budgets are mainly used as an instrument to plan the company's activity for the upcoming year (for instance, helping to identify and quantify new R&D efforts) and to weigh the need for company's restructuring, in particular when projects of great dimension, representing more than 40% of the year's current revenues, are accepted (this essentially depends on the strategic importance of the project/client). However, acknowledging the uncertain nature of innovation, deviations are not limited to a specific minimum and those deviations might be tolerated if they contribute to the development of the disruptive technologies (depends on the strategic importance of the project).

Regarding the internal budgets focalized on projects the main goal is to keep track of the consumption of resources by each project, whether it is in a *prospect, negotiation, execution* or *closing phase*. This type of budgets constitutes a requirement of the PMS adopted by Ydreams, which follows the main framework recommended by the *Project Management Institute*. Usually, the sales team, also called "accounts", makes the first contacts with the client, recommending a solution for a specific problem (in a proactive selling attitude) or the client comes with a specific need looking for a solution. This is called the *Prospect phase*. During this first phase, a project manager (PM) is appointed to accompany the "accounts" in the first meetings with the client and takes notes of the

14

client's requirements, the type of problem and the necessary technical specifications. Subsequently, a brainstorming meeting is internally organized at YDreams in order to conceive a solution that fits the client's need. This meeting is intended to be informal but with clear rules. It is open to everyone working in the company, though the PM makes sure that the right people to assess the problem is present, according to the technical specifications of the project (for instance, if necessary a member of YLabs might be called to provide a new perspective). Everyone is entitled to express an opinion in an orderly way and all ideas are registered.

The next phase corresponds to the *Negotiation phase*, where a solution is presented to the client by the PM, after he has shaped a plan with the ideas that came up from the brainstorming meeting. During this phase, the project's price is also negotiated with the client and an external budget (i.e. not used for internal control) is presented to the client, including all components costs (Hardware, Software, outsourcing of non-core parts of the project, and labor costs). If the budget and the execution plan are accepted by the client, then the project starts internally at YDreams, now in more formal terms.

The *Execution phase* corresponds to the formalization of the project internally, which not only requires an organization of resources in terms of technical specification, but also a written detailed calendar of the tasks that must be performed. To implement such organization, there is a kick off meeting mainly intended to establish a team, to discuss the objective of the project and to plan the whole execution. Different members of the team will work at different execution stages of the project, which corresponds to an "execution by layers". During this period, a budget of the project is prepared and monitored to avoid variances in the project's execution, thereby assuring the execution control. Such budget is based on the execution plan and tasks calendar defined by the PM in connection with the team to set up group responsibility instead of individual responsibility (of the PM). The internal

15

reporting procedures are very important to control each project's execution. Every week each member of the team must register his/her time spent in the project, in the time sheets available at the intranet (an average hourly labor cost was already defined by the Financial Department). Moreover, each team member needs to specify (once again in the intranet) the details of the project's technical execution (all technical tasks performed); and the PM and everyone else in the company have access to this information. The reasoning behind is to provide the necessary details in case any member of the team needs to be replaced, thus not harming to the execution of the project and to serve as a field work for future projects. Regarding other expenses, like hardware, software, furniture, and so on, they are compared with what was budgeted (such information is only available to the team). Once again, all information is reported in the intranet, fulfilling the company's reporting needs.

Several meetings are arranged during this phase of execution. Depending on the projects' complexity, the team might make five minutes briefings every day, or the team members might meet once or twice a week to keep track of the project. Moreover, every week all PM working at YDreams meet with the director of the Project Management Department to present and discuss the ongoing projects. The intention is to have feedback on what was done and some recommendations might be addressed regarding all projects' execution. This is another level of control and also a way to spread throughout the company what is being performed. In addition, there are some prearranged meetings with the client to receive some feedback on the work already done in the project and his/her expectations about it. Members of the Financial Department are also present during the projects' execution, making sure the project's budget is accomplished; being present in some of the meetings described earlier whenever their presence is necessary or recommended. This might be the case when the budget needs to be readjusted as there was a major planning mistake, or the technical specifications of the project need to be changed because the client did not agree with what was

presented to him/her or changed his mind, or even because the project's design is completely new to YDreams, causing some uncertainty around the project's plan. In addition, this also depends on the importance of the strategic nature of the project/client.

Finally, there is the *Closing phase*. The project is finished and there is a final assessment of the quality of the project by the Quality Department. Internally, the project's responsibility centre is closed and a final assessment of the accomplishment of the budget is performed.

7.   Management control systems and the Innovation Process at YLife

The innovation process at YLife is similar to the one described by Davila *et al.* (2009), except that the commercialization stage comes earlier than the execution stage (see Figure I on p.8). This difference is a result of the commercial nature of YDreams, since the company focuses mainly on selling projects and not on selling products. As such, it is during the Negotiation phase of the PMS that the commercialization stage occurs; before the execution stage of the innovation process.

The intelligence gathering stage is the starting point of the innovation process at YLife. The "internal and external networks" that stimulate the generation of ideas (Davila *et al.*, 2009) are a direct product of YDreams' knowledge management tools (*Wiki, Subversion* and the *LMS* – internal sources of knowledge), the mailing lists used internally to communicate what other players in the market are doing (a kind of "external benchmarking") and conferences and other relevant scientific colloquies that workers attend – external sources of knowledge. Regarding the knowledge management tools, the *Wiki* is the company's internal Wikipedia ©, where all the relevant knowledge coming from past projects and YDreams' self developed technology is available to be consulted by everyone inside the company. The *Subversion* is the version control software that manages and keeps track of all modifications made on documents, programs and other sources of information that

can be stored as computer files. The *LMS* (*Learning Management System*) is a software platform combined with the *Subversion* that keeps track of all computer files that were created and modified. Such platform connects those computer files to an e-learning sharing system in communities of practice; for instance all information and files related to algorithms is available to be shared and discussed among all computer programmers inside YDreams. This platform is also a learning tool with an archive function that enables to store in the *Wiki* all knowledge produced from these discussions.

The intelligence networks are influenced by the initial brainstorming meetings of the PMS (already described in the previous section). These meetings influence the way ideas are generated because these brainstorms combine the three elements that define creativity (Amabile, 1998). The expertise is not only a combination of workers' education (design, computer programming, 3D, etc.) with the experience coming from past projects in which they participated and interacted, but also a combination with the internal and external sources of knowledge. This combination of different levels of expertise helps to develop the workers creative-thinking skills, where workers' flexibility and imagination are pushed to create unique approaches in the execution of the tailored-made projects. Since the brainstorming meetings are opened to everyone (though the PM makes sure that the right people to assess the problem is present), workers feel part of the project as their ideas are pleased, which has a direct impact on the intrinsic motivation (the strongest from of motivation responsible for creating more interesting solutions). Moreover, extrinsic motivation is also pushed through the existence of additional bonuses tied up to the accomplishment of several goals (for example, learning a new subject and giving a lecture about it to the other members). The way these three elements are managed at YLife contributes to the generation of ideas that make up incremental innovation at YLife.

The idea recognition stage is influenced by two levels of decision inside YLife. The first level of decision occurs during brainstorming meeting, where the PM recognizes the most suitable ideas for the client's problem. The second level of decision in the hierarchy of "resource allocation rights" (Davila *et al.*, 2009) corresponds to YLife's Director, influencing the idea recognition stage through the elaboration and execution of the corporate budget, as this budget is an important vehicle to communicate YDreams' strategic vision of being the lead investigator of disruptive technologies, especially in the field of *Augmented Reality*. In this sense, the corporate budget is an important formal system of idea recognition, by identifying and quantifying new R&D efforts. Moreover, this budget helps to lead the innovation efforts to the market, allocating resources for the ideas that are then selected.

The idea selection stage occurs after the brainstorming meeting, when the execution plan of the project and the external budget of the project are performed. The corporate budget influences the idea selection too, through the availability of resources to execute the project. However, the final decision belongs to the client that is responsible to approve the execution plan and the project's external budget (which occurs during the Negotiation phase of the PMS).

Contrary to the innovation process described in Figure I (p.8), the execution stage includes the manufacturing stage. The PMS defines a set of procedures responsible for structuring this stage, for instance the kick off meeting, in which the definition of the project's execution calendar is essential to plan the "execution by layers". In addition, the meetings that the PM arranges during the project's execution constitute not only an important level of control, but also provide the necessary flexibility to take advantage of unexpected innovation opportunities, without necessarily compromising the project's direction. The project's internal budget is also a structuring system of the execution stage, as it ensures that the project's direction is maintained. Changes in such direction are always

dependent on the decision of the YLife's Director or, depending on the strategic importance of the client/project, on the decision of the CEO.

The value capture stage concludes the innovation process. This stage corresponds to the success of the project's execution, i.e. the control mechanisms were effective, the project was finished and the client approves the final outcome. In this sense, the value capture is the product of the influence of YLife's MCS on the other stages of the process of innovation.

8.   Assessment of the MCS at YLife: concluding remarks

Budgets at YLife fulfill essentially a diagnostic role. On one hand, corporate budgets help in the process of strategy implementation (Simons, 1991; 1995), particularly helping to plan the R&D efforts. On the other hand, the projects' internal budgets are important feedback mechanisms of the project's execution contributing to the definition of the acceptable domain of activity (Simons, 1995; see Bisbe and Otley, 2004). However, these budgets are far from encouraging "individualism and risk-averseness" (see Frow *et al.*, 2006), since the kick off meeting, besides shaping the aim of the project, is also responsible to set up a kind of group responsibility to accomplish what was budgeted.

In contrast, the PMS at YLife plays an interactive role. This MCS is not just used as an instrument of strategy implementation, but through it, all team members get personally involved with the different phases of the project's execution (Simons, 1991; 1995; see Bisbe & Otley, 2004). The informal nature of the promoted debates and dialogues established in the different phases of the PMS become the heart of incremental innovation at YLife, as they are responsible to create new pools of knowledge and alternative ways to use YDreams' disruptive technologies. This informal dimension favours the motivational environment at YLife, enabling a personal involvement and commitment to the projects, favoring the workers' intrinsic motivation (Simons, 1991; 1995; Davila, 1998; see Bisbe

& Otley, 2004). In addition, the PMS is also important to identify strategic uncertainties and to take advantage of new strategic opportunities (Simons, 1991; 1995; Davila *et al.*, 2009). The disruptive technologies developed at YLabs are surrounded by some level of uncertainty, and so their application in YLife's projects constitutes an important test to concepts. At the same time, the prospect and the negotiation phases promote a direct contact with the client, and therefore with the market. This contact sometimes brings new opportunities in helping to identify new research paths that affect radical innovation at YLabs, depending on the nature of the clients' requests (sometimes members of YLabs might attend some of YLife brainstorming and kick off meetings).

The problem of shared accountabilities and partial controllability at YLife is generally acknowledged and several strategies were designed to solve such problem. Regarding the relationship between the account and the PM, they are engaged in team work during the prospect and negotiation phases so that the selling price and the budget defined correspond to the possible technical solution created for the client's request, minimizing risks of failure. The engagement of more people in the brainstorming meetings is also important to solve such problem, as there is a much more complete and accurate technical definition of the project, fitting the client's expectations. In terms of project execution, the same worker might be engaged in different projects at the same time, which might undermine the execution of all projects. This generally does not constitute a problem, since all projects' execution is scheduled in the beginning to avoid such problem. In case that happens, there might be a reprioritization of the projects (according to the strategic importance of the client or of the project) or another available worker might be assigned to the project, being essentially supported by all technical information available on the intranet. The existence of an informal environment helps to solve these conflicts in a much faster way, as people in YDreams always try to

solve conflicts speaking directly with everyone involved. If necessary (as a last resort), other members above in the hierarchy will put an end to the conflict.

The particular way that creativity is managed enables the intelligence gathering activity of YLife's innovation process. One important factor supporting creativity at YLife is the combination of different areas of expertise. The brainstorming meetings of the PMS are essential to combine this expertise into ideas/solutions that fit the clients' requirements. Since everyone can attend these meetings, the communication lines are opened to all members in the organization. Here, an important contribution for a good communication is the workers' knowledge and awareness of the company's strategic vision, communicated with the aid of the company's overall corporate budget. Another important factor that supports creativity at YLife is the definition of resources in which corporate budgets define the necessary resources to innovate, identifying and quantifying new R&D efforts. The analysis of these two factors demonstrates that MCS at YLife are important supporting systems of creativity, instead of killing it. The case of YDreams is important to illustrate how important MCS are in supporting creativity, which triggers the intelligence gathering activity in the beginning of the innovation process. MCS are essential to promote the managerial practices that benefit creativity: existence of challenge, the definition of resources, work-group features and organizational support (Amabile, 1998).

Contrary to some of Kanter's findings (2006), this work project demonstrates that control can be beneficial to innovation, helping to overcome some of the innovation traps that she describes. The diagnostic nature of YDreams' corporate budgets is essential to maintain the company's strategic direction and to define the company's acceptable domain of activity. However, budgets are designed from the beginning to identify and quantify R&D paths, incorporating the existence of uncertainty that surrounds the process of innovation. Moreover, the interactive nature of the PMS and the

communication and feedback mechanisms it builds permits taking advantage of unexpected opportunities. The PMS also organizes incremental innovation not to occur in silos. Instead, all members are welcome to participate in the brainstorming meetings and all the knowledge produced is available for the entire organization through the knowledge management tools. This incentivises all members to be creative and to connect with different areas of expertise, promoting a deeper understanding of different areas, increasing the likelihood of success of the innovation efforts invested.

The new control paradigm described by Davila *et al.*, (2009) reinforces the importance of MCS on innovation, through the diagnostic and interactive use of these systems. The informal dimension of MCS is critical to allow a personal involvement with the innovation process, contributing to the intrinsic motivation of the members. YLife's MCS and process of innovation contextualize this new control paradigm. In fact, YLife's case is important to prove that control is beneficial to the innovation process, as it influences its stages, particularly during the intelligence gathering, the idea recognition and the execution stages. The MCS are important to shape the motivational environment and to contribute to new knowledge. In addition, they are flexible enough to take advantage of unexpected opportunities, without hindering the strategic direction of the project.

This work project provides the contextualized view of the new control paradigm that Davila *et al.*, (2009) misses. Similarly, it reintroduces the discussion of the importance of interactive MCS (formal and informal) in the dynamic environment that characterizes the innovation process, responsible for creating new business paradigms. This field work also demonstrates that MCS can support creativity promoting good managerial practices, like the ones described by Amabile (1998), and help to overcome some of the innovation's classic traps described by Kanter (2006).

Appendix 1: YDreams' Organizational Chart
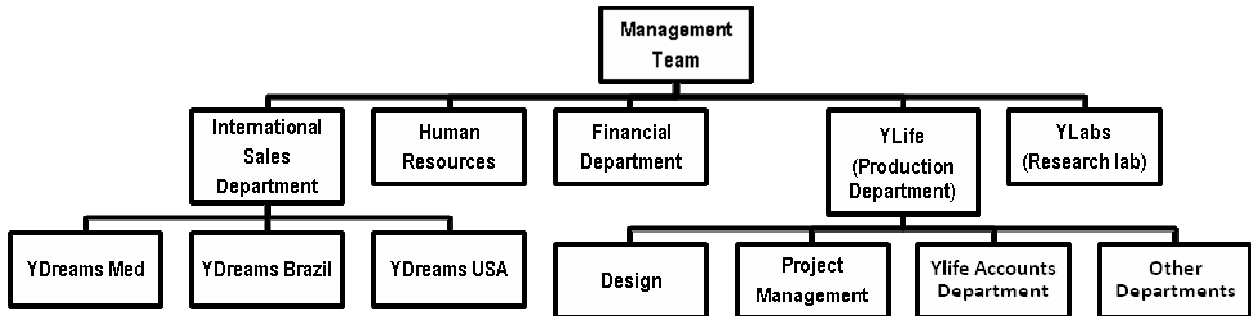
Other Departments: include the *Hardware Department*, the *Software Department*, the *Logistics Department*, the *IT Department* and the *Quality Department.*

Appendix 2: Interviews performed

Date	Lenght (min)	Position	Audio Record
14-07-2009	45	Co-financed Projects Financial Manager	No
20-08-2009	45	YDreams' CEO	Yes
12-10-2009	40	Co-financed Projects Financial Manager	Yes
21-10-2009	48	Project Manager, YLife	Yes
18-11-2009	26	Creative Director, YLife Design Department	Yes
24-11-2009	55	Project Manager, YLabs	Yes
09-12-2009	30	Knowledge Manager, YLabs	No
Total	289	7 interviews	

Appendix 3: Example of some semi-structured questions asked in the interview with the project manager (YLife)

1- Could you describe the different phases to elaborate a project? Do you participate in the meetings with the client?

   a. How do you define what is needed to develop the project? How many labor hours? What Hardware and Software that is needed?

2- Once the team is established, when and how frequently do you meet? How are team members evaluated?

3- How do you manage the project's budget? How are all members in the team involved?

4- How is everything described here changed (if so) when the projects belong to YLabs? How is the process of moving the research produced in YLabs to YLife projects?

References

- Amabile, T.M. 1998. "How to kill creativity". *Harvard Business Review*, 76-87.

- Bisbe, J. and Otley, D. 2004. "The effects of the interactive use of management systems on product innovation". *Accounting, Organizations and Society*, 29 (8), 709-737.

- Chenhall, R. 2003. "Management control systems design within its organizational context: findings from contingency-based research and directions for the future". *Accounting, Organizations and Society*, 28, 127-168.

- Davila, A., Foster, G. and Li, M. 2009. "Reasons for management control systems adoption: Insights from product development systems choice by early-stage entrepreneurial companies". *Accounting, Organizations and Society*, 34, 322-347.

- Davila, A., Foster, G. and Oyon, D. 2009. "Accounting and Control, Entrepreneurship and Innovation: Venturing into New Research Opportunities". *European Accounting Review*, 18:2, 282-311.

- Frow, N., Marginson, D. and Ogden, S. 2005. "Encouraging strategic behaviour while maintaining management control: Multi-functional project teams, budgets, and the negotiation of shared accountabilities in contemporary enterprises". *Management Accounting Research*, 16, 269-292.

- Frow, N., Marginson, D. and Ogden, S. 2006. "Budgeting and Innovation. Complements or contradictions?". *The Chartered Institute of Management Accountants*, ISBN 1-85971-578-8.

- Granlund, M. and Taipaleenmäki, J. 2005. "Management control and controllership in new economy firms – a life cycle perspective". *Management Accounting Research*, 16, 21-57.

- Kanter, R.M. 2006. "Innovation: The Classic Traps". *Harvard Business Review*, Nov., 72-83.

- Koberg, C., Detienne, D. and Heppard, K. 2003. "An empirical test of environmental, organizational, and process factors affecting incremental and radical innovation". *Journal of High Technology Management Research*, 14, 21-45.

- Ryan, B., Scapens, R.W. and Theobald, M. 2002. "Methods of case study research". In *Research Method & Methodology in Finance & Accounting*, 2nd edition, 142-162, London: Thomson.

- Scapens, R.W. 2005. "Changing times: management accounting research and practice from UK perspective". In *Contemporary Issues in Management Accounting*, Bhimani, A. (Ed.), 329-354. Oxford, UK: Oxford University Press.

- Simons, R. 1991. "Strategic orientation and top management attention to control systems". *Strategic Management Journal*, Vol. 12, 46-62.

- Simons, R. 1995. *Levers of Control: How managers use Innovative Control Systems to Drive Strategic Renewal*. Boston, MA, Harvard Business School Press.

- Tuomela, T. 2005. "The interplay of different levers of control: A case study of introducing a new performance measurement system." *Management Accounting Research*, 16, 293-320

- Yin, R.K., 2009. *Case Study Research: Design and Methods (Applied Social Research Methods)*. Thousand Oaks, CA, Sage Publications, Inc.