Supporting creativity through knowledge integration during the creative processes. A management control system perspective

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Abstract: Organizations require an intensive knowledge integration mechanism that supports creativity within all the phases of its process in order to analyze, understand, select, and integrate ideas into a business model. Management Control Systems, as a part of the structural capital, can be utilized as knowledge integration mechanisms to provide: i) a dialog among internal or external actors of the creative process; ii) a knowledge repository for data and other information required in the selecting process; iii) representation of the new ideas into a business model. Using a multi-method case study, this article analyzes the role of knowledge integration played by Management Control Systems (MCS). Within the perspective of the Levers of Control (Simons, 1995), MCS are recognized as the sum of belief, boundary, diagnostic and interactive systems that could be used to manage the creative process. We apply the Appreciative Inquiry model of creativity (Cooperrider, Srivastva, 1987) which recognizes four steps: Discovery, Dream, Design, and Destiny. Creativity is then classified based on the problem's characteristic using Unsworth's model (2001) which separates closed and open problems. Results show that in the early phases of the creativity process problems are more structured and are faced using diagnostic and boundary tools. In the design phase, a dynamic tension between interactive and diagnostic systems is always preferred. The final phase (Destiny) requires diagnostic approaches in all cases. On this foundation, the paper aims to contribute to the literature on innovation and intangible assets. It is our opinion that the results could also be used by managers and entrepreneurs involved in the creative process in order to improve a companies' ability to face change.

Keywords: creativity, management control system, levers of control, knowledge integration

1 Introduction and research question

Creativity is recognized as a core value and is described in the literature as a multi-dimensional construct where persons, processes, products and environment work together to develop successful creative ideas (Runco, 2004). According to these studies, creativity refers to the development and launching of novel ideas that are useful and appropriate to the situation (Woodman et al., 1993). An idea must have both novelty and usefulness to be considered creative (Amabile, 1987, 1999). Zhou and George (2001) recognized that creativity differs from organizational innovation. While *creativity* is the generation of new and useful ideas by individual employees; *innovation* involves the successful implementation of creative ideas by the organization.

Thus, creativity is often the starting point for innovation, and companies need to manage their creativity process in order to reinforce their sustainable competitive advantage. According to the literature mentioned above, organizations need an intensive knowledge integration mechanism that supports creativity within all the phases of the process in order to analyze, understand, select, and integrate ideas in a business model. Indeed, the literature recognizes by connecting knowledge across industrial and social settings, that companies can improve their creativity and foster their innovation ability (Dell'Era et. all., 2011). For example, Handzic and Chaimungkalanont (2004), recognized the central role of socialization in fostering creativity while Politis (2004) found the relationship between transformational and transactional leadership and the 'stimulant' determinants of the work environment for creativity.

Easterby-Smith et. all. (Easterby-Smith et. all., 2008) recognizes the important role of structure and mechanisms for facilitating the knowledge transfer. Thus, Management Control Systems (MCS), as a part of the structural capital, can be utilized as knowledge integration mechanisms since they have an important role as a coordination mechanism (Ditillo, 2004). Unfortunately, as recognized by Davilla et.

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all. (Davilla et. all, 2009, p.296) “Even if control systems are an important element in shaping the organization, its impact on creativity has been virtually ignored”.

To close this gap in the literature our paper examines how companies can recognize and describe how companies could use their MCS as an element of their structural capital in a way that both creates knowledge integration and supports the creative process. Thus, we recognize MCS as a blended tool that provides: 1) a dialog among internal or external actors of the creative process; 2) a knowledge repository for data and other information required in the selecting process; and 3) representation of the new ideas into a business model.

In order to reach our purpose, the paper is organized as follows: paragraph 2 offers a brief literature review on the field of creativity and management control system; paragraph 3 presents the methodology we used and paragraph 4 illustrates major results from our study. Our work ends with a conclusion paragraph which summarizes the aims, methodology and results of our study.

2 Literature review

2.1 Creativity and creativity process

Creativity has a multi-dimensional nature and several theoretical approaches have tried to categorize the concept. This, unfortunately, has led to a confusing array of frameworks. Sternberg (2006), for example, recognizes eight types of possible creative contributions based upon how they propel or move an existing paradigm. Using this perspective, Unsworth’s model (Unsworth, 2001) lends to an approach which asks two sets of questions: First, what are the drivers for idea generation? (E.g. what triggers creative activity) Second, what is the initial state of the trigger? (E.g what kind of problem has to be solved).? From these two dimensions, driver type and problem type, Unsworth derives a matrix of creativity which represents: 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). The earliest modern studies on creativity (e.g. Wallas, 1926) focused their attention on the creativity process where people:1) acquire information during an initial stage; 2) develop the idea unconsciously, (3) formalize the idea and then (4) test it. Runcho (2004) developed an approach where creativity is recognized by a blend of person, product, process and context. Focusing on the dimension of the process we can observe that in any organizational context, specific processes can be distinguished, thus enriching both the scope and the levels of creativity.

According to Puccio and Capra (2010) one of the most developed approaches in terms of creativity is creative problem solving, developed by Osborn (Osborn, 1953). Unfortunately, this approach has been under continuous refinement (Puccio, Murdock, Mance, 2007). The model in its current state recognizes six fundamental steps from exploring the vision to formulating a plan.

Another well recognized approach is Lateral thinking, developed by De Bono (1977, 1999). This approach focuses on the ability of thinking “out of the box” in order to create a shift in one’s thinking or perception. This model represents a complete break from previous thoughts and paradigms.

Cooperrider and Srivastva (1987) provided a different approach named Appreciative Inquiry that focuses on what is working well, instead of pinpointing what needs to be fixed. Yet another path of creativity development, Design Thinking adopts a user-centric approach based on what Fulton-Suri (2005) defined as a unconscious approach to innovation since a consumer’s experience with products provides feedback and clues regarding implicit gaps and opportunities for improvements.

Another approach developed by Gordon (1960 is Synectics which is based on the use of analogies. According to the author, the creative team works using metaphors and direct analogies in order to foster non-rational associations. While Synectics fosters free-associative processes of thinking, the Theory of Inventive Problem Solving (TRIZ) is based on repeatable engineering principles. As recognized from Puccio, Capra (2010) this approach was developed during the 1940's by the Soviet Navy.

These numerous and varied approaches lead to several different process, and are summarized in the table

Table 1: Creativity process. Different approaches

Approach	Description	References
Creative Problem Solving	Development of a process for problem solving with six steps: 1. Exploring the vision 2. Describing the challenge 3. Discovering the idea 4. Defining the solution 5. Exploring the acceptability 6. Formulating a plan.	Osborn (1953), Puccio, Murdock, Mance (2007)
Lateral Thinking	A technique of thought and perception which leads to a development that provides an indirect approach, observing the problem from different angles, as opposed to the traditional mode that concentrates on a direct solution to the problem.	De Bono (1977, 1999)
Appreciative Inquiry	A process that analyzes elements that work and those that do not work within an organization. The phases are: 1. Discovery 2. Dream 3. Design 4. Destiny.	Cooperrider e Srivastva (1987; 2005),S
Design Thinking	Mainly applied to re-engineering of products, this approach is characterized by 5: 1. Understanding, 2. Observation 3. Viewpoint 4. Displaying 5. Prototyping.	Fulton-Suri (2005)
Synectics	Development of a process that encourages participants to talk in metaphors. The process involves the use of analogies: Direct (1), personal (2) and symbolic analogies (3).	Gordon (1960)
Inventive problem solving	Developed by the Department for Patents in the Soviet Navy and known by the acronym TRIZ, this methodology is based on rational issues. Among the most important phases of this methodology, which provides a detail of 40 micro-activities, are: 1. Segmentation 2. Defining local quality 3. Exploring asymmetry 4. Testing universality.	Puccio, Cabra, (2010)

For this paper, we apply a dynamic view regarding courses of action, for which one of the most widely appreciated methodologies is that of “Appreciative Inquiry” known also as AI (Cooperider, Whitney, Stavros, 2005). AI utilizes four distinct phases mentioned above focused on both the positive and negative elements that characterize organizations. It proposes continuous and incremental change rather than great leaps in cognition. As evidenced by Grandi and Holton (2010, p. 180) “... fundamental to complexity theory is the acceptance of change as a given condition for sustaining life within any system. AI echoes this acceptance and focuses in particular on the role of positive feedback in amplifying small changes to produce exponential growth within a system.” The stages of AI are characterized as follows:

- *Discovery* refers to the dimension of problem analysis. It is configured as a preliminary effort, during which the elements of excellence and the problematic elements within the organization are identified. The objective of this phase is to ensure the excellence of the best processes and to set aside problematic elements.
- *Dream* is characterized by the identification of some paths of development and improvement, and is exposed by developing ideal “side trails”. As expressed by Wallas (1926, p. 15), it can be "a sudden insight, or vision, or a feeling, something between an impression and a solution, and at other times it is the result of a prolonged effort." The goal always is to detect elements of improvement.
- *Design* is the phase in which logical thinking, sparked through the dream, and is being incorporated into procedures and processes.
- *Destiny* encompasses the stress tests of the idea phase, resulting in a clear-cut project.

These phases appear to occur within either a single- or a multi-person environment. In an environment governed by management control, the phases will interact with the various elements of the company’s knowledge integration structure that connects all the phases. Thus, management control systems could play an important role.

2.2 MCS and knowledge integration

As noted, the creativity process needs a knowledge integration system that connects all the phases. When a task requires a high combination of specialists, efficiency is better realized through an effective integration among partners (Ditillo, 2004). Indeed, integration of knowledge helps to overcome uncertainty, thereby reducing knowledge disparities and clarifying people's beliefs and actions. Few studies have analyzed the knowledge integration impact in oragnizations, choosing to focus more on different aspects of knowledge management such as knowledge transfer and knowledge acquisition. It has been recognized that teams create synergy to improve their efficiency thus creating a cumulative process since the performance of the entire team is higher than the sum of its parts. Indeed, the group is able to integrate single perceptions reaching different and new points of view or having higher quality of judgment. In this perspective, as evidenced by Ditillo (2004), management control systems can certainly be interpreted as tools for knowledge management in general and as knowledge integration mechanisms in particular. Unfortunately, knowledge management in general, and a MCS in particular, are encompassed by the complexity of process management. Ditillo (2004) uses the model of Wood (1986) to recognize three determinant complexities: component complexity (number of the parties), coordinative complexity (number of relationships), and dynamic complexity (variability of parts and relationships). The author connects to the above-mentioned communication oriented approach for the extreme situation which is characterized by cognitional complexity and great dynamism. This is where an understanding of phenomena becomes central The model also considers the repository approach for extremes that are represented by computational complexity in which the coding and the preparation of performance reports are key elements. Complexity of the task and the MCS approach are connected in the effort of facilitating the evolution of management judgment. On this perspective, Hall (2010) views the role of an MCS as a means for producing mental models. Specifically, he found that control systems not only prompt mind mapping between managers but also increases performance. Hall also notes that the ability of an MCS to provide frameworks which support the cognitive process is related to the characteristics of individual individual managers. Managers having less experience in their specific role and who are members of smaller companies are more impressionable than managers having more experience and who operate in larger organizations (Hall 2010). The improvement in managerial perceptions is correlated with the improvement of managerial performance (in a broad sense) and, consequently, provides a more efficient exploitation of creative potential (Hall 2010, p.72). But, as admitted by Davila, Foster and Oyon (2009, p.296) "the interaction between creativity and organizational forces - an important field of research in the creativity literature - has yet to be explored".

A key contribution to understanding MCS is the work of Simons (1995, 2000). The author defines management control systems as "formal, information-based routines and procedures managers use to maintain or alter patterns in organizational activities" (Simons, 1995, p.5). Other studies highlight that the blend of aims MCS pursue requires a combination of multiple control systems (Otley, 1980, Chenhall and Euske, 2007). Indeed, Simons argues that there exist " […] four key constructs that must be analyzed and understood for the successful implementation of strategy: core values, risks to be avoided, critical performance variables, and strategic uncertainties. Each construct is controlled by a different system or lever, the use of which [...] creates the opposing forces - the yin and the yang - of effective strategy implementation" (Simons, 1995, pp. 6-7). Simons defines four systems that are used to exercise control ("levers of control"; LOCs), which are usually articulated as: belief, boundary, diagnostic and interactive systems. The belief system is "the explicit set of organizational definitions that senior managers communicate formally and reinforce systematically to provide basic values, purpose and direction for the organization" (Simons, 1995, p. 34). In order to explain the beliefs function, the literature recognizes a fundamental role in communicating core values for inspiring and motivating all the parts of an organization (Wider, 2007). As a consequence of the correct use of the belief system, organizations are able to explore, create and use endeavor-engaging appropriate actions for coordinating all the efforts of the organization in the same direction. The boundary system "delineates the acceptable domain of strategic activity for organizational participants" (Simons, 1995, p. 39) and provides the organization with specific behavior constraints. Thus, all parts of the organization are able to understand what is (and what is not) permissible. The diagnostic system is intended to motivate components of an organization to align their performance with organizational objectives. Feedback and measurement systems involve actions such as score keeping and the analysis of deviations from standards as the basis for monitoring employee actions. The collected information actions allow the analysis of the progress towards goals and to take corrective action when necessary (Mundy, 2010). Finally, the interactive system is forward-looking and characterized

by active and frequent dialogue between top managers and middle managers through debate about organizational strategic problems and their possible solutions. It implies a proactive, non-invasive problem solving approach focused on strategic uncertainty. According to this literature, the levers of control generate a ‘‘dynamic tension between opportunistic innovation and predictable goal achievement that is essential for positive growth” (Simons, 1995, p. 153).

3 Methodology

In order to achieve an empirical understanding of the impact of MCS as a knowledge integrator within creativity processes we developed a theory informed comparative multiple-case study (Yin, 1994) for linking the role of MCS as a creativity facilitator. In order to test our framework, a sample of 3 SMEs located in northeastern Italy was drawn from a list of 30 manufacturing firms supplied by local SME associations. The overall selection criterion for creating the sample was the introduction of at least one new product during the past three years with expected cost of the innovation project exceeding 100.000 Euros. This enabled the selection of companies having both a history of innovation and relevant innovation strategy projects. An invitation email was sent to these 30 companies from which a 10% response rate was achieved, resulting in a sample of 3 firms .These firms furtherindicated their willingness to participate in the project. Within this sample we adopted a multi-method approach that involved collection of information through interviews, public sources (such as balance sheets), and internal reports provided directly by companies. Interviews using a semi structured questionnaire were undertaken with the CEOs (managers or entrepreneurs) of the selected firms. A second round of interviews was developed with the key managers of selected firms. Data collected were recorded and transcribed. Interviews lasted for a total of 1755 minutes with an average time of 195 minutes. . An interactive content analysis methodology (Krippendorff, 2004) was selected in order to identify cross-case patterns that could highlight similarities and differences among the sample (Eisenhardt, 1989).

Table 2 reports a short description of the three companies interviewed. (To ensure anonymity we have referred to them as company A, B, or C).

Table 2: Description of Sample Firms

Firm	SIC code	Sector	Age of the firm	Sales /mio	Interview time	Managers interviewed
A	29	Petroleum and coal product	55	20	570	3
B	27	Printing and publishing	28	21	600	3
C	28	Chemicals and allied products	13	15	585	3

The primary objective of the interviews was the collection of detailed data about the control tools implemented, as well as the importance of such control tools for managing and monitoring the creativity process. The AI model was utilized for analyzing the creativity process and the LOC model was used for categorizing the MCS. To ensure the findings, we used a data triangulation approach (Yin, 1994) based on comparison from different kind of data collected: interviews of different managers within the company, and a comparison of interviews with company reports, ….

4 Analysis and Conceptual Framework Derivation

The literature shows that MCS are able to support the creative process by assisting in the construction and confirmation of mind mapping between managers. Their key role lies in functioning as a repository of knowledge and as a communication and dialogue tool. Therefore, we believe this double approach increases the effectiveness and efficiency of creative processes. We combined Simons’ (1995) perspective of “Belief, Boundary, Diagnostic and Interactive” (Levers of Control: LOC) with Cooperider and Whitney’s (2005) model with “Discovery, Dream, Design and Destiny” (Appreciative Inquiry: AI). According to Unsworth's model (Unsworth, 2001) the dimension of the problem influences the creative process. In problem-finding research, scholars have examined the degree to which a problem is formulated before the beginning of the creative process. Using Ditillo approach (Ditillo, 2004) we think that more structured problems require more computational effort

(developed through Diagnostic and Boundary Systems), while more open problems require a more cognitional approach (developed through an Interactive and Belief System). Using this assumption, we analyze the role of Levers of Control on the Discovery, Dream, Design and Destiny phases of the creative process.

4.1 Discovery and Levers of Control

Given the central motivation of the discovery phase being to identify the "positive capacity" and the "positive core" of a business, traditional approaches to AI propose a procedure based on interviews and on comparison of their output. The emphasis is on "performing", so that during the discovery phase "people throughout a system connect to study examples of what makes them their best, to analyze and map their positive core, and to investigate their root causes of success" (Cooperrider, Whitner, 2005). This directly connects to management control, because "to operate effectively, organizations ... need to know how many resources they are using in different activities and whether their use is cost-effective ... The accounting system is a language to provide information of this nature" (Anthony, Hawkins, Macri, Merchant, 2005, p.1). This concept also delves into a firm's strengths and weaknesses, since "to ensure that an inquiry hits at the heart of a system, it must be focused on questions that really matter to the organization's purpose, its value, its legitimacy and sustainability" (Grandi and Holton 2010, p.181). This approach was identified in all firms in our sample. Indeed, one manager stated *"We work in the pharmaceutical R&D field, so for us it is important to know what our core values are in terms of competitive success in order to develop future projects, so we have developed an intensive control system based on a Balanced Scorecard".* The perspective of purpose, value, legitimacy and sustainability points to the central role of diagnostic systems: The diagnostic approaches are often associated with a strict monitoring of processes and resources and often include action plans derived from the strategy, specific financial targets, and from comparing expected results with real achievements. This was confirmed by another manager in our sample who noted *"We need to control our goal achievement if we want to know what we know and in what we are good"*. With a very strict use of mechanical control systems, areas of excellence can be identified as well as the most critical areas of business, and thus they are a significant support to the discovery phase. One firm said: *"We always analyze our results and our goals in order to identify problems and to recognize points of improvements"* This aptitude of control systems has been posited to exert a most comprehensive influence on the cognitive faculties of managers (Hall 2010). By contrast, excessive use of diagnostic control systems, which are too heavily oriented towards "performance", ends up stifling exploratory activities. Thus, we derive that:

> ***P1a:*** *The use of the diagnostic systems can facilitate the phases of discovery during the creative process;*

4.2 Dream and Levers of Control

Explorative activities require high levels of freedom: "Managers need to be encouraged to identify defined areas within which a degree of experimentation and risk taking might be beneficial. Too often we stifle creativity and learning by insisting upon good performance from all activities" (Otley, 1994, p.287). This must be kept in mind when devising MCS tools, and there have been admonitions to this effect, (such as expressedby Kaplan and Norton (2001) in their Balanced Scorecard approach), that the use of a system be not limited to a mere diagnostic context. It becomes essential to use MCS tools as guides to the organization's creative activities towards the dream phase. Cooperrider and Whitner (2005) report that "mapping the positive core was followed by reflection on the question: What is the implication of this map of the positive core for the future of our business?" This appears to be confirmed by our analysis. One manager we interviewed stated: *"We need to know our core values in order to shape our future organization. For example we have developed a strict code of conduct in order to drive future developments"*. It seems evident before initiating creative processes and exploring innovation, that the mission and vision of the project be communicated in order to transfer and share core values. Then all efforts can be focused on a "communal" dream stage. One of the managers said, *"We spend a lot of time developing internal journals, communication meetings where we try to share our vision and core values. For one of our R&D projects we have asked to our middle managers to solve the problem considering the environmental impact of their decisions, so we changed the destination of one of our plants because we need to be environmental-friendly"* As evidenced by Malagueño and Bisbe (2010, p.11): "Cultural control could be defined as set of shared values and beliefs that guide norms of behavior within the organization". This leads into to the subsystem of Beliefs and Boundaries operating within a MCS. The sharing of values, symbols and

signs is essential to stimulate and guide the creative process: “Belief systems provide employees with a stable environment, and they also play an important role in challenging organizational inertia and political processes” (Mundy, 2010, p. 501). Thus we derive that:

> ***P2a:*** *The use of beliefs- and boundaries-systems can make it easy to “dream” in the course of the creative process;*

4.3 Design and Levers of Control

This phase always commences shortly after the dream phase has begun. as feasibilities must be conceived early. Managers will push for an interactive use of the control systems, aiming at discussions between the various business functions in order to communicate and stimulate new thinking strategies for steering the organization toward new horizons. “Conversation becomes a core process for eliciting the data and energizing the system for change” (Grandi and Holton, 2010, p.180). One company in our sample stated: *“Our projects required multiple competences, so our project manager organized frequently meetings in order to share visions and ideas, catching specific knowledge in order to create the best R&D Project”.* This would push the entire organizational system beyond the status quo, with a new focus on new value drivers, arguing what the status quo is like and what the organization could become and what the solutions for change should be (Cooperrider and Whitner, 2005; Henry, 2006). The design phase is used by senior managers to create their own interactive approaches for pushing the search for new solutions, to break routines, and to identify and encourage the emergence of new opportunities, new strategies and new initiatives (Simons, 1995). As asserted by Dent (1990), curiosity and a desire to experiment can be fueled by control systems: planning and control tools can be used to stimulate a dialogue that will lead to a new corporate image and will interact with the organization’s environment in a new way. If the use of a MCS is associated with the development of less formalization, and is more oriented to communication, this will develop open information flows among the various organizational levels. Henry (1996) noted that there exists a positive correlation between the use of interactive control and the acquirement of new capabilities in marketing, entrepreneurship, learning and innovation. This, as well, seems to be confirmed by our interviews when a manager said *“We need to talk because we need to discover operative solutions for shaping our future, putting together a multiple knowledge. For example, thanks to our weekly meeting, we were able to solve a huge problem, since one of our middle manager knew a special new material that allowed us to save more than 10% of construction cost. Thanks to this, we decided to develop the project”.* Thus we derive that:

> ***P3a:*** *The use of interactive systems enables the design phase to evolve within the creative process;*

4.4 Destiny and Levers of Control

Destiny leads to the natural selection of ideas and denotes where these ideas should be located thus "letting the transformation emerge" (Cooperrider, Whitner, 2005, loc. 354-61, Kindle Version). Creativity in this sense is a social process in which ideas should be shared, and their validity assessed by the entire organization. Here, the use of MCS, in the essence, can contribute by construing mental mind maps. In this perspective, the diagnostic use of control systems can provide the conceptual framework within which the change of thought can produce effects. This approach seems to be confirmed by our interviews. One manager said: “W*e strictly use Monte-Carlo analyses for evaluating our project ideas, we are a small company and we can’t allow to waste money following dreams we need to know that there are concrete opportunity at the end of the road*”. Thus we derive that:

> ***P4a:*** *The use of diagnostic systems can smooth the progress of destiny in the creative process*

4.5 Theoretical framework derivation

Empirical analysis supports the development of a theoretical framework as depicted in Figure 1.

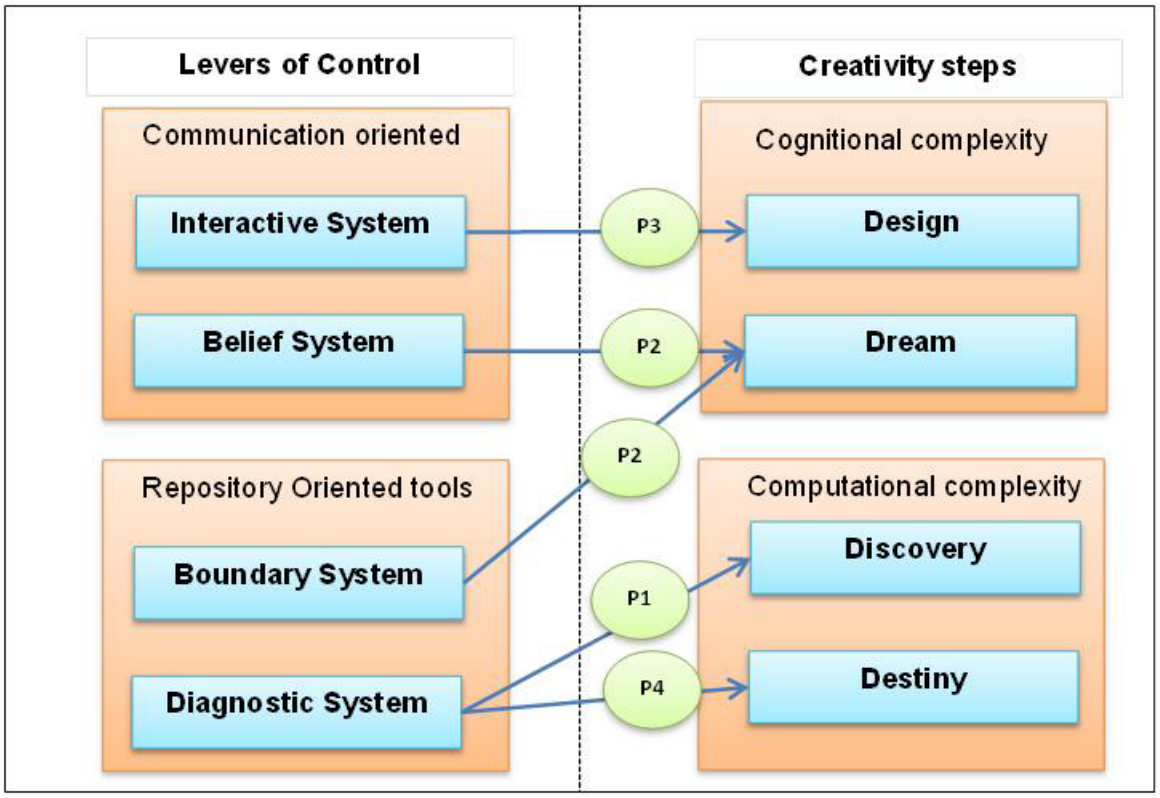

Exhibit 1: Levers of control and stages of creativity process

Phases of creativity are categorized by recognizing either a more cognitive complexity or a more computational complexity. An ability to analyze the items that are working well according to the appreciative inquiry techniques requires a more computational complexity. Managers need to measure several aspects of the organization, namely: finding the processes, the products and the people which work and those which do not work. Thus, Management Control Tools require a more repository approach. At the same time, the ability of selecting ideas that merit further development requires business plans, objective valuation and so on. A repository approach where information is well catalogued and measured could support this step of the creativity process.

The Dream step requires the ability of imagining the world in a different way. Therefore, management control systems must support the communication inside the organization, thereby leading efforts to a common goal. Given this perspective, the Belief system can support the Dream step of creativity. At the same time these efforts need to be finalized. A dynamic tension which involves the boundary system has to be created whereby people know the borders of their actions. This should lead to a maximization of effort on the part of all participants. Moreover, several endeavors have to be aligned in order to shape a dream. During the design step a continuous dialog approach must be in place in order to support the creativity process. Then, an interactive system can support the Dream phase.

5 Conclusion

We have proposed a new model which combines research in the areas of Simons' (1995) perspective of "Belief, Boundary, Diagnostic and Interactive" (Levers of Control: LOC) with Cooperider and Whitney's (2005) model with "Discovery, Dream, Design and Destiny" (Appreciative Inquiry: AI). Using a multi-method case study we have analyzed the knowledge integration role of Management Control System, recognizing how the Levers of Control could support the creative process. Our hypothesis are that in the early phases of the creativity process more structured problems are faced using diagnostic and boundaries tools while problems that are more open are faced using interactive and belief approaches. Thus, in the Dream phase a dynamic tension among boundaries and belief can facilitate the process focusing the creative endeavors while the proper use of interactive systems enable the design phase to evolve within the creative process. The final phase (Destiny) requires diagnostic approaches in all cases. On this foundation, the paper aims to contribute to the literature on innovation and intangible assets. It is our opinion that the results could also be used by managers

and entrepreneurs involved in the creative process in order to improve a companies' ability to face change.

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