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The Role of Project Management in Fostering Creativity: Towards Successful Architectural Design Projects

Angeliki Giannoulatou Destouni
Harrisburg University of Science and Technology

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The Role of Project Management in Fostering Creativity:
Towards Successful Architectural Design Projects

Angeliki Giannoulatou Destouni

GRAD 699 – Graduate Thesis

Master of Science in Project Management

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Abstract

The present study aims to identify best practices for project management, which can reinforce creativity in architectural design projects. Although creativity is a critical component of any successful design process, there is no existing literature or systematic documentation of what project management can do to cultivate it within an architecture work environment. Therefore, this research first explores existing theories and bibliography to define creativity and its conducive factors, and draw some hypotheses on the potential contributions of architectural project management. The validity of these hypotheses in practice is then tested through a survey, which mostly confirmed and expanded them. The combined findings, from primary and secondary research, highlighted the roles played by the project manager's leadership approach, the project team characteristics, the team members' motivation, the workflow structure, and the creativity-relevant processes. These contributed to a partial framework of recommendations and suggested practices, which help walk a fine line between project constraints and new ideas in architectural design projects.

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Introduction

This research will identify best practices in project management, applied to architectural design projects. Projects planned and executed within the realm of the “Creative Industries”, such as Architecture, have certain particularities that differentiate them from other types of projects and demand a slightly different approach in project management. The success of such projects relies heavily on creativity, which is less an individual trait, as it is an element promoted and enhanced by an organization’s culture, leadership and project management methods.

It is a common misconception that project management is all about organizing tasks and keeping a strict control of schedule and budget, thus not allowing, and even suppressing, any trace of creativity and freedom of expression (Saladis, 2009). Like in most creative fields, a large part of Architecture shares that stereotypical belief, by supporting the philosophy that project management is useful and necessary in the construction and administrative phases of architecture projects, but that it is an inhibiting element in the design phases. The main point of this argument is that project management is a “left brain” profession that cannot understand and foster all the “right brain” activities that make design projects successful. The aim of this paper is to reveal indications and evidence that question this preconception.

Although there is some research that studies the role of the project manager in the success of projects, there are not many precedents linking project management to the formation of work conditions conducive to creativity and richness of ideas. project managers in Architecture often do not know how to lead a project successfully through constraints, while fostering creativity at the same time. The absence of such a systematized framework prevents project management from

fully responding to the needs of the Architecture field, and neither of the disciplines can reach its full potential.

Overall, this research is very pertinent, both to the field of Project Management and to the field of Architecture, as it tries to strengthen and multiply the bridges between the two. Both can greatly benefit from such an exchange: Architecture can further improve its processes for successful projects, while Project Management can transcend its present limitations, by expanding and sharpening tools and methods that accommodate more, and more varied, requirements and needs.

The first section of this study consists of a research through existing literature to define and understand creativity, its main characteristics and determining parameters, as well as highlight some articulated directions in project management methods and processes that can apply to Architecture. The methodology section will describe and lay out the approach for further research, in which the hypothetical framework resulting from the existing bibliography will be evaluated through case studies and surveys. The results will then be presented and synthesized into conclusions, with the remaining questions opened up for future research.

Literature Review - Analysis of Related Work

The analysis of existing literature first aims at formulating a definition of creativity, mostly within the context of an organization, and identify some of its main characteristics. It is also crucial to understand the factors that influence and enhance creativity, in order to propose project management practices in this direction. There have been studies that highlight specific approaches of managing for creativity, as well as more empirical tips and methods to stimulate creative ideas. These are not exclusive to Architecture, in fact they usually refer to a breadth of disciplines, but they will be used to form a framework, which will be validated or modified through further research in the architectural design field. The purpose of the Literature Review is to extract the elements, conducive to creativity, that the proposed project management practices will aim to ensure, as well as build hypotheses that will be evaluated in later stages of the research. These hypotheses will definitely address tools and processes, and might also suggest points where the currently used waterfall methodology can be adapted, to better respond to the needs of the architectural design projects.

Defining Creativity and its Contributing Factors

Creativity has been the subject of numerous and diverse studies across many decades. The perspective has greatly shifted and evolved through the years. More recent theories have widened the spectrum of creativity, and have also widely accepted that it is a trait that can be cultivated and enhanced, and is not just inherent. According to Andriopoulos (2001), theories on creativity started by considering it exclusively as an individual, personal characteristic, but, as decades passed, more aspects of it emerged, now adding team creativity and organizational creativity to the spectrum of research (Andriopoulos, 2011). An expert researcher of creativity, Theresa Amabile (2012)

mentions that, until the 1970s, it was considered a characteristic that special cases of “geniuses” were born with, and, therefore, a rare element to preserve and admire. However, five main points and paradoxes in the existing research led her to question this established belief, and trace a new direction in the study of creativity, clearly expressed in her “Componential Theory of Creativity”, first articulated in 1983 and updated several times (Amabile, 2012).

In a recent revision, Amabile (2013) defines creativity as “the production of a novel and appropriate response, product or solution to an open-ended task” (Amabile, 2013, p.134). The main premise of the “Componential Theory”, and of the majority of Amabile’s large body of work, is that creativity is influenced by four main parameters, all of which need to exist to a certain degree for creativity to be possible. Among these influencers, three are internal to the individual: “Domain-relevant Skills”, “Creativity-relevant Processes” (personality and cognitive approaches that lead to new ideas), and what Amabile has coined as “Intrinsic Motivation”, in her “Intrinsic Motivation Principle of Creativity”. According to the principle “The intrinsically motivated state is conducive to creativity, whereas the extrinsically motivated state is detrimental” (Amabile, 2013, p.134-135), meaning that motivation cannot be imposed but inspired through meaningful work, or other parameters. Finally, the fourth influencing factor is external to the individual and is the “Social Environment” or, in the case of an organization, the team or organizational environment (Amabile, 2013). One could argue that, with the exception of the “Domain-relevant Skills”, all other creativity influencers can be affected and determined, to a certain degree at least, by the project management (PM) practices, and, therefore, they will play a role in proposing a PM framework for creative architecture design.

Since its publication, the “Componential Theory of Creativity” has also been largely confirmed and expanded on a team level and an organization level. Zhou (2003) found that having

creative co-workers (models) increases creativity, as does receiving developmental feedback, by boosting intrinsic motivation. On the contrary, close monitoring and frequent peer evaluations can create pressure that blocks the expression of novel ideas (Zhou, 2003). Hirst, van Knippenberg and Zhou (as cited in Amabile & Pillemer, 2012) also suggested that the team context can reinforce individual creativity by supporting individual learning, after they observed that members of teams were more creative when their task was challenging and led to the development of new skills (Amabile & Pillemer, 2012). Taggar (as cited in Amabile & Pillemer, 2012) concluded that there are also “Team Creativity-Relevant Processes” that, when used, help bring out the team’s most creative performance. This is also influenced by the team environment (Amabile & Pillemer, 2012, p.16). The conclusion was also confirmed in a study by Polzer, Milton & Swann (as cited in Amabile & Pillemer, 2012) which found, for example, that if team members share a view of themselves as an introduction at the very beginning of the collaboration, a process they called “interpersonal congruence”, the outcomes of the teamwork were more creative (Amabile & Pillemer, 2012).

On the organization level, theories have also highlighted various factors that can contribute to creativity. The conclusions of Andriopoulos’ Literature Review on the “Determinants of Organizational Creativity” suggest five principle elements that can enhance it: the “Organizational Climate”, “Leadership Style”, “Organizational Culture”, “Resources and Skills”, and the “Structures and Systems of the organization” (Andriopoulos, 2001), see Figure 1. In fact, the first three are interdependent, and could all be greatly influenced by the role of the project manager.

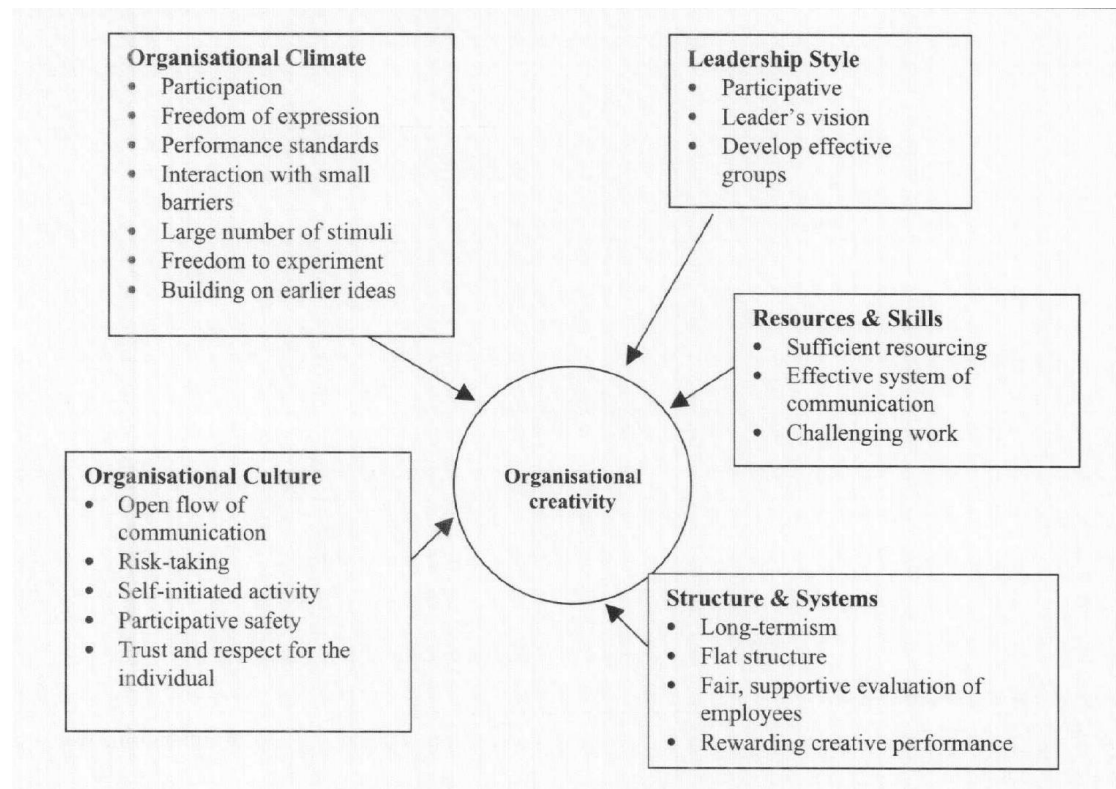


Figure 1. Factors affecting Organizational Creativity (Andriopoulos, 2001)

Woodman, Sawyer and Griffin (1993) also studied the links between individual, team, and organizational creativity with other factors, as can be seen in Figure 2 (Woodman, Sawyer & Griffin, 1993). The diagram, even if hypothesized, hints at group creativity being influenced by the social environment and organizational characteristics, both of which can also be affected by project management practices.

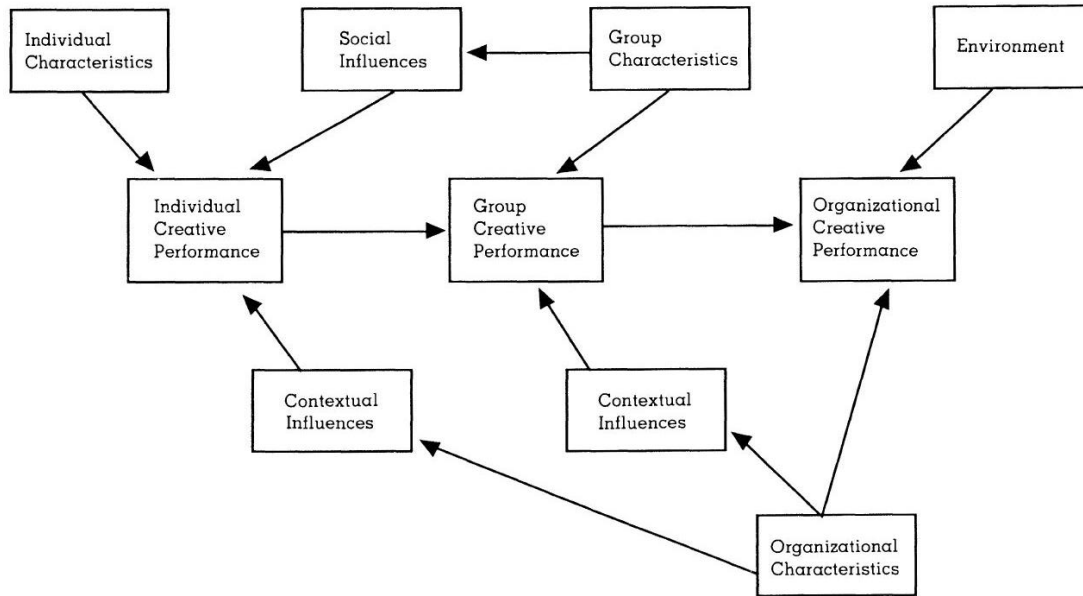


Figure 2. Hypothesized Linkages among Factors related to Organizational Creativity (Woodman, Sawyer and Griffin, 1993)

Amabile and Kramer (2011) emphasized the role of events, as part of the work environment, and identified two main types that can positively influence creativity: “Catalysts” and “Nourishers”. “Catalysts” are events that have a direct impact on the work, like adding resources, and “Nourishers” are indirect events that boost creativity, such as recognition of effort, or moral support. In addition to these factors, they also highlighted the importance of “Small Wins” and the sense of progress in meaningful work (Amabile & Kramer, 2011).

From all the aforementioned theories and studies on creativity and its determinants, from individual to team and organizational level, it becomes apparent that appropriate management and creativity-relevant processes can play a pivotal role. The next chapters of this Literature Review will investigate these two aspects that pertain to project management - overall approach and specific tools - as they have been already proposed in relation to creativity or the Creative Fields. This overview will aim at adding some more elements towards the proposed new PM framework.

(Project) Managing for Creativity

The vast majority of existing literature is in agreement in suggesting that more liberal, democratic and participatory team leadership helps foster creativity. The following overview also hints at the need to reinvent existing processes and methodologies, in order to better address the needs of creative projects.

Esin Kasapoğlu (2011) conducted a research, in form of a questionnaire survey, across 40 architects in Turkish design offices and tried to confirm or revisit her initial hypotheses, based on the data she collected. Most of her conclusions on project leadership behaviors indicated that most design teams perform better when in a context of participative leadership, while a minority prefers an authoritarian or free-rein leadership style. A very important distinction that she made was to highlight the particularities and differences of design project teams in relation to other project teams. According to Kasapoğlu, regular project teams usually work together for the duration of the specific project and are then redistributed to new teams for their next assignment. On the contrary, design teams in Architecture often continue working in the same combination for next projects as well, especially if the size of the firm is not that large. This difference in the project team lifecycle duration must affect, in Kasapoğlu's argument, the project leadership choices as well. (Kasapoğlu, 2011).

The main findings of Kasapoğlu's study are also confirmed in theoretical research, such as the following. Among many theories mentioned in Turner and Muller's Literature Review (Turner & Muller, 2005), Frame (1987) considers each of four leadership styles, as most suitable for a certain phase of the project life cycle, and as most compatible with a certain team type and nature (Frame, 1987 in Turner & Muller, 2005). As can be seen in the following Figure 3, "Design" phases are best served by democratic leadership, which gives all team members more agency and

encourages participation. Both of these elements can also contribute positively to creativity, as they reinforce the employees' "intrinsic motivation".

Leadership Style	Stage	Team Type	Team Nature
Laissez-faire	Feasibility	Egoless	Experts with shared responsibility
Democratic	Design	Matrix	Mixed discipline working on several tasks
Autocratic	Execution	Task	Single discipline working on separate tasks
Bureaucratic	Close-out	Surgical	Mixed working on a single task

Figure 3. Leadership Styles, Project Team Types and the Project Life Cycle (Frame, 1987 in Turner & Muller, 2005)

Dulewicz and Higgs (as cited in Turner & Miller, 2005) identified 15 leadership competence dimensions that relate to their three leadership styles and can be used to evaluate the project managers' performance, as can be seen in Figure 4 (Turner & Miller, 2005). It is interesting to see which leadership styles support the elements conducive to creativity, such as "Motivation", "Imagination", "Empowerment", etc. Theories on creativity mention all of these as important for achieving creativity, so a leader or project manager with the respective competencies is likely to develop creative skills. For the case of this study, however, this individual needs to contribute to creative conditions for project teams, which is a more complex challenge.

Group	Competency	Goal	Involving	Engaging
Intellectual (IQ)	1. Critical analysis and judgment	High	Medium	Medium
	2. Vision and Imagination	High	High	Medium
	3. Strategic Perspective	High	Medium	Medium
Managerial (MQ)	4. Engaging Communication	Medium	Medium	High
	5. Managing Resources	High	Medium	Low
	6. Empowering	Low	Medium	High
	7. Developing	Medium	Medium	High
	8. Achieving	High	Medium	Medium
Emotional (EQ)	9. Self-awareness	Medium	High	High
	10. Emotional Resilience	High	High	High
	11. Motivation	High	High	High
	12. Sensitivity	Medium	Medium	High
	13. Influence	Medium	High	High
	14. Intuitiveness	Medium	Medium	High
	15. Conscientiousness	High	High	High

Figure 4. Leadership Competencies and Styles of Leadership (Dulewicz & Higgs, 2003)

Ed Burgoyne (2015) explored whether certain project management methodologies are better than others for successful projects in creative firms (Burgoyne, 2015). After reviewing the strengths and weaknesses of Waterfall, Agile, and Integrated methodologies, he concluded that there is no exclusive choice to what creative firms prefer to use, but it really depends on the organization's needs and ideology. Each project management methodology offers different possibilities, and firms can be creative even in how they customize methodologies by merging their elements into new hybrids. Moriel (2017) supports this direction in his proposed hybrid project management framework for the building Design and Construction Industry, where he introduces some Agile tools and processes in certain phases of the traditionally managed projects (Moriel, 2017).

In another proposition, Burgoyne (2013) described the advantages of having an Integrated Project Manager in creative firms. According to his text, the project manager is not only able to coordinate and keep a project to its constraints, but also capable of leading and supporting the

creative process, through his/her special skills as a designer, producer, etc. A combination of “hard” and “soft” skills, makes the Integrated Project Manager an invaluable asset of a creative firm (Burgoyne, 2013).

On the creativity front, Amabile and Khaire (2008) mention the following elements that the leader, or project manager, needs to ensure. By implementing these points, the project manager can “manage FOR creativity” (Amabile & Khaire, 2008, p.2), which is critical to an Architecture project’s success. Among those, the most important are: “Drawing on the Right Minds”, “Tap Ideas from all ranks”, “Encourage and Enable Collaboration”, “Open the organization to diverse perspectives”, “Map the phases of the creative work”, “Provide paths through Bureaucracy”, “Motivating people to perform at their peak”, “Provide Intellectual Challenge”, “Allow people to pursue their Passions”, “Be an appreciative Audience”, “Embrace the certainty of Failure”, “Provide the setting for Good & Noble work”, “Pulling it all together”, “Marrying Research to Practice” (Amabile & Khaire , 2008).

As an unconventional “best practice” for promoting creativity, Saladis (2009) argues that project managers should also “encourage their team members to challenge methods and procedures, and look for better and more efficient ways of accomplishing project activities” (Saladis, 2009). In addition, he mentions attitudes that block creativity in dismissive and absolute project managers, as well as some that allow creativity to grow, in project managers who listen, are open to new ideas, and even provoke them by asking “what if” (Saladis, 2009)

Creativity-Relevant Processes

In addition to theories on creativity and the factors that can enhance it, many empirical findings from experiments and practice give valuable tips on how to promote and cultivate creativity in the workplace. These include specific processes and methods that lead to innovative

and creative ideas, which have been applied in various professions and have been proven successful. For the purpose of the present research, the processes to achieve creativity on a team level are most important, and tools addressed to individuals are only relevant for what they contribute to the team's work.

According to Kurtzberg and Amabile (2001), consistent steps to achieve creative problem solving have been identified since the earliest studies, as well as characteristics that are shared among "creative minds". Based on the idea that they have the ability for "lateral" or "associative thinking", one can understand how a diverse team and the presence of other individuals can enrich the creative process with more input. There are many benefits to using group brainstorming and problem-solving, but there are also some disadvantages, such as blockage, and dangers, such as "groupthink". These can be overcome in different ways, for example by implementing "anonymous brainstorming", or asking individuals to bring some ideas to the group table, and then discuss them collectively. Moreover, two key aspects of working in teams, diversity and conflict, can also affect creativity, both positively and negatively. Too much diversity in approaches can be an obstacle to finding a solution, as is the conflict that can result from it. On the other hand, having a "Translator" or "Bridge" in the team can bring out the advantages of diversity, and conflicts, if not too deep and when handled correctly can lead to more complex and stronger ideas. (Kurtzberg & Amabile, 2001).

Brainstorming is among the most used techniques for innovation and fresh ideas, but there are many, and different methods to achieve creativity. Teresa Amabile and Khaire (2008), emphasize that each phase of the creative process requires different tools, methods and resources, and that a good project manager should be mapping the stages and know which techniques to apply when. For example they explain that, at the discovery phases of the process, efficiency methods

should not be enforced, allowing for some fluidity and uncertainty, encouraging people to think outside the “normal distribution” (Amabile & Khaire, 2008).

In his list of “Creativity and Innovation Tools”, Ramon Vullings (2013) makes a distinction between two main categories, the “Diverging Techniques”, and the “Converging Techniques”, both of which are essential for reaching a creative outcome. The first category leads to a multitude of ideas, while the second is used to evaluate them and select the most promising ones (Vullings, 2013). Many variations of main tools have been developed and are being implemented in different fields, but there are some principles that most of them promote: free expression of ideas without the fear of failure or criticism, openness and supportive behavior from the project manager’s side, who should empower but not micromanage, adopt a “yes and...” approach instead of a “yes, but...” approach, assume different roles to assess the different aspects of an idea or a solution, visualize the process.

A somewhat unconventional technique, which has led to very creative results and has established itself among the most successful practices, is what started as “FedEx Day” at the software company “Atlassian”. What has now become part of many successful business models, sets aside a certain percentage of employees’ work hours, which they are asked to allocate, not towards their usual work tasks, but to something else that interests them. The only condition to these free explorations is that their outcome be presented to the rest of the organization. According to Rob van Lanen (2012), these self-initiated projects have been proven to increase innovation and motivation, both of which are known components of creativity (van Lanen, 2012). This finding was also confirmed by an experiment performed by Amabile and her collaborators in the 1990s, where non-commissioned artworks were evaluated as more creative than commissioned pieces by the same artists (Pink, 2010).

Finally, the bibliography on “Design Thinking”, which studies the approaches that designers, and more specifically architects, use to solve problems, can bring valuable contributions to the topic of creativity processes, and confirms many of the points mentioned above. Dam and Siang (2018) emphasize the “solution-based” approach of this design methodology, and the “human-centric” way with which it re-frames problems. One of the first versions of the Design Thinking model was developed by Herbert Simon in his 1968 book “The Sciences of the Artificial”, and it included seven steps: define, research, ideate, prototype, choose, implement, learn. A few different versions have been formulated throughout its evolution, but the seven stages can also be concentrated into 5 main steps, as seen in Figure 5 (Dam & Siang, 2018).

The human-centric approach can be confirmed by the “Empathize” step, where designers are supposed to overcome their own biases and get inspiration from research and observation. During the “Define” stage, the elements of the problem, as well as the desired features of the solution, are clarified. It is important to mention that the “Ideate” phase involves two parts: “Divergent Thinking”, where the ideation methods used aim at collecting as many ideas as possible, uncensored, and “Convergent Thinking”, where different ideation tools are used to narrow down the options and choose the best one. Although the steps of Design Thinking are described as such, they do not make up a linear process. Brown (2008) defines Design Thinking as a “system of spaces” that the project will loop through, and not a predefined series of orderly steps (Brown, 2008). The phases of Figure 5 also hint at an iterative type, which could even be associated with Agile and Scrum methods. In fact, Ben Mahmoud-Jouini, Midler and Silberzahn (2016) highlight the benefits of using a Design Thinking approach to manage projects that are uncertain, not well defined, with changing conditions, or “exploration” / innovation projects.

Design Thinking practices help overcome the shortcomings of traditional project management and lead to more innovative and creative ideas (Ben Mahmoud-Jouini, Midler & Silberzahn, 2016).

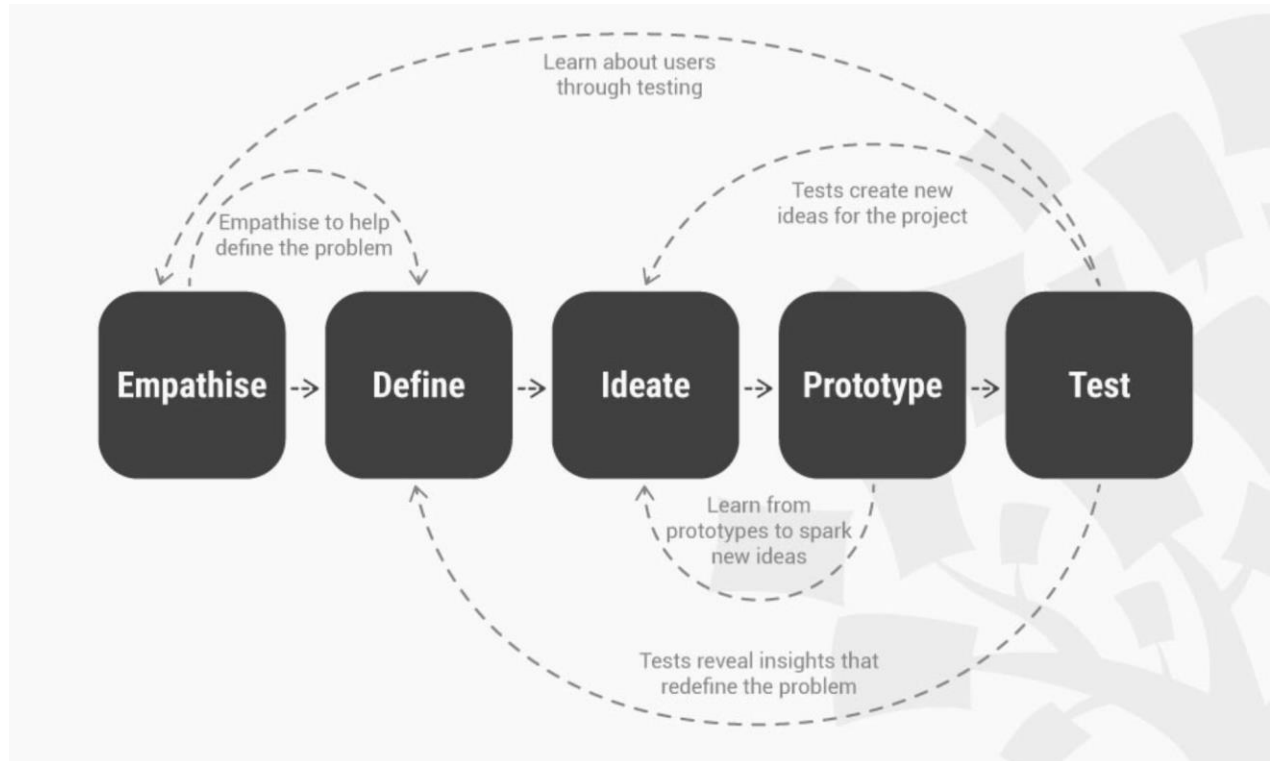


Figure 5. 5 Stages of Design Thinking (Dam & Siang, 2018)

Methodology

The following section will outline the methodology used in this research, and how it aims to reveal new project management practices that can enhance creativity in architectural design projects.

1. Literature Review

Research into the existing bibliography will be the foundation of this Thesis, first exploring theories on creativity, its definition and its main defining elements. A crucial parameter is to understand the determining factors that contribute to creativity, especially in the context of the work environment. The goal is to identify general management approaches that foster creativity, as well as highlight specific tips, tools and processes, that have been found to reinforce it. These will not be limited to the Architecture industry, or even the Creative Fields, but, rather, will look into sources from various professions. An important point to mention here is that the research will not focus primarily on individual creativity as a personal trait, but will consider it as a component of team creativity and even organizational creativity, both of which are crucial to the success of design projects.

2. Formulate Initial Hypotheses

The information extracted through the literature review will be synthesized and put within a context of architectural design projects, in an attempt to reveal some tendencies or directions, both in overall project management approaches, and in particular methods. This will lead to some first hypotheses on practices that might be successfully implemented in an architecture design context, and contribute to creativity. These hypotheses will also be the starting point of the primary research.

3. Conduct Primary Research

The goal of the primary research will be to confirm, question and enrich the hypotheses formed after the literature review, and provide additional insight for the proposed framework. It will consist of two parts, one limited within my organization, and one addressed to other architecture practices. The first will be a series of interviews with project managers that I have worked with, in a work environment I have experienced and know well, while the second one will be a short survey, sent to project managers of successful architecture firms in New York. Both the face-to-face discussions and the questionnaire will explore how many of the approaches and tools suggested in the existing research are used in design projects and what their outcome is, if different phases of projects or types of teams require different processes, etc. Moreover, the primary research will also have some open-ended questions, which will aim at identifying additional or different practices, not encountered in the bibliography.

4. Analyze Results and Draw Conclusions

The findings from the primary research will be analyzed and synthesized, as well as juxtaposed with the findings of the secondary research and literature review. The critical review of all the above will lead to the proposal of a new project management framework for enhancing creativity.

5. Propose a new framework

The final step of the thesis methodology will be the formulation of a new, partial, project management framework to reinforce creativity in architectural design projects. Based on the conclusions from all phases of the research, this Thesis will propose some project management approaches, tools and processes that, if applied in an architecture practice, can lead to more creative and, thus, more successful projects.

Results and Findings

The research through the existing bibliography, although not specifically focused on Architecture, still allows us to formulate some hypotheses that are pertinent to this field. They relate to different aspects of creativity, such as the characteristics of the project team, the overall leadership style of the project manager and the culture of the organization, creativity-relevant processes, and the elements that influence individual creativity. Out of all the factors affecting creativity, the present study focuses on those determined by and related to project management. Below are some of the main points extracted from existing theories and research on creativity in the workplace:

- The culture of the organization influences the creativity of its members.
- The management style and approach of the project manager influence the creativity of the team members.
- The size of the project team, its nature, and its dynamics influence the creativity of its members.
- The workflow structure and the work allocation influence the creativity of a project team.
- Individual development through a project influence the creativity of team members.
- Various creativity-relevant processes and ideation practices play a crucial role in stimulating and reinforcing fresh ideas within a project team.
- Different types of projects and different project phases require different processes.

In an attempt to test these hypotheses and explore if and how they can be applied to an architecture context, an anonymous online survey was structured around them. It was addressed to employees of architectural design firms based in New York, which have been recognized through

successful and creative projects. The respondents hold Project Manager positions, or are Designers - members of project teams. Out of all the phases of design projects, the questions refer mostly to the Concept Design phase, which is the first, followed by Schematic Design, Design Development, and Construction Documents phases, before the project moves into construction. The requirements and challenges of each project and each phase are different, and creativity does not play an equal role in all of them, but the Concept Design phase is where the discovery and most idea explorations happen, which makes it the ideal context for testing creativity.

The following section will present the most important results and findings gathered through the survey, organized around the main topics and contributing factors of creativity, as concluded from the bibliographic research.

Creativity in relation to the Project Team

The responses to the survey revealed some common tendencies as to how architecture firms organize their project teams, with a vast majority forming groups of 3-7 members, and very few choosing larger groups or individual assignments. It was impressive to see how 100% of the survey participants consider they are most creative when working in a small group, as opposed to alone or in a large group, a result that further justifies the firms' preference to small project teams. In most design practices the team members work on more than one project at the same time, but only about half of the participants consider this practice as positive for the team creativity. The rest believe they can perform more creatively when they are focused on a single project. Experience shows that even when members of a team work on more than one project simultaneously, there is usually one principal project that takes up most of their time. It is complemented by more limited

tasks on other projects, such as closing up pending issues on a past project, taking initial steps in a new project, or just supporting another team before a deadline, if circumstances demand it.

As for the effect of other team members on an individual's creativity, almost all respondents consider that familiarity with fellow team members reinforces it. The survey also shows that familiarity is achieved very often unofficially, or by personal initiatives, by working for long hours in an open office, and actively trying to interact with colleagues. Some organizations have established some events or activities which reinforce it, such as "Happy Hour", office-wide meetings, or group lunch. In addition, some larger firms, which are organized in "workshops" or departments under a common leading partner, facilitate bonding within these smaller groups, and choose to not break up the teams that work well together after the completion of a project. Finally, the majority of survey participants find the collaboration within an interdisciplinary team more fruitful than working exclusively among their peers.

Creativity in relation to Project Management and Leadership approaches

Project management approaches include many aspects of how the work is organized for each project, how it has been divided in cycles, the role and responsibilities of the project team members, the role and attitude of the project manager. The survey touched on a few of these issues, in order to reveal common practices, and their impact on creativity.

The responses showed that in most firms the work is reviewed among the team daily, or every other day, while meetings with higher management or clients range from once a week to once a month. When asked if frequent reviews and evaluations of their work affect their creativity positively, the majority of survey participants responded affirmatively, while a smaller group claimed that frequent reviews have a blocking effect.

As far as the role of the project leader is concerned, it seems that most architecture firms represented in the survey favor a collaborative work approach within the project teams, with members being given more responsibilities, freedom to express opinions and ideas, and are encouraged to take initiatives. Only a small sample still follows the more top-down approach, where the project leader has a strong vision, is closely involved in the day-to-day work, giving direction and “provocations” to the team members. The preferred practice, in this case, is also the one most conducive to creativity, according to the respondents, most of which enjoy having more agency in the project. On a related topic, the majority of the participants mentioned they are most motivated when working on something new and unknown, which gives them new skills, while the remaining 30% is more motivated when working on something they know well and are good at.

In regard to how the designs are being developed, and how much exploration is allowed during the Concept Design phase, the survey indicated the following: the slight majority of firms favors new ideas and explorations, while the rest prefer to work on quick and efficient ideas, or concepts that have been tested before. As the project evolves, more architecture practices develop and test as many options as possible, and select a few of the best ones to present to the client, through cycles of feedback and revisions. However, many other firms choose the opposite direction: after a short brainstorming phase, one main option is developed and presented to the client.

Creativity in relation to Stimuli and Creativity-Relevant Processes

There are several creativity-relevant processes that have been studied and have been found successful in reinforcing creative thinking, and most of them were included in the survey.

Participants were asked to identify those most used in their organizations (Figure 6), and then the ones they find most helpful during the creative phases of a project (Figure 7).

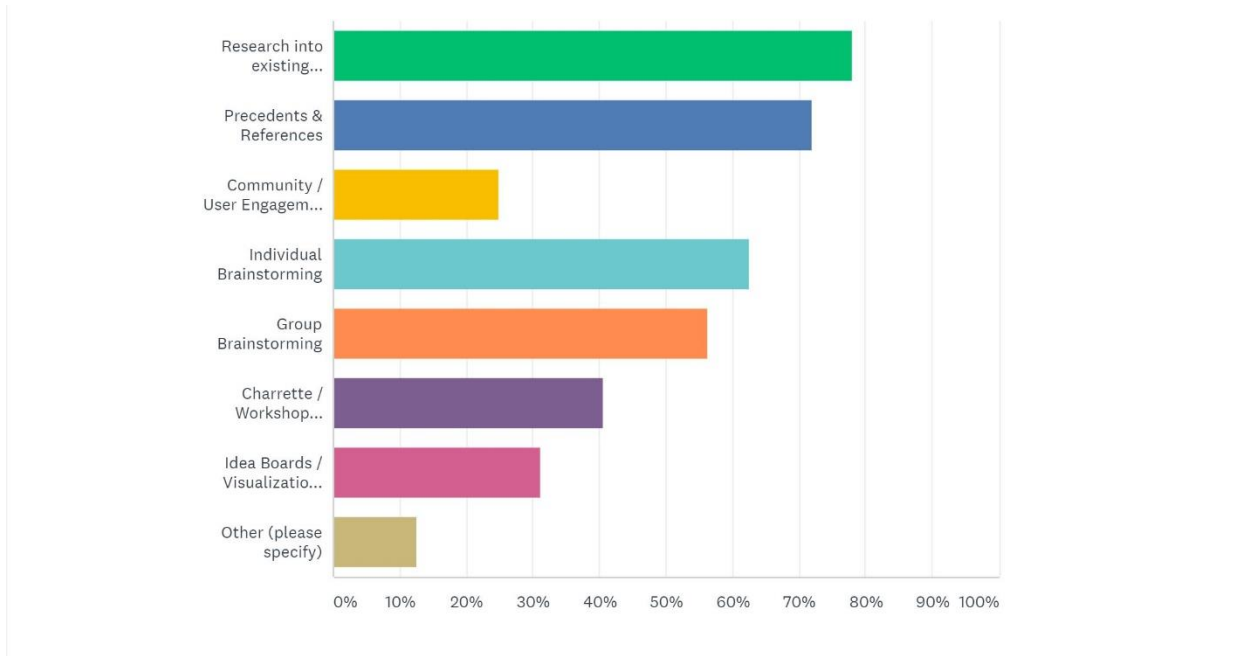


Figure 6. Which of these are part of your firm’s Ideation process? (graphic on surveymonkey.com, survey by Giannoulatou Destouni, 2018)

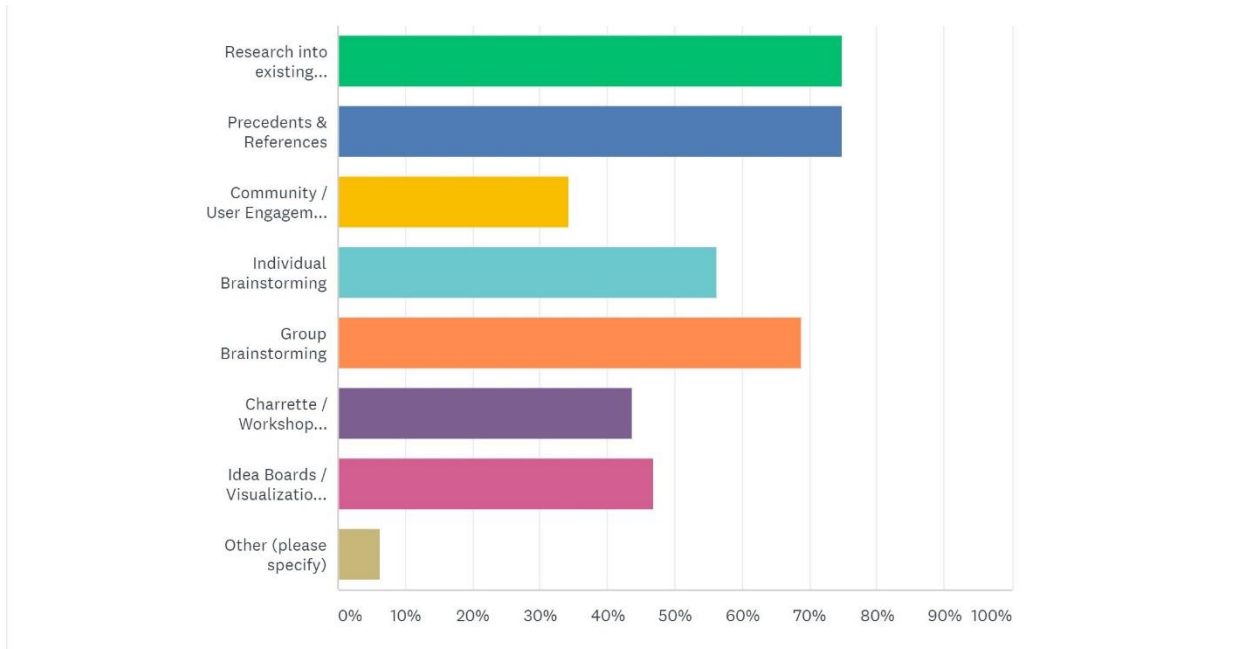


Figure 7. Which of these reinforce your creativity the most? (graphic on surveymonkey.com, survey by Giannoulatou Destouni, 2018)

As we can see, some of the most used methods, such as “Research into existing conditions and users’ needs”, or “Precedents and References”, seem to also contribute very positively to the creativity of the respondents. However, there are some other processes, like “Group Brainstorming”, “Idea Boards and Visualization of the progress”, or “Community and User Engagement in the design”, which participants consider conducive to creativity, but architecture firms do not choose to apply as often as other tools. Other processes mentioned that are used by some practices, were discussions with other experts and consultants for feedback on the direction, or project templates given by the project leader.

The last topic surveyed was on “Side projects” – in addition to the official ongoing projects of the firm - to investigate whether “FedEx Days” or any other unconventional but successful practices are applied in Architecture. Most participants responded that no employee work hours are allocated to any such project, while some others confirmed that their organizations pursued some research, self-initiated or pro-bono projects, exhibitions design or design experiments.

Discussion and Proposed Framework

The absence of existing literature linking project management practices and creativity in architectural design firms, led to a combination of secondary and primary research. The first part explored theories and studies on creativity in general, while the second aimed to test these theories within an architecture context, to confirm or question their validity, and ultimately formulate suggestions. The present section of the thesis bridges the findings from the two phases of the research, bibliography and survey, into a tentative framework of proposed project management practices and tools that should reinforce creativity in architectural design projects. These are mostly applicable in the Concept Design phase of architecture projects, or in Ideas and Design Competitions, where the freshness of ideas is most valued.

Similarly to how the research was structured, the proposal will touch upon the overall project management approach, characteristics of the project team and workflow, specific processes used during architectural projects. It is important to note that this study focuses on the contributing factors to creativity that are somehow related to project management, and does not engage as much with others, such as the organizational culture, or individual creativity traits.

The Project Manager

Both the bibliography and the survey emphasize the benefits of a democratic, collaborative and participatory approach to managing a project in the Concept Design phase, with the members of the team owning the work and having responsibilities. Project managers should be supportive and empowering, and should consider the individual development of the team members when assigning the tasks. Pigeonholing designers might seem to help with efficiency, but opening employees to new challenges and opportunities ultimately increases their intrinsic motivation, and

helps them be more creative. It is also crucial that the leader's visions are communicated in an open-ended and inspiring way, without setting limitations to other team members' ideas.

Team reviews are very important for the progress and development of projects, but they should happen informally, in an environment of trust and tolerance, without blocking or intimidating the team members. As a general rule, daily meetings are a good practice, but some phases of the project may require some more time for maturity and testing of ideas, so meetings could happen every two days or twice a week. It is definitely a challenge for the project manager to find a balance between meeting the pressing constraints of the project and maintaining a flexible and "free" work culture within the team. For that reason, there are great advantages in having an Integrated Project Manager, a project leader with a design background, who can relate better to the creative process and will help bridge the gap between pure project management and the particularities of architectural design.

Finally, to keep ideas creative, the project manager should have an attitude of constant improvement, challenging the existing processes and tendencies, and encouraging the project team to do the same. This role should offer stimuli and provocations that designers can react to, thus instigating new ideas.

The Project Team

The size of the project teams of course depends on the complexity of the project, but it is generally most productive to form teams of 3-7 people, which allow for productive multitude. Diversity and interdisciplinarity within the team often reinforce creativity, but the dynamics should be monitored by the project manager, who should intervene if necessary. Having team members with complementary skills can establish inspiring exchanges and mutual learning, conscious and

unconscious, which lead to richer outcomes. Familiarity among team members generally has a positive influence on creativity, and it can be achieved in many ways beyond personal initiative. From organizing team activities, to establishing a team continuity through more than one project, there are many approaches that a project manager can take to help set the foundations for solid and respectful relationships among coworkers.

The Workflow

The bibliography on Design Thinking highlights several elements that are already in use during the design process of architectural projects, and could be systematized even further. The “Empathize” stage is fundamental in the beginning of any project, and helps define the problem, add to the requirements and shape an approach. There are different tools that could help the project team reach Empathy, but the most successful ones consist of researching into the existing conditions and the users’ needs, whether through observation, historical analysis, or community and stakeholder outreach. The principle of Empathy is also the base of the participatory design approach, where future users and the community are actively engaged in the process, through series of workshops and feedback sessions.

Creativity can already be triggered through the “Empathize” and “Define” steps, but the “Ideation” stage is where most new ideas are born. This phase of the design should include both “Divergent Thinking” processes, to bring as many ideas as possible on the table, and “Convergent Thinking” tools, to select the most promising ideas to be tested. A fruitful ideation method is to look at precedents and references that are relevant to the project and could offer insight on things that worked or could be improved, as well as previous positions to react to. Brainstorming processes work best when individual brainstorming precedes the group brainstorming, and team

members come to the table with some ideas to discuss and enhance, so as to avoid the dangers of blockage or “groupthink”. After some brainstorming sessions within the team, it is often helpful to engage external consultants or experts from other disciplines, who will offer different perspectives and enrich the ideas. Visualizing the progress of the design, through Idea Boards or other tools, also supports creativity within the team, as it allows for ideas to mature and unseen connections between them to surface.

The “Prototyping” and “Testing” of the dominant ideas can often be concentrated into Charrettes or Workshops, tools that intensify and accelerate the process towards solutions, or the generation of more ideas. The design process in Architecture projects is never linear, and any point of its development can lead back to a previous step – to better understand the needs of the stakeholders, to redefine the problem, to discover new ideas –and the project team should be open to that. It should even take advantage of it, by exploring multiple options and engaging the clients into series of feedback loops. In fact, although architectural design projects are still managed according to Waterfall methodology, there have been suggestions of integrating some elements of Agile and Scrum into the process, and defining a flexible hybrid methodology that responds to the needs of design projects and reinforces creativity. However, these changes go beyond the scope of this study.

All of the above are creativity-relevant processes that can help structure the workflow within any architectural design project. But studies and empirical data indicate that there are also ways to boost creativity in the workplace by looking outside of the projects. Architecture firms could allocate some of the employees’ hours to side projects, whether organization-wide or individual-initiated. This can increase their people’s general sense of purpose and motivation, lead

to valuable discoveries for future projects, or simply reinvigorate the minds and creativity to be channeled back into ongoing “official” projects.

Conclusion

This study explored the project management practices that can be implemented in architectural design projects to foster creativity. It pieced together elements from insufficient existing literature, to define creativity and identify its contributing factors in an organizational context. Creativity, as “the production of a novel and appropriate response, product or solution to an open-ended task” (Amabile, 2013) is not merely an inherent individual trait, but can be cultivated and reinforced in the workplace, by establishing certain parameters. Most of these parameters can be influenced and defined by the project manager and the project management structures of the organization. “Intrinsic Motivation”, “Creativity-relevant Processes”, the “Team / Organizational Environment”, the “Leadership Style”, are all crucial factors that contribute to creativity and can be associated with project management. Even some elements that are more internal to the individual, like the team members’ “Domain-relevant Skills”, can be supported and further developed with the help of the project manager, in this case through training and learning opportunities.

The research on creativity was not particularly focused on architectural design projects, but the survey that accompanied it tested the relevance of its conclusions in an architecture context. The responses and the feedback that were gathered, from participants with Project Manager and Designer / team member positions in New York architecture firms, indicate that the questions were valid and pertinent to the field. Many of the hypotheses reached in the bibliographic research were

confirmed, and others seemed to fill some gaps in existing, widely used project management practices.

The conclusions and proposed steps towards creativity address the overall leadership approach of the project manager, the characteristics of the project team and the roles of its members, and creativity-relevant processes used throughout the project. An open, collaborative and empowering team environment, with a supportive project leader who understands the challenges of design projects and the creative process, in combination with purposeful and motivating work that contributes to self-development, can really help the team creativity shine. There is also a lot to gain from following a Design Thinking approach to Concept Design projects, from “Empathize” to “Define”, “Ideate”, “Prototype” and “Test”, an appropriate work structure of iterative nature, which offers flexibility, and can trigger creativity in all its stages. Many of its components are already at the core of the architectural design work process, but they can be reinforced even more if combined with other factors conducive to creativity, and enriched with a variety of ideation tools.

Throughout any effort to identify and establish best practices for reinforcing creativity in architectural design projects, there is one great lesson to keep: as Amabile (2008) very accurately emphasizes, one cannot manage creativity. But there are many ways to manage FOR creativity (Amabile, 2008, p.2), balancing between respecting the hard project constraints and encouraging the expression of good new ideas.

Recommendations for Future Work

Research into creativity, its determinants, and its connections to project management within an architectural design environment revealed numerous extensions and a vast network of topics, which were impossible to address in the present study alone. This Thesis was a first encounter, and an attempt to highlight different intersections of creativity, project management and architecture projects, thus opening opportunities for future research.

A direction that seems important to study is the relationship between the Agile methodology and creativity, how and if Agile tools can reinforce the design process even further towards the production of new ideas.

Another pertinent question would be to examine the different types of projects, whether commissions, design competitions, research projects, and estimate the role and importance of creativity in each one. The findings might show the need for different adaptations of the creativity-relevant project management practices or tools. In addition, establishing creativity as an evaluation criterion for the success of projects may be a good strategy for emphasizing its importance and making it a priority for project management.

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