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MANAGING WORK TEAMS IN EXPLORATORY PROJECTS

GESTIÓN DE EQUIPOS DE TRABAJO EN PROYECTOS EXPLORATORIOS

GESTÃO DE EQUIPES DE TRABALHO EM PROJETOS EXPLORATÓRIOS

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Abstract

We propose a model aimed at enhancing the management of work teams in exploratory projects. An interdisciplinary approach was employed. Qualitative research methods were used to build and enhanced the model. Positive social interdependence, a construct from the Social and Educational Psychology fields, has the potential to meet the challenges presented by these projects. Results suggest that additional empirical field testing is needed to determine the validity of the model. From a pragmatic point of view, the application of the model's prescriptions affords project managers additional tools to better deal with the inherent difficulties of exploratory projects. Keywords: exploratory projects, cooperation, social interdependence, work teams.

Resumen

Proponemos un modelo destinado a mejorar la gestión de los equipos de trabajo en proyectos exploratorios. Se empleó un enfoque interdisciplinario. Se utilizaron métodos de investigación cualitativa para construir y mejorar el modelo. La interdependencia social positiva, una construcción de los campos de Psicología Social y Educativa, tiene el potencial de enfrentar los desafíos presentados por estos proyectos. Los resultados sugieren que se necesitan pruebas de campo empíricas adicionales para determinar la validez del modelo. Desde un punto de vista pragmático, la aplicación de las prescripciones del modelo ofrece a los gerentes de proyectos herramientas adicionales para lidiar mejor con las dificultades inherentes de los proyectos exploratorios. Palabras clave: proyectos exploratorios, cooperación, interdependencia social, equipos de trabajo.

Resumo

Propomos um modelo que visa melhorar o gerenciamento de equipes de trabalho em projetos exploratórios. Foi utilizada uma abordagem interdisciplinar. Métodos de pesquisa qualitativa foram usados para construir e melhorar o modelo. A interdependência social positiva, uma construção dos campos da psicologia social e educacional, tem o potencial de enfrentar os desafios apresentados por esses projetos. Os resultados sugerem que testes empíricos de campo adicionais são necessários para determinar a validade do modelo. De um ponto de vista pragmático, a aplicação de prescrições do modelo oferece aos gerentes de projeto ferramentas adicionais para lidar melhor com as dificuldades inerentes aos projetos exploratórios. Palavras-chave: projetos exploratórios, cooperação, interdependência social, equipes de trabalho.

INTRODUCTION

Innovation is a term that has come to be widely used in companies around the world. This is arguably due to the importance of the development of new products, intended for mass-consumption of a public that has grown accustomed to annual updates of technology products -the ubiquitous mobile phones, for instance- leading to an expectation of renewal in other tech products and services, whether it be in personal transportation, gastronomy, garments, or practically everything that can be consumed.

Innovation can be seen not only as a collection of processes but also as a strategic activity that is one of the fundamental drivers in organizations, allowing for its economic sustainability, evolution, and growth (Robayo, 2016). A handful of well-known companies have managed to become the indispensable global players, as a direct result of novel ideas that brought about a wave of innovation. Strategies have been adopted and implemented manage innovation, allowing organizations to leverage their innovation capabilities -particularly evident in the high technology space- to bring to market products and services that have altered the way people live their lives and even, how we as individuals socialize and interact among ourselves. It is important to highlight that such strategies do not refer only to technical issues, but also to complex human issues, especially the strategic management of project development teams, a responsibility that the project manager must adroitly adapt.

EXPLORATORY PROJECTS: INNOVATION AND UNCERTAINTY

The current wave of innovation visibly impacting society is illustrated by social networks as the ubiquitous Facebook (2.5 billion users and still growing), dating apps like Tinder, and chat applications like WhatsApp. The list goes on with digital assistants like Siri, Alexa or Google, mobile apps that allow on-the-spot renting of electric scooters and other personal mobility devices, cashier-less stores, drone deliveries, and an ever-growing list of technical advances represented in wearables, always-connected devices, AI-capable gadgetry, and so on, so forth.

Innovation is at the core of most companies today, and all have benefited from increased productivity. Society at large has also substantially gained from innovation, even though some negative aspects from it have emerged, such as loss of privacy, loss of jobs, and concentration of wealth driven by the rise of the likes of Apple, Facebook, Google, Amazon, and Microsoft, all already or fast approaching a trillion-dollar in market valuation.

Unintended consequences of innovation notwithstanding, it will continue. Consumers are nowadays expecting and demand constantly updated things. For companies, this means that the innovation process must be managed effectively to constantly come up with new products and services, including revolutionary ones that, according to Porter (1993), grant competitive advantages. For De La Torre, Hernández & Velaz (2008), innovation management consists in organizing and directing both human and economic resources towards the creation of new knowledge, the generation of technical ideas that allow the creation of new products, processes, and services or improvements in existing ones, and then transfer those same ideas to the production, distribution and usage phases. Consequently, innovation is also in the domain of management as other business factors like costs, human capital, technologies, that need to be managed to sustain constant innovation.

Even as innovation can sometimes be the direct result of a sudden inspiration of talented individuals, most of it is the result of a sustained, concerted effort involving strategic analysis, planning, marketing, and particularly, research & development (R&D), which usually entails complex projects that need to be adequately managed from beginning to end. Innovation is closely related to a project: exploratory

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> *Exploratory projects are designed to do preliminary work for research and development projects. Exploratory projects can be carried out to evaluate the technical feasibility of innovative ideas and concepts, to assess the degree to which future R&D projects (individual, cooperative, or flagship projects) may be viable and to provide a basis for concept development for flagship projects. In this type of project, the level of ambiguity and uncertainty tends to be high.*

Lenfle (2016, p.1) had already established the critical attributes that characterize an exploratory project: "In exploratory projects, neither the objectives nor the means to achieve them are clearly defined from the beginning", while McGrath (2001, p.120) posits that "little existing knowledge applies and the goal is to gain knowledge about an unfamiliar landscape". In other words, in these projects, the classic considerations of scope, time, quality and cost that characterize the definition of a project as described in publications like the Project Management Book of Knowledge or PMBOK (PMI, 2017), do not fit properly since uncertainty and unpredictability direct its dynamics (Loch, De Meyer & Pich, 2006).

EXPLORATORY PROJECTS AND TEAMWORK MANAGEMENT

Human-related issues and social group dynamics are very much present in that reality, as exploratory projects usually require setting up a dedicated and autonomous project team to manage radical innovation (Lenfle, 2016, p.2). Indeed, Lenfle highlights how exploratory require a certain critical mass, referring to the need for human-aware sensitivity by the project team's leadership that pays attention to things like a fluid personal contact among team members and a sense of shared accomplishments, Also fundamental is the

creation of links between the group's individuals that otherwise may not be present without the efforts of the team leader, in a way that members of the team develop strong interpersonal relationships and a shared sense of direction towards the project's goals.

Relevant elements are to be found in knowledge advanced by Psychology, concerning the type of soft skills that practitioner managers need to develop and apply if they want to achieve the formation of an interdependent, cooperative project management and execution team that is suitable for a successful innovation initiative.

Wong (2007) states that in every project, two dimensions must be carefully considered. First, to verify if the project's expectations are being met. It means checking if actual results comply with the project's objectives, in terms of reaching the milestones according to the planned schedule, and within the stated specifications and budget. Second, to pay attention to human needs, by being aware of the expectations of the team members, making sure that the values are shared and respected, striving for team-members to feel satisfied and convinced that they will succeed as a team. High performance in one or the other is an only partial success; true project success requires meeting both people's and project's expectations. Project managers lead both projects and people" (p.13).

But how can a project manager set up a work team that is devoted to the success of exploratory projects? In other words, what can be done by the project manager to achieve true teamwork in its subordinates? Psychology, and specifically Social and Educational Psychology, may provide pertinent answers. This work is then focused on proposing a new framework for the management of project teams in exploratory projects under the contributions provided by both Social and Educational Psychology.

METHOD

The knowledge produced in this research was informed by a qualitative perspective, employing a strategy based on the study of documents, and it is based on what emerges from the analytical interrogation of texts, a scientific research procedure that is described by Alonso (1995) as a systematic process of inquiry, collection, organization, analysis, and interpretation of information centered on a particular topic. Like other types of research, this leads to the building of new knowledge. It went through several phases, namely: initial reflection (identification of the topic and questions to investigate, identification of paradigmatic perspective), planning (selection of a context, selection of a triangulation strategy), selection of documents, analysis and production of the final text with the elaboration of a proposal, as indicated by Valles (1999).

Regarding the reflection phase, after identifying the topic of interest (work teams in exploratory projects) and developing some guiding questions for the investigation in the reference literature, an interpretive perspective was assumed, in line with the analysis of qualitative information, for the construction of the postulates that would integrate an alternative point of view around the formation of work teams in exploratory projects. Under this perspective, the formulation of inferences was planned based on the systematic and objective identification of the characteristics of the postulates of the reference theories to be examined. The planning and analysis phases of the documentation allowed the select the models of Deutsch (1949) from Social Psychology, Kerzner (2001) from Project Management and Johnson & Johnson (2009) from Educational Psychology, as reference theories for the triangulation of contents; the latter was carried out with the use of both the textual information of the theoretical contributions of the authors of the aforementioned models and the review of the complementary literature on human factors of success and failure in project work, which allowed to infer the proposal of an integrated model for the formation of work teams for exploratory projects.

The methodology for the analysis of texts used allows for credibility guarantees as the results of the research reflect a clear and representative

image of the situation of interest and are valid for the field in which the phenomenon was studied since the triangulation in the data collection was used to determine the congruence between the results and the discussion of the interpretations elaborated among the researchers; and hence, its transferability as it is possible to expand the results of the study, in the tradition of Guba & Lincoln (1981) building from the basis of documents and the experiences described to be applied with some adjustment to the specific context of exploratory projects.

For document selection before text analysis, a query was performed using Google Scholar, Google's search engine variant focused and specialized in the research of scientific and academic content and bibliography. The search term used was "failure factors in project management", which generated 33 results that included mention of both failure factors and successes in project teams. In this regard, those groups that effectively included mentions of failure, success, or both factors within the same article about Project Management were selected from this group of documents, extracting the assessments from the authors of these documents related to the human factors in the project teams. Table 1 shows the result of this research phase.

RESULTS

The team works management: classic perspective

In a more classic perspective, Kerzner (2001) posits that the successful management of a project -independently of the organizational structure- depends on the various individuals who are managing the key functions within the project and not on the work of a single person. It demands a collective effort from a group of people dedicated to achieving specific objectives. This particularly applies exploratory projects since close cooperation among team members is the best way forward to overcome the uncertainties typical of this project.

A key project management principle is that the project manager and his team must remain fully engaged until the project's completion. An exploratory project effort demands such committed engagement to a greater extent, since the added uncertainties, where the likelihood of unexpected, emergent events is more the norm than the exception. Beyond their level of professional competence and technical knowledge, members of the team need to be interpersonally linked to each other. As stated by Driskel & Salas (1992) "tasks that require interdependency of team members, transfer of information, and coordination of member activities to achieve a group product, the interdependent behavior of group members should be a significant determinant of group success" (p.285).

A new perspective in human relations in exploratory projects

Team members in exploratory projects will have to coalesce around the key but elusive goal: innovation and these demands for an above-average level of human skills from managers and team members. The risks threatening an exploratory project's execution and completion lies more in the inability of the team members to carry out the appropriate actions, not for lack of technical competence but failures in communication and similar issues present when interpersonal relations are at fault, preventing cooperative integration to take hold and jeopardizing achieving project goals. When problems during project development arise, causing team members difficulties to cope, active and involved leadership from the project manager is called for in guiding and encouraging team members to overcome the problems.

Table 1 shows the authors of the selected documents and what they posit about aspects of human factors in project teams that are linked to the success and/or failure of projects.

What follows from the analysis in Table 1 is the recurrent consideration in the different authors of the importance of human interrelation in project teams, in aspects that are inherent to their conformation, such as communication, motivation, problem-solving, and commitment. These group processes can make the difference between a successful or a failed project, without leaving aside, of course, aspects of a technical nature, typical of the management processes.

Tabla 1. Selected research papers for documental analysis in the success and/or failure of projects.

Author(s)	The human factor in project teams
Discenza & Forman (2007)	Project team members must be skilled and experienced and have clearly defined roles and responsibilities.
Kendrick (2008)	Motivational problems emerge and are generally a consequence of the diminishing interest when projects are long, or when interpersonal conflicts between team members arise, and the staff does not get along, often quarreling.
Khan, Thornton & Frazer (2000)	Creation of a powerful group of "Champions" for change. Networks and teamwork. Selection of the correct project team
Ika, Diallo & Thuillier (2012)	The attitude of the staff
Diallo & Thuillier (2005)	Communication
Mahmood, Asghar & Naoreen (2014).	The interrelation between team members Interest in participating in the team and the motivation of the members
Lesca & Caron-Fasan (2008).	Little concern for the project that they do not see as useful. Project team members do not get involved in the project
Nelson (2007)	The undermined motivation of the members that influence productivity and quality; poor interrelations between team members
Hyväri (2006)	Communication, problem-solving, effective surveillance, and feedback Commitment

Source: authors

However, it can be said that effective human interrelation in a project context may be possible if cooperation emerges in the project team. From the analysis of the classical perspective about the conformation of project teams and using the perspective of positive social interdependence in collaborative groups, approaches can arise that promote effective human interrelation based on a new approach, specifically aimed at projects exploratory, given their sensitivity to aspects of ambiguity and uncertainty of the tasks that the project teams must perform in them.

According to Wong (2007), a fundamental premise is that only capable people can generate the necessary motivation and the energy required to develop a challenging project. People should be good at cooperating with another as well as willing and able enablers of their fellow team members, as cooperating with others is critical for success. "As time goes on, we must depend more and more on the cooperation of others to get our job done. At the same time, organizations are functionally more integrated, and departments and divisions are more leveraged in their operations and work processes. Companies are becoming more dependent on internal and external partnerships to meet their business goals." (p. 13).

The team works in exploratory project management: Interdependence

Kerzner (2001) identified several central competences that the project manager must-have for the successful integration of project team members, among them, the ability of the project manager to build an effective work unit that integrates a group of collaborators for a project. This goes well beyond fostering a climate that leads to teamwork or good interpersonal relationships and team spirit, as the matter is more complex.

But Social Psychology's perspective suggests the team leader, in this case, the project manager strives to forge a positive social interdependence among team members. Long-ago Morton Deutsch (1949), pioneered the study of Social Psychological aspects of the conflict with "his original laboratory experiments, theoretical innovations, and practical advice" (Druckman, 2018, p. 121), emphasized distinguishing cooperation from the competition in interpersonal or intergroup relationships. For Deutsch, the key to cooperation among people depends on the development of positive social interdependence, a useful characteristic of human behavior. How the goals of participants (team members) are structured, and how the interactions among them are set, will

determine the possible outcomes. In other words, social interdependence theory posits that how goals are structured determines the patterns of interactions of individuals, which in turn affects the outcomes.

Positive interdependence, according to Deutsch (1940, 1962) gives rise to three psychological processes:

1. Substitutability, when actions of one-person substitute for the actions of another person.

2. Positive cathexis, when individuals invest positive psychological energy in things other than themselves (in work, friends, and/or family).

3. Inducibility, when an individual is willing to be influenced by and to influence others.

Conversely, negative interdependence allows for non-substitutability, negative cathexis, and resistance to influence. Interdependence cannot exist without the three psychological processes identified by Deutsch.

Based on Deutsch's perspective, the project manager of an exploratory project should guide and encourage the three psychological processes that lead to positive social interdependence among team members.

From Educational Psychology, Johnson & Johnson have also made additional and significant contributions to social interdependence theory. "Almost without exception, any meaningful task requires the efforts of more than one individual" (Johnson & Johnson, 2017, p. 3). In effect, Johnson & Johnson (2009) exposed that for social interdependence to take place, it is not enough that the behavior of a person is affected by their actions or that of other people, but those actions have to be for promoting the achievement of common goals. This is different from social dependence (A effects B but B does not affect A) and social independence (A does not effects B nor B effects A). Positive social interdependence is both about achieving common goals and to attain shared rewards for the team.

For exploratory projects to deliver on product innovation, that kind of mindset must be present in all team members. When a project team is oriented towards the achievement of common goals and rewards, execution is comparatively better than when the teamwork is directed only to control resources. In other words, a work team that directs its execution towards shared rewards will have better performance than the teams where the individual team members work independently to deliver just what is expected of them individually.

Positive social interdependence does more than just positively motivate the members of an exploratory project team. When group members identify themselves in terms of their membership, they are better disposed to take fewer common resources individually and make a greater contribution to the common good.

The team works in exploratory project management: development cooperation

Johnson & Johnson pointed also to additional factors for the development of team cooperation, factors that the project manager of an exploratory project will do well to take into account to conform its team if it is to reach the intended innovation. The project manager will find useful both adopt and adapt the prescriptions of positive social interdependence, instrumenting those factors originally identified by these authors in the context of Educational Psychology. Project managers and the exploratory projects under their supervision will greatly benefit when attention, based on Tjosvold, Druckman, Johnson, Smith & Roseth (2019, in press), is paid to Constructive Controversy; "constructive" refers to a shared goal of cooperating to resolve a conflict; controversy" refers to disagreement about interests, opinions, or beliefs. These authors refer:

productivity and growth are enhanced when people confront and discuss their different viewpoints in dyads or teams. Procedures that encourage people in dispute to exchange information about their differences often lead to new ideas that solve problems. But the success of this process depends on learning how to discuss differences in a flexible manner. (p. 6).

In effect, Johnson & Johnson (2009) had reviewed the specific factors to explain how cooperation is possible to resolve conflicts and refers to these factors as follow:

- Strength of responsibility: the team's strength of responsibility influences members a sense of duty which in turn positively impacts motivation and therefore, quality of execution. A sense of duty promotes not only the completion of individual

tasks but also cooperation to facilitate the work of other team members.

- Promotive interaction: positive social interdependence takes place when individuals encourage and facilitate the efforts of other members to carry out the team goals (promotive interaction). Typically, in this case, individual team members behavior includes: 1) acting confidently and honestly; 2) exchanging necessary resources and processing information effectively and efficiently; 3) providing effective and efficient assistance to teammates; 4) having the motivation to face obstacles for mutual benefit; 5) aiming at the achievement of common goals; 6) controlling levels of stress (tension) and anxiety; 7) influencing efforts of others; 8) giving feedback to increase execution; 9) modifying (or influencing) the reasoning of others to promote quality decision making and creativity; 10) taking the perspective of others to explore different points of view (cognitive empathy). This necessarily requires that the project manager actively guides and encourages this type of behavior among members of the team. When present, these signals an effective human exchange.

- Use of social skills: A critical point is represented by the appropriate use of social skills. Effective co-operation requires that team members be trained in skills for working in groups and which: 1) they can get to know and trust each other. 2) communicate adequately and in an unambiguous way (acquiring dialogic skills). 3) accept and support each other.

- Interpersonal skills: sometimes referred to as soft skills, these are behavioral competencies that include communication skills, emotional intelligence, conflict resolution, negotiation, influence, team spirit development, and group facilitation. These abilities are valuable assets for project team development. The project manager can, for example, use emotional intelligence to "reduce tension and increase cooperation by identifying, evaluating and influencing the feelings of the members of the project team, anticipating their actions, recognizing their concerns and following up on their problems " (PMBOK, 2013, p. 275).

- Group processing: according to Johnson & Johnson (2009), group processing takes place when its members:

  1. assess which actions were helpful or unhelpful, and

  2. decide which actions should continue or change.

This contributes to the effectiveness of team members' actions necessary to achieve the group's goals. Group processing also requires the project manager to be perceived as ethical and respectful of the team, collectively as well as individually. It is reasonable to consider that ethical management principles fully apply to project management, as human relations are front and center. Additionally, the project manager is to provide individual feedback to each member of the team, doing this is more effective than when feedback is only provided collectively to the whole group. This can increase the personal self-assessment of team members and generate positive attitudes towards the project and a closer identification with its goals.

A new framework for teamwork management in exploratory projects

A framework with practical implications for exploratory projects is presented, expanding on the ideas borrowed from Social and Educational Psychology on the concept of social positive interdependence, that goes beyond the more general considerations of Kerzner (2001) and that builds upon the Deutsch (1949, 1962) and Johnson & Johnson approach (2009). It illustrates elements for the construction and management of better, more effective exploratory project teams, as shown in Figure 1.

Source: based on the model of Johnson & Johnson, 2009

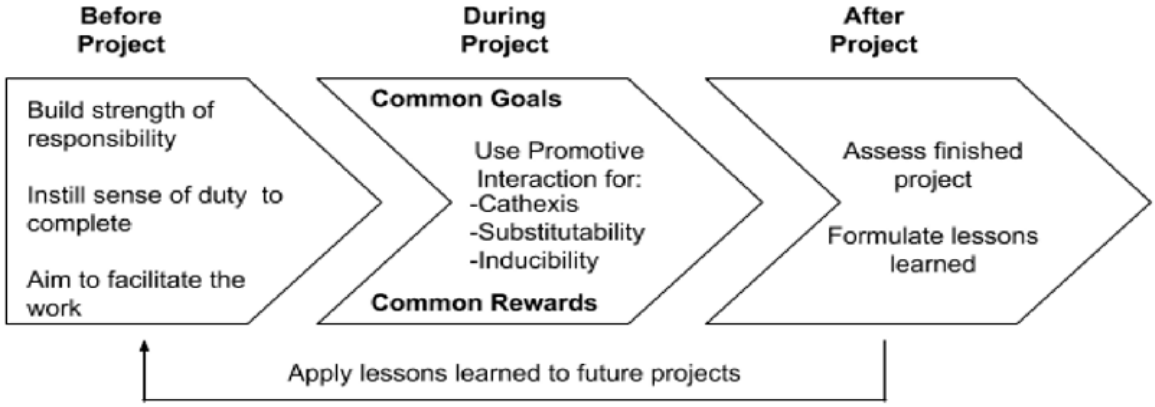

Figure 1. Process framework for positive social interdependence in exploratory projects ().

This framework considers the dynamic processes of integrated teams in exploratory projects in three moments:

Before, when preliminary work before the project's execution takes place and the project manager selects and organizes the project´s team.

During, when team members effectively interact as they work together during project execution and the relevant dynamics of human exchange occurs.

After: when the project's execution work is finished, a time for reflection and analysis to gather learned lessons to be applied in future projects.

In each phase, the project manager is to work intensively to guide, calibrate and assess the factors of the strength of responsibility, promotive interaction, social & interpersonal skills, and group processing illustrated in the proposed framework, to facilitate the emergence of the positive social interdependence among workgroup members, consequently improving participants capacity to work as a highly effective, well-integrated innovation team.

DISCUSSION

Modern Project Management is a discipline where the best practices resulting from the experiences reported by project managers worldwide converge. In general, for projects of any kind, and particularly for exploratory projects, those best practices have been enriched by the interaction of different disciplines that contribute dialogically in the achievement of new knowledge (Van del Linde, 2007). Indeed, this investigative and convergent effort seeks to add new knowledge, different from what could be previously bound disciplinarily (Sotolongo & Delgado, 2006). Hence, the integration of constructs from Social Psychology and Educational Psychology to the management of exploratory projects, in terms of human factors in teams, is of great usefulness and a relevant application of the intended interdisciplinarity of this research.

As such, the proposed model is for this investigation does not seek novelty in itself, but rather an interdisciplinary enrichment of best practices from the incorporation of conceptual aspects from Social Psychology (the theoretical approach of Deutsch, 1949, 1962), from a theory of Educational Psychology (the Johnson & Johnson model, 2009) and pragmatic and technical aspects from Project Management (Kerzner, 2001) to enhance the management of exploratory projects (Lenfle, 2016).

The interdisciplinary focus strengthens the approach to the problem of the human factor in exploratory projects, overcoming the existing classical approaches regarding the consideration of work teams. The interdisciplinary approach (figure 1) thus incorporates the concepts of positive social interdependence in collaborative teams of exploratory projects, within the framework of the dynamics of project management processes, considered in sequence (before, during, and after). In each of these moments, specific actions are proposed to be undertaken by the manager of an exploratory project.

In the first stage (before) the Project Manager is to establish the basis for the generation of responsibility, instill a sense of duty and commitment by team members thus facilitating the team's work, all essential aspects that a team requires to act with a sense of direction towards the same objective, avoiding the dispersion efforts while working in unison towards the achievement of common goals and rewards in the second stage (during). In this second phase, the Project Manager needs to achieve cohesiveness of the members of the team by staging the strategic processes that regulate human interactions within groups: substitutability, positive cathexis and inducibility, which will result in actions that will allow the integration of members as a truly collaborative team, enabling synergy to better reach shared goals.

In the last stage (later), the Project Manager guides the team to a reflective assessment on the work done, its performance as a collaborative team working together towards a common goal, evaluating the results and identifying improvements to take into account from the first stage onwards for future exploratory projects. To Douglas & Ra (2006), teamwork requires basic rules, clear and explicit expectations, and confidence-building. Resistance to change and conflicting agendas can erode the competency and values of team members, affecting work and causing difficulties in achieving project goals, due to loss of time, conflicting behaviors, communication issues, and erroneous perceptions, and a slowdown of activity due to discontent and apathy towards tasks. The ideas advanced by this research contributes to avoiding these potential problems by providing the basis for the creation of a cooperative structure of tasks that can be performed under a positive interdependence scheme among team members of exploratory projects, given their inherent ambiguity, and the uncertainties present in the creation and development of new products or services, even for high-performance project teams, which in today's dynamic and culturally diverse environment, can be a daunting task (Thamhain, 2007).

CONCLUSION

Although the concept of social interdependence originates in the context of Social and Educational Psychology and is widely applied in cooperative learning contexts, its adoption, and successful adaptation to project management is not only possible but advantageous. The benefits of increased effectiveness of cooperation among project team members strongly advise awareness of the variables of human dynamics that mediate the group´s effectiveness. Johnson and Johnson (2009) have identified those mediating variables (positive interdependence, individual responsibility, promotion of interaction, social skills, and group processing) critical, as stated by Kerzner (2001) and Wong (2007), for true integration of a work team.

The mediating variables that have been used and refined to promote effective cooperation in learning contexts are also valid and applicable in any situation where people must work together effectively as a team. Results suggest that additional empirical field testing is to is needed to determine the validity of the proposed model. This approach can be especially useful in complex projects, where typically a diverse group of persons with different kinds of technical expertise, social skills, professional backgrounds, temperaments, and expectations needs to cooperate in a way that common goals take precedence. Positive social interdependence and it's mediating factors aid to curb individual competitiveness and the pursuit of personal success over that of others, serving the common good and benefiting the group. A project manager whose actions, values, and leadership style lead to the realization of an integrated, cooperative project team, where social positive interdependence is a reality, will strengthen the effectiveness of his/her team and improve the odds of overcoming the challenges posed by exploratory projects.

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