DO ACTUAL RISK MANAGEMENT PRACTICES

ADDRESS TEMPORARY MULTI-ORGANIZATIONS' IT PROJECTS COMPLEXITY?

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Abstract: Nowadays, firms tend to conduct IT projects in collaboration with external parties who share, directly or indirectly, similar organizational strategies. These projects can become increasingly complex due to the number and nature of the relationships between project components. In such circumstances, risk management processes can help project teams reduce uncertainties and achieve project success. However, projects continue to fail even when risk management has been well taken into consideration and risk management practices well applied. This paper reviews the literature in order to understand the complexity behind the temporary multi-organizations (TMO) and to evaluate the capacity of actual risk management practices to address this complexity. It concludes that actual risk management practices do not properly address TMO's complexity for IT projects and indicate new directions for research to fill the gap between risk management and TMOs IT project contexts.

Keywords: practices and methods, risk management, project management, temporary multiorganization, complexity, IT projects.

1. INTRODUCTION

Projects become more and more complex due to increased levels of technological and market uncertainty, especially in the Information Technology (IT) field (Oerlemans et al. 2009, De Bakker et al. 2010, Thamhain 2013). Requirements management, resource management, contract management, communications management between stakeholders, and budget management increasingly involve interdependent variables, which require sophisticated processes and relationships in order to manage project risks (Baccarini 1996, Sanchez et al. 2009). Organizational dynamics and the multidisciplinary structure of today's corporate environment, particularly for technology-based advances, are the primary causes of these risks. (Kruglianskas and Thamhain 2000).

Thus, in order to better address those risks, many organizations are collaborating with other firms that share directly or indirectly the same organizational strategies (Faems et al. 2005, Albino et al. 2012). Advertising, construction, biotechnology, information systems, and financial services are just a few of the industries where this phenomenon has been noticed.

In such circumstances, risk management, which is a vital component of project management (PMI 2009), can help project teams reduce uncertainties and achieve project success (Jaafari 2001, Raz et al. 2002). Risk management adds value to other processes designed to identify and manage the effects of future events and conditions on project outcomes and therefore, it presents the cornerstone to help ensure, in a way or another, project success (Keil et al. 1998, Raz and Hillson 2005, Bannerman 2008, Nelson et al. 2008, Sicotte and Bourgault 2008, Sanchez et al. 2009). Thus, knowledge about risk management methodologies and mature organizational processes to identify, assess, and mitigate project risks have to be more developed in order to ensure successful management of future, yet uncertain, threats or opportunities (De Bakker et al. 2010).

However, both the academic and professional literature contains plenty of examples of failed IT projects associated with inter-organizational collaborations (IOCs) even when risk management has been well taken into consideration and risk management practices well applied. These failures have cost billions of dollars for both the private and public sectors (Jaafari 2001, Cooke-Davies 2002, Baker et al. 2008, Bannerman 2008, Vidal 2009, De Bakker et al. 2010). In fact, the evidence shows that IOC projects have particular risks, including commitment and trust among stakeholders, human resources issues, cultural and geographical dispersion, and communication and knowledge management problems, all of which can lead to project failure (Gray 1989, Hinds and Bailey 2003, Czajkowski 2006a, Daoudi 2010).

This theoretical paper presents a literature review in order to understand the concept of temporary multi-organizations (TMOs), the complexity behind IT projects conducted in such a context, and the relationship between actual risk management practices and TMO complexity in the IT field. It bases its findings on a survey of recent research published in international publications focusing on project risk management, TMO, and project complexity.

Therefore, in the first part, a literature review is conducted to present the key concepts of this study. In the second part, the link between risk management practices and TMO complexity is addressed, and issues with actual risk management practices is depicted. Finally, a vast scope for future research is presented to better address risks in TMO's contexts.

2 LITERATURE REVIEW

2.1 TEMPORARY MULTI-ORGANIZATION (TMO)

Most organizations involved in technological development conduct projects in collaboration with external parties that share, directly or indirectly, similar or complementary organizational strategies (Gray 1985, Powell et al. 1996, Knoben and Oerlemans 2006). In fact, organizations are constantly seeking resources to meet their strategic objectives. This drives them to interact with other organizations that have the right resources that enable them to accomplish their goals and strengthen their internal

resources with the aim of improving their productivity and efficiency (Weber and Khademian 2008, Provan and Lemaire 2012). Partnership with other organizations allows the transfer of tacit and explicit knowledge, leading to the formation, advancement, and acquisition of resources that would be impossible to mobilize and develop otherwise (Powell et al. 1996, Faems et al. 2005). Moreover, organizations engaged in a collaborative process can distribute or share their risks, which helps them manage risks more effectively and achieve common goals more securely (Weber and Khademian 2008, Hoberecht et al. 2011).

The organizational arrangements for collaborative development have recently been termed as "temporary multi-organizations" (TMOs). More specifically, it has been defined as "*A group of two or more non-temporary organizations collaborating toward the accomplishment of a joint task with the duration of the collaboration explicitly and ex-ante fixed either by a specific date or by the attainment of a predefined task or condition*" (Janoqicz-Panjaitan et al. 2009, p. 2). The TMO comprises a set of independent organizations that are loosely bound by a minimal hierarchical structure and that work together temporarily to achieve a common goal (Lizarralde et al. 2012). The TMO takes into consideration two main elements: the temporariness of projects and the collaboration process. The temporariness refers to a short span of time during which individuals gather, interact, produce something, and then dissolve (Bakker and Janowicz-Panjaitan 2009). It is the finite time limit for the TMO to exist. Collaboration refers to a process or relationship between stakeholders who work together toward specific and agreed-upon objectives by communicating information, coordinating the various activities, and participating in the decision-making process (Gray 1985, Czajkowski 2006a, Daoudi 2010).

2.2 TMO COMPLEXITY

The project management literature contains many examples of failed projects, usually attributed to their complexity (Keil et al. 1998, Taylor 2006, Bannerman 2008, De Bakker et al. 2010). However, although project complexity has been studied extensively, it has not been adequately conceptualized to date. It has been seen as a highly subjective notion that can be defined in many ways, not only in terms of the field of activity but also in terms of the various branches of a specific field (Sinha et al. 2001, Vidal 2009). Nevertheless, this has not prevented researchers from proposing definitions. (Baccarini 1996) defines complexity as composed of various and interconnected aspects that can be conceptualized in terms of differentiation and interdependence. For Vidal (2009), even when the majority of environmental information is reasonably known, complexity is described as a quality of a project that makes it challenging to understand and govern. Geraldi et al. (2011), and after an extensive literature review on projects' complexity, have found five dimensions of complexity; structural complexity, uncertainty, dynamics, pace and socio-political complexity. They conclude that "*not only will project exhibit a mixture of these dimensions, but the dimensions themselves are frequently interdependent*" (Geraldi et al. 2011, p. 983).

So due to its subjective nature, the TMO complexity definition, in this paper, will be closely linked to the IT projects developed in a TMO environment. In other words, the TMO's complexity for IT projects will be defined by three dimensions: the multi-organizational complexity, uncertainty, and temporariness.

2.2.1 MULTI-ORGANIZATIONAL COMPLEXITY

The multi-organizational complexity is related to the environment in which the project is conducted. The involvement of several organizations, for a limited period of time, each one with a different culture, vision, and long-term strategies, and only to accomplish a specific project, make this dimension harder to manage in TMOs than other types of IOC (Janoqicz-Panjaitan et al. 2009).

One of the attributes of this dimension is geographical and cultural dispersion. Geographical dispersion has a direct effect on the organizations involved in a collaborative effort. It limits managers' ability to supervise the participants, increases travel expenditures, limits face-to-face interactions, weakens social relationships, complicates the planning and coordination of activities, and obscures the understanding of tasks, processes, and problem-solving approaches (Bell and Kozlowski 2002, Hinds and Bailey 2003, Evaristo et al. 2004). Cultural dispersion also poses certain challenges. Geographically dispersed organizations give rise to a number of cultural disparities (Persson et al. 2009). The misinterpretations of information, behavioral differences within teams, and diverse perceptions of authority, hierarchy, planning, and punctuality are just some of the risks that may occur (Krishna et al. 2004, Persson et al. 2009).

Another attribute of this dimension is "Knowledge risks". This type of risk, mainly related to knowledge identification, storage, and protection, is more likely to occur in a collaborative environment, and may reduce the operational and strategic benefits for all participants (Perrott 2007, Trkman and Desouza 2012). Hence, each time knowledge is shared between stakeholders, there is the potential for a security breach (Majchrzak 2004). In addition, the TMO environment itself influences the knowledge management process, because it is made up of individuals with highly specialized skills who work together for a limited period of time, it becomes increasingly difficult to establish a common knowledge base, particularly as the majority of these individuals do not know each other well and "*have to engage in swift socialization and carry out a pre-specified task within set limits as time and costs*" (Lindkvist 2005, p. 1190).

The interdependence between TMO's project components is also an attribute for this dimension. In fact, any change in the project parameters propagates throughout the entire project due to numerous and various interdependencies between its components (Vidal 2009). "*These changes may lead the project to high levels of disorder, rework, or inefficiency, when changes are not well communicated or assimilated by the team and others involved*." (Geraldi et al. 2011, p. 978).

Interdependent relationships among TMO members can, in fact, lead to coordination breakdowns. (Elsner 2004)

In other words, this dimension is influenced by the size of an organization and its capabilities to develop external interfaces. It requires the higher need for coordination, communication, and information processing between TMO's project stakeholders (Hanisch and Wald 2013).

2.2.2 UNCERTAINTY

Another dimension of the TMO complexity is uncertainty. It is both a reality and a great challenge for most projects (Ward and Chapman 2003). This dimension is related to the project conducted in a TMO context and it is defined, by Geraldi et al. (2011) as the inability to perform a pre-assessment of the impact of events, actions and decisions in order to predict and control the evolution of the project. It denotes the inability to assess the objectives and characteristics of the project's components and the impact of actions and decisions over the entire project environment.

Several authors tried to classify uncertainty. Sicotte and Bourgault (2008) discuss that technical and project uncertainty, market uncertainty, fuzziness, and complexity were discovered to be the four dimensions of uncertainty. These aspects are influenced by the quality attribute (effectiveness and efficiency), as well as the co-moderator (project methods and human resource adequacy). In fact, uncertainty can be caused by the external environment of the project, it's internal environment, and the task characteristics Sicotte and Bourgault (2008). This classification, contrary to the relationship between uncertainty and complexity presented in this paper, presents complexity as a dimension of uncertainty.

Ward and Chapman (2003) classify uncertainty into four categories; "basis of estimates", "design and logistics", "objectives and priorities", and "fundamental relationships between project parties". Thamhain (2013), in their journey to measure the degree of uncertainty, divided uncertainty into four categories; variations (known variables such as cost, time, or

technical requirements), contingencies (known events that can occur and negatively affect project performance), accidents (identifiable events with their probability and impact difficult to predict), and "Unknown-Unknowns" (unknown events for the project team seen as impossible to happen).

In fact, uncertainty is about novelty – a cutting edge technology or new framework or process (Raz et al. 2002, Geraldi et al. 2011), ambiguity – lack of clear specification, data, structure to consider issues, and ignorance about the effort required to complete an activity (Ward and Chapman 2003), and the managers' perception or experience – Individuals, all depending on their mental representations, provide external reality according to their own perception (Jaafari 2001, Geraldi et al. 2011, Vidal et al. 2011).

2.2.3 TEMPORARINESS

The temporariness is the limited period of time where people work together on specific tasks in order to answer specific objectives (Bakker and Janowicz-Panjaitan 2009). It may vary from days, months to even years, depending on the project's objectives. For example, the construction of a hospital is a type of TMO project that may take several years to deliver. On the other side, the development of a software application that answers specific customer needs (client-consultant type of TMO), can be delivered in a couple of months.

The urgency and criticality of time goals necessitate particular structures and administrative strategies, which have been extensively studied in the literature. It references in general to the speed of which projects should be delivered (Geraldi et al. 2011).

The temporariness has several effects on projects conducted in a TMO context. The temporariness of the TMO hinders trust building among its members (Bechky 2006, Raab et al. 2009). In fact, in a collaborative environment, stakeholders must communicate effectively and commit to work together in order to achieve common goals (Hord 1986). The partners must define common objectives that reflect a clear mission and a shared vision (Gray 1989, Czajkowski 2006a). However, according to (Cullen et al. 2000, p. 226), "*Without a sense of mutual commitment to each other, partners often fail to work out inevitable problems… retreat to their own companies or cultures leaving issues unresolved and often feeling the venture is not worth the effort*".

On the other hand, in a TMO, time has an effect on managers' leadership style and tends to be more task-oriented. Thus, "*the temporariness of a team has an effect on the relationship between leadership style and outcomes rather than only on the type of leadership exercised*" (Janowicz-Panjaitan et al. 2009, p. 68). In addition, temporariness may cause tension between stakeholders and exert pressure on the participants, which can dramatically affect managers' decision-making abilities.

In other words, time shapes TMO's complexity. The more time a project team has, the less uncertain the objectives of the project are and the more organized the relationship between the participating organizations is.

2.3 RISK AND RISK MANAGEMENT DEFINITIONS

Project risk management is regarded as a critical success factor and a fascinating research and development area (Project Management Institute, 2017). However, the research on this topic is regularly related to single-employer organizations; it neglects specific challenges related to TMO (Lehtiranta 2014).

First, we must define risk. Sicotte and Bourgault (2008, p. 468) define risk as "*a single, identifiable event that may or may not occur but that will have negative consequences if it does*". The (Project Management Institute 2017) defines risk as an event or condition that may occur in the future with potentially significant impacts on project objectives. The risk may be due to one or more causes, such as a requirement, an assumption, or an unexpected constraint, with the potential for negative or positive outcomes. The definition of the project management institute will be adopted in this paper.

On the other hand, risk management also has several definitions. De Bakker et al. (2010) describe risk management in projects by the following two approaches; the evaluation approach – which considers risk management as an analysis process used to determine risk factors, and the management approach – aimed to collect and analyze information in order to support the decision-making process. Besner and Hobbs (2012) define risk as related to the set of practices and tools generally used to manage project risk. For the (PMI 2013), risk management includes processes for planning, identifying, assessing, mitigating, and controlling project risks. The aim is to reduce the impact of negative events and increase the presence and impact of positive events.

2.4 RISK MANAGEMENT PRACTICES

Several risk management practices exist in the literature. "*The list of practices and tools useful to manage risk can vary greatly from one author to the other; the list may include a very large number of project management practices, tools and techniques*." (Besner and Hobbs 2012, p. 231). Critical path analysis, budget tracking, checklist, brainstorming, risk classification, ranking of lists, focus groups, Monte Carlo analysis, simulation, Prototyping, risk impact assessment, etc. are all project risk management tools dedicated to make project-based objectives more securely achievable (Raz and Michael 2001, Besner and Hobbs 2012, Thamhain 2013). The IT field, as well, has several risk management practices like the spiral model (Boehm 1988), Agile and Xtreme Programing (Boehm and Turner 2003, Nelson et al. 2008), etc. Those models have been developed in order to answer several issues with the classic software development methods such as code and fix models, and the waterfall model. For example, the waterfall paradigm stresses completely developed documentation as completion criteria for early requirements and design phases, which does not work well for many types of software, particularly interactive end-user applications, because it encourages the creation of detailed requirements for poorly understood user interfaces, as well as the design and development of enormous amounts of useless code (Boehm 1988).

3 DISCUSSION

One of the factors that lead to project failure, discussed profoundly in the literature, is the lack of a risk management approach that is efficient for assessing and managing project risks (Sanchez et al. 2009). The term "efficient" in this context is very important. In truth, there are various practices, processes, techniques, and approaches for assessing and managing project risks; however, it has yet to be determined whether these practices, methods, processes, and approaches are useful or necessary for project success (Sanchez et al. 2009, De Bakker et al. 2010, Besner and Hobbs 2012). For example De Bakker et al. (2010) tried to figure out what the link was between risk management and the success of IT projects. After reviewing twenty-nine articles published between 1997 and 2009, the researchers concluded that neither the evaluation nor the management approaches have yielded conclusive evidence about the relationship between risk management and IT project success, regardless of the context in which the project is carried out. In fact, they conclude that "*the empirical knowledge is still anecdotal and largely based on how risk management is assumed to work instead of how it is actually used in project practice*" (De Bakker et al. 2010, p. 501). Furthermore, there have been projects where project managers have not used risk management strategies and the project has succeeded, as well as instances where risk management procedures have been used appropriately and the project has failed (De Wit, 1988), especially from an IT perspective (De Bakker et al. 2010, Hall 2014).

In other words, while some projects continue to fail, it has yet to be determined whether the problem is due to poor risk management methods or poor risk management practices by project managers (Hall 2014). Another intriguing fact discovered by researchers is that most project managers conduct risk management processes at a lower level than recommended by project management institutions and risk management standards. (De Bakker et al.

2010, Besner and Hobbs 2012). In fact, "*only 29 percent of the project offices studied consider managing a risk database to be an important function*." (Sanchez et al. 2009, p. 19) The purpose of this paper is not to provide a solution to this problem, but to raise some concerns about the development of IT projects in a TMO environment.

3.1 RISK MANAGEMENT PRACTICES AND MULTI-ORGANIZATIONAL COMPLEXITY

The multi-organizational complexity contains several risk areas that need to be carefully managed. In fact, research on risk management, that takes into consideration the multi-organizations dimension, is scarce (Lehtiranta 2014). Several authors identified risk factors associated with an inter-organizational collaboration context, especially in the software development sector. However, rarely has a risk management process or practice been identified to manage risks associated with this dimension.

For example Persson and Mathiassen (2010) proposed a process to manage risks in distributed teams for software projects. Their framework takes into consideration the geographical and cultural dispersion by evaluating the following risk factors, among others: Language obstacles, work culture, and cultural bias, all affect spatial distribution, temporal distribution, and goal distribution. However, there is no clear evidence about the success of this framework. It has been tested on only one project (a software project from ScandicBank), and eventually, as they mentioned, "*generic processes leave room for experimentation and suggestions for modifications*." (Persson and Mathiassen 2010, p. 28).

On the other side, sharing risks in an MOT context is valuable; yet, it cannot be done in a disorganized fashion because the improper sharing of knowledge can lead to disastrous results (Hackney et al. 2008). Several authors studied knowledge risks and their influence on IOCs, but little frameworks or processes have been proposed to manage them (Easterby-Smith et al. 2008, Hackney et al. 2008, Weber and Khademian 2008, Trkman and Desouza 2012). For example Christopher and Gaudenzi (2009) indicate that trust is needed between organizations to facilitate the way knowledge flows and therefore manage knowledge risks. The reputation (a trust factor) of a business has a strong impact on how knowledge is generated and shared. In fact, reputation in IOC goes through three phases: "*pre-relationship phase*", "*lifetime of the relationships phase*" and the "*termination and re-establishment of relationships phase*". "*In all of these 3 phases the communication of experiences from other parties are often essential in the creation of the"experiential learning*" " (Christopher and Gaudenzi 2009, p. 192) and therefore, the management of risks is related to the transfer and exchange of knowledge. (Trkman and Desouza 2012) suggested, an exploratory framework that categorizes knowledge hazards based on five dimensions: cooperation nature, network nature, proximity, type of action, and risk range. Every dimension has different attributes, it may have an impact on the knowledge transfer and on the network, and it exists several possibilities to mitigate it. This framework, which is theoretical with no empirical studies, has been criticized by (Marabelli and Newell 2012) who argued three points: "*(1) we argue that viewing knowledge transfer as 'sticky' is insufficient and that instead, the focus should be on knowledge translation; (2) we argue that knowledgeability is an emergent process, and (3) we argue that presenting knowledge management as a set of "rules" to assess risks associated with its transfer falls short because such an approach overlooks the emergent nature of knowledgeability.*" (Marabelli and Newell 2012, p. 25). In conclusion, more theorizing is needed to understand knowledge risks in an MOT context for IT projects. Risk management practices need to include processes to effectively manage this type of risk.

Interdependence, as well, exists between project components; and any change in the project parameters propagates through the entire project (Vidal 2009). For example, in an MOT context, links exist between organizations, stakeholders, and tasks. In other words, project team, which belongs to different organizations, needs specific resources to execute specific tasks. Therefore, risks associated with project components are linked (Fang et al. 2012). However, actual risk management practices do not solemnly take into consideration the interdependence between risks (Marle and Vidal 2011, Marmier et al. 2013). In fact, it is easy to model and integrate risk behavior into a risk management approach independently (PMI 2009). Nonetheless, in reality, the interdependencies between risks exist because the interdependencies between project components that may cause negative or positive events exist as well. If one or more hazards occur at the same time, these interdependencies can affect the settings of specific risks, such as the probability and/or impact (Marmier et al. 2013). A risk can be a trigger that generates other risks, which are in many cases difficult to evaluate and manage (Carr and Tah 2001). Actual risk management practices do not take into consideration the interdependencies between identified risks nor the dynamic nature of projects (Fang et al. 2012, Marmier et al. 2013). "In practice, the PRM methodologies are often used to analyze risks independently, according to their individual characteristics, with more or less detailed and quantitative approaches, based on experience and/or expertise" (Fang et al. 2012, p. 2). Current risk management practices do not identify risks according to the interdependencies between project's components and consider, implicitly, the concept of vulnerability by neglecting the influence from project systems in risk processes. In addition, the current methods of risk management do not take into account the nonlinear and dynamic nature of projects and consider the relationship between risk events and risk consequences as direct and linear (Zhang 2007, Sanchez et al. 2009). It is to mention that risk management methods that take into consideration the propagation between risks, such as "Markov chains" and "Bayesian networks", are very complex to use in practice. (Vidal 2009)

3.2 RISK MANAGEMENT AND UNCERTAINTY

Uncertainty is closely linked to risk since these two terms are often used in an interchangeable manner (Sicotte and Bourgault 2008). Risk is derived from uncertainty because it can occur not only in the form of known, quantitative and real events, but also in forms of unknown and imaginary events (Thamhain 2013). (Ward and Chapman 2003) suggested transforming risk management into project uncertainty management. The reason behind this transformation is that the term "risk" encourages a threat perspective and cannot englobe opportunity management as suggested by (PMI 2013). "*Uncertainty management is not just about managing perceived threats, opportunities and their implications. It is about identifying and managing all the many sources of uncertainty which give rise to and shape our perceptions of threats and opportunities.*" (Ward and Chapman 2003, p. 98)

Actually, risk management practices go through three stages when it comes to managing uncertainties. First, potential risks to the project's ability to achieve its goals are identified. Then those uncertainties are classified regarding the likelihood that they will become real. Finally, responses are formulated in order to address each significant risk (Besner and Hobbs 2012). However, risk management practice presents several issues when it comes to managing uncertainty, especially in the IT field. In fact, the lack of knowledge about the project's uncertainties reduces the risk identification process performance (Sanchez et al. 2009, Marle and Vidal 2011, Besner and Hobbs 2012). On the other hand, "*managers tend to focus on commonly recognized risks in areas with which they are familiar, but they ignore other areas of risk with which they find it more difficult to associate.*" (Hall 2014, p. 28). In fact, current risk management methods intend to identify, evaluate and prepare risks mitigation plans early in the project where uncertainty and ambiguity are very high, which makes these methods inaccurate in terms of risk analysis (Ward and Chapman 2003, Sanchez et al. 2009, Vidal 2009, De Bakker et al. 2010)

2010, Besner and Hobbs 2012). In fact, "*only 29 percent of the project offices studied consider managing a risk database to be an important function*." (Sanchez et al. 2009, p. 19) The purpose of this paper is not to provide a solution to this problem, but to raise some concerns about the development of IT projects in a TMO environment.

On the other hand, managing the unknown presents as well a significant issue. In fact, the majority of risk management processes, practices and methods, allow project managers to identify foreseeable and quantifiable risks, while other practices are needed to identify unforeseen and unpredictable risks (Besner and Hobbs 2012, Thamhain 2013). "*there is no framework currently available for handling risks that are either unknown or too dynamic to fit conventional management models*" (Thamhain 2013, p. 22).

Also, disregarding the risk management practices, project managers' perception plays a vital role when it comes to managing risks, especially in the information technology field. In the identification stage, project managers tend to focus on risk with which they are familiar and ignore risks that are more difficult to associate. In the evaluation stage, project managers tend to focus on risks that are easy to evaluate in terms of probability and impact and where risks' responses can be defined with confidence. Nevertheless, they encounter difficulties evaluating probabilities for a certain number of risks even those coupled directly with an incident. As for the response stage, project managers tend to stay positive regarding risks, they don't call attention to risks because they are afraid to undermine stakeholders' confidence in their ability to deliver. On the other hand, investing resources to prevent problems, which might not even happen, is seen in some organizations and by some project managers as wasteful (Renn 1998, Kutsch and Hall 2010, Hall 2014, Lehtiranta 2014).

3.3 RISK MANAGEMENT AND TEMPORARINESS

Time is an important concept since the urgency of delivering projects objectives requires different types of governance and managerial attention (Sarker and Sahay 2004, Geraldi et al. 2011). However, "*it is still difficult to operationalize measures since pace refers to the rate at which projects should be delivered relatively to some reasonable or optimal measure*" (Geraldi et al. 2011, p. 980).

In truth, there is still a lack of knowledge on the relationship between risk management and the impact of time on project goals. Actual risk management techniques tend to focus solely on the impact of occurrences on project objectives, such as timeliness (Sanchez et al. 2009), but not the effect of time on project's environment. As for the TMO context, the temporariness effect on this context has been widely discussed in the literature, but it has not been related to risk management (Bakker and Janowicz-Panjaitan 2009, Janowicz-Panjaitan et al. 2009, Raab et al. 2009).

One of the most important effects of temporariness in a TMO context is the negative impact of time on putting in place a trust structure between the collaborating organizations (Gray 1985, Czajkowski 2006b, Hoberecht et al. 2011). This paradox prompted several authors to develop frameworks and concepts in order to build trust structure within IOC contexts (Das and Teng 2001, Maurer 2010, Van Aarssen 2010, Müller et al. 2013). For example Raab et al. (2009) introduce the concept of "swift trust". This concept occurs when individuals do not have the time to gather information about the loyalty of other individuals in the group, so they resort to category-driven information processing. This concept has been criticized in the literature, mainly because of the definition of temporary organizations presented by (Raab et al. 2009, p. 168) "*members who have never worked together before and who do not expect to work together again*". According to (Bechky 2006), this definition cannot be generalized as organizations who have worked together successfully tend to repeat the experience in the future and therefore, the trust will be built by the succession of positive experiences between them. Another example is the framework developed by (Black et al. 2003). The main goal of this framework is to strengthen interpersonal trust by giving individuals the right knowledge about the work and roles of their partners, which, in consequence, increases their efficiency and performance, and enhances collaboration. Even though those frameworks and concepts have increased our knowledge about trust building and IOC. However there is no clear evidence, to our knowledge, about their integration in risk management strategies especially for IT projects in a TMO context.

Another effect of temporariness is on managers' decision-making abilities. In fact, studies on taking decisions under time pressure in a TMO context are still limited (Janowicz-Panjaitan et al. 2009). In fact, frameworks have been suggested to make better decisions and eventually better manage projects, but there is no clear evidence about the integration of those frameworks in a risk management strategies (Gelatt 1989, Caniëls and Bakens 2012, Marmier et al. 2013). For example Marmier et al. (2013) proposed a tool based on the interdependencies between project's risks. It helps project managers improve project success rates and control project risks by taking the right decision at the right time. However, those frameworks do not take into consideration the time's effect on project's objectives nor its effect on a context where several organizations are engaged in collaboration activities. In other words, questions regarding team autonomy and decision-making processes, especially in IOC context, need to be answered and developed in order to provide some relevant insights for project managers (Bourgault et al. 2008). **Table 1** presents the various research propositions that are proposed for future research.

4 CONCLUSION

This paper focuses on IT projects developed in a TMO context. It tries to link actual risk management practices with the complexity of the TMO context. First, a literature review on TMO complexity has been realized, and three main dimensions have been extracted. The first dimension is the multi-organizational complexity. This dimension is related to the environment in which the project is conducted. The geographical and cultural dispersion, "knowledge risks" and the interdependencies between project components are some examples of these dimension attributes. The second dimension is uncertainty. This dimension denotes the inability to assess the objectives and characteristics of the project's components and the impact of actions and decisions over the entire project environment. In the context of this paper, this dimension is related to the IT project conducted in a TMO context. The third dimension is temporariness. This dimension is the finite time limit for the TMO to exist and to achieve project objectives. The importance of this dimension resides in the fact that in a TMO, time is crucial and has several effects on how IT projects are managed. It hinders trust-building among stakeholders and can, if not managed effectively, dramatically affect managers' decision-making abilities.

Secondly, the link between actual risk management practices and TMO context has been drawn. The interesting findings are that actual risk management practices do not properly address TMO complexity for IT projects for many reasons. First, actual risk

Table 1 - Research opportunities to continue developing risk management processes for IT projects conducted in a TMO context

	TMO complexity		
Need for risk management processes	Multi-organizational complexity	Uncertainty	Temporariness
	Consider the geographical and cultural dispersion	Consider the unknown risks	Consider the effect of time on trust-building structures
	Consider the "Knowledge risks"	Consider project managers' perceptions	Consider the effect of time on decision-making
	Consider the interdependencies between project components and eventually project's risks		

management processes do not properly manage risks related to the multi-organizational complexity of TMOs. Some frameworks take into consideration geographical and cultural dispersion. However, there is no clear evidence about the success of those frameworks. Also, the relationship between risk management and other attributes of the multi-organizational complexity dimension, such as “knowledge risks” and the interdependence between project components, is not very clear in the literature and it is not well represented with a risk management framework or practice. Third, actual risk management practices manage the uncertainty properly, especially that the term uncertainty and risk are often used in an interchangeable manner. In fact, actual risk management practices cover the known risks well. However, there is actually no framework that manages unknown risks, or that takes into consideration project managers’ perceptions. Finally, actual risk management practices do not effectively take into consideration the effect of time on project’s environment. Negative factors on building a trust structure between TMO members and on decision-making have to be addressed when it comes to managing risks for IT projects in a TMO context.

In conclusion, IT projects conducted in a temporary multi-organization (TMO) context present several challenges, and effective risk management processes and methods have to be developed to ensure projects’ success. Therefore, a promising avenue for future research would be to conduct studies that explicitly address risk management for IT projects in a TMO context in order to fill the gap between those two promising and important fields of study.

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DO ACTUAL RISK MANAGEMENT PRACTICES

ADDRESS TEMPORARY MULTI-ORGANIZATIONS' IT PROJECTS COMPLEXITY?