

Management Organizational Complexity in the Background Multi - Projects

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Abstract

To be effective in running multiple concurrent projects and achieving their strategic business objectives, project-oriented companies need to have adequate information about the challenges they face in managing them. The study conducted as part of this research work borrows a descriptive path and contributes to the improvement of the understanding of the different users of what is the multi-project management. These challenges include project selection; the allocation of resources; the prioritization of projects and the management of project teams. It is thus necessary to educate the project management community regarding the specifics of multi-project management and the organizational complexities while developing new tools which will permit organizations faced with the above identified challenges to adequately adapt in an increasingly complex environment. In addition to these comments, this study extends its contribution by presenting proposals for future research and resolution of the problem of project selection, project prioritization and the composition of a project portfolio.

Keywords: Managing Multi-Projects; Complexity; Conflict; Affection of resources; role redistribution

Introduction

With the evolution of science and technology we are in the era of speed, change and the complexity where competition and competitiveness no longer have borders. For decades, companies were oriented to specific management activities because of the due changes to environmental turbulence. Therefore, will be forced to configure their management actions by offering diversified services and products in a short time.

This new trend has forced many companies to resort more or less intensively to project-based organization to maintain and / or improve competitive positions. To achieve this, they have moved from operations management strategies to project-oriented companies, i.e. from project management to project management which, given its result-oriented content, is nowadays a rapid expansion to the detriment of traditional management which tended to favor a mono-chronic approach that is to say centered on a single activity. So, we went from a single project to multi-projects.

In a multi-project implementation, several projects are carried out side by side, borrowing at least the resources of a common pool of resources; these recorded changes have led to a growing awareness of the need for a new perspective in project management within organizations, a perspective distinct from that applied in the context of individual project management.

In this context of project management, a project can no longer be considered or managed in the same way as traditionally. Since the organization is called to pilot projects of all kinds coming from everywhere and aiming at the achievement of different objectives; and with a limited amount of resources. Thus, all these considerations lead to understand that these are not necessarily all the organizations would be able to make project-based management because mastering uni-project tools taught for planning and control largely lose their relevance to the new reality much more results-oriented.

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In a results-based management, the success in the realization of the projects resides in the mastery of complexity and in the capacity of organizations to implement more suitable models at the structures to manage multiple projects simultaneously with at least one common pool of resources.

Following this logic, Merwe (1997), based on his work on the structure and control of the multi-project organization, found it important to understand how organization, projects and individuals coexist and how time is managed as it is an indispensable resource that can have positive or negative impacts in the performance or success of a project portfolios. However, although he is one of the few authors to focus his attention on the organizational structure in a multi-project context, his studies have not made it possible to understand how to describe the organizational management of complexity in a multi-project context.

Payne (1995) remains to date the only one that has studied the notion of complexity in a multi-project context. But the information it provides is general and condensed, which makes it difficult to understand how complexity is apprehended from the point of view of senior management.

This is the void we are trying to fill in the present paper for a better perception and consequently for a better understanding of the actors intervening in a problematic multi-project. Our concern is to increase the degree of understanding of how project management works and the degree of understanding of the perception of complexity within organizations that apply it, hence our desire to contribute to the evolution of the knowledge of this new reality.

We will first discuss multi-project management as a complexity management; then we will conduct a review of the literature that will allow us to lead to multi-project management and its organizational specificities, ending with the organization, conflicts and redistribution of roles inherent in a multi-project structure without claiming to completeness.

Multi- project management s complexity management

In the current economic context, projects are often considered as a means of business success, Frame (1994), Forsberg et al, (2000) Pinto (2002), Shenhar and Poli (2003). Generally, they are implemented in a multi-project environment where some are managed individually, others in the form of programs and some simultaneously with implementation among at least one pool of resources used, Platje & Seidel (1993), Ireland (1997), Fricke and Shenhar, (2000), Kuprenas et al (2000), Milosevic and Patanakul (2002), Pennypacker and Dye (2002). Even though these projects are independent with respect to the objectives of the deliverables, they are grouped together as a portfolio of projects to be managed by the same manager for the sake of optimizing the use of resources and to promote an increase in productivity.

This type of project management is currently attracting a great deal of interest from many organizations in various sectors and is in vogue in the areas of high technology, research and development, computer services and the pharmaceutical industry considering dynamic and turbulent environments. Very often, most of the companies that are in the multi-project management's focus only on their attention as its only facet as it is to realize the benefits that would be possible only by proceeding otherwise.

The majority of these companies have been seduced by shining the optimization of productivity because of this limited vision. By focusing on this one conception, they did not seek to know the price to pay for it. But the multi-project has its flip side that is the set of obstacles to overcome and challenge before taking advantage of what makes its management process complex and therefore complicates the state of affairs for organizations who practice it.

In an overt way, the organizational complexity in multi-project management refers to the difficulties that organizations often face in choosing the projects to build their portfolios, since the projects making up the portfolios do not necessarily have the same objectives.

Since winning new contracts, it has always been the main concern of organizations, this pushes to make more commitment, that is to say, too many projects going beyond the level of their resources. It is this approach that Clark and Wheelwright (1992) call "canary cage" For portfolio planning, that is, "new canaries" (Projects) are thrown into the cage without any analysis of the effects on others canaries already in the cage. In such a context, organizations find themselves with several projects of different natures and sizes, classify according to their objectives as more important or more urgent. Faced with this reality, the organization is sometimes confronted with the next dilemma: which manager to prioritize when, for example, two of them experience the same desire as a critical resource given?

In practice, this situation can be described as follows: on the one hand, an **A** manager who manages a portfolio of projects is given a new project presenting an emergency situation and whose compliance with delivery deadlines could allow the business to earn capital gains; on the other hand, another **B** manager who is piloting a small project that could have a considerable impact on the balance sheet assets of the organization because of the costs that this could incur in the form of a penalty for non-compliance with contractual clauses if the timetable was never respected and in the form of shortfall if it was able to penetrate the market too late by being overtaken by a competitor.

These two cases mentioned may also be add another configuration that would further complicate the state of affairs. Imagine for a moment that another manager **C** who fails to get the highest priority in managing a single project then decides by strategy to push the project into a very critical state to attract the attention of senior management because he wants to deliver the project on time and move on.

Assuming that the completion of activities in all three cases requires the sharing of resource **Y** and that there is no possibility of subcontracting, or even contracting, given the very high costs involved. The organization is then caught up in the allocation of Resource **Y** between the three managers. It is true that an order of priority will be established, but it must be recognized that this will require some gymnastics. It is this state of affairs that seems to make it difficult to manage projects within organizations, because obtaining a balance in the handling of its different elements is not easy and requires the organization a sufficient amount of skills and competent resources able to function in different work teams.

Ultimately, multi-project structuring is a living environment where the concepts of selection and prioritization are important. There is a struggle and a competition for survival, to obtain the highest priority in the allocation of specific resources. This competition in resources pushes project organizations to make efforts to find a better compromise in order to play between the available resources and the quantity of projects to be achieved in a timely manner. However, achieving this balance is not a battle won in advance.

It is in these different situations that multiple project managers and organizations consider complex when they are called upon to manage and manage projects in a turbulent, dynamic and unstable environment.

Literature review

According to Danilovic and Sandkull (2005), the multi-project situation is recognized as a major issue for companies and the focus in research has shifted to it. As a result, some researchers have attempted to create a greater understanding of it by addressing the areas in which they felt that change was needed.

Along the way, a number of issues were identified and addressed in terms of the impact they might have in managing a project portfolio if it was managed with traditional tools in the current context.

Cusumano and Nobeoka (1998), point out that the vast majority of projects managed in a multi-project context share resources with other projects and thus the major challenge is to find ways of handling resource. By focusing on the problematic of multi-project organizations, Kurtulus and Davis (1982), Tsubakitani and Deckro (1990), Wiley et al (1998) limited their contribution to appropriate algorithms for planning, leveling resources and aggregate resource planning.

Hendriks, Voeten and Kroep (1998), find the multi-project situation as a problem of scarce resource allocation of a diversified project portfolio. They suggest flexible resource planning taking into account the limited availability of resources and the need for special knowledge. In the same vein, Engwall and Jerbrant (2003), recognized the resource allocation syndrome as the number one problem for organizations operating in the area of multi-project management and examined the mechanisms underlying this problem phenomenon according to them, one of the best ways to manage the allocation of resources across projects is to improve the quality of project estimates in terms of durations.

Tong and Tam (2003), to facilitate understanding of the distribution of resources in such a context have introduced a fuzzy optimization of the distribution of work by generic algorithms. Wu (2007), sheds another light on the problem by introducing a fuzzy linear programming approach for the allocation of labor to projects within the matrix organization.

If from the point of view of the latter, the allocation of resources is the deep motive which causes more difficulties for the organizations as regards the coordination of the activities within the framework of the multi-project management and which as much caught their attention for others the interest is different.

For some, multi-project management should be understood as complexity management and it is on this point that all contributions should converge if one wants to increase the chances of success of a portfolio of projects.

Payne (1995), thinks that complexity can be limited by trying to integrate the similarities between projects using the same resources, but also by setting up a formal project selection procedure that is operational and to which all parties adhere. But the main criticism is that it can make as part of this work, it does not take much time to describe the complexity concept in the global or organizational context to better dispel the concerns of the target users.

Geraldi (2008), believes that organizations that have projects as their primary source of income face different types of complexity intensity (complexity of faith complexity of fact and complexity inter action) both through the different types of project portfolios, as well as through subsidiaries, acquired and merged companies, and project partners. According to her, these heterogeneities require structures with different degrees of flexibility. From our perspective the notion of complexity that addressed in the context of its work is limited much more about the implementation of activities or performing tasks while the complexity as seen in the multi-project s management goes far beyond the nature of the tasks.

Merwe (1997), finds that the complexity in a multi-project context would be related to the determination of the number of projects constituting a portfolio of projects that must be assigned to a manager. As a result, he bases his reasoning on a heuristic giving the maximum number of projects that a manager would be able to manage during a year while remaining productive. But its formula or method of determining the variables is not clearly defined, which does not make it possible to remove the inaccuracy on certain aspects and consequently does not facilitate the calculations when determining the quantity of the projects to be assigned to a manager.

This brief presentation of the state of the art in the context of the multi-project problem clearly shows that no descriptive study of the organizational complexity management in a multi-project context has been conducted so far. This is the deep reason that justifies the relevance of this paper.

Multi-project management and organizational s specificities

Many authors have recognized that multi-project management is not simply the management of a assembly individual projects, and as such requires unique approaches, techniques and tools. In other words, efforts in multi-project management go beyond those used in the management of individual projects. By individual projects we mean a set of isolated and independent projects from the point of view of the use of resources, that is to say, not competitive in terms of resources.

Such recognition not only highlights the specificities but also the challenges organizations face when they decide to move from project management to project management. These challenges include project selection, prioritization, critical resource allocation and team management.

The selection of projects

With competition, economic constraints, and failures in the management of individual projects, companies have embarked on simultaneous management of several projects. In doing so, they learn to make difficult choices about projects to remember. As a result, organizations are increasingly seeing an increase in the number of projects managed simultaneously and meeting different objectives. Such a process demonstrates how difficult it is for organizations to successfully retain projects that can meet their strategic objectives. For if these organizations, in the context of traditional management were previously guided in the realization of their choices by retaining only projects that meet their objectives, it is different in the context of multi-project management in that, they refuse to specialize in one area which makes the state of affairs complex when composing a portfolio of projects.

To this end, Cooper et al (1997b) identified six (06) fundamental problems that organizations may encounter when selecting and composing a portfolio of projects that include: no connection with the organization's strategy; build portfolios of poor quality, that is to say, a very large number of new projects that have no profitability for the company; the reluctant to kill projects since, as soon as a project has been launched, it takes a life and is allowed to continue until the end of the development of the work even if its implementation is no longer justified on a commercial base.

Be faced with scarcity of resources and identification of project requirements that are often difficult to ensure the selection of good projects; and finally, the overflow of information and its quality. Leaders can become confused with the amount of information available for decision-making, and not be able to identify the right information.

This means that selecting the right projects that align with the strategic objectives of the organization remains a complicated choice.

Project prioritization

Once the projects are selected, management is responsible for allocating each of them the necessary resources so that they can be realized. One of the major frustrations for decision-makers and managers in organizations is how to categorize projects in a world where there is a mismatch between scarce and limited resources and project resource requirements. To satisfy those whom are unlimited and also have a significant contribution to the strategic direction of the organization.

Given the constraint of resources and particularly of the human resource, companies find themselves obliged to proceed with the evaluation of their opportunity cost, i.e. the shortfall or the advantage gained by granting the resource critical to the project manager X at the expense of his counterpart Y when they share the same resource. It is this relationship of preference, that is to say, deciding to grant the privilege to one or more factors to the detriment of others that we qualify here as a priority. In this case, decision-making arbitration will depend on the interaction between the requirements needed to achieve organizational objectives and the impact of non-completion of the project in a timely manner.

The biggest challenges for multi-project organizations are not just limited to the levels of project selection and prioritization, especially since even the allocation of resources may make the task more complicated.

Resource allocation

In project-oriented companies, management is called upon to pilot a large number of projects with a limited amount of resources. Generally, to achieve this, it implements a resource allocation policy that will serve as a reference base when making decisions. From there, she will be able to judge whether it is necessary for a project manager's resource allocation requirements to be totally or partially unsatisfied. Since the majority of managers experience the same challenge for critical resources, this can also limit the ability of the organization to fully meet all the resource demands it is expected to meet.

The problem here is how to proceed to satisfy the requirements of different project managers for the allocation of critical or scarce resources. In general, decision-makers have more than one option among the various situations that come their way, but the real challenge remains to determine the appropriate combination for the current situation. They will therefore have the choice between three allocation policies as proposed by Laslo and Goldberg (2001) namely: the overall planning policy, the policy priority and policy cost center. Obviously, what the e that is the policy applied, it would anger in all cases wrongly or rightly at least one of the parties which would be the source of conflict within the organizational structure.

Team management

In multi-project management context, managers are required to manage multiple projects in parallel. Each project can be totally different in terms of its purpose or in terms of teams that will perform the different activities. In this case, the manager's responsibility is to lead each of them with a distinct team while managing interdependencies between projects so that each project can achieve its goal, Ireland, (1997), Milosevic and Patanakul (2002). The challenge for the manager is how to effectively plan and organize activities with fewer resources in an environment where there is constant pressure to shorten the life cycle to deliver the product faster.

For example, if it usually takes six to eight months to move from one stage to another, when it should be in a span of three months. The time factor then forces the members to change the way of proceeding that is to say to break with the routines and inertia and work harder and spontaneously. For this, the manager must have additional skills including interdependency management, managing concurrent teams with a limited amount of resources, managing inter-project processes, multi-tasking and organizational experience, as well as the experience allowing him to navigate more easily between several project teams.

The mastery of all these elements ensures that the multi-project environment can create a lot of problems not only for the managers but also for the team members who are called to have the skills to evolve between several teams at the same time and to work under pressure to respond to the call of duty.

We have extensively listed the challenges that senior management, executives, managers and team members face in achieving strategic and operational goals in a multi-project management context. But the need to shed more light on the problems encountered by the latter in applying such management is necessary.

Multi-project complexity: organization, conflicts, and redistribution of roles

Organizations that generally manage several projects in parallel are usually called upon to make decisions as part of the process of managing their activities. However, the environment in which these decisions are made is often opaque in that committed agents do not always have the same information. This can lead to erroneous decision-making which will later lead to a number of problems in the future number of which the effects of information asymmetry and resource allocation conflicts.

Asymmetry of information

The project management process connects two parties: senior management and the project manager. From this process, agency relationships will arise from the moment when a principal actor (management) entrusts the management of his portfolio to another agent actor (project manager) for reasons of know-how held by him.

Although, the principal has delegated the entire management to the agent, the final decision regarding certain management spheres such as resource allocation for example still belongs to him. According to this management approach, information can be considered as a factor of production according to the position of the holder and the use he wants to make of it. Depending on the position taken by the agent, the principal will then face two risks when making the final decision namely:

The moral hazard that states that the principal cannot always be able to appreciate where the decisions that are made by the agent. Oppositional selection, in which the principal is not sure of having in his possession all the information available to the agent.

Given its limited knowledge of the phenomenon, because of the lack of transparency of the system, the principal does not have all the required information because those made available to him are incomplete and insufficient for making an optimal decision. Consequently, the choices that might arise from such a mechanism as well as the expected results could be tainted by bias.

In multiple project management planning is done in an operational, day-to-day manner, and decisions are sequential - that is, over time. For example, a decision (D_o) can be taken in a space (E_o) because we have information (I_o). But the same decision was taken in the same space differently if we had rather an information (I_1), (I_o) can mean imperfect and incomplete information and (I_1) perfect and complete information. Under these conditions in terms of management, information then poses two problems: the first is the acquisition of information; the second is the consequence of the asymmetry of information in an exchange.

In order to understand how the information held by the decision maker influences the decision-making process, it is important to make a comparison with the common practice generally accepted in the organizational framework of multi-project management. When management is asked to allocate critical resources to the various project managers in order to see them complete their activities on time, it is based on the nature of the information that is available to it, which information generally is based only on the priority rule initially established, that is, at the moment (to) when the project entered the portfolio. Once this period has passed, the management can no longer have real control over the evolution of the activities taking place in the portfolio. From now on for all the decisions it will have to take knowledge of the information provided by the managers of the different project teams. As there is a fierce struggle to get the highest priority, managers who have been given the priority to (to) can continue to insinuate that the requirements are still not being met when this is not true, but all simply because they want to continue to keep the resource to complete another project in their portfolio that was deemed not a priority. This illustration shows that the variations produced between (to) and ($t1$) can be important, but management does not have the capacity to evaluate them because of the existing dichotomy between the organizational and operational spheres.

In short, the distribution of critical resources and the satisfaction of managers depend on all the information that management has, from the moment the decision is made. What makes information crucial in decision-making and the consequences of its absence or inadequate circulation within organizations would then be a source of conflict between different participants.

Resource allocation conflicts

As previously stated, when a decision is not sufficiently informed because of the lack of information or the inadequate flow of information across the different management poles, senior management can make choices that, in her view, are best when in reality they are wrong. On the other hand, because of the lack of transparency of the system, because of the allocation of scarce resources, rightly or wrongly born in the minds of managers, some frustrations due to the fact that the resource would have been attributed to its counterpart, whereas it should come back first, given the certain criteria. These situations of imbalance associated with the multiplication of ascending and descending information channels can lead to conflicting situations that are detrimental to the proper functioning of the company and to people.

The interaction between operational and organizational services as developed in the context of multi-project management can lead to a wide variety of conflict situations. To improve user understanding of conflict Laslo and Goldberg (2008), identified three (03) confrontational fronts from existing research. It is within this set that we have drawn to address the identification of the different conflicts encountered in the multi-project management which are among others:

Realistic conflict: This is a conflict in which decision-making is consistent with the expected net benefits of the participants. So, a party can improve its expected net profit by moving to a more favorable policy, and the other parties reduce their favorite net profits when they lose the battle for maintaining a favorable policy.

Unnecessary conflict: This is a conflict in which at least one of the involved sides has a rational expectation that by winning the battle for a resource allocation policy it will improve its expected net profit, but the other side has nothing to lose from favored politics. In this case in the absence of two (02) opposing interests, the battle can be avoided.

The unrealistic conflict: This is a conflict based on the bad perception of an existing situation by one side. A difference in interest is presumed when in fact there is no real clash between their expected net profits and the preferred resource policy on the other side. Instead of a battle there is a possibility of a win-win agreement.

These three types of conflicts can therefore be manifested either between the project managers and the internal managers or between the internal managers and the sponsored managers and finally between the sponsored managers.

Clarification of roles and responsibilities of different stakeholders

Many organizations today find it difficult to manage their portfolios effectively because of ambiguities, confusion of roles and responsibilities between different stakeholders. It is therefore clear that there is a clarification of the roles and responsibilities of senior management, management, project managers, and team members that will reduce any disputes that may arise in the management of a project portfolio of projects. It is important to note that the clarification of the roles and responsibilities of the different parties derives from the work of Dye (2005).

To be effective in managing multiple projects or a portfolio of projects:

The project managers should be diligent, be proactive to identify problems and take appropriate measures and actions. They must work with functional managers who are responsible for meeting the resource requirements of the project. They should coordinate all resource calendars to not create overload for a critical resource. Both have the responsibility to put the team members in ideal conditions which will promote the implementation of their skills that are necessary for the success of the project.

The project leaders themselves have the responsibility to coordinate resources between projects and it is they who are responsible for the formation of teams. They are responsible for managing the various project cycles and keep the manager informed of the evolution of the activities.

The executives and senior management must be actively involved in projects and make decisions in a fair allocation of resources between current projects and potential projects. Of course, the role of senior management is to ensure that projects are linked to the long-term strategy.

The senior also responsible to ensure that the methods and management tools are available for sharing between all projects, project managers and team members and other key stakeholders of the company. As a result, a company's success in project portfolio management can only take off when all of these elements are put together.

Conclusion

The study conducted as part of this research work borrows a descriptive path and contributes to the improvement of the understanding of the different users of what is the multi-project management by highlighting what differentiates it from the management of individual projects. She comes to lift the veil on the lack of understanding about the issue of organizational complexity by addressing the crucial aspects of multi-project management. It clarifies the notion of multi-project management and how the complexity resulting from this management mode can be perceived from an organizational point of view.

We are aware that, although from this study we have been able to show that certain imperfections can emerge, such as informational asymmetries, all stakeholders involved in management (organizational sphere) do not have access to the same information, such as this is the case for managers who have detailed information about operational decisions that are not necessarily within the reach of senior management.

The developments in this paper show that, overall, there is still a long way to go to meet the full needs of project-oriented firms. These are limitations that could be attributed to this study and will be the subject of further research, because project portfolio management or multi-project management is a complexity management that is difficult to implement and whose elaboration appropriate tools remain a problem that has to be solved. The tools used in the management of individual projects are simplicity management tools and do not lend themselves so much anymore. It is in this logic that this research is part of which the subsequent developments are in progress and are already promising.

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