Handelshøyskolen BI i Oslo

BIK 65101

Prosjektledelse 3

Bacheloroppgave

MULTIPROJECT "HOSTILE" ENVIRONMENTS

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Utlevering:	23.01.2017 09.00
Innlevering:	15.08.2017 12.00

Eksamenoppgave - Bacheloroppgave

ved Handelshøyskolen BI

- Multiproject «hostile» enviroments -

Eksamenskode og navn:

BIK 65101 – Prosjektledelse 3

Utleveringsdato:
23.01.17

Innleveringsdato:
15.08.17

Studiested:
BI OSLO

PREFACE

This thesis addresses the problems and challenges of working in a multiproject environment, and what could we do to improve it.

The thesis has been prepared in connection with the program BIK 6512 Project Management 3, at BI Department of Management and Organization Oslo.

The author has been working as a project manager himself for the organization described for the last 5 years. I'm a Spanish construction engineer who moved to Norway 5 years ago with my whole family because of the Spanish economy crisis. I have several years of experience as project manager in Spanish construction industries, and now I'm leading offshore projects for a Norwegian O & G engineering company (IKM dsc Engineering). I would like to remark that I'm fluent in Norwegian and English, but I can express myself much better in English even though is not my mother language. Please have this in mind when reading the thesis, thanks!

This thesis has been basically prepared for my own learning, but I really hope it can contribute to improve the way we face daily our work in a multiproject environment.

Oslo 15.08.2017.

The author.

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SUMMARY

This thesis addresses the challenges involved in working in multiproject environments.

The most common situation in my organization is to work simultaneously with several small projects, an in this environment, there are challenges and difficulties in the direction of projects that differ from the ones considered in PL1, PL2 and PL3 for major projects.

These projects have hectic schedules and reduced+shared resources, and therefor are not completely possible to implement all processes and methodology learned.

This is the starting point for the Bachelor thesis "Multiproject hectic environments".

The topic for this thesis is**:** Multiproject enviroments

The problem for discussion is: Managing projects in these enviroments

The delimitation of the problem for discussion is: How does my organization manages projects and resources in these environments.

My conclusions shows that: Creating a Project Management Office (PMO) will lead into a better coordination of small projects and efforts. Will have a better overview of the whole project portfolio needed to prioritize better projects and resources. And in general will contribute to make my organization more competitive in the actual market situation.

1. INTRODUCTION TO THE TOPIC AND PROBLEM

1.1 Purpose, target and method of the thesis.

Purpose:

The purpose of courses PL1, PL2 and PL3, taken from autumn 2016 to spring 2017, has been increasing my competence in all fields related to project management. By the end of PL3 I hope to have gotten the necessary skills in project management to develop my work better as a Project Manager in my actual organization.

Target:

The thesis is part of the PL3 program in BI Oslo. It should be delivered in accordance with frameworks given in the thesis formulation given 23.01.17 by 15.08.17.

My goal will be delivering a solid and good thesis that provides a better understanding of working in multiproject environments. I hope knowledge and experience from the thesis could be used in my company to improve our daily work in projects.

Beyond this, it is of course a goal that the sensor finds my thesis interesting, easy-to-read and instructive.

Method:

Through work on this thesis, I hope to strengthen my professional competences and better understanding on the main and different topics I've described. The work on the thesis will make me come into contact with knowledge and information directly relevant or not to the thesis. Will make me better able to understand working in a Multiproject environment as a whole, and will contribute to understand different parts of the project, not just the topic of the thesis.

1.2 Background for the selection of this topic

Most project management methods studied in PL1, PL2 and PL3 consider major projects. This differs from reality in many organizations and project managers, since it is common to work with small projects.

In my organization case, small projects with durations of a few months, budgets below half a million dollars, and small teams are the most common projects.

This is called by different authors "Multiproject environments" (*Dye, L. D. & Pennypacker, J. S. 2000. Project portfolio management and managing multiple projects: two sides of the same coin?*) and means that different projects are developed in parallel and sharing resources. This generates additional work to manage and plan these difficulties, since not only the project manager must consider his own needs, but also those of the other projects that share resources.

In most of the cases this is not done, and each project is planned independently, leaving the task of planning a low level to each individual or area, which means more conflict, problems of overload, and a final result that it is not usually the best for the entire organization.

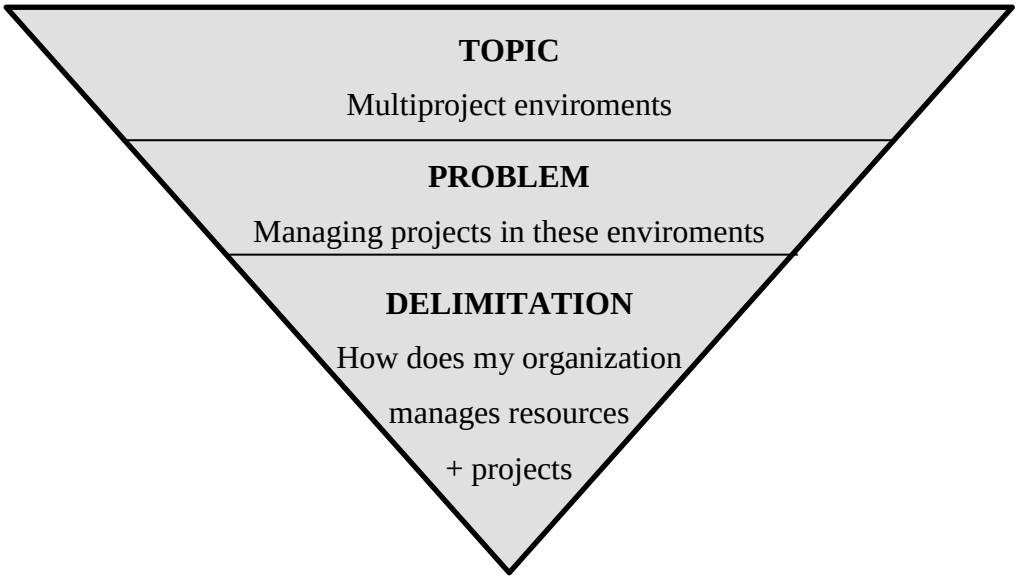
In the multiproject environment, several projects that share resources converge in the same organization. This creates a competition between projects to get resources at the right time, and an interdependence that makes decisions or events in one of them affect the rest.

In my organization, and I guess in most organizations, there is a tendency to assign all projects a "Number One Priority". As a result of this, there is no clear guidance to which project(s) has the greater urgency and the more critical need for resources, placing all projects in an equally competitive position for limited resources.

Through this thesis I've found several other topics which are closely related, and I have taken time to learn a little bit more through secondary data. None of these topics have been deeply studied in PL1, PL2 and PL3, except for "Project organization"

1.3 Topic, problem and delimitation

I began by defining the topic which I would like to learn more about. From this topic, I extracted the problem for discussion which will be the center of my thesis. This will be the recurring theme through it, and lead me to a delimited problem for discussion which will provide me with an specific framework for the thesis. This may be illustrated as follows *(Andersen og Schwencke, 2002:29):*



Although the main topic for this thesis is "Multiproject enviroments", as explained before, I've found several other topics which are closely related, and I would like to learn more about them:

- Project Organization
- Small Projects
- Project Portfolio Management

These other topics have help me to understand better the problem to be solved: "Managing projects in multiproject environments", have delimitate better the problem: "How does my organization manages resources and projects" and had lead me into a reasonable conclusion to wrap up this thesis.

1.4 Structure of the report

The thesis is built up with an introductory chapter introducing the topic and the problem. This chapter contains main purpose, target and method used for writing this thesis+ the topic, problem and problem delimitation + a brief description of both the industry and the organization for a better understanding of the thesis.

The second chapter describes which methods are used in for the collection of primary and secondary data, and also contains a critic into the method.

The third and main chapter is divided into 4. In this chapter I comply the secondary data of the main characteristics related with how my organization works, and associate it with relevant theory. Then I will extract the findings done on the primary data in light of the theory, and make an assessment. Each sub-chapter includes a partial conclusion.

The thesis concludes with a fourth chapter which includes the conclusions and a part of theory that supports my conclusions based of the findings done through the thesis.

1.5 Description of the industry and the organization

1.5.1 About the offshore sub suppliers industry

The Norwegian Oil and Gas supply industry, includes more than 1 100 companies supplying goods and services in all stages of the value chain, including seismic and engineering services and drilling rig equipment; valves, nuts and hoses for the shipyard industry; and advanced offshore supply and service vessels and subsea technology.

The service and supply industry is located throughout Norway. It employs most people in the Stavanger region, where there are companies offering a wide range of goods and services. In other parts of the country, there are often clusters of companies in the same segment within a limited geographical area. In and around Oslo for example, there is well-established engineering expertise.

The specialised, technologically advanced supply industry has developed a knowledge base that is also useful for other sectors. There are many examples of

technology that was originally developed for the petroleum industry and is now being used in very different fields.

The topside and process equipment segment had the largest international turnover in 2015, despite the plunge in newbuilding orders at Asian yards. The second largest segment was subsea equipment and installation.

In 2016, 40 % of the total turnover came from international markets. Turnover in 2016 is significantly lower than 2015, as this industry is highly affected by the oil companies' cost-cutting measures. In 2016 new sales were limited, and most companies experienced a considerable decline in order intake during it.

The five most important markets in 2015 measured in terms of turnover were the United Kingdom, South Korea, Brazil, the United States of America and Singapore.

In the UK, Norwegian companies provide goods and services for most product segments, whereas South Korea has such an important position because of large deliveries to Korean offshore construction companies, mainly drilling packages and other platform deck and rig equipment. In Brazil, there is high turnover in a fairly small number of segments: rig and drilling services, transport and logistics (primarily vessel hire) and subsea equipment and installation.

(Source: Norwegian Petroleum Directorate)

1.5.2 About IKM dsc Engineering

IKM dsc Engineering is a privately owned Norwegian company, member of the IKM Group. IKM dsc Engineering was established in 1995, currently employs 16 employees and has a budgeted turnover of 60 million NOK for 2017. It was purchased by IKM Group in 2012, which employs today approx. 2450 employees and has budgeted revenue for 2016 of 3.5 billion NOK.

IKM dsc Engineering is highly specialized in the design, delivery and installation of prefabricated architectural products that require fire / explosion safety. They have carried out more than 150 projects for the same customers for many years in

the offshore oil and gas industry, especially on the Norwegian continental shelf. These customers have used their concepts and products especially because weight and cost savings (extremely important for the offshore industry), their high degree of prefabrication (which also means time and cost savings during installation) and due to their fully documented and certified systems according to the most important international standards (especially Norwegian offshore standards).

IKM dsc Engineering is organized as follows:

• **Board of Directors** (General Manager + Project Managers + Technical Manager):

- Øyvind S. : General Manager IKM dsc Engineering (GM)
- Jon R.: Technical Manager IKM dsc Engineering (TM)
- Amund I.: Project Manager IKM dsc Engineering (PM)
- Pablo Berzal (author) : Project Manager IKM dsc Engineering (PM)

• **Administration Department** (Economy, QA, Procurement, Document Control, Logistic):

- Grethe T.: financial department (FD)
- Hilde K.: QA department (QA)
- Trine H.: Document Control (DCC)
- Roar R.: Procurement + logistic department (P+L)

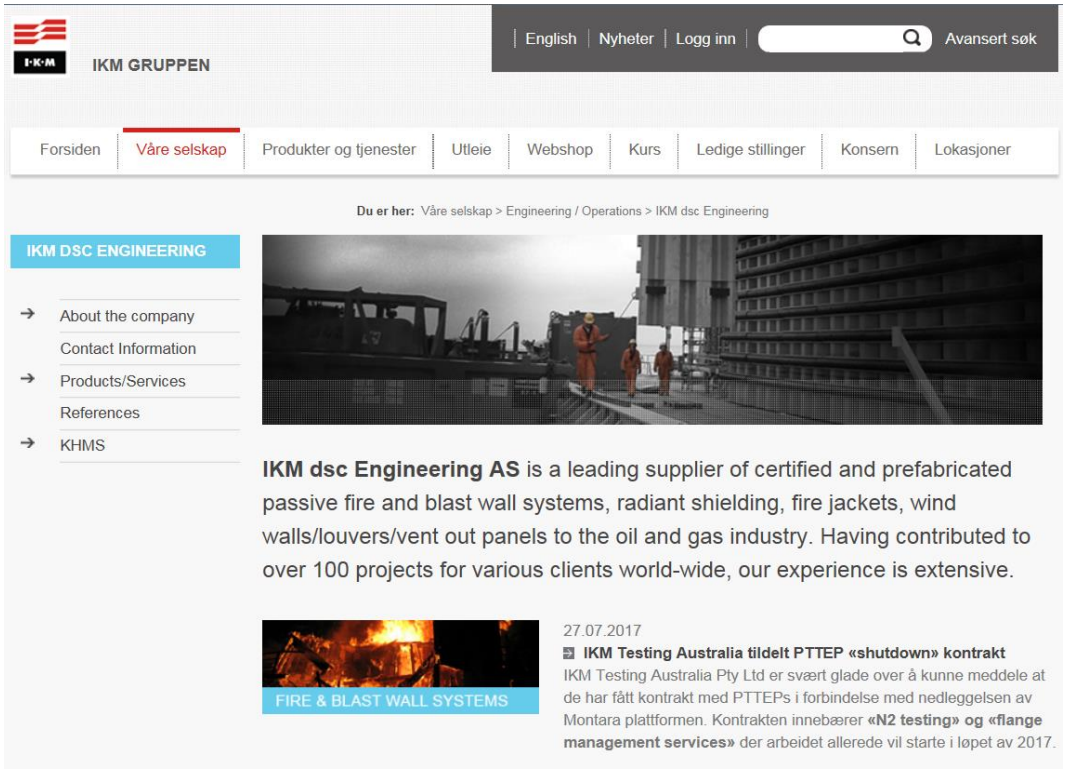
• **Technical department** (Engineers and consultants):

- Engineers: 8 permanent employed (ENG)
- Consultants: No consultants actually, but this varies often as per load work. It can even reach to 6 or 8 consultants.

The company is very used to work in projects and so are employees, but they struggle when too many projects run at the same time with such a limited resources. It is difficult for them having to respond to several projects simultaneously, causing them to be self-managed sometimes.

It is important to remark that IKM dsc Engineering always organizes their projects after the matrix organization model. Only technical resources are allocated into the projects, while the administrative ones are part of the basis organization.

Ikm dsc Engineering has 6 projects ongoing at the moment of writing this thesis at different stages, for a total approximate value of 60 million NOK. The two project managers in the organization (Amund I. and Pablo Berzal) have 4 administrative resources working in the basic organization, and 8 engineer resources working in the different projects.



2. METHODE AND COLLECTION OF DATA

2.1 Choice of method

As I know relatively little about the problem area (theoretically speaking), I have chosen to use an explorative method, since this will give me an insight and will create a better understanding on the problem. An explorative design requires studies of relevant literature as primary data and use of secondary data *(Andersen og Schwencke 2016)*

The primary data has been obtained using a qualitative study method, as I believe this is a good method for a better comprehension of the way we work in IKM dsc Engineering. I have used individual interviews, as I found most person's experiences and opinions to be of interest. This method also gives the interviewed more time to give a detailed answer concerning a specific topic.

The secondary data has been collected from literature in various databases, and especially various internet sources and project-related information. I have completed this data research with the curriculum literature from PL 1, PL2 and PL 3 to establish a theoretical basis further work on the thesis.

To answer our problem for discussion I will compare my interview material to secondary data.

2.2 Secondary data

Secondary data is described as data collected for some other purpose and now given a secondary application *(Gripsrud, 2007, 4th edition).*

This is a quick and relatively inexpensive way of obtaining data. In my thesis I have based my secondary data on reading from project management and other relevant discipline areas.

I have searched for literature (books and journal articles) in various databases, and especially used various internet sources and project-related information. I have completed this data research with the curriculum literature from PL 1, PL2 and PL 3 to establish a theoretical basis further work on the thesis.

To answer my problem for discussion I will compare my interview material to the secondary data.

2.3 Primary data

As stated above, I have chosen to make use of individual interviews to obtain the information I need.

I felt this was necessary to obtain an answer to my problem for discussion, as this type of comprehension of the way we work in my organization was not available in any other way. By using qualitative individual interviews, there would be room for clarifying questions if anything was unclear. I believe this increases the validity of this method.

I prepared an interview guide with critical open questions about the way we work. These questions formed the backbone of the interviews, but I also had a high focus on supplementary questions during the interviews. The questions in the interview were first formulated in such a way that they were suited to all interviewed but also with specific questions to each of them. I've tried to investigate also what my colleagues and managers know about the main and other topics described in this thesis.

I considered relevant to interview the whole board of directors:

- Øyvind S. : General Manager IKM dsc Engineering (GM)
- Jon R.: Technical Manager IKM dsc Engineering (TM)
- Amund I.: Project Manager IKM dsc Engineering (PM)

But specially colleagues within the basis organization:

- Grethe T.: financial department (FD)
- Hilde K.: QA department (QA)
- Trine H.: Document Control (DCC)
- Roar R.: Procurement + logistic department (P+L)

I did not considered relevant to interview the Technical Department since they are mostly involved in one project at a time.

2.4 Critic of the method

Based on the method I have chosen, I can consider a critical attitude to in my thesis both having few people interviewed, short available time (not from authors' side) for the interviews, and not having interview none of the technical department:

I have limited the interviews to eight due to practical challenges, even though *Gripsrud (2007)* recommends 15-25 respondents.

In some of the interviews and due to the hectic environment we work in, the interviewed didn't have enough time to complete all questions/topics I wanted to discuss with them.

Engineers and consultant only work in several projects at a time when changing from on project to the next. That is what I did not consider relevant to interview them.

Given these facts, my findings may not be 100 % significant and my conclusions and deductions may not be totally correct, but should nevertheless be interpreted as clear indications.

3. THEORI

In this chapter I have complied the secondary data on the main characteristics related with how my organization works, and associate them with relevant theory. Then I have extract the findings done on the primary data in light of the theory, and make an assessment. Each sub-chapter ends with a partial conclusion.

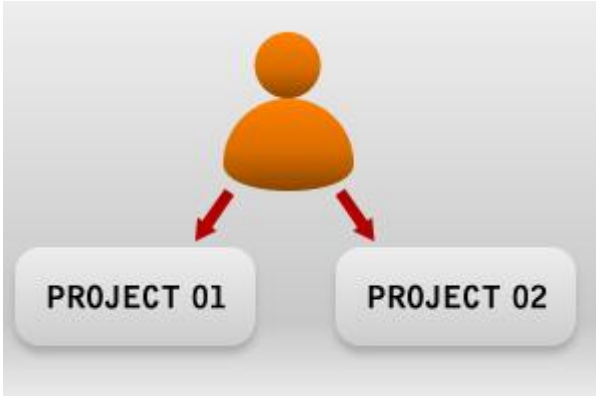
The main characteristics on my organization's work are:

1. There are always several projects ongoing at the same time: Relevant theory: MULTIPROJECT ENVIROMENTS
2. We always work in projects after the matrix organization model. Relevant theory : PROJECT ORGANIZATION
3. The projects we usually work with are small projects. Relevant theory: SMALL PROJECTS
4. Projects are affected and limited by the dependencies with other projects. Relevant theory: PROJECT PORTFOLIO MANAGEMENT

3.1 Multiproject environments

3.1.1 Theory

The most common situation in my organization is to work simultaneously with several small projects, which is known as a "Multiproject environment".



The greater complexity of an environment with several projects significantly affects the way in which these are planned and managed, as well as the needs and way of working of the organization.

Multiple Project Management (MPM) has taken hold in organizations as they seek to improve management and efficiency, coordinate interrelated projects to cut cycle time *(PMBOK® Guide, 2000)*, and transfer technology between projects to outperform the competition.

An environment with several projects has the following implications:

- Hinders the planning process, since the availability of resources is affected to the needs and schedules of other projects.
- Introduces a limitation or additional about the project, since any decision or changes applied should consider the effect on other projects.
- Introduces an additional risk due to interaction of the project with others. This interaction may involve delays in other projects preventing from having a resource in time, and therefore other projects also slow down.
- When the pressure increases, it reduces the productivity of resources by having to respond to several projects simultaneously, causing them to be self-managed.
- The focus of the organization is no longer on analysing the performance of projects individually, but more focused on all the projects.
- The number of conflicts between projects increases due to increased interrelation. This requires implementing some system to resolve such conflicts in the form for an efficient organization.
- It also creates opportunities to take advantage of synergies between projects, such as joint purchasing or making better use of the knowledge generated.

Basically there are two ways of dealing with the situation of an environment with several projects in the methodologies of project management *(Miloševic, D. & Patanakul, P. (2002). Secrets of successful multiproject managers*).: Accepting or not accepting multitasking.

Accepting multitasking.

This means that resources can simultaneously perform different tasks, for which a certain percentage of dedication is dedicated to each task. Consequently, the duration of the tasks in the respective schedules is adjusted according to this dedication.

Not accepting multitasking

When multitasking is not accepted, the resources always work with full dedication to each task, so that the fit of the different projects is made based on the availability of the resource, and looking for the most optimal solution for the set of projects.

What solution can be applied in reality?

According to the different approaches seen, it seems clear that the best solution for most organizations would be not to accept multitasking, although reality shows that in most cases they do work by accepting it.

Apart from cultural reasons and customs in the organization itself, which in many cases are the main reason for continuing to accept multitasking, it is also true that the reality is more complex than that defined in the methodologies that do not accept it, which causes these are a little unviable. Among the reasons for this greater complexity we could point out are:

- In many cases, the resources from the basis organization work in tasks related to projects with others that are not at the same time, and therefore not managed or planned following the same methodology. This is the case especially of when the provide commercial support, technical support…
- There are tasks that are not subjected to be planned, especially because they are not given with the necessary anticipation. Like for example some technical support or a quotation to be sent into a client as pointed before.
- In the methodologies that don't allow multitasking, the organization of resources is contingent to the needs of project portfolio, which may differ from the requirements of functional areas to prioritize resources. In reality there is a need to maintain the balance between the needs of the projects and functional areas.
- Its application also requires that the project managers are strong within the organization. This clashes with the reality of many organizations that are structured matrix or even functional, limiting the capacity of the project managers.
- In small projects, resources that can be devoted to managing the project are also small, limiting the level of detail of the planning and subsequent monitoring.
- The ability for initiation and execution of a new project related to the existing ones is limited, because when an order is received initially, is normally expected to start immediately, which requires having a certain number of resources available.

These situations are not insurmountable, but imply that the theoretical solutions are not fully applicable. Therefore, an intermediate solution that accepts a certain level of multitasking should end up being applied.

What does seem clear is that more multitasking lowers productivity and gives worse results for the organization. Therefore, we must balance this division by comparing the extra costs in management that supposes the non-acceptance of multitasking, with the lower productivity of accepting it.

There is a set of measures that we can apply to minimize the above points and facilitate the non-acceptance of multitasking:

- Planning under the concept of not accepting multitasking, but with a dedication of less than 100% resources. In this way there is a remnant to attend the works that cannot be planned.
- Separate the resources dedicated to projects from those dedicated to other activities outside the projects, so that the interference between both types disappears. Matrix organization.
- Assume a certain percentage of dedication of resources, based on historical data respecting the total period initially defined.
- Create a PMO and provide greater capacity and authority to project managers so that they can manage further.

The creation of a PMO is something I should consider as a reliable solution for the problem later on.

3.1.2 Facts

Ikm dsc Engineering has 6 projects ongoing at the moment of writing this thesis at different stages, for a total approximate value of 60 million NOK. The two project

managers in the organization, (Amund I. and me) have 4 administrative resources working in the basis organization, and 8 engineer resources working in the different projects.

We all have accepted multitask, but it generates daily conflicts due to the fact that the different projects are developed in parallel and sharing resources. This generates additional work to manage and plan these difficulties, since not only the project manager must consider his own needs, but also those of the other projects that share resources.

Out of the interviews with the board of directors, I found they consider as a normal situation being multitasked. "All of we are, even me (GM)" This is how this organization has worked in the last 20 years and it'll continue being like that.

Jon R. (TM) in fact considers that the only ones who are not fully multitasked are the engineers, due to the fact that they are usually assigned to just one project at the time. My colleague Amund I. (PM) point out the difficulty of getting the use of these resources shared, and the conflicts it leads into… but he guesses this is the only way to organize the company to make it profitable.

On the other hand, my colleagues in the basis organization, wouldn't like to be multitasked, but all of them understand this is the best way to run several projects at the same time in general. They basically "complain" about the lack of planning and coordination of the projects and of their time in general and especially when quotations are to be sent. They also criticize how the members of the board of directors always consider their project the most urgent and first priority. A quotation into a future client is almost a project in itself; it requires a lot of effort from the basis organization and they usually come with really short schedules.

Even thought my colleagues in the Technical Department have not been interviewed, based on my experience working with them in the last years, I can conclude they accept multitasking. It is not that often that they have to work in two projects at a time, only at the end of a project and in the beginning of the next one. Is the PM together with the TM who plans their work, and there are usually not that many problems as with the basis organization who works in 6 or 8 project at the same time.

3.1.3 Review

The offshore sub supplier industry that IKM dsc Engineering deliver their products into, is an industry where most of actors work in multiproject environments and accept multitasking. In fact because of the characteristics of the offshore projects, it won't be possible to not accept it and being competitive under the current market situation.

IKM dsc engineering already organizes their projects following the matrix organization. Technical resources are fully under the PM's responsibility, but not basis organization ones. This part or the organization is critical for the good development of the project, all departments there play a key role in the documentation, quality, and delivery of the products.

Project managers plan the project taking in account the technical resources, but not the basis organization ones, and there is no overall method/criteria for prioritizing the work of them. Their activities are always included in the overall plan, but these resources have never a detailed plan of their work. The multiple projects that the project managers must handle at the same time, makes difficult to find enough time to plan their projects as accurate as they will and should.

3.1.4 Partial Conclusion

An intermediate position that could coordinate the work of the basic organization and had a better overview of current projects, oncoming projects, company priorities… could be really useful.

The creation of a PMO could be definitely part of the solution to the problem. I consider it is worth to learn more about this figure and how could it be implemented into our organization.

3.2 Project organization

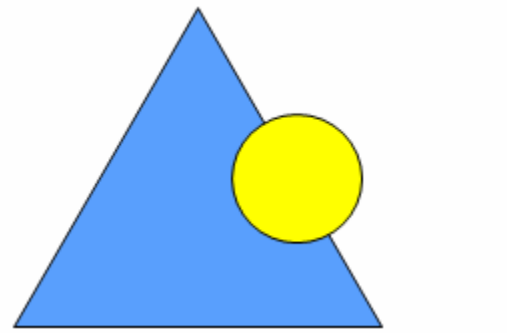
3.2.1 Theory

In every project developed within an organization, the direction of this project is going to be affected by several aspects. One of these aspects is its relationship with the other projects, since this structure will significantly affect the ability of the project manager to manage the resources allocated, and how they will develop communications between different resources.

From the point of view of the project there are different types of organizations (*Jan Terje Karlsen; Prosjektledelse fra initiering til gevinstrializering; 20015):*

- Functional Organization
- Project Organization
- Matrix Organization

As pointed before we always work in projects after the matrix organization model.



In a matrix organization, resources are organized into functional areas each with a responsible for each area, but the specific resources allocated to each project also report to the project manager. In this case the word "also" becomes important, since resources are going to have two heads, thereby diminishing the authority of the project manager and the risk to exist interests and different priorities between this and the head of the area.

This type of organization is also defined by other authors by the way authority is limited *(Jensen, Svein Arne; Practical project leadership; 1998):*

- Fully incorporated = Functional Organization
- Full authority = Project Organization
- Split authority = Matrix Organization

As seen in the matrix organization, authority is shared between the project manager and the different area managers, leading to divide this into two subcategories:

- Strong matrix: the main authority is the project manager.
- Soft matrix: the main authority is the responsible of the area.

In the first case we will be closer to the organization by project situation and in the second case to a functional organization, where the project manager assumes the role of coordinator without real power.

The project manager in the matrix organization is not a staff man, nor does he normally have less authority than the functional managers reporting on the same level.

As advantages we must mention the greater specialization of resources, and the fact that they have the support of an area, which facilitates the reuse of knowledge and less dependence on specific resource.

Does the Matrix Work?

No specific organizational form can be guaranteed to work at all times, or to improve productive output. However, it can be said that some organizational forms have a better chance of working than others, particularly if they are designed to meet the needs of project work. As previously indicated, the matrix meets a number of well-defined needs. The principal need is for an organizational structure that can handle the great complexity of a multidisciplinary effort. *(Stuckenbruck, L. C. (1979). The matrix organization. Project Management Quarterly, 10(3), 21–33.)*

If the multidisciplinary need is really there, and if project management is necessary, then the matrix is a viable organizational solution. However, the matrix is a complex organizational form and will not automatically work. The number of things that can go wrong is endless, but the most usual reason for failure of the matrix results from “sabotage” on the part of functional management and even by lower level supervision.

It is necessary to assure that the matrix will work by thoroughly selling the concept to top management and to all involved functional management. If everyone involved in the matrix is "a believer," and every effort is expended to make it work, the matrix will work and will result in outstanding project accomplishment.

The matrix organizational structure has had a great influence on project management. The matrix evolved to fill a need for an organization capable of dealing with great project size and complexity. The result was increased organizational complexity. However, it has greatly added to the versatility and effectiveness of project management. The matrix has permitted project management to be effective not only for very large projects but small projects as well, and has been extremely valuable for solving multidisciplinary problems.

The matrix organizational form is only desirable if there is a real need for its added complexity. Not only is it not for everyone, but it cannot be guaranteed to work. The matrix will function and result in very improved project productivity if top management gives its unwavering support and if functional management and the project personnel accept the matrix as a "way of life" which can only be of great advantage to the company in improving output and profit. *(Stuckenbruck, L. C. (1979). The matrix organization. Project Management Quarterly, 10(3), 21–33.)*

3.2.2 Facts

Ikm dsc Engineering always organizes their projects after the strong matrix organization. It is a small company, so there is no room for several employees or area responsible into the same area of the basis organization.

At this point, I consider necessary to describe the different areas of the basis organization for a better comprehension of the reader of what are the tasks they perform for these shared resources:

3.2.2.1 Document Control:

Documentation is one of the main processes involved in this type of industry. The Norwegian Oil and Gas industry has developed a tremendous amount of codes and regulations to comply with. All this compliance has to be strictly documented, and even for small projects the document list tends to be huge. Document Control processes starts at the very same time that the P.O. is received and end several weeks after the products have been delivered. A two way system has to be implemented, and the way to receive or deliver documents varies from client to client. Usually a FTP server/system is created due to the large size of documents. The Document Control procedure includes the preparation, marking, approval, distribution, revision and changes of documents.

3.2.2.2 Procurement:

Our company bases a greater part of its activities on purchases. The quality and cost-benefit of our supplies are hence in a substantial way tied to use of suppliers who may satisfy the quality requirements set by our company.

3.2.2.3 Quality assurance:

Our company is a certified ISO 9001 company. This kind of management certification is almost a must for working nowadays, but it implies a tremendous bureaucratic work. Everything has to be strictly documented, inspection are pretty severe… It also requires a considerable effort to keep up with different updates in lower certifications and processes.

3.2.2.4 Economy:

The Economic department processes starts at the very same time that the P.O. is received and end several weeks after the products have been delivered depending on the payment terms. Frequently first activity is stablishing initial performance bond guaranties

For a correct project cash flow is utmost important that the economic department is aware of the payments to be receive and done. This is really linked to the project development, and the economic department should be aware of.

3.2.2.5 Logistics:

The logistic department plays a really important role in the projects. They come into the project typically on a later stage, but intermediate move of materials might be required also from them. The logistic department needs to be aware of the amount of materials to be sent and about the site need dates for the materials. Booking the sea/air containers is crucial for getting the best rates from the logistic agents and for securing the space and equipment needed for the shipments.

In general all my colleagues at all levels are used to work under this organization system and accept it. As explained before, it is as important for the good progress of the projects the work done at the basic organizations as the work done at the technical side.

3.2.3 Review

Matrix works perfectly for our kind of company and industry, it provides specialized assistance into the project managers and takes advantage of the synergies produced by repetitive projects.

A functional or project organization wouldn't be feasible for us and everyone is aware of it, so the feedback obtained from the interviews shows no special findings. Just to remark, that many of my colleagues have the feeling that there is quite a "distance" between basis and project resources… even though there are only a few meters between them.

3.2.4 Partial Conclusion

Maybe some small adjustments could be done in order to make the system better, but processes and tasks are clear for all and well differentiated. Again an intermediate figure between the project and the basis organization could be useful in order to improve the system.

3.3 Small projects

3.3.1 Theory

The PMI defines major projects, as those that last more than one year, with more than a million dollar budget and a team of over a hundred people (Source: Project Management Institute). Therefore by analogy we could say that the other projects would be small projects.

Besides the differences reflected in the above definition, we can highlight other differences that have an important effect on the needs and how to manage these projects *(Rowe, S. F. (2008). Managing multiple small projects.):*

- As projects with a short deadlines and reduced+shared resources, it is difficult to fully implement the processes defined in the methodology.
- This also usually implies that the project manager must assume part of work, which subtracts time for the tasks of planning and managing.
- The small projects are usually developed under multiproject environments, so usually are affected and limited by the dependencies with other projects.
- Organizationally it is also usual that they are developed within matrix organizations, which implies a lower authority of the project manager.
- Although they are quantitatively projects with lower risk than large projects, they have a smaller capacity of reaction due to budget and time.
- An advantage of these projects is that they usually have a component of repetitiveness and large projects than reuse. This is because usually orders within a range bounded by the activity of the company.

In general we can say that are simpler and lower-level needs project management project but usually develop more "hostile" environments, which ultimately ends up generating difficulties that often occur in large projects.

How to deal with small projects?

Although the most obvious would say that it is necessary to apply the processes defined in the project management methodologies, the reality is that this is not feasible for the few resources available for it.

The first thing to note, is that although they cannot strictly follow the processes, they cannot ignore them either, because as any other project there is a need to plan and control the various aspects that compose it. So the question is how to combine this need with reduced resources.

There may be different solutions that can be summarized in the following points:

- To pass on some of the tasks of project management to the organization and take advantage of the fact that we are usually talking about projects with a high level of repeatability. This volume of resources to manage within the project is reduced and replaced by exploiting synergies shares.
- In a multi project environment the creation of a PMO which should take the work of planning for all the projects.
- The availability of a PMO can collect and store historical data, reducing the time needed to complete the planning phase.
- Part of the planning phase must be transferred to the commercial stage, so when the order is received, this already addresses the most important needs from the point of view of the management of the project, and somehow the initiation process is completed. Again this can be done by considering the historical data provided by the PMO.

To gain efficiencies S.F Rowe proposes to use a multiple-project management process (MPM). The multiple-project management process has three steps *(Rowe, S. F. (2008). Managing multiple small projects.):*

- Develop a single project plan for each individual project
- Incorporate individual project plans into a multiple-project plan
- Execute and control the multiple-project plan.

- Step 1: Develop a Single Project Plan for Each Individual Project

Planning is a major challenge for small projects. We know that it is important to plan. When planning is not done, you start out thinking the project is small and end up hoping that the project is really small. However, getting the right people together at the right time to discuss the project details can be painful.

- Step 2: Incorporate Individual Project Plans into a Multiple-Project Plan

After individual plans are developed, they should be consolidated for project monitoring and control. This will allow the project manager to see the results in a single document and also to see impacts across projects.

The multiple-project plan has two important components: interproject dependencies and duration. Interproject dependencies or logical relationships among projects, phases, or activities should be identified with the appropriate links. Any time that a deliverable from one project affects the completion of another project, it should be identified on the multiple-project plan. If a project that is not within your control has a deliverable that affects one of your projects or if one of your projects has a deliverable that affects someone else's project, that dependency should also be identified and shown on the multiple-project plan.

- Step 3: Execute and Control the Multiple-Project Plan

Projects should be monitored, executed, and controlled using the methods defined during the planning process. The multiple-project schedule and risk log should be

updated with actual data. Status information should be summarized into one document.

Managing requires that the project manager plan, organize, direct, and control project activities by developing plans and keeping them current, understanding the needs of the project stakeholders, and responding appropriately.

Leading requires interaction with people. The project manager must command authority and be able to inspire and motivate others. The project sets the general direction of the project and allows team members to provide input along the way. During difficult times, the project manager must remain calm and be able to provide solutions to get things back on track.

In order to effectively manager and lead, the project manager must have communication, facilitation, problem-solving and decision-making skills. Because small projects are viewed as easy, they are sometimes used as a training ground to prepare a project manager for larger projects. To become proficient, the project manager will first acquire knowledge—an understanding of the project management theory, processes, and practices necessary to manage projects. Then the project manager will develop the skills necessary to lead project activities.

It is important to be successful on small projects. When a project manager fails on a large project, he or she might get a second change by being reassigned to a small project. When a project manager fails on a small project, what's left? The moral: develop your ability to both manage and lead small projects to maximize your chance of success. (Rowe, S. F. (2008). Managing multiple small projects.):

3.3.2 Facts

In the offshore sub supplier industry, small projects require almost same effort for the basis organization than big projects. Products to be delivered follow the same standards than main projects, have the same QA regulations, and require basically the same documentation that will be finally incorporated into the main documentation of the main project.

Managers in general agree than working in small projects is comparatively as much time and resource consuming as working in large projects. However, these projects could be really profitable if well managed, even more than large projects comparatively. Of course they would rather having larger projects, but the way the offshore sub supplier industry works, limits the size of the projects by splitting the main contract/project into tens of small contracts/projects.

Basis organization is the most affected but the way small projects are managed. It requires from them a big effort for being active in all projects at the same time. Basis organization for a specific project work, starts always before even project team is set together (bidding phase), and ends several months after project team is dissolved. This is also applicable to project managers in a minor grade. After the engineering is finished and products are delivered, there is always work to be done by the basis organization specially related to documentation and minor deliveries associated to the main delivery of the product. If the life cycle of a project for the technical department is between six months and one year, for the basis organization is between one and two years.

3.3.3 Review

Dimension of the projects in the offshore sub supply industry depends on main EPC contractors and shipyards. Main contracts/projects for a platform, rig or a ship are split into tens of small contract/projects searching for the most qualified sub suppliers and best prices in order to reduce life project cycle and reduce risks.

These facts do not depend in IKM dsc Engineering as we take the projects as they come.

3.3.4 Partial Conclusion

The coordination of all these projects and efforts cannot be done by the project managers on their own. It requires a person with a hierarchic relation over them and a better overview of the whole project portfolio in order to prioritize project and resources.

3.4 Project portfolio management

3.4.1 Theory

A portfolio, is a collection of projects or programs and other work that are grouped together to facilitate effective management of that work to meet strategic business objectives. The projects or programs of the portfolio may not necessarily be interdependent or directly related *(PMI, 2006, p. 78).*

A portfolio of related projects consists of projects of a similar type, organization, or subject that often share resources and could be formally managed by a project portfolio manager.

There is a tendency to assign all projects in the corporate portfolio a Number One Priority. In spite of this widely recognized criticality, a clear and formal project selection and prioritization policy is too often lacking; selected projects are all considered as high priority projects. As a result, there is no clear guidance as to which project(s) has the greater urgency and the more critical need for resources, effectively placing all projects in an equally competitive position for limited resources. (*Dye, L. D. & Pennypacker, J. S. 2000. Project portfolio management and managing multiple projects: two sides of the same coin?*)

Projects must be prioritized based on their relative importance and contribution to the overall strategy. Each project should be prioritized relative to other projects being evaluated as well as those currently under way. In addition, as the business and technical environment changes, the priority of one or more projects may change also.

To best accomplish these objectives, multiple project environments should be focused on ensuring compatibility among different simultaneous projects with a strategic portfolio approach.

When selecting and prioritizing projects, especially when resource allocation in a multiple project management environment is an issue, it is important to consider the following:

- Projects should be similar in size and level of complexity.
- Projects should be relatively of the same duration and require few unique resources.

- Projects should be of similar priorities to permit balancing requirements without completely omitting some projects in resource assignment.
- Projects should be similar disciplines or technologies.

All projects, even inter-related projects in a multiple project environment, typically have a unique and complete life cycle with different start and finish times. This usually places individual projects within the project portfolio in different phases for the project manager to plan and execute at the same time. A project manager may experience some difficulty in trying to maintain a balance between the projects because of the different phases of the life cycle being pursued at the same time

Why prioritize the allocation of resources?

In any project management department is a particularly complex decision. Among all available projects, what we prioritize?

Probably there is a long list of projects or tasks that we would implement, but time and resources are limited.

The only way to achieve satisfactory goals is to prioritize those most important, most interesting or will report greater benefit to our company, is economical, increase market share and build brand image and satisfaction projects or tasks among our customers.

To choose which tasks to prioritize, we cannot get carried away by emotions or feelings, but we must make a structured and objective approach that allows make the best decision.

If we think beyond the execution time of the projects, we see that not all of them are just as important for the organization. In some cases we will have projects that can generate new orders or have a high visibility, which gives them a priority. Therefore the person in charge of managing the portfolio of projects must know these political and commercial aspects, and know how to balance them with the objective criteria.

Methods for managing the project portfolio

As a method of trying to manage the corporate project portfolio, day-to-day planning often is very unstable and unsuitable. In contrast, the project portfolio

must have some degree of consistency and stability. In addition, while planning the portfolio once a year can be effective for looking at competitive organizations in practice, an annual review period is too long because changes in the project portfolio within a year are inevitable. The problem is that many companies do not know how to handle a more frequent portfolio review process.

DeMaio and Corso propose a five-step model that takes a logical approach project selection and prioritization aimed at helping decision-makers in a multiproject environment (*DeMaio and Corso; 1994; Managing Multiple Projects: Planning, Scheduling, and Allocating Resources*):

- Individual project evaluation, evaluation, classification, and initial screening
- Multiproject classification and selection
- Actions for improvement and portfolio reclassification
- Priority assignment
- Ongoing control of project portfolio.

It is critical to establish project selection and prioritization guidelines that are consistent with the corporate mission and objectives.

3.4.2 Facts

IKM dsc Engineering work constantly with 6-8 projects and 3-4 inquiries at the same time.

Only the general manager has an overview of the project portfolio and can evaluate which projects must be prioritized based on their relative importance and contribution to the overall strategy. The rest of the board of directors have not. The technical manager follows the GM's indications and the project managers… we basically follow the tendency to assign all projects in the corporate portfolio a Number One Priority.

Basis organization basically follows the project managers' instructions. They do their best to keep up with all the different task that project managers assign into them. They really complain through the interviews on how project managers always think their project is most important, and on how everything is left behind when client inquiries for new project come.

3.4.3 Review

It is utmost important to manage the project portfolio properly, the basis organization feels frustrated and loaded with work from the project managers with no more indication that everything hurries. Project managers hurry them up for their projects, while the general manager prioritizes over all the inquiries for the new projects.

3.3.4 Partial Conclusion

At this time, only the general manager has a strategic overview on how to manage the project portfolio. His task are multiple as for the rest of the organization, and his time limited. Unfortunately he does not have the time to formalize the portfolio and share this information with the rest of the organization.

4. CONCLUSION

The main conclusion is that : **“I can’t keep calm, I’m a project manager”**

Now, serious, writing this thesis has helped me to understand better how we are working in my organization and how could we improve the way we do it.
The fact that the offshore sub supplier industry is a multiproject environment is nothing we are going to change, but as concluded before, a position that could coordinate the work of the basic organization and had a better overview of current projects, oncoming projects, company priorities… could be really useful.

Matrix works perfectly for our kind of company and industry, but maybe some small adjustments could be done in order to make the system better. Again an intermediate figure between the project and the basis organization could improve the system.

For a better coordination of all these small projects and efforts, a person with a hierarchic relation over the project managers and a better overview of the whole project portfolio is needed in order to prioritize project and resources and this cannot be a new task into the General Manager.
I’m going to explore if the creation of a PMO in my organization could help to coordinate, improve and prioritize. For doing it, I’m going to learn more about

what is a PMO, how could I integrate it, what will be its functions, its advantages and the difficulties we could face when implementing it.

What is a PMO?

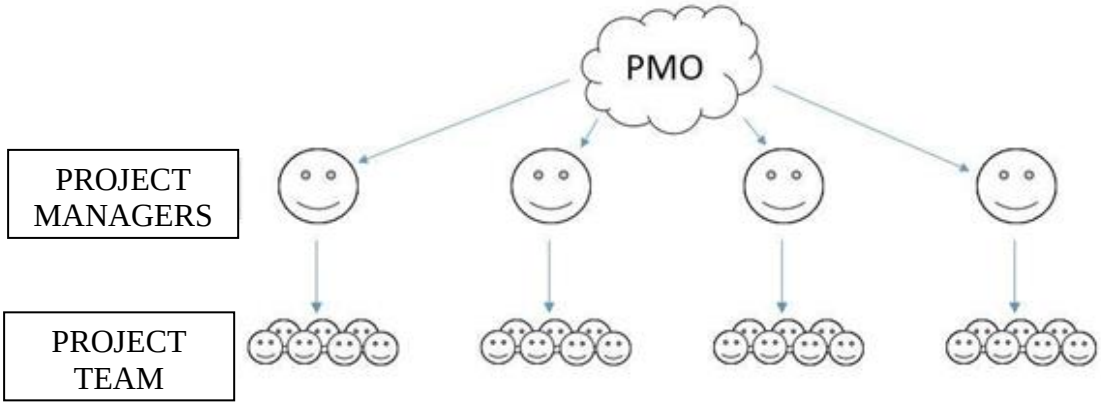
The Project Management Office (PMO) is the department or figure within the organization in charge of defining common criteria for managing and coordinating projects, with a scope and responsibility that varies according to the organization.

Although in large companies the Project Management Office (PMO) is usually a department, in smaller companies this can be formed by a single person, or even be part of the work of one of the project managers. This is really interesting for us, I think that one of us (the project managers) could take fewer projects and get started with the PMO with the support of the general manager.

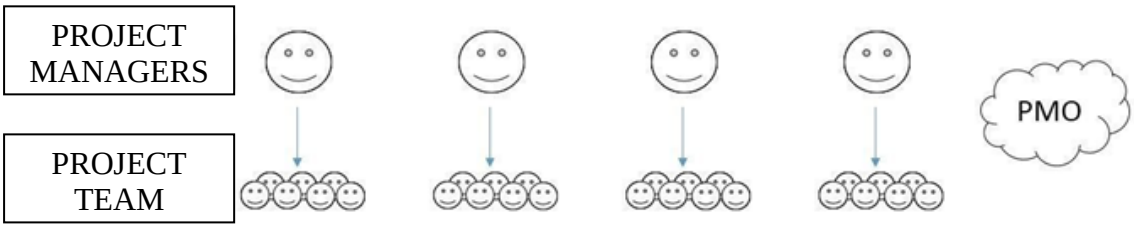
How could we integrate the PMO in IKM dsc Engineering?

There are basically two ways of integrating the Project Management Office (PMO) into the organizational structure:

- Hierarchical relation with project managers. In this case the PMO is established as a department that manages the project managers. This form of integration is what gives authority to the PMO, and greater capacity to act and assume functions.

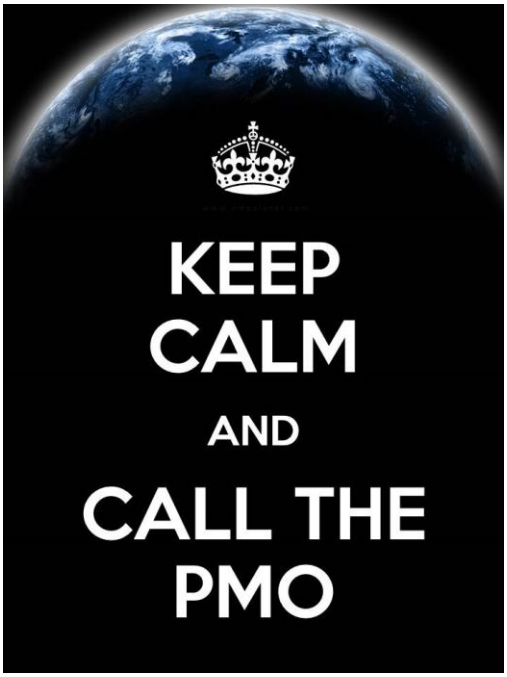


- Non-hierarchical relation with project managers. In this case the Project Management Office (PMO) does not directly manage the project managers, but act as an independent and external help to this entity.



There is no better way to integrate the Project Management Office (PMO) in the organization, but the way to integrate will depend on the objectives and functions that it has to assume. In this way, a Project Management Office (PMO) with no hierarchical relation over the project managers will have a limited capacity to manage them, leaving its limited capacity to specify processes and audit its application.

I think for IKM dsc Engineering, the best way to integrate the PMO will be with a Hierarchical relation with the project managers. This will provide the necessary authority to it in front of the rest of the organization and the attributes to manage the portfolio for example.



What will be the Functions of the Project Management Office in IKM dsc engineering?

Generally, the Project Management Office (PMO) will be responsible for coordinating and establishing common guidelines for the management of projects within the organization. It can be carried out more or less extensively and will include the following responsibilities and functions:

- To define the working processes and the monitoring of projects in the organization, creating a common framework for all project managers.
- To manage the project managers, giving them the assignment to each project and ensuring that they meet the needs of the organization.
- To integrate and balance the project resources to optimize their overall result.
- Resolve conflicts between projects by setting priorities managing the project portfolio..

What could be the advantages for IKM dsc Engineering of the Project Management Office (PMO):

Creating a Project Management Office (PMO) and integrating it into a running organization will not be simple, and will involve facing numerous conflicts, and an investment of resources and time. Consequently we have to be sure that this is going to be beneficial to the results of the organization before its implementation.

Among the main benefits that a Project Management Office (PMO) can bring to IKM dsc Engineering could be highlighted the following:

- Will equalize processes in management of projects, facilitating monitoring of these by the board of directors, and releases partially the pressure on the result of the project of the person who runs it. In this sense the risk of failure in projects is reduced.
- Will optimize the number of necessary professionals to run the whole project, reducing the cost of this activity.

- Will optimize the allocation of project managers based on their profile, assigning those with more experience and formation larger or more complex projects then to those who have not.
- Will plan and coordinate the use of resources to reduce the average duration of projects, increasing the economical results of the company.
- Will collects and reuse the information and knowledge generated in projects to allow the implementation of improvement processes.
- Will set goals for resolving conflicts between project, according to objective prioritizing criteria within the organization.

Obviously, along with the advantages there is also a disadvantage, since a Project Management Office (PMO) implies an expense and a use of resources that must be compensated by the advantages that we hope to obtain.

Difficulties that will be facing when implementing the PMO

Like any process of organizational change, the implementation of a Project Management Office (PMO) will have problems and difficulties. As summary we can expect the following:

- Resistance to change in the organization itself.
- Introducing changes without affecting negatively ongoing projects, which often involve a period of coexistence between the two ways of working.
- Changes in the responsibilities of different colleagues that will not be well accepted.
- Lack of knowledge within the organization itself for carrying out this task with internal resources.

What can we do for making the implementation smoother:

There are a number of tips that make it easier to deal with these difficulties, some of which are totally necessary to deal with such a change:

- The implementation of the Project Management Office (PMO) should be a activity promoted and fully supported by the direction of the organization or n or n. which should be involve actively in the process.

- Usually it is more effective and simple the implementation in different phases, increasing the functions and authority of the Project Management Office (PMO) progressively.
- It is absolutely necessary to have people with the necessary knowledge and experience to be able to carry out this process, and to be able to manage the Project Management Office (PMO) once implemented. It may therefore be necessary to implement organizational changes to put the right people in the right place.

The figure of the PMO was completely new to me before I took PL3 at BI, it really caught my attention at once, and through this thesis I've realized it could really help my organization to improve.

Working in a multiproject environment is really challenging for all of us as I've found through the secondary data. It causes problems day by day for all shared resources and contributes to create a hostile environment. The creation of a PMO could help my organization to be more efficient and competitive under the current market situation, and hopefully reducing the hostility of the environment.

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