Comprehensive Reorganization of Project Management: A Case Study

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Abstract At the starting point of the present study stands the need to improve the Project Management (PM) of a company. The fundamental aspects of the implementation of the Critical Chain Project Management (CCPM) method and its implications for the organization are described, focusing on the changes and improvements achieved during implementation of phase 1. The analysis highlights a number of aspects revealed as a result of the implementation of the method beyond the quantitative results. The present findings are interesting from a dual perspective: their inherent value as knowledge and basis for future research; and, furthermore, the fact that they led to the need of a second phase, transcending the scope initially established by the project.

Keywords Project management · Portfolio management · Critical chain · Team · Resource management

1 Introduction

The relevance of PM nowadays seems to be obvious, considering the different arguments provided by several authors. Projects are the means by which strategies are performed (Cleland 1991), the innovation strategy of a company is implemented and developed (Tatikonda and Rosenthal 2000) and new products are developed and launched (Cook 1998).Thus, PM has been evolving since the mid-20th century, becoming a mature discipline in which nevertheless the interest is still growing (Bredillet 2010).

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J.L. Ayuso Muñoz et al. (eds.), *Project Management and Engineering Research*,
Lecture Notes in Management and Industrial Engineering,
DOI 10.1007/978-3-319-51859-6_1

Regarding PM research, some authors claim that it is still in its early stages (Sauser et al. 2009). Furthermore, a different approach is asked for by different authors, instead of that provided by the traditional PM research perspective (Ivory and Alderman 2005; Cicmil 2006). In particular, a more practice-focused research is considered necessary in order to reach a deeper understanding of PM (Blomquist et al. 2010). In this way, Sauser et al. (2009) suggest a new point of view beyond the *good versus bad management* perspective. In its place, it should be aimed to determine whether the management was right or not in any given particular situation.

One of the PM-related areas that have received more attention in recent years is the Project Portfolio Management (PPM). The interest in this area is due to the fact that most projects are performed in multi-project environments (Payne 1995). Nevertheless, only those aspects considered to be most urgent have been covered. Thus, the efforts invested in developing PPM guidance have been mainly focused on the project selection and prioritization, even if broader approaches have been documented (Pennypacker and Dye 2002). Indeed, in these contexts resources are limited and their capacity is shared by existing projects, making the selection and prioritization of projects crucial (Dinsmore and Cooke-Davies 2006).

On the other hand, these works have been developed assuming certain stability and predictability levels which cannot always be taken for granted, especially when the contexts are uncertain or dynamic (Petit and Hobbs 2012). According to the authors, *Organizations facing higher uncertainty in dynamic environments put in place different approaches to maintain efficiency while keeping the organization flexible*. Indeed, changes of goals or priorities, short-term execution management needs, new projects and sudden opportunities are only a few examples of situations these contexts are plagued by. This leads to the conclusion that the solutions to properly manage these environments require something else than what is offered by those approaches.

Similarly, assuming that programs and projects are operational activities performed in organizations, Maylor et al. (2015) identify a gap in the literature regarding the competitive increase in project-based operations (PBOs). In this recent work they state that *Superior project delivery capability is the opportunity that has likewise been neglected by so many organizations. The cost of neglect is becoming increasingly clear and it will take time to (re)build excellence*. As they explain, in these environments there are problems that go beyond the Operations Management. On one hand, local improvements are not enough to gain the desired competitive advantage, and on the other hand it is not possible to be good at everything. As a consequence, priorities must be selected and trade-offs made, such as quality, delivery speed, price, etc. Thus, they conclude that even proper prioritization and selection, consistent with the strategy, won't be effective unless they are properly implemented, that is to say, until the consequent actions are defined and deployed to the resource level. This is consistent with Petit and Hobbs, who claim that *it is no longer sufficient to develop unique resources or capabilities (as initially proposed in the Resource-Based View) to gain a strategic advantage but that resources and capabilities must be constantly reallocated and reoptimized to*

adapt to changing environments. As a result, Maylor et al. (2015) provide a view of the PBO comprised of four elements: strategic intent, focus, fit and configuration of resources, concluding as well that the alignment is an important factor as it could be beneficial to achieving the global goals.

The recent work of Smith and Smith (2014) offers a different approach although it shares some aspects with the paper of Maylor et al. (2015). Instead of superior project delivery capability, the term *high due-date performance* is used, where Flow is the key to return on investment (ROI). They claim that the inability of companies to get and use the information needed to perform in alignment with the ROI is the main problem for many companies today. In other words, the way companies measure their performance, assuming that local efficiency improvements will lead to an improvement of the company's global efficiency, is causing the organizations to lose the connection to Flow.

In other works, the relevance of performance measurement and metrics was highlighted (Smith 2000; Smith and Smith 2014), which under this perspective become essential. Thus, these aspects influence behaviours, as people will act depending on how they will be assessed. Therefore, assessment and reward systems should be aligned with strategies and goals, avoiding invalid or misaligned measures and metrics. Some other authors agree with these statements, emphasizing the relevance of performance measurement (Melnyk et al. 2014). They identify some related problems, such as *the lack of fit between the environment, strategy and what is being measured*. Thus, the alignment seems to be a key ingredient for the proper management of the system yet again.

In summary, the perspectives provided by these and other authors suggest that there are many aspects requiring further research, especially considering the mutual influence they can exert over other factors.

The authors base this research on the opportunity provided by a real-world project. In order to enhance the comprehension, this document is arranged as follows: firstly, the main features of the observed company and its context are explained in Sect. 2. Secondly, the objectives of the research are deployed in Sect. 3. Thirdly, the details of the case study are explained in Sect. 4. Section 5 gathers the results of the research. Finally, the conclusions and further research areas are developed in Sect. 6.

2 The Background of the Company

This inquiry deals with the case of a company that offers integral solutions to other companies which develop new products. In particular, it is focused on the pre-launch stage. By integrating all the different phases involved (i.e. designing, engineering, prototyping and manufacturing) the company is capable of taking over the whole new product development process.

The company is arranged into two business units: *Prototypes and Manufacture of Products*, and *Checking Fixtures*. This research is limited to the latter, devoted to the manufacturing of checking fixtures for plastic pieces and stamping pieces. The Management identified the main problematic features as following:

- Highly customized products.
- Each product is linked to a project. Average duration between 6 and 8 working weeks.
- Lead time strongly influenced by the customer's involvement (1 intermediate milestone: acceptance of the design proposed by the company).
- Average portfolio consists of 80 projects, carrying out up to 50 of them simultaneously.
- 22 workers involved in this business unit.

From the customer's perspective, the service is considered to be good. Nevertheless, on-time deliveries are attained at the expense of huge efforts like frequent insertion of non-programmed tasks or considerable overtime.

In short, the company's sensation was that lack of knowledge and maturity in PM was the cause for an unsatisfactory performance considering capacity. Therefore, the company aimed at improving the existing PM system.

3 Objectives

As explained in the introduction above, case studies are very important sources for PM research as they provide experience and information suitable for this purpose. The basis for this paper is a practice-based research which aim goes beyond the analysis of the implementation project of a method in a specific company. The project itself has an intrinsic value for this purpose, as *there are very few descriptions of how firms can implement and maintain dynamic capabilities in practice* (Petit and Hobbs 2012). Nevertheless, this is not the focus of this research. Instead, it addresses a closer view of the problems related to a real-world context when facing a project that aims to change the behavior of the company through the alteration of rules, roles and habits. The attainment of an aligned management of the whole system entails that a framework capable of performing under real conditions must be available. In this case it required to direct the organization effectively, consistently and sustainably.

The achievement of the research objectives depends on the implementation project. It is important to highlight that the scope of this inquiry is limited to the first stage and that the vehicle for this research was the implementation process itself. Therefore, the results will be divided into two parts: results of the implementation project and results of the research. To ensure a better understanding, firstly the objective of the project is explained, followed by the objective of the research.

3.1 Objectives of the Implementation Project

As explained in Sect. 2, the company aimed at improving the existing PM system, so as to lead the company to better results in terms of service, management capability and profit. In order to fulfill this purpose a preliminary diagnosis was carried out as explained in Sect. 3.2. Said diagnosis provided a lot of valuable information to understand the system's features and problems, and led to the conclusion that the impressions of the interviewees were well-founded. As a result, it was decided to carry out a project to implement the Critical Chain Project Management (CCPM) method in the company as the most suitable solution. Furthermore, some specific objectives were stated for the project, even more demanding than those initially defined by the company. These objectives should be progressively reached, and therefore they were distributed into two consecutive stages, as explained below:

Stage 1 (implementation of CCPM):

The purpose of this phase was the design and effective implementation of those procedures needed to manage the projects according to the CCPM method (Goldratt 1997), specifically:

- Common management method and terminology for those people involved in projects.
- Definition of roles and responsibilities according to the method.
- Project launching synchronization mechanism.
- Precise visibility of the situation of projects and resources.

Stage 2 (continuous improvement):

The aim of this stage was to achieve measurable results by the progressive improvement of the system's performance based on the new status provided by the first stage. This phase is not included in the research.

3.2 Objectives of the Research

Right from the beginning of the implementation project the researchers identified a number of critical aspects. The relevance of these points was founded both on their individual potential influence and on the possible consequences of their combination. However, these aspects were not perceived by the company as being important. Furthermore, when facing these problems, the company tended to find individual solutions that would ideally solve these problems one by one, ignoring that they could affect or interfere with each other.

Considering the above, and in particular the existing gap between both internal (company) and external (researchers) perspectives, the objective of this inquiry is to get an insight into the question: *how do metrics, performance measurement and*

holistic management influence the due-date performance capabilities of a project-based company? The rationale for the design, the contents and the arrangement of the research are explained in Sect. 3.

4 Research Method and Case Study

Once the objectives of the research have been explained and the company and its context have been introduced, the research method used to conduct this inquiry is described in Sect. 4.1. Then, the case study is explained in Sect. 4.2.

4.1 Research Method

The starting point for the design of the research is the process suggested by Robson (2002). Accordingly, a research methodology must include both a research strategy and research tactics, covering the following aspects:

- Research strategy: identification of the research purpose; selection of the research strategy as well as the unit of analysis.
- Research tactics: data collection methods and analysis of data and evaluation

There are three possible purposes for a research: exploratory, descriptive and explanatory (Robson 2002). When the purpose is exploratory, the aim is to understand how a new phenomenon takes place, identifying key issues and variables. If the study explores and explains a topic providing additional information, then the purpose is considered to be descriptive. Finally, the explanatory research purpose aims to understand why an event takes place, by analyzing the cause and effect relationship between variables. Taking the objective of the research into account, the explanatory purpose was discarded, and only the exploratory and the descriptive purposes remained valid.

According to Robson (2002), depending on its features a research can be qualitative or quantitative. A research is considered to be qualitative when it is based on non-numerical information, oriented to discover or refine research questions. Quantitative research is based on mathematical or numerical data, statistical or computational techniques to determine patterns of behavior or test theories, which are not the aim of this research.

Due to the special features of management research (MR), another kind of research different from the traditional approaches may be more suitable (Easterby-Smith et al. 2002). Indeed, MR is characterized by singularities such as the need to consider the physical and the human elements of the organization at the same time (Drejer et al. 2000). In these contexts, the performing activities don't allow to take control of the events, forcing the researcher to study the phenomenon

according to the current situation. For instance, Case Studies (CS) can provide a depth that can't be achieved by other research methods (Rowley 2002; Wacker 1998). In this way, the access to information is direct, avoiding the limitations of other methods.

Under these conditions, CS-s may be the only possibility to research (McCutcheon and Meredith 1993). According to Yin (2009) CS *Investigate a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident*. He also states that case studies are useful when how and why questions are being asked about a contemporary set of events over which there is little or no control. Furthermore, case studies can also help to explain the complexities of real-life situations which may not be captured through experimental or survey research (Guide Jr and Srivastava 2000; De Massis and Kotlar 2014).

On the other hand, case study research may be conducted by Action Research (AR) (Meredith et al. 1989), a participative variant of case studies concurrent with the action (Coughlan and Coghlan 2002) where the researcher is a participant in the action (Easterby-Smith et al. 2002; Gummesson 2000), and tests a specific approach (Benbasat et al. 1987). It may be especially helpful to overcome limitations of traditional research when facing organizations' real-world problems, for process understanding (Platts and Gregory 1990) and on the management of capacity, flow and bottlenecks (Coughlan and Coghlan 2002).

Qualitative research aims at a deep understanding and it rests on collecting, analyzing, and interpreting data by observing what people do and say (Yin 2009). There are different ways to collect the data in a qualitative research. As the research was to be performed by the AR approach by participating in the implementation, many sources of information were available, providing access to lots of people and data as shown in Table 1. That approach allows the observation of the same phenomenon from different perspectives (Stake 2005; Yin 2009; De Massis and Kotlar 2014); and makes for convincing and accurate findings (Tracy 2010). Furthermore, triangulation can be applied, thus enhancing data credibility (De Massis and Kotlar 2014).

Table 1 Data sources used and strengths

Source of evidences	Strengths
Documentation	Letters, e-mail correspondence, administrative documents, …
Archival (sic) records	Helpful to verify the correct spelling and title names of organizations to be analyzed
Interviews	Can provide other specific details to corroborate information from other sources
Direct observation	One can create inferences, but it is important to treat them as clues worthy of further research
Participant-observation	Computer files and records such as service records, organizational records, maps, survey data, …

Adapted from Yin (2009)

Concluding, this research can be defined as a qualitative inquiry with exploratory and descriptive purposes, based on a holistic single case study and performed through participative action research, implying that the researcher takes an observer-participant role.

4.2 Case Study

In Sect. 3, the initial situation of the company was described, which aimed to improve the management of projects. In order to acquire a thorough knowledge of the context and the functioning of the organization, a series of preliminary actions, were conducted, such as meetings, interviews, observations, observation of management meetings as observers, or analysis of documents and information among others. The result was a preliminary needs assessment which led to two actions: a training course designed to enhance the PM capabilities of the staff involved, and a project for implementing the CCPM method in the business unit.

Having set the conditions for the implementation, the development of the two-stage implementation plan was addressed, as mentioned in Sect. 3. However, the implementation progressed in a different way, influenced by the wishes of the company. Thus, phase 1 was interrupted before completion to incorporate some major changes. As detailed in Sect. 3.2, certain aspects that according to the researchers' perspective didn't fit the characteristics of the company's context were identified in the diagnosis. Some examples were the way projects were planned; as well as the organization and management of the resources. However, despite the insistence of researchers, the management initially refused to make any modification to the existing arrangement of resources, characterized by a segmentation of the resources into two semi-independent teams.

Thus, the first stage aimed to design and effectively implement those procedures required to manage the projects according to the CCPM method. For this purpose the following set of actions was proposed: review of the project modeling and management approaches; analysis of the organizational structure; definition and implementation of the management processes; and adaptation and implementation of the software. These activities were simultaneously performed, in coordination with training activities. It is noteworthy that the implementation activity developed in the organization led to meaningful changes and results within weeks from the beginning of the project; the most significant aspects being.

Access to updated and relevant information within the system

Despite the organization's experience in real-world PM, it lacked the means and know-how to enhance the existing PM approach by its own means. Consequently, development in this area was limited. Apart from its experience, its main assets in terms of management were a customized spreadsheet and its rigor to daily update it. As a result updated information was available, but the process was very time-consuming and the management information provided by the system was limited to a short-term load versus capacity perspective.

In response to this problem, software compatible with CCPM was implemented. Its ability to manage projects and resources in an integrated manner brought a lot of advantages beyond accessibility or usability of information. It became a key factor to achieving the *visibility*, in other words, information regarding issues such as the progress status of projects versus deadline, resources' expected load versus capacity ratio or prioritized task lists for resources, among others.

Impact of the customer's acceptance

Customer requests were addressed as a single project from start to finish. The project started with a design stage. Ideally, the design and the corresponding deadlines would be accepted by the customer by an agreed point in time. Then, the manufacturing phase would be launched.

However, reality proved to be different. Very often, the customer failed to give an answer by the agreed milestone, thereby generating delays that negatively impacted on the project plan; as well as on resource availability, and the company's cash flow.

It was noted also that those projects affected by this problem tended to suffer significantly more. Further analysis revealed that this was not only due to external factors such as customers' behavior, but to the capabilities and attitudes of the individual project managers. In particular, it was found that those project managers working proactively towards achieving customer acceptance managed to get results within the agreed period much more frequently; in contrast to the results of those who just waited for the customer to react.

The solution to this problem was posed by a different planning approach: the customer's request would be modeled as a project comprised of two subprojects, namely Design and Manufacturing. The launch of the second project would be conditional upon the acceptance of the design by the customer by an agreed deadline. Thus, both the individual management of each project and the multi-project management would be easily managed in accordance with the current circumstances. It was also decided to keep track of the on-time acceptance rates of the designs, thus urging project managers to perform more proactively.

Management limitations caused by the segmentation of resources

The reason for the segmentation of resources was to make better use of their capabilities. By means of dividing the workforce into two teams, their management was expected to become simpler. Projects were straight away assigned to one of the teams, which would handle the project until its completion. The monitoring showed, however, that this approach was inappropriate in a context characterized by uncertainty and dynamism, and constantly changing situations. Figure 1 depicts the situation at any given time in the project: the prevailing variability in the system led to load versus capacity imbalances on both teams at different times. Since each team was responsible for managing their projects, the solutions proposed were limited to their respective individual domains.

However, the management of all projects and all resources as a whole would have led to a less complex situation, requiring an easier and more reliable solution. Starting off with the implementation in a two-team scenario as insisted upon by the

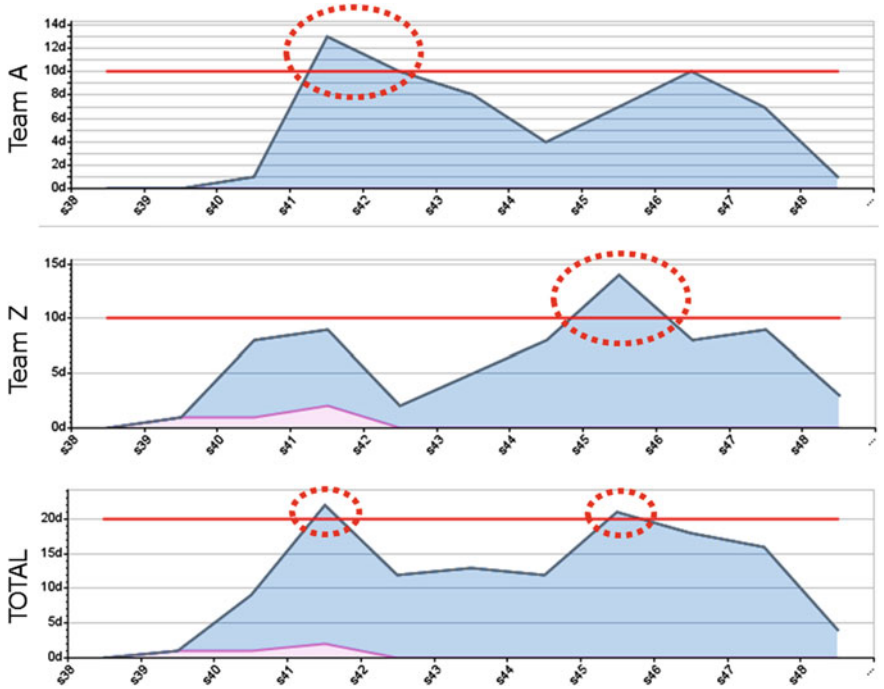


Fig. 1 Expected workload in Team 1, Team 2 and total (Team 1 + Team 2)

management caused the implementation process to be interrupted. The management eventually agreed to moving on to a single-team scenario as had originally been suggested by the researchers. The management concluded that the application of the new method had led them to gaining new insights. By combining the original two teams into one unit, the former policies that had been blocking the alignment of resources were removed. This decision led to several changes oriented towards enhancing the alignment, such as the creation of some new roles, the changes of the responsibilities of other roles, and the adaptation of both the software and the teams' management to the new situation, among others.

Impact of the local measurements on the global result

Despite the prioritization introduced into the system, namely to have clearly defined objectives and to have received specific training, there were still problems to work as intended. The workload imbalances as discussed above were a clear example of this, leading to situations where some members of staff could temporarily be out of work. These situations tended to generate nervousness and conflicts, leading to an urgent reprogramming of the workload in order to accelerate other jobs. This in turn entailed additional and unforeseen administrative and management work, for the sole purpose of avoiding idle resources. Moreover, these changes in general caused major disruptions, affecting more resources and jeopardizing the due-date performance.

However, this was not the only sign of misalignment or disorientation, as other similar situations arose, e.g. the creation of larger batches of work to increase *productivity*, or the pressure to start working on projects as soon as possible. This in turn led staff members to allocating a part of their working day to several projects simultaneously, which consequently resulted in a negative impact on the delivery date of the projects. The underlying problem in these situations was a local misalignment with the global objectives, mainly caused by the inconsistency of objectives and local metrics. Other factors were inertia and resistance to change. The way to overcome this misalignment was to give guidance to the staff in their daily activities and in the weekly review meetings, monitoring problems and results.

5 Results of the Implementation Project—Phase 1

The result of the first stage of the Project was the effective implementation of the CCPM method in the company. Thereby the main objective stated in Sect. 3.1 was met: *design and effective implementation of those procedures needed to manage the projects according to the CCPM method*. In fact, the company has performed autonomously and in line with the method since stage 1 had been completed.

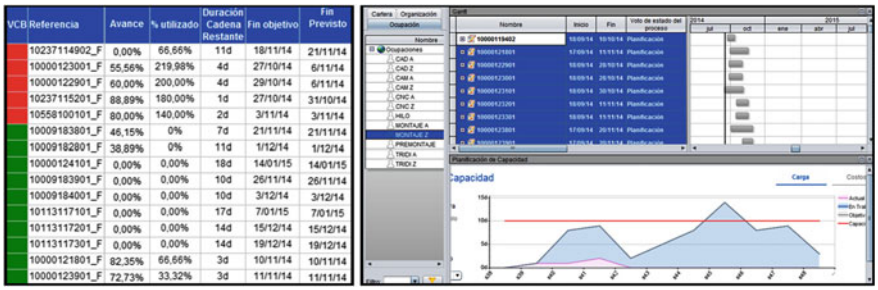
Furthermore, the remaining objectives related to this phase as explained in Sect. 3.1 were also reached. Certain other factors were crucial as they influenced both the result of the implementation and the managing capability acquired by the system. Those aspects are:

Achievement of global and local visibility:

The new system provided a clear, accurate view of the progress of projects and tasks, as well as the resources. Consequently, each employee had access to relevant information. This dynamism of the information resulted in more, speedier and better decisions, as deviations were identified faster, and decisions were based on updated information. The previous information system, although it had also been updated daily, was not capable of providing such complete information, in particular regarding the relative priorities of tasks and projects according to their current situation, as depicted in Figs. 1 and 2.

Reduction of the impact caused by the company's customers:

A two-stage approach for project planning was implemented in order to limit external impact. As a result, the PM was improved, indirectly also improving the allocation of resources. By dividing the project into two parts, management of the system became faster and more flexible as consequent adjustments were progressively introduced. For instance, the excess of unnecessary information in the system while waiting for customers' acceptance of the first stage was dramatically reduced. In fact, even before launching the second stage, problems such as the preventive resource allocation for activities without confirmed dates were reduced. The number



VCB	Referencia	Avance	% utilizado	Duración Cadena Restante	Fin objetivo	Fin Previsto
	10237114902_F	0,00%	66,66%	11d	18/11/14	21/11/14
	10000123001_F	55,56%	219,98%	4d	27/10/14	6/11/14
	10000122901_F	60,00%	200,00%	4d	29/10/14	6/11/14
	10237115201_F	88,89%	180,00%	1d	27/10/14	31/10/14
	10558100101_F	80,00%	140,00%	2d	3/11/14	3/11/14
	10009183801_F	46,15%	0%	7d	21/11/14	21/11/14
	10009182801_F	38,89%	0%	11d	1/12/14	1/12/14
	10000124101_F	0,00%	0,00%	18d	14/01/15	14/01/15
	10009183901_F	0,00%	0,00%	10d	26/11/14	26/11/14
	10009184001_F	0,00%	0,00%	10d	3/12/14	3/12/14
	10113117101_F	0,00%	0,00%	17d	7/01/15	7/01/15
	10113117201_F	0,00%	0,00%	14d	15/12/14	15/12/14
	10113117301_F	0,00%	0,00%	14d	19/12/14	19/12/14
	10000121801_F	82,35%	66,66%	3d	10/11/14	10/11/14
	10000123901_F	72,73%	33,32%	3d	11/11/14	11/11/14

Fig. 2 Examples of information about the current state of the system: projects (*left* deadline vs. projected end date today) and resources (*right* load vs. capacity for resource *Montaje Z*)

of projects potentially requiring the same resource in the same week was reduced by more than 50%, and resource requests were based on real needs according to deadlines and priorities. This in turn led to a reduction of both the artificially created uncertainty and the consequent efforts demanded from the staff caused by said uncertainty, enabling the system to give a faster and more effective response to the real needs at every moment.

Aligned management of the system:

The alignment of the company as a whole towards common objectives is considered to be the fundamental achievement of phase 1. The trend observed in the immediate period following this stage shows the impact of this fact clearly: dynamic reduction of overtime as well as the improvement of the time-estimates to complete upcoming tasks. Even though it is still early to accurately quantify results, in the short time of observation since phase 1 was completed, reduction of task duration is estimated to be about 20% on average, peaking at reductions of up to 50%. These results are even more relevant considering that the workforce was the same as prior to the implementation of the project.

The implementation of the CCPM method enabled the staff to perform consistently towards the global objectives and priorities of the company. The holistic nature of the CCPM method made this endeavor easier. Thus, operational tasks such as prioritization and resource assignment could be carried out according to the progress of projects, the availability of resources, and the relative urgency of activities.

Finally, the results exceeded the objectives set for stage 1. One example is the manifestation of the aggressive duration estimates used by the method during implementation even in routine jobs, and using the same resources. This demonstrates that as a result of the changes productivity, and therefore capacity, were being increased. Nevertheless, the overall system will benefit from this change only by turning the local improvement into a global improvement, enhancing the global results, which were aimed at in stage 2.

6 Findings, Conclusions and Future Research

This research is focused on the organizational aspects of a project-based company performing in a multi-project environment. The outcome of stage 1 of the implementation project was better management and control of the system, in other words, consistency between objectives and achievements. The key was the consistent alignment of local decisions and actions with the global objectives at any given time, based on the combined outcomes as explained in Sect. 5. Enhancement of PM know-how and skills were essential. Software as key to information availability (i.e., visibility) on one hand; and the management team's direct involvement in the implementation of the decisions on the other hand, were crucial factors to the successful conclusion of the implementation.

The results and findings confirm the influence of metrics, performance measurement and holistic management on the due-date performance of a company. This is consistent with the theories outlined in the introduction. It is proven that the entire system must be aligned with the strategy in order to achieve the desired results. This has several implications: firstly, it involves all levels of the company to be oriented and aligned towards its goals, from the top management to the most basic operational level. Secondly, there must be a consistent framework driven by metrics and performance measurements. Thirdly, this framework must enable efficient and sustainable organizational alignment.

The research project came to further relevant conclusions regarding certain key factors and corresponding implications as explained below; including suggestions for future research:

- The CCPM method was crucial to achieving the desired results. Its holistic nature made the construction of the new context fast and easy, providing whatever means were needed to perform accordingly. Supported by appropriate software, the method acted as an eye-opener, enabling the staff to understand and take advantage of a wider range of skills. The present results and findings would probably not have been reached by using a non-holistic approach.
- The decision of segmenting the capacity of the whole system must be deeply and carefully analyzed in its own context before being definitively adopted. Otherwise, the organization may be oriented towards individual objectives, neglecting the company's overall goals and performing below the company's actual capacity. Structural decisions involving the segmentation and amended use of resources require a previous understanding of their impact on the global results, as well as the management of the whole system. More research is needed to identify these aspects and their potential impact on a system's performance.
- The way that projects are planned, it not only delimits the potential of the company, but may also constrain its performance. This conclusion is closely related to the way a company understands a project plan, and is especially meaningful if the use of a said plan is limited to a mere representation of the work to be done, overlooking other potentialities. As explained in Sects. 4.2 and 5, the development of strategies for the PM to consistently reconcile different factors is

key to performance. The suggested starting point is the simultaneous management of single projects and shared resources, covering both plans and their execution. Even though different theoretical approaches for this purpose already exist, the challenge is to find a way to appropriately deal with all kinds of upcoming issues.

- The definition of an appropriate system of metrics with a holistic perspective is a factor of special interest. This seems to be a key driver for companies, as the alignment of the system as a whole is crucial. In actual fact, the global result of a company is a consequence of locally taken actions and decisions. Therefore, in practice consistency is essential to achieving the alignment towards the global goal. The metrics, as the main influence on workers' behavior, are key to this end.

Finally, it must be highlighted that these suggested factors should be addressed in a consistent manner, by means of a global approach and not as a sum of individual responses to different problems. The holistic perspective serves as basis for the present results.

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