



**UNIVERSITAT  
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**Applying Change Management in a Project  
Context:**

**The case of BP VDU Revamp Project**

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# Table of Contents

Introduction.....	4
Part 1. Theoretical Framework .....	6
1. Projects and Project Management .....	6
1.1 <i>Projects: definition and characteristics</i> .....	6
1.2. <i>Project management</i> .....	8
1.3. <i>Success factors in project management</i> .....	9
2. Change management.....	12
2.1. <i>Change management definition</i> .....	12
2.2 <i>Change management models</i> .....	12
3. Diagnostic framework for implementing strategic change: The Kaleidoscope .....	19
Part 2. Application of Change Management: Case of BP VDU Revamp Project .....	22
4. Research design and methodology.....	22
4.1 <i>Action Research</i> .....	22
5. Case description: BP and VDU Revamp Project .....	24
6. Application of Action Research to BP VDU Revamp Project .....	28
6.1 <i>First cycle</i> .....	28
6.2 <i>Second cycle</i> .....	40
6.3. <i>Outcome</i> .....	44
7. Conclusion.....	48
References .....	51
Appendices.....	53

# Abstract

## *Purpose*

The main objective of this study was to propose improvements, by using change management insights, to help ensure the success of the project reorganization for the case company. Also, to analyze how changes can be managed within a project with the objective of increasing the efficiency and commitment with the project targets by improving coordination and having more clear roles and responsibilities.

## *Methodology*

In this study I have used the Action Research methodology as an approach to obtain my objective. Action research is usually defined as research in action, where the idea is to use a scientific approach to study the resolution of organizational issues together with those who experience these issues. To carry out the analysis, I resorted to “The Change Kaleidoscope”, a framework for implementing change in organizations, that is characterized by providing both the available range of implementing options and the analysis of contextual features.

## *Outcome*

Analysis of the initial state resulted in suggested improvements of the coordination and information flow. Secondly, some of the improvements were implemented and feedback was collected to initiate further improvements with the objective of creating a well-coordinated and efficient project organization. As a result of the implied changes, an improvement in the progress of the overall execution of the VDU<sup>1</sup> Revamp project was detected as well as an improvement of the managerial and functional cooperation. There are still improvements to be made in the project organization in terms of communication and people management.

*Key words:* Change management, Project management, Action Research.

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<sup>1</sup> Vacuum Distillation Unit, further distills the residue oil from the bottom of the crude oil distillation unit (Wikipedia, 2018).

## Introduction

In today's world, the rate of change is not going to slow down at any time. Rather, it is more likely that the speed increases due to increased competition and continued development of new technologies. For organizations, external forces such as politics, technology, sociological trends and economy demand for major change efforts to be able to adapt to the shifting conditions.

Change may have a strategic dimension in many firms, as it is "the movement away from the present state toward a desired future state to increase competitive advantages" (Hill & Jones, 2001, p. 486). Yet research shows that most change initiatives, as high as 70 per cent, fail to accomplish their intended outcomes and may even limit the potential of an organization and its people (Kotter, 2012; Balogun and Hailey 2004). The consequences of not managing change effectively can be devastating and long lasting. Therefore, it is important that executives, middle managers, etc. understand the potential challenges and equip themselves with techniques to support change-management initiatives.

In project management literature, the management of organizational change has had a relatively small representation (Hornstein, 2015). In addition, as reviews of project management literature have concluded, while there has been an increase in the efforts to identify the importance of more social/psychological approaches to the success of projects, the implementation of strategic change remains a business problem that cannot be solved by an exclusive focus on project process. An example can be seen in the fact that, recently, the Project Management Institute<sup>2</sup> (PMI) seems to be starting to acknowledge formally the importance of organizational change management to project success (Hornstein, 2015: 293).

The disciplines of change management and project management understandably cross paths throughout the execution of a project or an initiative. Each one brings the necessary and critical structure for effectively implementing change and realizing results (Creasy, 2018). On one side, it is a business imperative for organizations to use project-based initiatives as levers for organizational change to ensure success (Parker et al 2013). On the other side, change management principles can be helpful/necessary for project management success (PMI, 2018).

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<sup>2</sup> The Project Management Institute is the organization that gives out the PMP (Project Management Professional) credential, a globally recognized certificate that assures employers that a person is trained and qualified to manage projects and is also the organization that oversees the documentation of the Project Management Body of Knowledge (PMBOK) within the PMBOK Guide.

Thus, it can be considered that project management and change management provide structured and planned approaches to the technical side and people side of a project. This is the foundation of the phrase "complementary disciplines with a common objective" which describes these two disciplines (Creasy, 2018). A successful change is characterized by a solution that is effectively designed, developed and delivered, Project Management, and that it is embraced, adopted and used by impacted employees, Change Management (Creasy, 2018). In conclusion, it can be argued that without both the technical approach and the people approach a project or organization will not be able to deliver the results and achieve a successful outcome and thereby obtain a competitive advantage.

In this work, I examine how a company can use change management in combination with project management within the context of restructuring a project organization. Specifically, the objective is to examine if the applied changes will have an impact on the progress of a project and efficiency within the project organization

In doing so, I adopted action research as a research methodology. Action research is usually defined as research in action, where the idea is to use a scientific approach to study the resolution of organizational issues together with those who experience these issues.

The work is structured as follows. First, I introduce the terms project and project management followed by an introduction to change management and a diagnostic framework for implementing strategic change; The Change Kaleidoscope. In the second part of the work I explain the methodology Action Research, followed by a description of the case and the application of change management and action research to the case.

# Part 1. Theoretical Framework

## 1. Projects and Project Management

### *1.1 Projects: definition and characteristics*

“A project can be considered to be the achievement of a specific objective, which involves a series of activities and tasks which consume resources” (Muuns and Bjeirmi, 1996). Another definition of a project is suggested by Sebastian Nokes and Sean Kelly (2007) who defines a project as “a temporary endeavor, having a defined beginning and end (usually constrained by date, but can be by funding or deliverables) undertaken to meet unique goals and objectives, usually to bring about beneficial change or added value”.

From these definitions, it stems that a project is temporary, with a starting date and an end date and therefore it has a defined scope and resources. A project is unique, because it is not a routine operation but a specific set of operations designed to accomplish one objective. Also, the project team is a set of people that usually do not work together – they can be from different organizations, external companies, and various geographies. All of these factors require a high level of management to deliver the project with the right quality, on time, within the budget and without interfering, too much, with the daily operations. (Slack et al, 2010).

Project are to be found in many sizes and forms such as building a new factory, developing a new product, transferring of production lines, remodeling a house, planning a wedding, introducing a new ERP<sup>3</sup> system and much more. In terms of size, projects can be of small scale - with variation of one day, one week or one month with few dedicated resources and a small budget-, and of large scale, where the company must invest a huge amount of resources for a long period of time from months to years. The large-scale projects can be very complex and, typically, they will involve interactions between many different parts of the organizations.

In general, all projects, small scale or large scale, have some elements in common. They have an objective and an end result that typically is defined in terms of safety, quality, time and cost. All projects are unique, since it is not a repetitive undertaking, even projects that are repeated such as the construction of a type house have variances in terms of the resources allocated and used and the environment where the project takes place. All projects are planned before they are executed, which means that uncertainty

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<sup>3</sup> Enterprise Resource Planning is the integrated management of core business processes, often in real-time and mediated by software and technology

is something that must be taken into account. All projects are temporary with a defined start and end date and there will always be some degree of complexity.

According to Slack et al (2010) a usual way to classify projects is by taking into account their level of uncertainty and complexity. The term uncertainty is related to achieving the projects objectives of safety, quality, time and cost – Usually it is defined in relation to size, value and the number of people involved in the project. A project with high uncertainty will be more vulnerable in the phase of project planning and it is likely to be more difficult to define and set realistic objectives for a project with a high amount of uncertainty. If the details of a project are subject to change during the course of its execution, the planning process is difficult. Resources may be committed, times may be agreed, but if the objectives of the project change, the environmental conditions change, or if some activity is delayed, then all the plans which were made prior to the changes will need to be redrawn. When uncertainty is high, the whole project planning process needs to be sufficiently flexible to cope with the consequences of change. This is often done by using a tool such as risk assessment, throughout the entire project, where possible risks are highlighted and grouped into different categories such as high risk, minor risk etc.

Complexity is due to the interdependence between the different tasks and activities of the project i.e., that design specification and approval for construction of a pipeline must be completed before it can be assembled. A complex project will mainly be vulnerable within the project control phase, it is not necessarily difficult to plan a complex project, although it might take a significant bigger effort; but controlling such a project can be challenging. When projects become more detailed with many connected activities, resources and teams involved, the risk for things to go wrong increases. Furthermore, as the number of connected activities in a project increases, the ways in which they can affect one another increases exponentially. This increases the effort involved in monitoring each activity and also increases the chances of overlooking parts of the project which are deviating from the plan. Most significantly, it increases the ‘knock-on’ effect of any problem.

Classifying a project within this typology can give the project manager an idea of how to manage the project, which difficulties there are to be found and which project management principles to apply (Slack et al, 2010).



## 1.2. Project management

Project Management has been defined as the disciplined application of knowledge, skills, tools and techniques to project activities to achieve project requirements (PMI, 2013; Turner & Müller, 2005). It utilizes the existing organizational structures and resources and seeks to manage the project by applying a collection of tools and techniques, without adversely disturbing the routine operation of the company (Muuns and Bjeirmi, 1996).

The Project Management Institute's (PMI) guidelines to project management, that are given in the Project Management Bodies of Knowledge (PMBOK® Guide,) points out that Project Management is accomplished through the appropriate application and integration of the 47 logically grouped project management processes, which are categorized into five process groups being: Initiating, Planning, Execution, Monitoring & controlling and Closing of the project.

*Initiating* is about examining and analyzing the internal and external factors that might influence the project and give an understanding of the environment that the project will be operated in and thereby being able to set (1) the objective, what shall be achieved with this project, (2) the scope, which responsibilities within the range of the project does the project manager has and (3) the strategy, how the project manager will meet the objectives of the project.

*Planning* includes decisions about (1) how to execute the project, the cost and duration of the project, (2) which and how many resources are needed and (3) whom will be responsible of the different areas of the project (cost, engineering, contracts etc.). The planning of a project can be regulated many times during the project life cycle, as conditions change and unforeseen problems occur.

*Project execution* is the phase where the project manager and his/her team must construct the deliverables and present them to the customer and key stakeholders. This is usually the longest phase of the project life cycle and normally the most demanding. The key purpose of project execution is to complete the work defined in the project plan and to meet project objectives. During this phase the project manager should focus on managing his or her team, follow the processes and communicating information to stakeholders, sponsors and the team members.

*Controlling and monitoring* of the project is about following-up on the project to ensure that it is being executed according to the plan, which makes it the most important link

between planning and doing. In this phase, there are three decisions to be made to ensure that the project is being controlled and monitored according to reality:

1. How should the project be *monitored* in order to check the progress; including archived and missed milestones, engineering status, construction status, man hours spent and more. Some activities will be monitored in relation to time, other to cost or quality, depending on the project objectives.
2. How to assess the performance of the project by comparing monitored observations of the project with the project plan; is the project performing according to the schedule, cost, safety and quality standard set.
3. How to intervene, in case the project gets out of control, and in order to make changes that will bring it back on the right course. It is the project managers responsibility to intervene and take action if the project has gone “out of control”. A change in one area of the project will most likely affect other areas, which means that such changes will require consultation and also focus on and knowledge of change management.

*Closing* the project is the combination of assuring that all work has been completed, that all issues agreed upon project management processes have been executed and a formal recognition of the completion of the project - agreed and confirmed by all. The final project is handed over to the end user and all project activities are shut down and it is important that the right dates, priorities and responsibility allocation are clearly communicated and agreed upon. When closing the project, the project manager must review all prior information from the previous phase closures to ensure that all project work is completed and that the project has met its objectives (PM BoK Guide, 2013).

The phases of project management are not simple serial steps, they demand repeating analysis to make the right decision.

### *1.3. Success factors in project management*

The topic of project success has had a significant concern in Project Management literature (Cooke-Davis, 2002; Fortune & White, 2006). The idea of project success has traditionally been understood from a middle-management perspective, i.e., emphasizing activity-centered, control-oriented issues like project execution and delivery. However, the willingness of employees and managers to accept and implement changes recommended by projects is at least as important a consideration (Jetu & Riedl, 2012). Much research has been conducted in an attempt to identify the factors that

determine project success and thereby minimize the failures. The following factors, that are more focused on “organizational and behavioral” than in technical issues have been raised by researchers within the field of project management, to be particularly important in implementing a project successfully (Pinto and Slevin, 1987):

- Clearly defined goals: including the general project philosophy or general mission of the project, and a commitment to those goals on the part of the project team members.
- Competent project manager: a skilled project leader who has the necessary interpersonal, technical and administrative skills.
- Top-management support: top-management commitment for the project that has been communicated to all concerned parties.
- Competent project team members: the selection and training of project team members, who altogether have the necessary skills to support the project.
- Sufficient resource allocation: resources, in the form of money, personnel, logistics, etc., which are available for the project in the required quantity.
- Adequate communication channels: sufficient information is available on project objectives, status, changes, organizational conditions and client’s needs.
- Control mechanisms: the mechanisms which are in place to monitor actual events and recognize deviations from plan.
- Feedback capabilities: all parties concerned with the project are able to review the project’s status and make suggestions and corrections.
- Responsiveness to clients: all potential users of the project are concerned with and are kept up to date on the project’s status.
- Troubleshooting mechanisms: a system or set of procedures which can tackle problems when they arise, trace them back to their root cause and solve them.
- Project staff continuity: the continued involvement of key project personnel through its life. Frequent turnover of staff can dissipate the team’s acquired learning.

Managing people effectively influences many results of a project (Belout, 1998) as well as involvement of people within the project. It is becoming more and more accepted that it is in fact people who deliver projects and not processes and systems (Cooke-Davis, 2002). This enhances the need to include human factors when talking about project management and to keep in mind that phases of change will occur during the project process. Therefore, to be able to manage these changes and get a successful project, it is important to consider not just the technical aspects such as planning, controlling and monitoring, but also to focus on the people side variables such as behaviors, responsibility and involvement.

### *Success factors when partnering in projects*

When dealing with large and complex projects, partnering or establishing alliances with a contractor is an approach that is usually followed, especially in construction projects. When implementing partnering and making the alliances in practice, it requires the development of relationships based upon co-operation and away from a reliance on contradictory working methods (Bresner 1991). Much of the literature tends to presume or imply that implementing partnering is essentially a technical managerial problem, involving the application of appropriate tools and techniques to bring about motivations, attitudes and expectations (Bennett et al., 1995, Bennett et al. 1998 and Lorine, 1993). According to this approach, the required transformation is achieved through the application of an arsenal of techniques such as severe selection procedures, formal teambuilding exercises and appropriate financial incentive systems, complemented with other formal integrative mechanisms such as charters (Bresner and Marshall, 2002). Partnering will 'work' in the first place, provided the right mechanisms are in place and provided there is sufficient senior management support for the idea and a willingness to see it through. That means that, rather than being simply a case of applying certain tools and techniques, developing an effective partnering approach results from a complex and dynamic process in which informal processes are just as important as formal mechanisms, since, in addition to a set of practices or techniques, it is also about changing the attitudes and behaviors of the involved parties to become aligned (Barlow et al. 1997 and Bresner, 1991).

In this sense, it is important to take into account that managing a project being either of a complex or/and an uncertain nature, the project manager is forced to adapt to the changing environment to be able to achieve the project objectives. As it has been proposed by Levasseur (2010), in order to improve the human side of project implementation, project managers should become more intimately familiar with and use the tools associated with the more well-known and rigorous change management processes. It means that their abilities to cope with change management and the human factors as well as the technical aspects are a strategic necessity to ensure a successful project outcome. Additionally, when navigating in partnering projects it must be stressed the importance of bringing together the different cultures and behaviors to achieve a dynamic project organization by combining formal and informal processes to ensure successful partnering.

## 2. Change management

### 2.1. *Change management definition*

Change management is a discipline that guides how we prepare, train and support individuals to successfully adopt change in order to drive organizational success and outcomes (Prosci, 2018). The underlying objective of change management is to make fundamental improvement in how business is undertaken in order to meet the demands of a changing market environment (Kotter, 2007). While all changes are unique and all individuals are unique, decades of research show that there are actions we can take to influence people in their individual transitions. Change management provides a structured approach for supporting the individuals in an organization to move from their own current state to their own future state, called transition.

When organizations undertake projects or initiatives to improve their performance, seize new opportunities or address key issues they often require changes. The main types of changes in organizations are often related to people behavior, people mindsets and beliefs, the organizational culture or organizational systems such as: mission, goals and strategy, organizational structure, processes, policies and legal agreements, technology or products, marketing and customer relations (Chiva, 2017).

Change implies that it is the employees within the organization and the organizational culture that ultimately have to change. If these individuals are unsuccessful in their personal transitions, if they don't embrace and learn a new way of working, the initiative will fail. If employees embrace and adopt changes required by the initiative, it will deliver the expected results.

### 2.2 *Change management models*

A common way to conceptualize change management is considering it as a process. Moran and Brightman (2001: 111) define it as "a process of continually renewing organizations direction, structure, and capabilities to serve the ever-changing needs of external and internal customers". This view of change management as a process is shared across the majority of accepted change models in use today, which identify change management as either a process or as a set of steps (Parker et al., 2013).

Most of the research adopting a process view to study organisational change has followed the model suggested by Lewin (1947), who described organisational change as a process of three phases: unfreeze, move, refreeze. Lewin (1947) model was followed by further contributions to change management, such as Kenter et al.'s (1992) *Ten commandments for executing change*, where he argued that analysing the organization and its need for change was the first step in the change process, followed by the creation

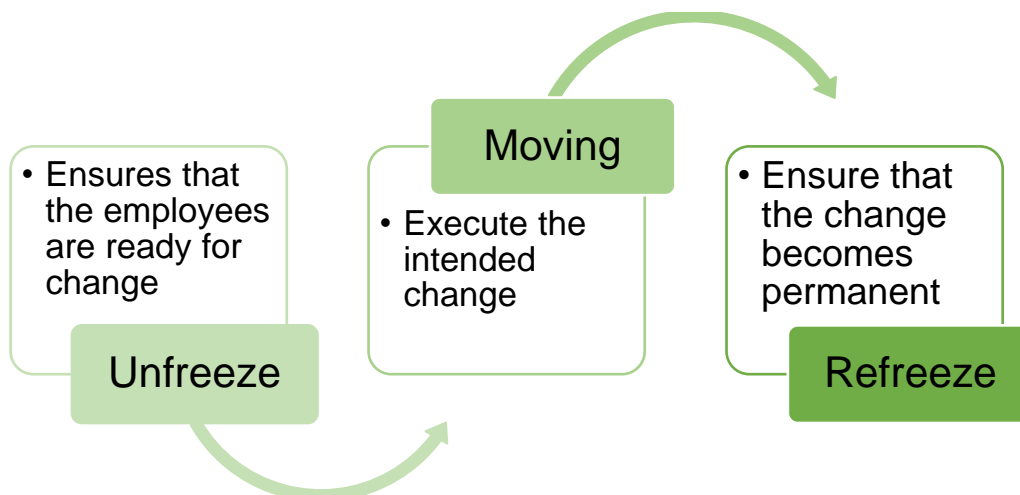
of a common vision and direction (Parker et al., 2013: 535). Kotter's (1996) *Eight-stage process for successful organizational transformation*, where the eight steps to follow stressed out the importance of creating a climate for change, engaging and enabling the organization and implementing and sustaining the change. And also, Luecke's (2003) *Seven Steps*, which commenced by recommending mobilizing energy and commitment through joint identification of business problems and their solutions (Parker et al. 2013: 535).

For my case I have found two of the above proposals to be the most relevant. First Lewin's three-step models, that sees the change process as planned and secondly Kotter's eight-stage process, that uses an emergent approach to change.

Kurt Lewin's work has dominated the theory and practice of change management for more than 40 years and he is considered as the intellectual father of contemporary theories of applied behavioral science, action research and planned change (Burnes, 2004: 978). Lewin (1947) developed his three-step model of change and the term Action Research from his research in the areas of field theory and group dynamics. Field theory aims to understanding group behaviour by trying to map out the totality and complexity of the field in which the behaviour takes place. Group dynamics stresses the importance of the group in shaping the behaviour of its members.

According to Lewin (1947) a successful change involves three steps unfreeze, move, refreeze as summarized in figure 1.

**Figure 1. Lewin (1947) Three-step model of change.**



Source: Chiva (2017).

The first step, *Unfreeze*, involves preparing the organization/group for the change, including breaking down the status quo - the current state – before a new way of doing things can be build up. Schein (1996) identifies three processes necessary to achieve

unfreezing: disconfirmation of the validity of the status quo, the induction of guilt or survival anxiety, and creating psychological safety. Those concerned have to feel safe from loss and humiliation before they can accept the new information and reject old behaviour (Burner, 2004, p. 985).

The second step, *Move*, is about taking action and get people to embrace the changes by involvement and motivation and in order to make change successful getting people to understand how it will benefit them. In this step action research can be used as an approach to take all forces at work into account and to identify and evaluate all available options. This iterative (repeating) approach of research, action and more research, enables groups and individuals to move from a less acceptable to a more acceptable set of behaviours (Burner, 2004, p. 986).

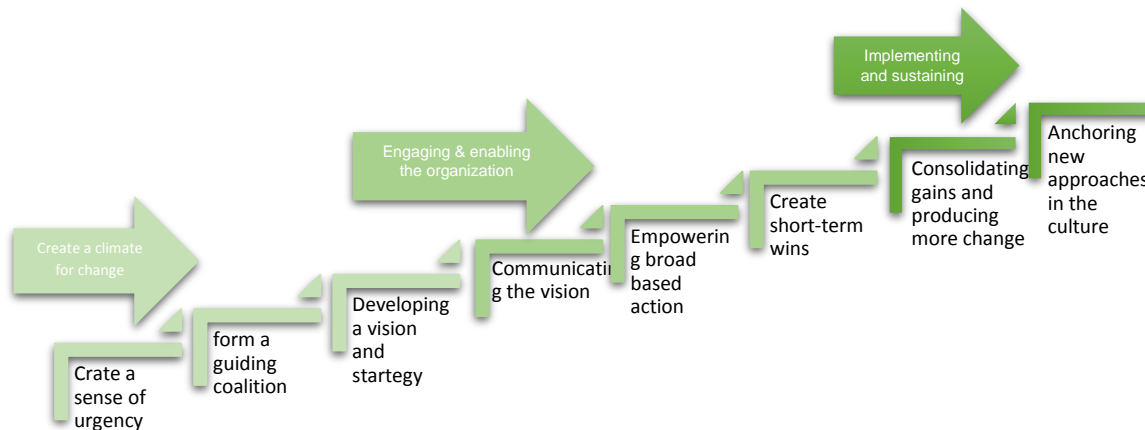
The third step, *Refreeze*, seeks to anchor the changes and regain stability in the group/organization in order to ensure that the new behaviors are relatively safe from regression. Lewin (1947) saw successful change as a group activity, because unless group norms and routines are also transformed, changes to individual behaviour will not be sustained. In organizational terms, refreeze often requires changes to organizational culture, norms, policies and practices (Cummings and Huse, 1989).

It has been said that Lewin's model (1947) follows a planned approach to change, which in sum uses four concepts (field theory, group dynamics, action research, the three-stage model) to form an integrated approach to analysing, understanding and bringing about change at the group, organizational and societal levels. In combination, these concepts are used to bring about effective change (Burner, 2004). From the perspective of a planned approach, change is deliberately developed through an intentional and rational process, driven top down, and based on the assumption of a stable environment (Hayes, 2002). The original purpose of this approach is to achieve effectiveness improvement of human operation through group application of change program (Burns, 2004). It perceives that one change which is a series of linear events can be applied for all parties.

Despite its popularity, Lewin's original theory has been criticized for being based on small scale samples, and more importantly the fact that it is based on the assumption that organizations act under constant conditions that can be taken into consideration and planned for (Bernard & Stoll, 2010).

A second widely spread contribution is the Eight-step process model proposed by John P. Kotter (1996). This model is based on his analysis of dozens of change initiatives over a period of more than fifteen years. By identifying and extracting the success factors and fundamental errors in change management, he combined them into a methodology, *The Eight-Step Process for Leading Change* (Kotterinc.com, 2018). Figure 2 summarizes the eight steps in making transformation successful.

**Figure 2. Kotter (1996) Eight-step change process.**



Source: Own elaboration based on Chiva (2017).

Step 1. *Create a sense of urgency*- identifying existing or potential crises or opportunities to create a reason “why change is needed”, it also implies to convince at least 75% of the managers that the status quo is more dangerous than the unknown (Kotter, 2007: 3).

Step 2. *Form a guiding coalition* -by assembling a strong group with enough power to lead the change effort and encourage them to work as a team outside the existing hierarchy.

Step 3. *Developing a vision and strategy* - vision should be created that can direct the change effort and develop a strategy for achieving the vision.

Step 4. *Communicating the vision* - vision must be communicated throughout the organization using all communication channels available. As many people as possible need to hear the mandate for change loud and clear, with messages sent out consistently and often, it includes teaching new behaviours by “leading by example”.

Step 5. *Empowering broad-based action* - involves getting rid of anything blocking change, like bosses stuck in the old ways and systems or structures undermining the vision. Empowerment is achieved by moving obstacles out of peoples' way so they can make something happen, once they've got the vision clear in their heads. Encourage the employees into taking risk and think in alternative ideas and actions.



Step 6. *Create short term wins* - implies to define short term-goals and recognize and reward employees involved in the improvements.

Step 7. *Consolidating gains and producing more change* - keeping on changing by re-assign changes and make the necessary adjustments. Increased credibility from the early wins must be used to make further changes of the structure, systems, policies that is undermining the vision. Successful change leaders don't drop the sense of urgency.

Step 8. *Anchoring new approaches in the culture* – make the changes stick which is done through culture. If managers can create a totally new culture around some new way of managing, it will stay, and they should focus on demonstrating the connections between new behaviours and the organizational success by leading by example.

To achieve successful change in organizations the eight steps process should be followed and skipping any of the steps in the process will only illusion speed and never end out with a satisfying result (Kotter, 2007: 3). For the model to work effectively, it is not only about following the multistep process, since it should also be driven by high quality leadership and not just excellent management (Kotter, 1998: 460). Kotter has stated clearly that the focus of change leadership is on crafting a vision that reinforces urgency and minimizes complacency, and then aligning and motivating people affected by the change so that they are prepared to support and adopt it (Kotter, 1996, 2008).

Kotter (1996), in connection with his practical studies of change in organizations, identified 8 errors or barriers to change which has contributed to unsuccessfully change initiatives and are closely connected with performing the steps in his model. (1) allowing too much complacency, (2) failing to create a sufficiently powerful guiding coalition, (3) underestimating the power of vision, (4) under-communicating the vision by a factor of 10, 100 or 1000, (5) permitting obstacles to block the new vision, (6) failing to create short-term wins, (7) declaring victory too soon and (8) neglecting to anchor changes firmly in the corporate culture. He points out that not putting an effort into avoiding any of the eight barriers common to transformation efforts can have serious consequences such as slowing down new initiatives, creating unnecessary resistance, frustrating the employees and thereby causing an organization to fail and lose their competitive advantages. No matter how necessary a change is, it will be difficult for an organization to implement the planned strategic change successfully if barriers to change exist, it is therefore necessary to break all these barriers to help ensure successful planning and implementation of the change.

Kotter (1996) change model has been said to follow an emergent approach which is open-ended and continuously driven bottom up and adapted to changing organization

context (Hayes, 2002). In the emergent approach, change is initiated in a contingent and unpredictable environment. It is built up from interrelated several variables such as external environment and process of decision making (Graham, 2009). Although Kotter's (1995) eight-step process for implementing transformations has been considered as the most influential model for managers around the world, his emergent approach to change is not in itself free from critics who question the use of broad-based action sequences and their application to unique organizational contexts (Bernard & Stoll, 2010). Another critic is that while the eight steps may seem straightforward on paper, they can be time consuming and difficult to achieve, regardless of the organizational environment you are in (Greiner, 2015).

If we compare Lewin (1947) and Kotter (1996) models, from the previous paragraphs we can infer that both approaches describe change as a transformation process with different stages. Whereas Lewin's (1947) model is based on his research within field theory, group dynamics and action research, Kotter (1996)'s is based on the success factors and fundamental errors he identified. Lewin's model gives a general overview of the change whereas Kotter's model is more a step by step analysis. Even though they describe a different number of stages, a correspondence between them can be established, as it is shown in table 1, *Comparison of Lewin's and Kotter's change models*.

**Table 1. Comparison of Lewin's & Kotter's change model steps.**

<b>Lewin (1947)</b>	<b>Kotter (1996)</b>
Unfreeze	<ul style="list-style-type: none"> <li>• Create a sense of urgency.</li> <li>• Form a guiding coalition</li> <li>• Developing a vision and a strategy</li> </ul>
Move	<ul style="list-style-type: none"> <li>• Communicate the vision</li> <li>• Empowering broad-based action</li> <li>• Create short term-wins</li> </ul>
Refreeze	<ul style="list-style-type: none"> <li>• Consolidating gains and create more change</li> <li>• Anchoring new approaches in the culture</li> </ul>

Source: Own elaboration

In both models, the problem is identified at the beginning and they examine how difficult it is to get people out of their comfort zone for the change to happen. As previously stressed, Kotter's change model is using an emergent approach to change whereas Lewin's model is based in a planned approach to organizational change. With the emergent approach to organisational change, change is seen as being rapid and unpredictable and therefore it cannot be managed from the top down, whereas the planned approach to change is deliberately developed through an intentional and rational process driven from top down, based on the assumption of a stable environment. Also,

Kotter argues that change should be seen as a process of learning, where the organisation responds to the internal and external environmental changes (Bernard & Stoll, 2010).

Since the development of Lewin and Kotter's work on change management further models and framework have been published within the field. Prosci (1998) developed the ADKAR (Awareness, Desire, Knowledge, Ability, Reinforcement) model which encapsulates the business/process dimensions of change and the individual dimension of change and provides a clear management checklist for managing change.

Hope and Hailey (2002) developed a framework which they called *Change Kaleidoscope*, to help managers design a context sensitive approach to change by pulling together and codifying a wide range of contextual features and implementation options that require consideration during change. The Change Kaleidoscope forms a diagnostic tool which encourages (1) a rigorous analysis of context; (2) a consideration of a range of implementation options; (3) an awareness of one's own preferences about change and how this limit the options considered; and (4) development of change judgement (Balogun and Hailey 2002).

The fact that it offers guidance and details to generate a diagnosis on all these elements makes it a practical option in implementing change in firms. In the following section I will describe the Kaleidoscope framework in more detail, as it has been developed by Balogun and Hailey (2008).

### 3. Diagnostic framework for implementing strategic change: The Kaleidoscope

According to Balogun and Hailey (2008), in a change process, there are three states of transition: current state, transition state, future state as summarized in figure 3.

**Figure 3. Three stages of transition in a change process.**



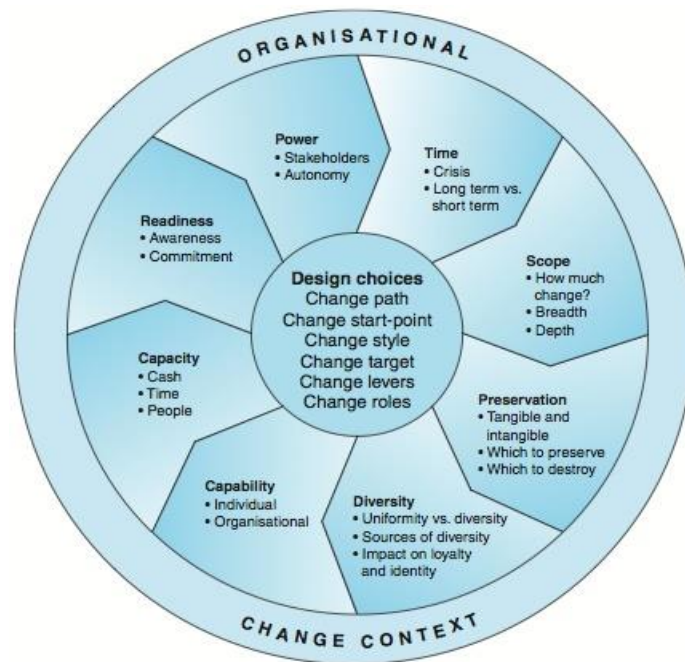
Source: Balogun and Hailey (2008).

Balogun and Hailey (2008) stress the fact that it is not enough to describe the current situation and the expected future situation, but also the importance of recognizing the actual transition, and developed a framework, the Change Kaleidoscope, which is a practical approach to manage change and focuses on the change itself and on the many facets that are to be found within change management. Thus, they use the Kaleidoscope as a tool to describe and facilitate a change process and the main purpose of this framework is to clarify the many facets change contains. (Balogun and Hailey, 2008).

The Change Kaleidoscope has been said to be primarily a mechanism for dealing with planned change and it is most appropriate when there is a particular end goal there needs to be achieved (Chibili, 2017). In comparison it can be considered that Balogun and Hailey's framework uses the same simple approach to change as Lewin (1947) by dividing the change process into 3 stages mobilize, move and sustain, which can be directly transferred to the stages: unfreeze, move and refreeze. Additionally, it is also an approach characterized by providing direct applied experience in the implementation of organizational change. As these authors indicate, the Change Kaleidoscope provides a framework to help pulling together and organizing the wide range of contextual features and implementation options that require consideration during change.

In the Change Kaleidoscope, depicted in figure 4, three elements for implementing strategic change are identified: (1) organization context, (2) change contextual features, and (3) design and implementing choices for change.

**Figure 4. Change Kaleidoscope.**



Source: Balogun & Hailey (2008).

The first step in the process of using the Kaleidoscope to analyze the transformation consists of assessing the six design choices, the inner ring in figure 5, that must be made on how to design the implementation approach.

The six design choices are: (1) *change path*, which is related to with which speed the change must be implemented and to what extent; (2) *change starting point*, such as top-down or bottom-up process; (3) *change style*, with which the change shall be implemented; it can vary from involving the employees to dictation from top management; (4) *change target*, i.e., is the aim to achieve higher outputs or to change the corporate values and culture; (5) *change levers and interventions*, which will be useful and relevant in relation to the specific change; (6) *change roles*, related to who will be responsible of leading and implementing the change. None of these design choices can be made without reference to the second step change context.

The second step is the incorporation of the contextual features (forming the outer ring in figure 5) in the analysis, in context with the design choices. The change context is analyzed based on eight features: (1) *Time*, how quickly is the change needed? Is the organization in crisis or is it concerned with long-term strategic development? (2) *Scope*, what degree of change is needed? Realignment or transformation? Does the change affect the whole organization or only part of it? (3) *Preservation*: what organizational assets, characteristics and practices need to be maintained and protected during change? (4) *Diversity*, are the different staff professional groups and divisions within the

organization relatively homogeneous or more diverse in terms of value, norms and attitudes; (5) *Capability*, what is the level of organizational, managerial and personal capability to implement change? (6) *Capacity*, how much resource can the organization invest in the proposed change in terms of cash, people and time? (7) *Readiness*, how ready for change are the employees within the organization? Are they both aware of the need for change and motivated to deliver the changes? (8) *Power*, where is power vested within the organization? How much latitude of discretion does the unit needing to change and change leader possess?

By taking a closer look of these eight areas, both the extent of the needed change can be described and how ready the organization is for the change can be assessed.

In addition to the design choices and the contextual features, the cultural web model, depicted in figure 5, is a central part of the Kaleidoscope. The cultural web decomposes the culture in an organization into six subcategories, symbols, stories, power structure, organizational structure, control systems and routines and rituals, all of which contribute to the overall organizational culture is used as an input to the design choices as well as a frame to analyze the cultural changes needed in relation to the change.

**Figure 5. Cultural web.**



Source: Balogun & Hailey (2008).

The third step consists of implementation of the changes. It can be initiated after the analysis of the elements of the Kaleidoscope has been completed. During the implementation, it is important to keep focus on the transition, the communication method and how the change is managed.

## Part 2. Application of Change Management: Case of BP VDU Revamp Project

### 4. Research design and methodology

The focus of the research was to make an intervention proposal for the management of a project by using change management insights. For the second part of the work, I used the Action Research approach, which is about change and intervention, where researchers work with practitioners on matters of a shared interest (Eden and Huxham, 1995; Sauders et al., 2012). As a supplement to the research method I relied on the framework by Balogun and Hailey (2008) the Change Kaleidoscope, as described in the previous section, for analyzing the context of the change and the transformation. The research was conducted at the BP Refinery in Castellon, a part of the BP downstream segment, and was performed during a period of 9 months, from June 2017 to March 2018, within the VDU Revamp Project.

The following sections introduce the main features of action research methodology, followed by a presentation of the VDU Revamp Project and the initial setting where change management was required. Next, I describe the application of action research stages to the VDU Revamp Project and the main conclusions of this work.

#### *4.1 Action Research*

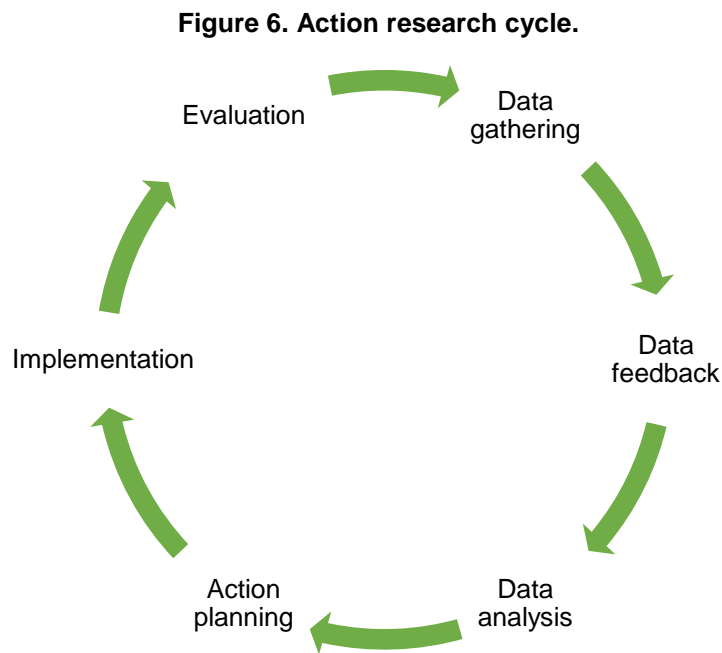
Action Research is an approach to research that aims at both taking action and creating knowledge or theory about that action (Coughlan & Coughlan, 2002: 220).

The term action research was coined by Lewin (1946) in an article entitled 'Action research and minority problems'. He conceived Action Research as a two-pronged process which would allow groups to address three aspects. Firstly, it emphasizes that change requires action, and is directed at achieving this. Secondly, it recognizes that successful action is based on analysing the situation correctly, identifying all the possible alternative solutions and third choosing the one most appropriate to the situation at hand (Bennett, 1983).

It is a generic term, which covers many forms of action-oriented research, and indicates diversity in theory and practice among researchers, so providing a wide choice for potential researchers as to what might be appropriate for their research questions (Reason & Bradbury, 2001). It has been used to analyze many different aspects, such as social settings (Lewin, 1947), organizational development (French and Bell, 1999) and resistance to change (Coch and French, 1948).

The process of Action Research is continuous, cyclical and systematic on reflecting, evaluating, and improving the quality of professional practices and methodologies that are specific to a field or immediate environment (Mills, 2003).

Coughlan & Coughlan (2002) suggest six main steps for implementing action research, first related to data then to research. The six main steps are summarized in figure 6 and described following.



Source: Coughlan & Coughlan (2002)

Step 1. *Data gathering*. It can be either “hard” data such as operational statistics and yearly reports or “soft” data such that is gathered through observations, discussions and interviews.

Step 2. *Data feedback*. The gathered data is feed to the client and made available for analysis.

Step 3. *Data analysis*. It is done in collaboration between the researcher and the client, for example the management team.

Step 4. *Action planning*. It is based on the analysis of the gathered data and is a joint activity.

Step 5. *Implementation* of the planned actions by the client.

Step 6. *Evaluation*. It involves reflecting on the outcomes of the action. The process is reviewed in order to ensure that the next cycle of planning and action benefits from the experience of the first cycle.



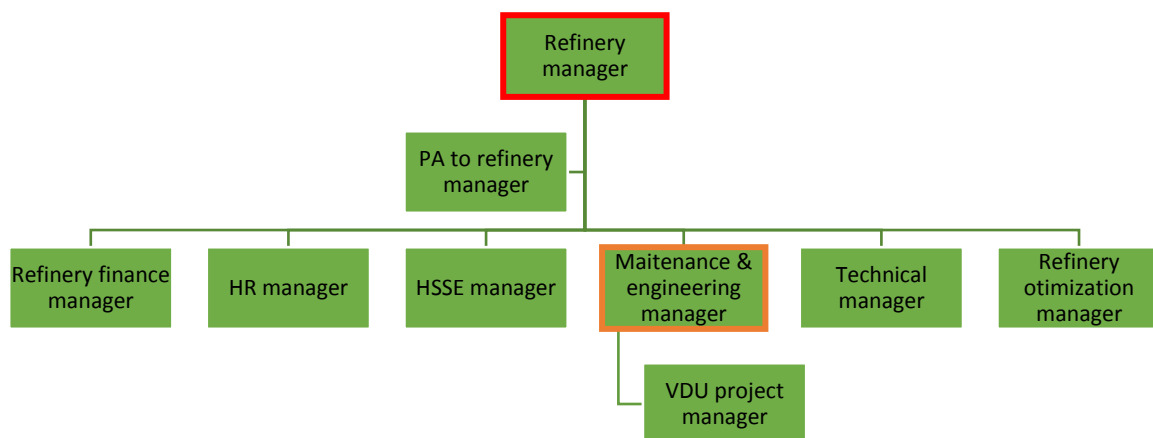
The desired outcomes of action research are not just solutions to the immediate problems but important learning from outcomes both intended and unintended, and a contribution to scientific knowledge and theory (Coughlan & Coughlan, 2002: 223). Action research is basically about learning from experience and fundamentally about change.

### 5. Case description: BP and VDU Revamp Project

BP is a British multinational and global energy business that operates in 72 countries and employs 74.500 people, the headquarter is located in London UK and is one of the few energy businesses in the world that are equipped to deliver light, heat mobility on a global scale. BP's core business is centered on finding, producing, refining and distributing gas and oil onshore and offshore, but they are also getting more and more involved in renewable energy forms such as biofuels and wind power.

The BP Refinery in Castellon is structured within the core business Fuels of the downstream segment. Figure 7 summarizes the *BP Castellon refinery structure*.

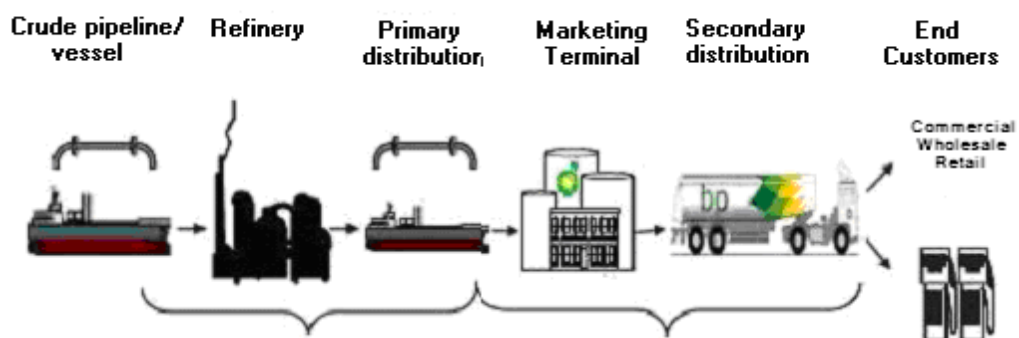
**Figure 7. BP Castellon refinery structure.**



Source: BP intranet (2017).

Figure 8, summarizes the situation of the Castellon Refinery in the supply chain, where the crude oil is delivered to the refinery from the tank vessels via pipelines, to be

**Figure 8. BP Iberian fuel value chain.**



Source: BP intranet "LOMS Handbook" (2017).

processed into different products and afterwards it is being distributed further on primary by vessel.

The VDU Revamp Project is a huge, over \$100 million, revamping project that started in 2015 and was planned to be finished in the summer of 2018. The Program covers 5 different sub projects (P1, P2, P3, P4 & P5) within the area of the refinery with the overall objective to obtain new distillations from the Vacuum Unit, that will be processing heavier crudes, and to increase the output of the FCC<sup>4</sup> Unit. The Project is currently in the phase of execution and, for this phase of the project, BP hired an engineering contractor to handle detailed engineering services and construction management.

One of the important decisions of project management is the type of organizational structure that the project will have. A project organization is a structure that helps the coordination and implementation of project activities (PM4DEV, 2007). It is not a fixed organization and the structure changes from project to project, depending on the size of the project and on the type of project. Its main purpose is to form an environment that fosters interactions between the team members with a minimum of interruptions, overlaps and conflict.

For managing large projects, BP Refinery in Castellon uses a project based organizational structure, meaning that an independent project team has been created with their own technical staff and management, and the refinery organization assigned fulltime resources to the project organization. This is the case of the VDU Revamp project.

Typically, the organizational structure of large projects includes a set of roles:

- A *steering committee*, which is made up of the high-level stakeholders who provide guidance on key issues such as project objectives, budget control, resource allocation and decision involving changes and large expenses.
- A *gatekeeper*, the leader of the steering committee, who is responsible for the continuity of the project and making the decision to cancel or continue the project at each project stage.
- A *project sponsor*, who is the overall project leader within the organization and member of the steering committee. His responsibility is to ensure that the project objectives are achieved.

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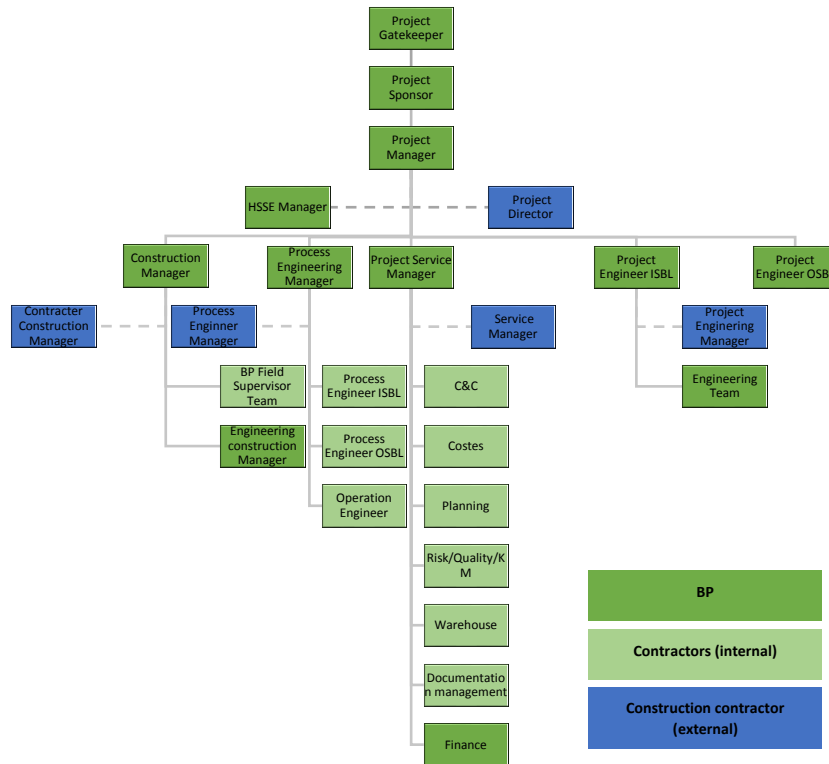
<sup>4</sup> Fluid Catalytic Cracking, one of the most important conversion processes used in petroleum refineries. (Wikipedia, 2018).

- A *project manager*, who reports directly to the project sponsor or steering committee. He is in charge of the entire project team where his role is to manage and coordinate the project team in order to achieve the project targets.
- A *project core team*, with a manager representing each function in the project, being a HSSE (Health Safety Security and Environment) manager, a quality manager, a process engineering manager, a mechanical engineering manager, a construction manager, a service manager (procurement and warehouse) and a project control and cost manager. Each function has a team of specialists in the specific area also representing external consultants and subcontractors.

The original VDU Revamp Project organizational structure is summarized in figure 9. At the top it is the project gatekeeper, which in the BP Castellon refinery organizational structure corresponded with the refinery manager. The project sponsor, who in the BP Castellon refinery organizational structure has the role of maintenance & engineering manager, reported to the project gatekeeper. The VDU Revamp project manager, representing BP, reported to the project sponsor. From the project manager and down, the project organization was two-dimensional. One side was represented by BP and internal contracted contractors and the other side was represented by an external construction contractor.

The interface between the two dimensions of the project organization was that each of the functional managers of the BP project organization coordinated with their equal in the contractor's project organization, i.e. the construction manager representing the contractor had a dotted line to the construction manager representing the owner (BP project organization) and so on.

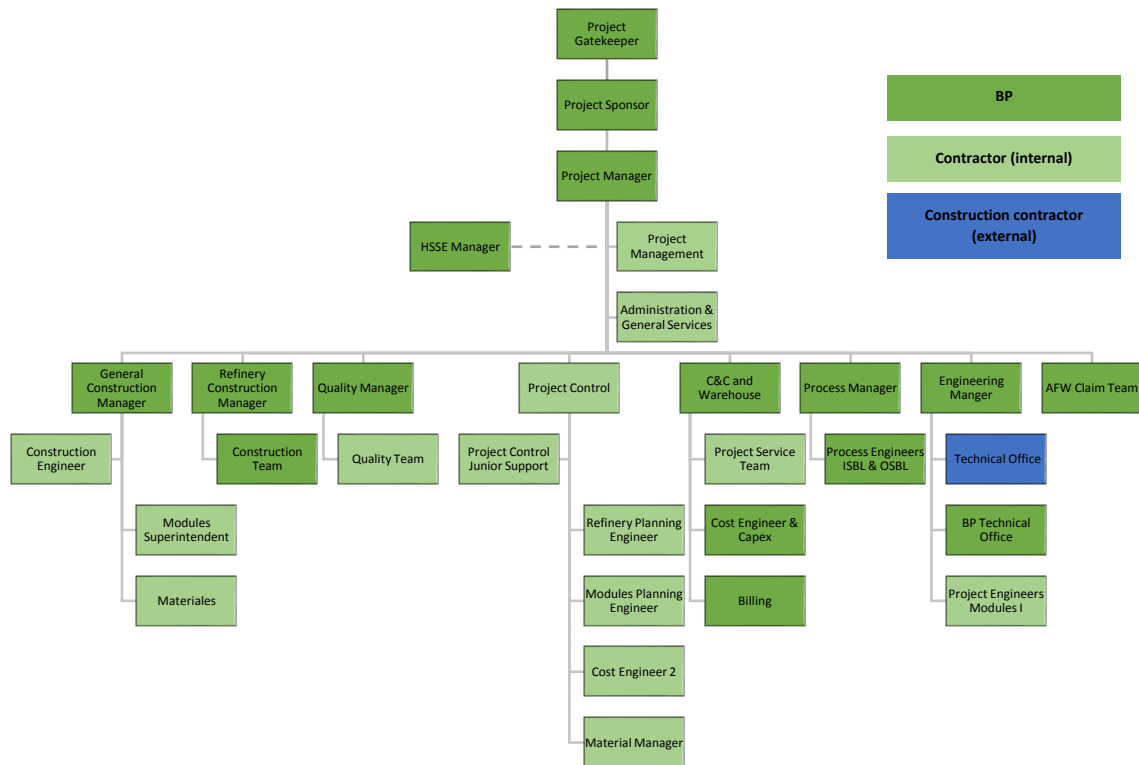
Figure 9. Old structure for the VDU Revamp project organization.



Source: VDU Revamp Project, Project Director (2017).

This organizational structure showed to be complex, which caused problems in terms of coordination which led to inefficiency, delays and extra cost. Therefore, it was decided that there was a need for changes in the organizational structure. The suggested changes were that the contractor would be released from the project, 20% of the contractor's staff would be transferred to the new Project organization and additional staff from the BP organization would be transferred to the project organization. These changes would lead to a restructure of the project organization, with the organizational structure as shown in figure 10. In the new organizational structure, new functions were added, with the aim to allocate responsibilities and take the pressure of the functions that had been worn-out due to a high amount of work.

**Figure 10. Proposed structure for the VDU Revamp project organization.**



Source: VDU Revamp Project, Project Director (2017)

The project manager wished to be sure that the new improvements would be successful. In doing so, he asked for an analysis of the current and future situation followed by an interventional proposal on how to implement the reorganization with the purpose of improving the coordination and making each role and the responsibilities within each role clearer.

## 6. Application of Action Research to BP VDU Revamp Project

The application of action research to the case of the VDU Revamp project was made by following the *Action Research Cycle*, as summarized in figure 6. As it is a continuous cyclical and systematic process of reflecting, evaluating and improving, in this case a project organization, it has been applied in two cycles.

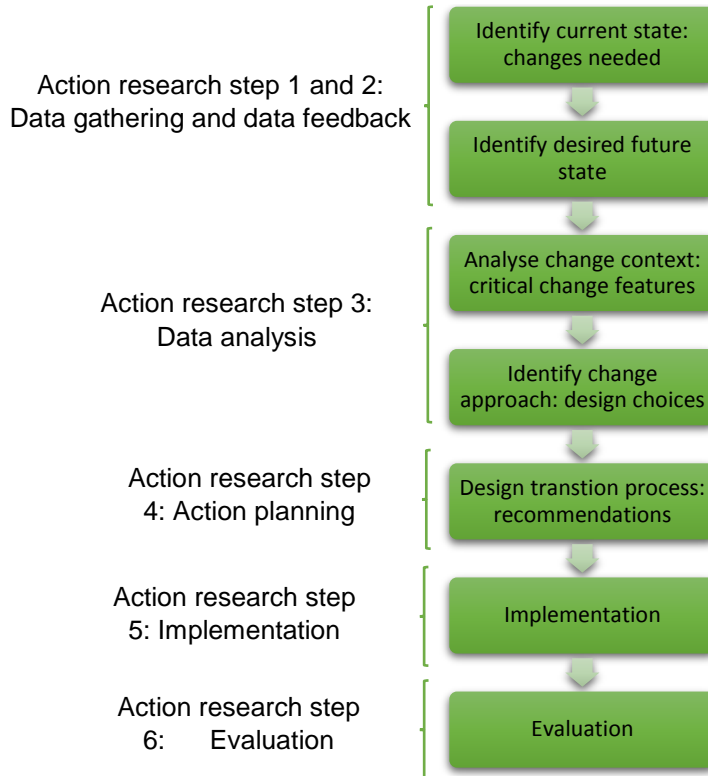
The following subsections describes the first action research cycle applied.

### 6.1 First cycle

The first action research cycle was initiated by a mandate that was given to me on identifying the current state of the VDU project organization, followed by feedback from the project manager on his desires of the future state of the project organization. An analysis was performed based on the diagnostic framework the change kaleidoscope (Balogun and Hailey, 2008) followed by an interventional proposal on how to transit from

the current state to the desired future state. The first implementation was made and subsequently evaluated. The six stages in the first cycle are summarized in figure 11.

**Figure 11. Change flowchart for action research.**



Source: Own elaboration based on Balogun & Hailey (2008).

### *Step 1 and 2. Data gathering and feedback*

Initial data gathering was carried out during the period between June 2017 and December 2017 in the BP Refinery in Castellon, in connection with my internship. The data on the VDU Revamp project were collected by using company internal documents (procedures, processes, project description and organizational diagrams), by internal unstructured interviews and observations made during meetings and daily work. The internal documents were reviewed and served the purpose of initial description, on the current state, together with interviews with project members and with the project manager.

As described in the previous section, *Case description: BP and VDU Revamp Project*, the analysis of the current situation showed that the VDU project organizational structure was very complex, which caused problems in terms of coordination which led to inefficiency, delays and extra cost.

The frame for the desired future stage was given by the project director and contained a new organizational structure with the following objectives for the future organization: (1) increase the efficiency and commitment with the project targets, (2) improve coordination and (3) have clear roles and responsibilities.

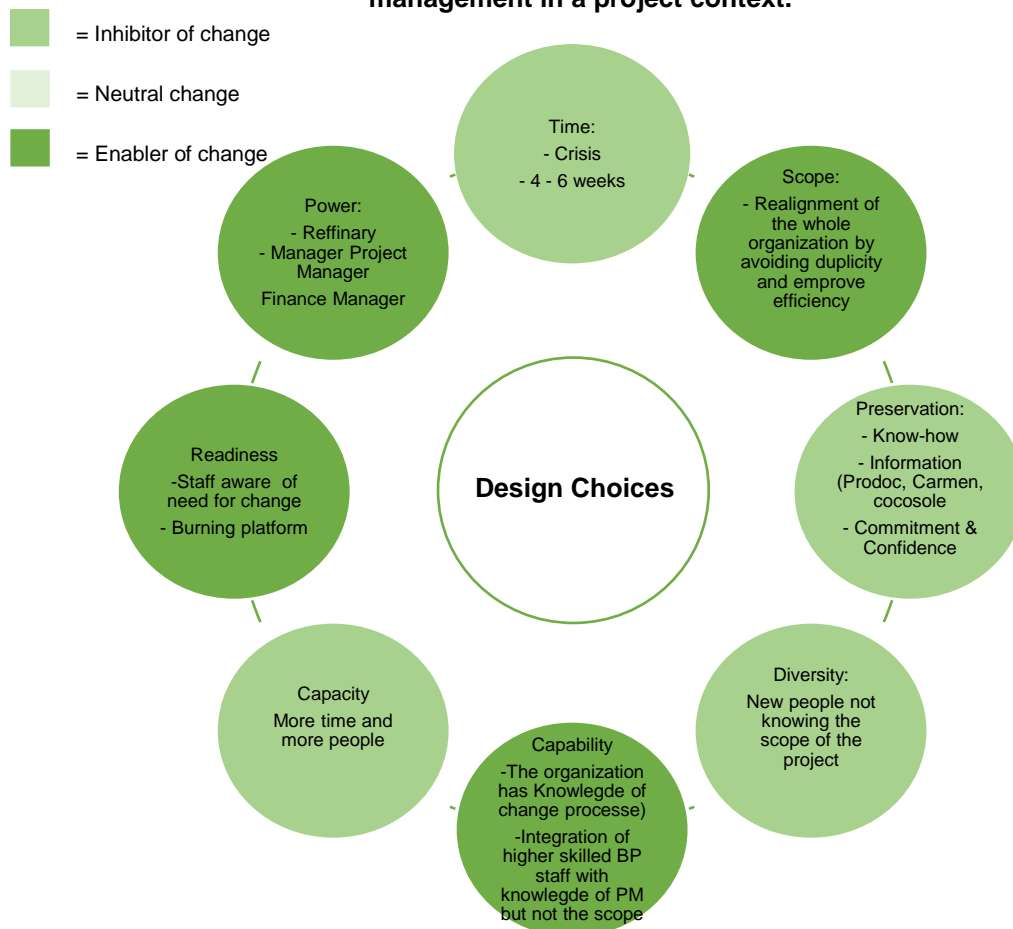
Feedback was given to and received from the project manager and made available for analysis.

*Step 3. Data Analysis*

For the first round of analysis I relied on Balogun and Hailey’s (2008) steps to use the diagnostic framework “Change Kaleidoscope”, since the framework can be used to facilitate and describe a change process and its main purpose is to create clarity of the many facets a change contains.

To analyze the change context, each of the eight contextual features were assessed, as summarized in figure 12, and each area was rated to be either an inhibitor of the change

**Figure 12. Analysis of contextual features to apply change management in a project context.**



Source: Own elaboration based on Balogun & Hailey (2008).

(an important element in the change process), a neutral in relation to the change (limited focus required) or an enabler of the change (primary driver of the change).

*Time* was assessed to be an inhibitor since the time for the change was limited, working within a period of 6 weeks where the project continued to run. This lack of time was considered to constitute a limitation in the design choices.

*Scope* was assessed to be an enabler of the change. The scope of the change was to realign the organization by removing duplicity, which is done by releasing the contracting organization and thereby achieving an organizational structure that will be working more efficient.

*Preservation* was assessed to be an inhibitor. New project members were to join the project team and, therefore, action had to be taken to ensure that the knowledge of the project was shared and that information was made easy, visible and accessible to all.

To get the knowledge transferred to the new project members, it could be done by the following initiatives: (1) Identify the knowledge that needs to be passed on; the persons to deliver the information and the persons to receive it. (2) identify information that needs to be made visible, create social interactions between individual which will allow circulation of knowledge within the organization, i.e. by creating an environment for communication. (3) integrate the knowledge into the new organization by making information visible, (4) document it and translate it into procedures or processes, if possible.

The solution on how to retain the project data and information provided by the contractor was made by buying the license to the programs used by the contractor. In this way the information and data that these systems contained would be transferred to the new project organization.

*Diversity* was assessed to be an inhibitor of the change since new project members, from BP organization would be transferred to the project and therefore an effort was to be put into making the Project Organization homogenous.

*Capability* was assessed to be an enabler because the BP organization had the knowledge of change management processes and the staff within the project organization was highly skilled within the area of project management. However, there was a challenge in the fact that new people would be introduced to the project organization and they were not familiar with the scope of the project.



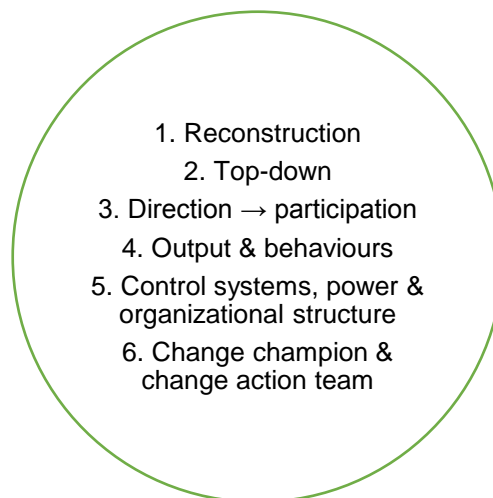
*Capacity* was assessed to be an inhibitor because time was not available to drive the change. In terms of human resources there were also limitations, because 80% of the current contractor organization would be resigned, and therefore people from the BP organization was needed in the new project organization but they had not yet been allocated.

*Readiness* was assessed to be an enabler, because the staff and management of the project team have awareness that change was needed, which creates a burning platform that can help force the change.

*Power* was assessed to be an enabler since the refinery manager had the decision-making power and it was in his interest that the project would become a success within the objectives of: safety, quality, deadlines and cost.

Once the context variables were assessed, next step consisted of determining the change approach by identifying the design choices. To examine the design choices, I assessed each category in line with the contextual features. Figure 13, summarizes my recommendation for the design choices, which was used to support the transformation approach.

**Figure 13. Design choices for supporting the transition process.**

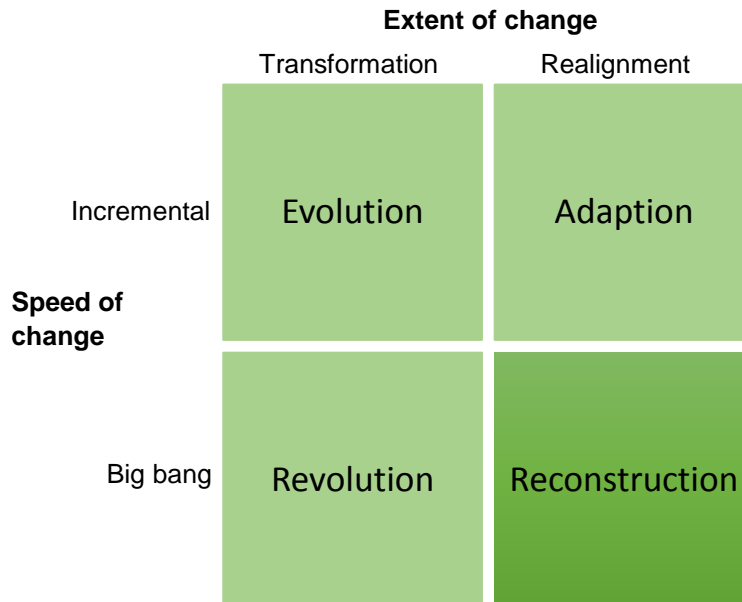


Source: Own elaboration based on Balogun & Hailey (2008).

*Change path* - there are four main types of changes – adaptation, reconstruction, evolution and revolution, as illustrated in figure 14. These four main types of change are defined in terms of two dimensions the speed of change and the extent of change. The extent of the change needed was limited to a reorganization of a project organization in crisis, meaning that something had to be done now and time to do it was limited. The change would affect the whole project organization but only in the context of making more clear definitions of roles and responsibilities and removal of duplicity and thereby

achieve higher efficiency. Since the analysis showed that time was scarce and the change was not extensive I suggested a reconstruction to get a quick realignment of the project organization.

**Figure 14. Four types of strategic change.**



Source: Balogun & Hailey (2008).

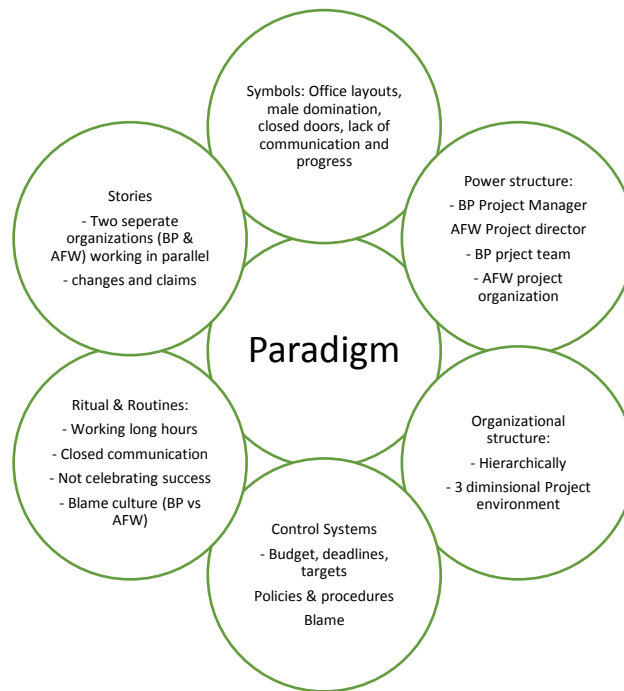
*Change start point* - again, taking into account the limited time I recommend that the change starting point was initiated and developed top-down. This approach would deliver short and sharp reconstruction and provide clarity to the staff in times of uncertainty.

*Change style* - as in the previous design elements, time and the crisis situation were an issue, but there were also some other considerations to take into account such as the fact that the change included personal and organizational sensitive information. Therefore, the majority of the decisions about what to change was taken by the senior management.

*Change target* - one of the change targets was the behavior, by the mean of giving the functional managers new roles and areas of responsibility which will force them to behave differently and ultimately think differently. But also, there was a need for a rapid improvement in the efficiency and performance of the organization and therefore I suggest also targeting outputs that can be transformed into visual outcomes, which will also serve as a motivator.

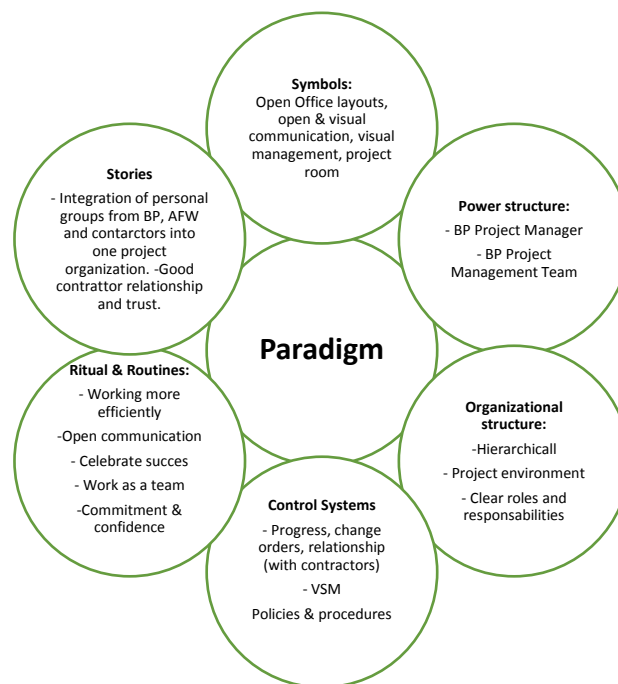
*Change levers* - this design choice was directly related to the cultural web and an analysis of the current and a desired future cultural web has been summarized in figures 15 and 16. Targeting both outputs and behavior, I suggested that the primary levers were

**Figure 15. BP VDU revamp project present cultural web.**



Source: Own elaboration based on Balogun & Hailey (2008).

**Figure 16. BP VDU revamp project future cultural web.**



Source: Own elaboration based on Balogun & Hailey (2008).

the control systems, the power structure and the organizational structure, since these are related to making clearer the roles and the responsibilities in the organization and being able to measure concrete results. As secondary levers I suggested to focus on the

routines and symbols to create an environment of open communication where celebrating successes creates team- work and spirit.

*Change roles* - in this case since the company was dealing with a rapid change, it was to be driven by the Project Manager with support from his project management team as additional change agents.

#### *Step 4 Action planning*

Once identified the design choices to implement the change, the next step consisted of designing the transition process by making recommendations on how the VDU Project Organization could transit from the current state to the desired future state, in such a way that a more efficient organization could be achieved. The recommendations were designed as a top-down directional approach aimed at the second layer of the organization. Afterwards it would be the responsibility of each of the middle managers to extent the changes to each of their individual functions.

Balogun and Hayley (2008) suggest dividing the transition state in 3 stages: mobilize, move and sustain. Accordingly, I followed their approach in terms of: *Mobilize, i.e.*, - making the people within the organization ready for the change and making them aware about the need for change; *Move, i.e.*, implantation of the needed changes; and *Sustain*, anchoring the change throughout the whole organization to ensure that the project members do not fall back to the patterns of their old behaviors. In general, these stages can be assimilated to Lewin's (1947) stages of unfreeze, move and refreeze.

In relation to the mobilize stage within the Revamp project, most of the project members in the project organization were already aware of the need for a change, but they were not familiar with the scope of the change. Due to the level of awareness in the organization, I did not think that the changes would meet much resistance, but I thought that it would come as a shock to a majority of the project members that the contractor would be released. Therefore, I suggested that Project Management focused on giving a high level of information and communication to the project members in order to transmit a clear vision and goals of the change supported by visual information. This would support them to mobilize human resources and help them transfer through the first stages of the transition and into the Move phase of the transition. The project members can be mobilized by using the release of the contractor as a symbol of the change, to challenge status quo and thereby achieve a realization of that action is taken do to the need and as symbol of a management team that is taking acting and leads the need for a change.

Further it was particularly important to communicate the vision of the change by inviting the whole project organization to a common information meeting where the reason of the change is explained. The future project organization should be presented and made visual by showing the new organizational chart and ensure that new organizational chart was made visible by placing them in areas where all project members has access. It should be complemented with the introduction of new project members to the project team and explain who they are, where they were coming from and what their role will be in the project organization. Also, explaining the new roles in the project organization and communicating the expectations of the change and of the project members could be helpful actions to reinforce achievement of results.

To move the project organization through this stage, with limited time, the implementation had to be lead top-down with a dictating style by the project manager, who had to dedicate time to communicate the desired goals and direction to the project organization. In this phase it was important to ensure the new, as well as the old, project members were provided with the correct knowledge and actual situation of the VDU project and to get them integrated in the project organization to make it homogeneous. To support this, I suggested to create a more open spaced offices and to take in use visual management tools to better communicate, motivate and involve the project members and improve efficiency. To get through the reconstruction phase and get the whole project organization aligned I suggested that the Project Manager should involve his management team in the implementation phase to get them to take ownership of the changes and support the new work practices. This would deliver a message to the rest project members of management commitment and thereby help to achieve the desired goals throughout the whole project organization. These actions could be implemented by explaining what the benefits of the changes would be in terms of efficiency, improved coordination and more clear roles and responsibilities. Also introducing new working practices by means of new coordination procedures, visual management (notice boards, performance charts, visual progress indicators, project schedule overview), weekly management and function team meetings and work process mapping that would help make clearer the direction of communication and make communication more efficient. As said previously, changes in the office layout, in the means of more open office environment, in order to create space for open communication, could help speed up the integration process of the new project members and improve the transfer of project knowledge from the old members to the new. Finally, project status and progress should be communicated on a weekly and monthly basis.

Moving on to the final phase of the transition, sustain, is about getting the implemented changes anchored within the organization, which demanded the management team to keep focus on continuing doing things in the new ways. Also, in this phase there was a raised need to keep the project members motivated, since a lot of them were tired and worn out. Thus, I suggested that time and money were devoted to celebrate success such as achieved milestone and reward those who had put in an extra effort. Finally, I suggested that the management team continuously looked back on and assess which of the actions had been consolidated and which of the project teams needs more focus and support. To sustain the changes in practice I suggested the importance of celebrating the archived successes by saying “thank you”, arrange a celebration dinner, invite to a meeting were cake is served by recognizing the effort of the team and individuals in terms of an extra bonus or vacation. Finally, it was important to assess the changes and look into what was working and what was not, and if there were a need of further support or areas where more focus was needed.

Table 2 summarizes the suggested action and implemented actions for each of the three stages of the action planning.

**Table 2. Suggested actions for change management stages in VDU revamp project**

Stage	Suggested actions	Implemented
Mobilize	<ul style="list-style-type: none"> <li>• High level of information</li> <li>• Communication of the vision</li> <li>• Release of contractor</li> <li>• Joint information meeting</li> <li>• Visualization of new project organization</li> <li>• Introduction of new project members</li> </ul>	<ul style="list-style-type: none"> <li>• Status quo challenged by release of contractor</li> </ul>
Move	<ul style="list-style-type: none"> <li>• Communicate desired goals and objectives</li> <li>• Involvement of management team</li> <li>• Introduce new work practices</li> <li>• Change office layout</li> </ul>	<ul style="list-style-type: none"> <li>• Involve management team</li> <li>• Introduce new work practices (coordination procedures)</li> </ul>
Sustain	<ul style="list-style-type: none"> <li>• Assessing new actions</li> <li>• Celebrate successes</li> </ul>	<ul style="list-style-type: none"> <li>• Assessing actions</li> <li>• Celebrating successes</li> </ul>

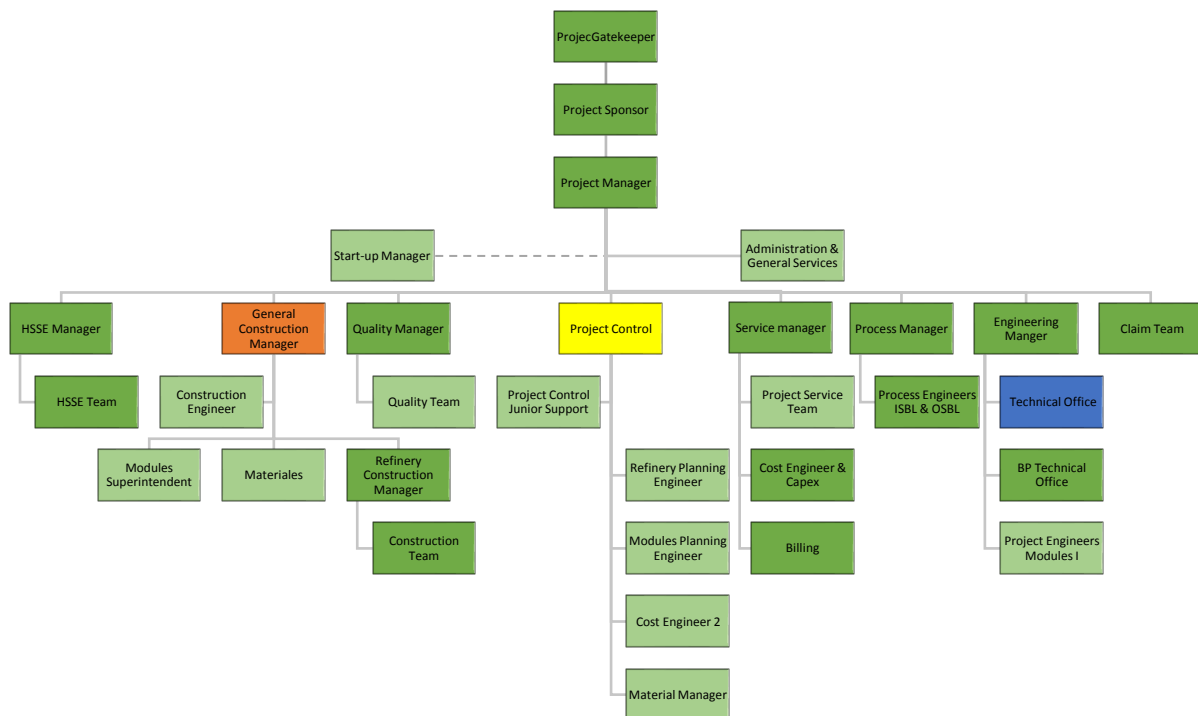
Source: Own elaboration

### *Step 5 Implementation*

The first implementations were made in December 2017 by the project manager (top down). The first implementations, effecting the organizational structure, were that the contracted contractor and 80% of his staff were relief from the project leaving only the

contractors technical office (highlighted blue in figure 17). To replace these resources internal BP employees were allocated to the project and reorganized in a new organizational structure. The final organizational structure was slightly modified as summarized in figure 17. The main characteristics of the new project organizational structure were that the construction function was divided into areas (modules, material and Refinery) managed by a new general construction manager (highlighted orange) who was more skilled within coordination and management. A new function named project control was added (highlighted yellow) to relief the service manager of some of his assignments and work pressure. The remaining contractor staff, the technical office, was placed with a direct line to the engineering manager. The organizational restructuring and release of the contractor were aimed at getting the organization mobilized.

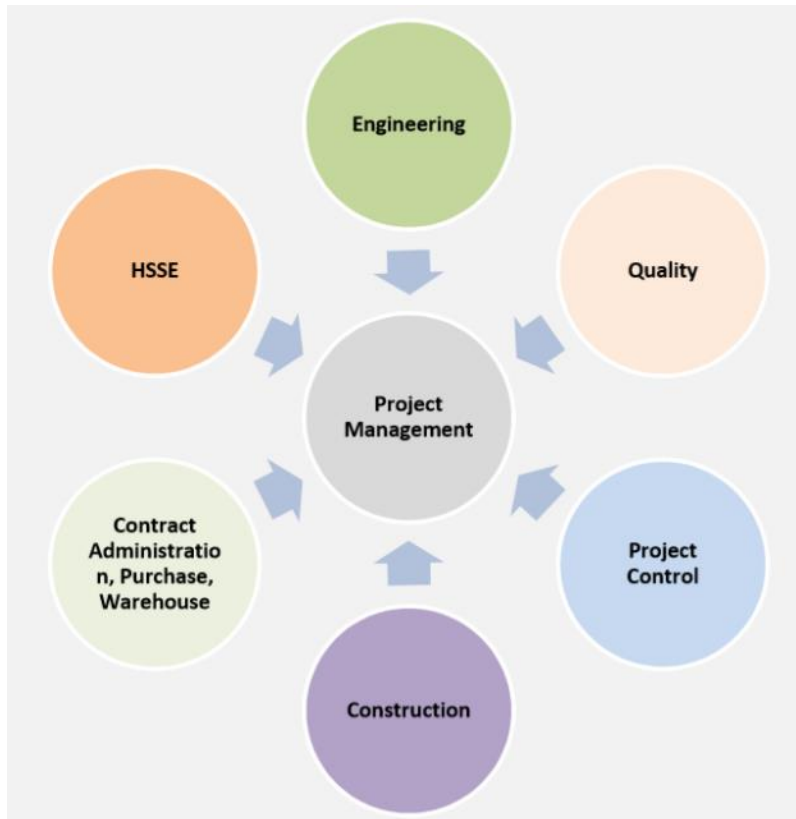
**Figure 17. Actualized structure for the VDU Revamp project organization.**



Source: VDU Revamp Project, Project Director, 2018.

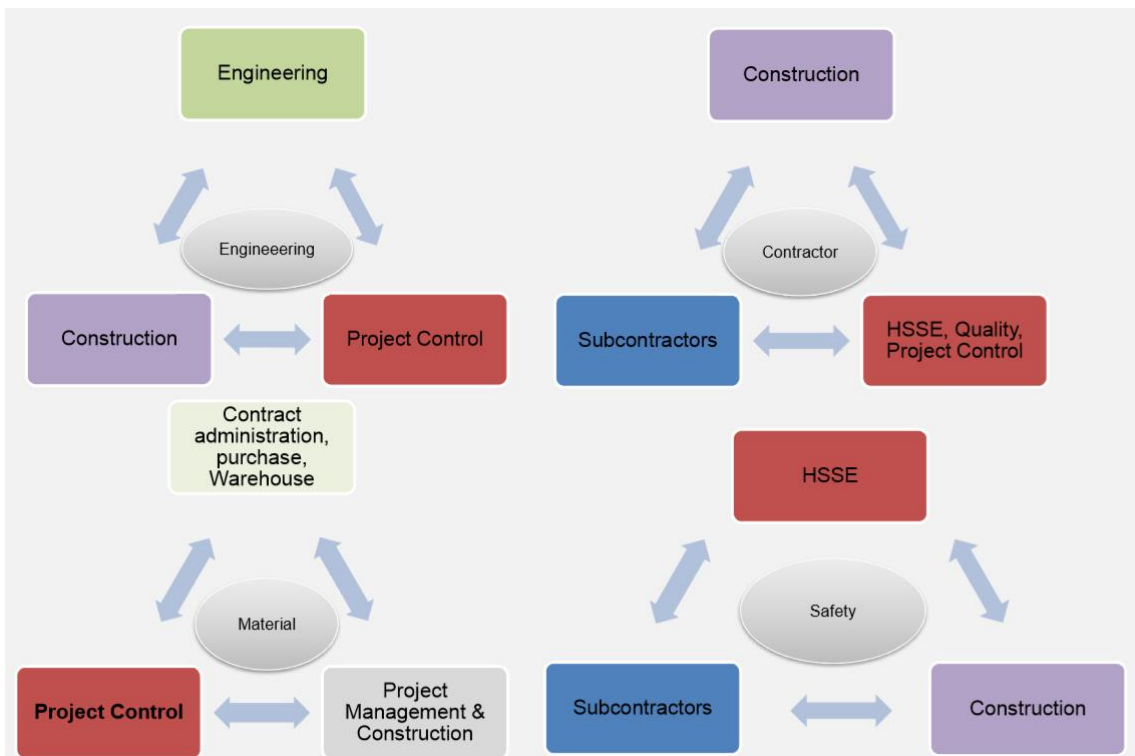
Following the restructuring the organization were ready to move, which was helped by implementing the set of new work practices “Coordination procedures” developed and suggested by me. These procedures contained a structure for core team follow-up meetings and function coordination follow-up meeting, as summarized in figure 18 and figure 19, and implied twice a week coordination within the project core team and weekly coordination between the project functions.

Figure 18.VDU revamp project weekly core team coordination meeting structure (1).



Source: Own elaboration

Figure 19. VDU revamp project weekly function coordination meeting structures (1).



Source: Own elaboration



No further of the suggested actions were implemented at this stage.

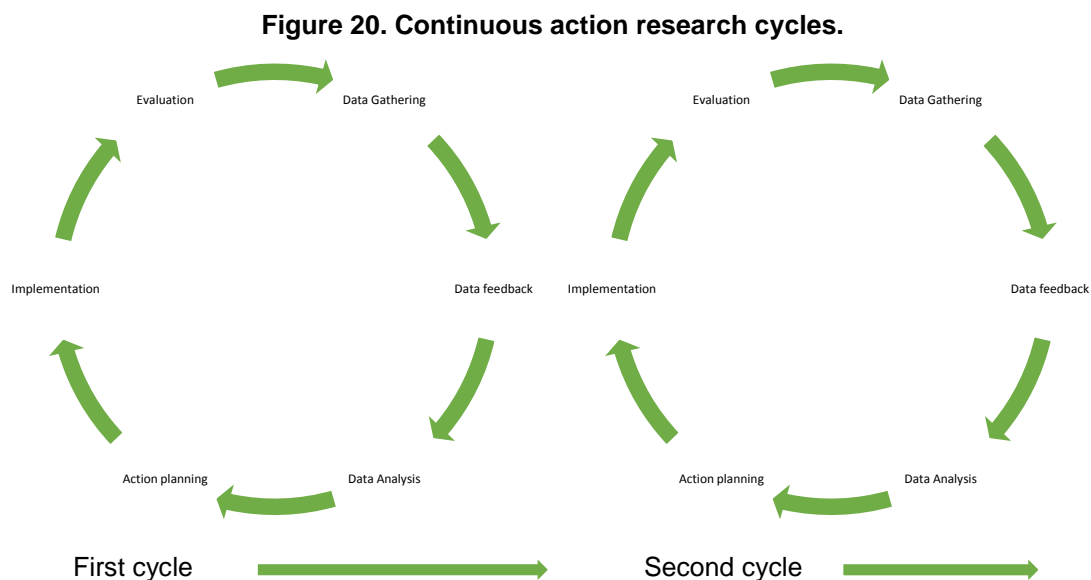
### Step 6. Evaluation

The first evaluation was conducted by the project manager in January 2018, which followed his reflections on the newly implemented project organization and the newly suggested coordination procedure. He wished to ensure that the new project organization were well coordinated and working efficiently and therefore he asked me to ensure that the new suggested and introduced coordination procedures were properly implemented and further more to look into on how to improve and make more efficient the weekly core project team meetings.

The following paragraphs describes the second cycle of action research, taking into account the same steps in the process.

### 6.2 Second cycle

The second action research cycle was initiated on a request from the project manager who wanted me to ensure the implementation and evaluation of the new coordination procedures and to present a proposal for further improvements to be implemented. Figure 20 summarizes the continuity from the first cycle to the second cycle and so on.



Source: Coughlan & Coughlan (2002)

### *Step 1 and 2. Data gathering and feedback*

The data was gathered during the period January 2018 to April 2018 in the BP refinery in Castellon. Throughout this period, I was contracted as a project engineer and referred to the VDU Revamp project manager.

The data collection was based on standardized, open-ended interview and the same open-ended questions were asked to all the interviewees. The interviews were carried out with two groups: (1) interviews about coordination procedures with function managers. (2) interviews about coordination with selected function team members. The aim of the interviews was to analyse if the new coordination procedures had been fully implemented and make suggestions for further improvements within the new frame of the new VDU revamp project organization.

Table 3 shows the structure of the interviews that were conducted with VDU Revamp function managers and selected function team members in relation to implementation and improvements of the new coordination procedures. A summary of the conducted interviews can be found in appendix one and two.

**Table 3. Interviews with: core team & function team members.**

<b>Data type</b>	<b>Participants</b>	<b>Number of interviews</b>	<b>Topic</b>	<b>Date</b>	<b>Length</b>	<b>Documents</b>
Face to face interviews	Function managers	8	Coordination procedures	Jan. – Feb. 2018	30 – 60 minutes	Field notes
Face to face interviews	Function team	7	Coordination procedures	March 2018	15 – 45 minutes	Field notes

Source: Own elaboration

In the second data collection round observations were also made during meetings and daily work and summaries were made of all of the interviews.

Based on the qualitative data and observations, feedback was given to the project director and made available for analysis.

### *Step 3: Analysis*

I performed the analysis on the results of the conducted interviews and the observation made during daily work and meetings. The interviews with the project function managers (engineering, processes, construction, HSSE, project control, service management, and start-up) showed that there was a general agreement about that the weekly core team meetings were too time consuming and needed more structure. Too many technical

details were discussed in them and they ought to be debated and solved within coordination of technical functions. As for the question regarding the new coordination procedure, the overall view was that the meetings in general were held, attended and well structured. An exception was the weekly engineering meeting, which was not held since the majority of those involved in this meeting did not find this coordination relevant.

The start-up manager pointed out that his function was not represented in the coordination procedures (figures 18 and 19), and that a meeting in relation to the execution progress was needed. Therefore, he suggested to add an additional weekly coordination meeting involving the functions of planning, construction and start-up in the weekly execution.

As for the question regarding other meetings held, those not included in the coordination procedures, it showed that the functions: start-up, construction, quality, process engineering and HSSE were well coordinated internally, whereas the mechanical engineering, service management and project control functions were not coordinating internally, due to lack of management and leadership skills.

The interviews with the selected function team members showed that there was a lack of internal coordination within the functions of service management, project control and mechanical engineering. These are the same functions that were detected as not being coordinated when interviewing the function managers. The internal issues entailed lack of information sharing and function members conflicts. From these interviews it was also detected that there was some external coordination and cooperation issues between the project control function and the service management function in terms of essential information that was not being shared.

A clear pattern was detected and showed that those managers who were coordinating well externally were also coordinating well within their functions and were good at distributing information to the function team. On the other hand, the function managers that were not coordinating well externally were also lacking coordination internal in their teams.

Additional observations were conducted from the interviews showing that there were some general management issues that needed to be addressed: (1) lack of top-down communication since, in general the function team members found that they were not being informed about the overall project progress; (2) function managers and members were not aware of how the new organizational project structure looked like; (3) internal conflict between two of the function managers and function team internal and external conflicts that project manager did not deal with.

Table 4 summarizes the main findings from the analysis of the first cycle.

**Table 4. Main findings from step 3 of the first action cycle.**

Main findings	Functions affected
Core team meeting inefficient and time consuming.	Project Management
Start-up function not represented in coordination procedures.	Project management and start-up
Good internal coordinated	HSSE, quality, construction, process engineering,
Bad internal coordination	Mechanical engineering, service management, project control
Management issues within: top-down communication, information sharing and people management.	Project management

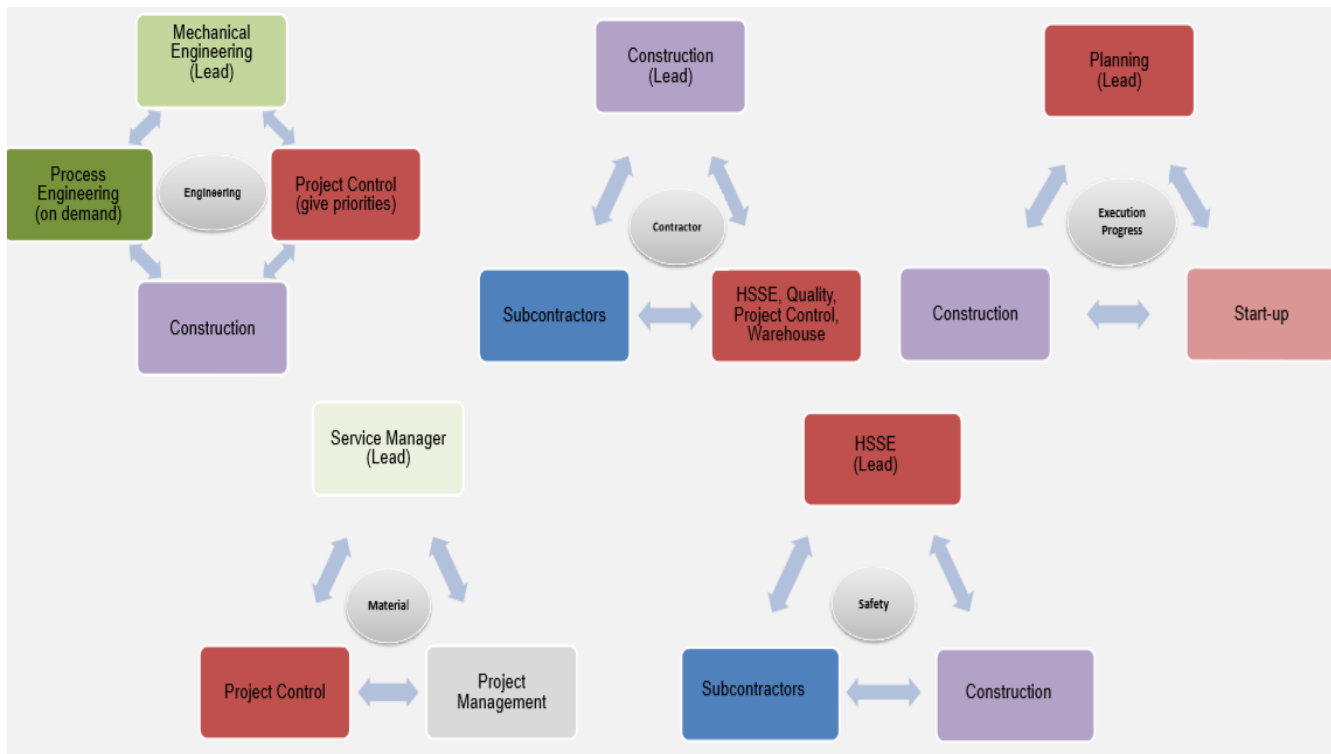
Source: Own elaboration

*Step 4 and 5: Action planning and implementation*

Based on the conducted analyses the following actions were planned and implemented in consultation with the project director.

First action implemented was starting up the weekly engineering coordination meeting. This action was implemented within a few weeks and a fourth function was added to the weekly engineering coordination meeting in the coordination procedures as depicted in figure 21. This can be seen by the representation of both mechanical and process engineering in engineering weekly follow-up.

**Figure 21. VDU revamp project weekly function coordination meeting structures (2).**



Source: Own elaboration

The second planned action was to make the weekly core team meeting more structured and efficient. The planned action consisted of structuring the weekly meeting with a fixed agenda where the Monday meeting was related to the subjects of work during the week, project priorities and function status; the Wednesday meeting was concerning the project dashboard and KPI follow-up; and the agenda for the Friday meeting was to discuss ad hoc issues. These actions were implemented within few weeks, and subsequently the Friday meeting was canceled due to improvement of the meeting efficiency.

#### *Step 6: Evaluation*

The second evaluation was conducted in March 2018, based on reflections and feedback from the project director. He found that coordination was improved in the function management level, but there was still work to do in order to improve coordination within the function and in general the communication. Also, there were the issues concerning the conflicts within the management team and the two functions project control and service management. Not actions were at that time planned for the conflict issues.

#### *6.3. Outcome*

The objective of the VDU project restructuring was to achieve a more efficient project organization; to achieve this, the organization was first cleaned of duplicities, by releasing the contracted constructor from the project which allow the BP project management to gain the direct control of the project.

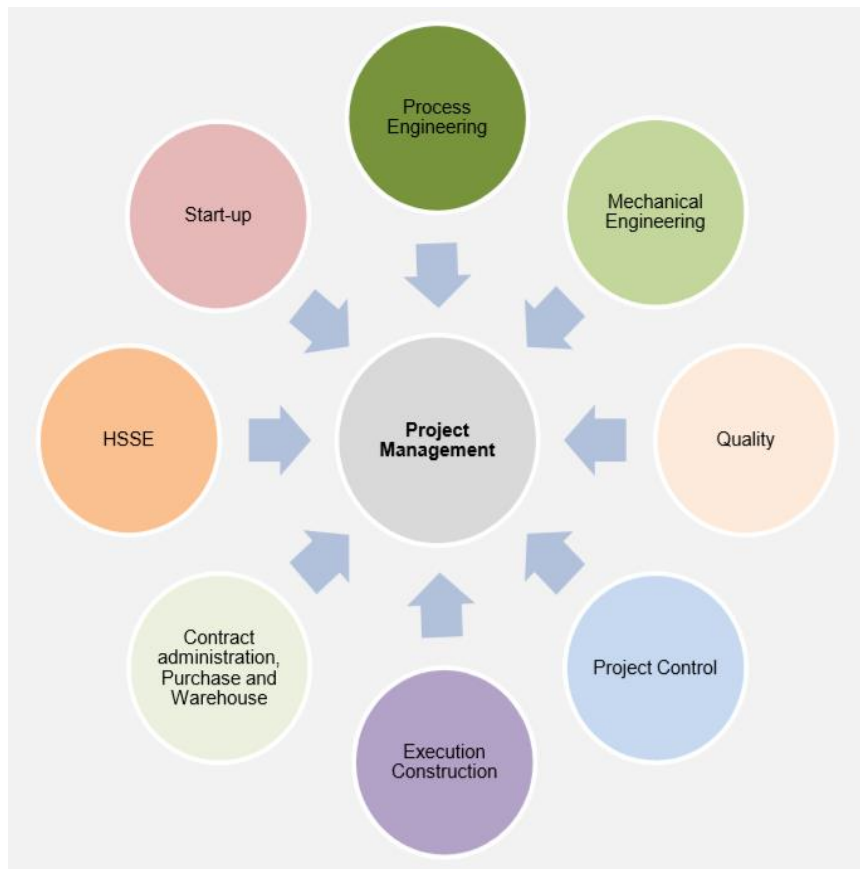


of progress failed to appear in the period March to October 2017. In October 2017 the progress speeded up but slowed down again during November and December 2017, which makes it clear that the overall execution progress had not been satisfying. In January 2018 the progress started to speed up again, according to the target S curve the project progress should know be stagnant, but there was a lot of lost work to catch up on. Since January, after the contracted contractor was released from the project and the organization had been reorganized, it can be seen from the actual S curve that the project progress has increased significant, which indicate that the structural changes have had a positive impact on VDU Revamp project.

Third, new coordination procedures were introduced with the aim of making roles and responsibility clearer and improve the coordination within the project. The procedures were first introduced and some adjustment were made during the implementation period, as can be seen in figure 23, where the start-up function has been added to the coordination meeting procedure for the core project team.

In figure 21, it can be seen that a new coordination meeting related to the execution progress has been added to the coordination procedures and also that in the engineering

**Figure 23. VDU revamp project weekly core team coordination meeting structure (2).**



Source: Own elaboration

meeting two engineering functions are added, progress and mechanical. The improvement of the new coordination procedures has helped to make the already established core team meetings more efficient and improvement of coordination was especially to be found within the engineering functions where structural coordination had not earlier been used as well as within the start-up function that was not earlier included in any structured coordination within the project organization.

Finally, the reorganization has made the project organization more transparent by means of clearer roles in the project management team, delegation of the responsibility and a better utilization of projects resources which results in saving on the bottom line.

In terms of top-down communication, information sharing and people management there are still improvements to be made.

Finally, I would like to add that despite improved outcome achieved with this intervention, there is still work to be done in order to improve coordination within some of the project functions. This applies especially to the functional managers who need to take more care of their team members. Also, information in general is still to be better shared and made more visible in order to keep people involved and motivated. Finally, the project manager should develop his leadership skills and focus more on the human aspects of his project organization in order to help solve the internal conflict and improve the cooperation of the project organization.

As a whole, I hope that my work contributes to further assessment and improvement of the coordination, cooperation and communication within the VDU Revamp project organization.



## 7. Conclusion

The objective of this research has been to make an intervention proposal that could help improve the case project organization and the way the organization coordinates in order to become more efficient and achieve a successful project outcome. In doing so, I relied on contributions from change management and used an action research methodology.

Previous research has highlighted the importance of incorporation of change management and project management principles in projects (e.g. Muuns and Bjeirmi, 1996; Creasy, 2018). Change management is basically about moving from a current state, through a transition state to arrive at a new desired future state by addressing the people perspective in this transition and by providing a structured approach in terms of processes, behavior and culture that supports the individuals in the organization. The technical perspective of project management is related to how to design and develop a solution and approach on how to achieve a set objective. In this work it has been argued that without both the technical approach and the people approach, a project or organization will not be able to deliver the results and achieve a successful outcome; rather, it is by combining these two disciplines the way we can ensure the success rate of a project. Thus, said when managing a project, it is important to be familiar with the tools associated with change management processes, as it will become difficult for the project manager to support the personal transition of the individuals if not, make them embrace new ways of working and make the initial succeed. It has been presented in this paper that projects can be classified within their level of complexity and uncertainty, by doing so it could help the project manager to get a full picture of the complications to be found within the project scope and which stages (initiating, planning, execution, controlling, closing) would be the most vulnerable. Since project management is not simple serial steps, this classification can be a significant help to help identify which project management principles to apply and support the decisions making process and thereby help achieve project objectives in terms of safety, quality, time and cost.

Also, it was outlined that there is a number of factors that are in particular important in order to implement a project successfully. These factors mostly focus on the human perspective of managing a project and less on the technical perspective, again pointing out that managing people correctly has a positive influence on a projects outcome. Additionally, I would like to stress the importance of leadership when dealing with partnering projects, where bring together different cultures and behaviors is essential to achieve a dynamic project organization by combining formal and informal aspects and

ensure successful partnering. Hence, in relation to make partnering a success, it is about getting people to cooperate towards a shared objective.

Action research has been recognized by researchers as a planned approach to come about change and can be applied in many different aspects. In my case I have also found action research to be relevant and valid for the disciplines of project management and change management due to its ability to address operational realities experienced by practicing managers while simultaneously contributing to knowledge and reflection inside the project organization on how to manage and implement changes.

By use of action research, the focus has not just been to find solutions to the immediate problems but also to learn from these outcomes and to make further improvements based on these experiences. In regarding to this method, I have made proposals highlighting the importance of communicating, leading top down, new work practices, management involvement and leadership.

My approach to action research has been retrospective where my case has performed the function of a “learning history” and has been used as an intervention to promote reflection and learning in the project organization. By supplementing action research with change management theories, I have applied Lewin’s (1942) theoretical three step model in practice, both consciously and unconsciously, which shows that it clearly emerges as a universal model which can be used in project management as a part of a change process. As the outcomes of the action research demonstrates, it has shown to be an advantage when dealing with a project reorganization to incorporate a diagnostic framework “Change Kaleidoscope (Balogun and Hailey, 2008) to support the analytical part of the action research cycle. In my opinion, the models can be used consciously or unconsciously, which method is not interesting as long as an adequate result is achieved. Common logic implies that the models are used as soon as a need for a change process occurs. Thus, the models are helpful in virtually all projects and as a minimum a good checklist in connection with the process.

Finally, I would like to add that despite improved outcome achieved with this intervention, there is still work to be done in order to improve coordination within some of the project functions. This applies especially to the functional managers who need to take more care of their team members. Also, information in general is still to be better shared and made more visual in order to keep people involved and motivated. Finally, the project manager should develop his leadership skills and focus more on the human aspects of his project organization in order the help solve the internal conflict and improve the cooperation of the project organization.

As whole, with this work, I have shown how change management principles can be helpful in a project context. I hope that my work contributes to further assessment and improvement of the coordination, cooperation and communication within the VDU Revamp project organization. Further extensions of this research can be undertaken by looking deeper into how further development of management and leadership skills within the project management team could contribute to further improvements within the project organization.

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# Appendices

## *Appendix 1: Summary of interviews with function managers*

Based on formal and informal interviews with managers of the functions: Quality, project control, project service management, process engineering, mechanical engineering, start-up, construction and observations such as meeting participation. I have written my general perception of the coordination, communication and cooperation within the functions of the VDU Project managers.

### *Meeting coordination*

The follow-up *core team meeting* is held 3 times a week Monday, Wednesday and Friday. The meeting is too, therefore it is suggested:

- Technical details involving engineering, quality, construction must be discussed and solved in functions coordination meetings.
- More meeting discipline is needed, such as meeting agenda i.e. Monday meetings include: priorities, work of the week etc., Wednesday meetings involves: KPIs, dashboard and action tracker.
- Information that project manager need to receive or give in the core team meetings includes: help to solve issues, deadlines to postpone, incidents etc.

The *engineering coordination* meeting is not set-up, it is suggested that meeting lead should be the mechanical engineering manager. Currently the coordination is ad-hoc on a daily or weekly basis, meaning that there is no structure in information sharing and needed data. It is mentioned that the coordination on the technical issues is being done in the core team meetings, which is not the purpose of this meeting. Construction and process engineering are requesting information from planning (project control) regarding updates and changes in the subcontractor's schedule.

The *contractor coordinating meeting* is organized and led by the general construction manager, who is new to the project organization. The meeting is held weekly and issues related to HSSE, quality, planning and materials are discussed. A minute of meeting is distributed accordingly after each meeting.

The *material coordinating meeting* is organized and led by the project manager, suggested to be held by service manager instead. The meeting is held once a week and issues related to resources, work processes, procedures and material status are discussed.

The *safety meeting* is organized and led by the HSSE manager. It is held once a week and safety issues related to planning and follow-up are discussed. A minute of meeting is distributed accordingly after each meeting.

#### *General inputs from the function managers*

The *start-up manager*, who is the link between the project and the operation, has a good internal team coordination as well as coordination with construction. He is requesting more coordination with process engineering, project control (planning). The information given from the other project functions need to be set-up in a more structured manner.

The *general construction manager* has a good internal coordination and structure with his team. Meetings are held one a week where information is aligned and construction issues are covered.

The *project control manager*, who earlier referred to the project service manager but now has his own team to manage, is planning to start internal coordination meetings with his team, but this has not been initiated. The purpose of the meeting should be internal coordination of cost and planning.

The *quality manager* has a good internal team coordination, with daily and weekly quality team meetings where the quality KPI's and action tracker are updated.

The *mechanical engineering manager* has no structured coordination with his technical office team, only ad-hoc coordination with the technical office responsible.

The *process engineering manager* has a good internal team coordination with weekly meetings where a fixed agenda is used. He is demanding coordination with start-up manager in relation to processes, and inputs from project control related to planning and schedule information.

The *service manager* has no internal coordination with his team, only coordination with purchasers related to invoice management and suppliers.

## *Appendix 2: Summary of interviews with function team*

Based on formal and informal interviews with representatives of the functions: Project control, Project service Management, Process engineering, construction and observations such as meeting participation, I have written my general perception of the coordination, communication and cooperation within the functions of the VDU Project team.

### *General perception*

- *Process engineering team:* seems to have good internal coordination, with a weekly meeting and a structured agenda where relevant topics are reversed. External coordination is made with technical office, construction and PEM, and recently a new process, for handling changes in PID, has been made, which from my point of view seems to be a way of improving the coordination between the involved function. The process team receives information, via their manager, from project management.
- *Construction team:* Seems structured and well managed, with daily and weekly coordination meetings and roles and responsibility that have been made clear. Construction Manager communicates information to the other functions and distributes relevant information from project management such as weekly dashboard and other relevant information. The coordination with subcontractors has improved since contracted construction manager was replaced by BP construction manager
- *Project control team:* One team kick-off meeting has been held (January or February) and since then nothing. The internal team coordination is informal and consist of the information sharing taking is place in the project planning office and via e-mail correspondence. The planning team uses shared folders for information sharing, but still it seems that the planning team is not aligned (Samuel, Rodrigo, Roberto, Alejandro) and is not receiving the needed internal and external information could be because of lack of internal/external coordination meetings. Samuel is participating in the weekly contractor meeting and earlier he also received the status of ISOS, but not at the moment. The cost team is also using shared folders as information sharing with contract team, but they have expressed, with much frustration, that information is not received neither in the shared folder nor via e-mail. The lack of information to cost means the cost data is not accurate, and also it seem that the planning is not working efficient within gathering and receiving information which makes it difficult to make an accurate schedule. The project control team is



receiving poor information from Project Management and more communication from team manager is needed.

- *Service team:* The overall internal team coordination is poor, weekly meetings regarding contracts and purchase meetings are held but no team meetings. Information is shared in the team office via informal channels and mail correspondence, but those not located in the team office is not getting this info. No internal coordination between those handling contracts and no coordinating meetings between contract handling and planning/cost. The service team is not receiving top down information from PM and more communication from team manager is needed.
- There is a tension between the planning/ cost team and the contract team, where the issue seems to be that information is not being shared /exchanged/passed on. There is no process that indicates who are responsible for what and when and the managers are not taking the responsibility of solving the issues. The common perception is that planning and cost is not delivering to those responsible of contracts and vice versa that contract team is not delivering to cost/planning.
- There is a lack of information flow in cases of receiving new project members which results in inefficiency.
  - The information is given in the last-minute meaning that there has been no time for: Preparing paperwork for entrance, security etc., Setting-up laptop, Setting-up a work place, Preparing work assignment.
  - There are no procedure/process for introduction of new project team members.
- Both project control team and service team have people, who are placed away from the rest of the team, which means that these team members are missing a lot of the informal information flow within the team office.
- Lack of communication, management and leadership within the functions of project control team and service management team
- Information, such as below, given by PM to the function teams is too poor:
  - Project overview
  - Progress info
  - Status updates (only those who receives the dashboard)
  - Newsletters