POLITECNICO DI TORINO

Master's degree in Mechanical Engineering

Academic year 2019/2020

Thesis Title:

Project portfolio management:
Key factors in monitoring and controlling activities.

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To my family without whom this work would never have been completed.

To my friends who supported me in this journey.

Finally to myself, my best companion through tough times.

"Excelsa assequor, ima despicio!"

Contents

Acknowledgement

First and foremost many thanks to all whose work, research and support guided me in the development of this thesis, especially Prof. Alberto De Marco who gave me the opportunity to develop this work.

Furthermore I would like to express my gratitude to Richemont International, in particular to the Logistic Project Management department and colleagues who welcomed me in a difficult period and helped me throughout the research process.

Finally thanks to my closest friends and family, who made me laugh and gave me the energy to complete this journey.

Introduction

During the last few decades globalization and market trends have increased the world-wide competition between companies. It is undeniable that these tendencies have generated an incredible amount of opportunities for growth, technology evolution and created new market segments, but at the same time these new dynamics pressured the companies to maximise their profit in order to deal with competitors.

The profit is strictly connected with the selling of products and/or services by the business entity and ultimately depends on the optimization and efficiency level of the structure, the operations and the activities put in place by the company.

The creation of a new product, a new facility or a change in a current process must go through the execution of a project. For this reason project management practices gained a solid importance in day to day activities of a business entity.

Depending on the level in which these practices are applied it is possible to distinguish between project, program and portfolio management. To this regard, this thesis is focused on the latter one and proposes itself as a guideline for a correct implementation of standards and practices in order to maximise the success probability of a portfolio of projects.

Combining a theoretical research and a real case study this work concentrates on the Monitoring and Controlling phase, analysing the key factors that allow the project portfolio manager (PPM) to evaluate the performance of the portfolio, to take timely

preventive actions and ensure the alignment with the company strategy.

The real case study is a product of the student's internship experience inside the project management office (PMO) and logistics enterprise team of Richemont International S.A. in the Geneva site in Switzerland.

The first few chapters give a general overview regarding project management practices, underlining the differences between the application levels in order to set the context for the focus on portfolio management and in particular the monitoring and control activities. Later, some key factors and problem areas related to monitoring and controlling activities are presented from a theoretical point of view, few research studies are analysed and an implementation model is proposed by the author.

The model proposed, based on the stage gate method, is meant to give a solid structure to project selection, prioritization and to project monitoring and controlling, in order to give to the portfolio manager an instrument to have an overview of all the projects, their performances and make go/kill/adjust decisions.

The approach described is developed so to deal with the key problem areas highlighted in the study as: resource shortage and improper allocation, inefficient projects prioritization and selection during portfolio reviews, absence of decision making system based on quality and reliable information and reluctance to kill poor performing projects.

The case study, instead, represents an opportunity to validate the model proposed with empirical data collected with a survey, apply in first person the theory to a real corporate information technology (IT) logistic environment and propose a tentative solution for some of the problems identified during the study.

Chapter 1

Introduction to project management practices

1.1 Project definition and boundaries

In a common working environment one of the most used terms is "project". Regardless of the frequency with which this word is used, its meaning it is not always properly comprehended. A project is a temporary vehicle created to achieve some goals and must comply with constrains that could be either related to cost, resources, schedule or know-how.

A project has well defined objectives and creates a unique outcome that could be tangible or intangible. The duration of the endeavour is stated and an ongoing effort is made by the team and the project manager to respect the plan. A project can be terminated when all the objectives are reached or if the project sponsor wishes.

It is important at the beginning of the project to clearly states what is in scope and out of scope in order to not fall in the overachievement trap.

1.2 Project management practices

Project management is the practice of guiding a team to achieve the goal of a project within the related constrains and ultimately satisfy the client's objectives.
According to the literature each phase of the project is divided into five logical groups of management processes that are:

- Initiating
- Planning
- Executing
- Monitoring and Control
- Closing

Each of these is fundamental to ensure the correct flow of the activities and to achieve the planned results satisfying all the parties involved.
When managing a project the project manager has to perform some activities which include, but are not limited to:

- Identify the requirements
- Understand all the needs, expectations and concerns of all the parties involved and prioritize them
- Creating and supporting a structured communication system among all the stakeholders
- Manage all the different constraints (scope, quality, schedule, budget, resources, risks..), taking into account that a change in one of them will most probably affect others.

The project management practices can be applied to every type of project, they do not depend on the project's nature. Nonetheless, the type of management must be adapted to better fit the need of the project. For example in the Information technology environment (IT) the rapid technology changes and version updates force the management style to be prompt and quick in adapting to changes.

Figure 1.1: Project management logical groups with some related activities

1.3 Program Management

The program management term is associated to the multiple-project environment concept. A program is defined as a collection of related projects, subprograms, and activities managed in a coordinated way to obtain superior benefits. The same benefits could not be achieved from managing the projects individually.

Projects contained into a program always share some connections, whether they are a common result or a capability. If the connection between projects it is only a client or a resource they better be managed as portfolio. A possible grouping could be for

business unit, market destination, market size or program dimension.

Program managers represent a connection between the company strategy and the project managers. To ensure the success of the program they need to establish a structured approach that spans from the procurement and resources allocation to an integrated management and communication systems. The attention must be put on the interdependencies between projects in order to decide the better approach to deal with the program and exploit when possible those opportunities in favour. An example could be managing a resource constraints that affect multiple projects. The activities that are generally performed within a program can be grouped into three broad themes:

- Benefit management
- Stakeholder management
- Structured governance.

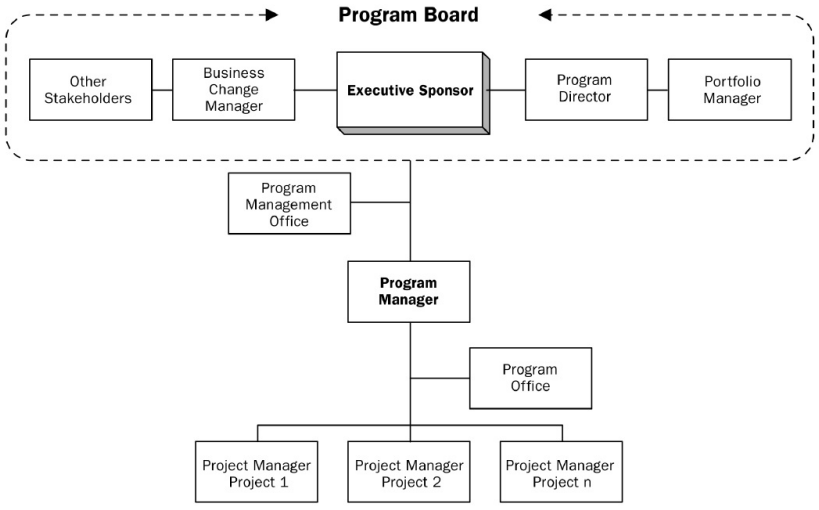

Figure 1.2: Program governance structure, [3] ch. 1.7.3

Chapter 2

Portfolio Management

2.1 Portfolio definition

A portfolio is a collection of programmes, sub-programmes and projects managed together to achieve strategic objectives that cannot be awarded if each component is managed individually. Even if the elements that constitutes the portfolio may share objectives and may be interdependent, it is not a necessary feature. Unrelated projects can be grouped in a portfolio.

Like in a project and in a program, a portfolio has a limited amount of resources available that must be shared by its components. For this reason project prioritization, resources allocation and balancing cover an important role.

Since each portfolio addresses a specific goal and strategy, an organization may have different portfolios and sub-portfolios. A hierarchy is created based on the dimension and strategic importance. When a new proposal takes place, it may evolve in a project or a program and it becomes part of an existing portfolio or a new one. A possible example could be a new product line or an IT platform.

The first difference that comes up when comparing programmes and projects with portfolios is the duration and the life-cycle. Considering the long term objectives that a portfolio has, they require particular management attention. A portfolio will

be closed when the company strategy changes and it is not compatible anymore, when all the objectives are achieved or when the components are moved to a different portfolio.

As announced before, a portfolio is strictly related to the company's strategy and therefore driven by a strategic forces. Some drives could be:

- Market demand;
- Customer request;
- Strategic need;
- Legal requirement;
- Technological advance.

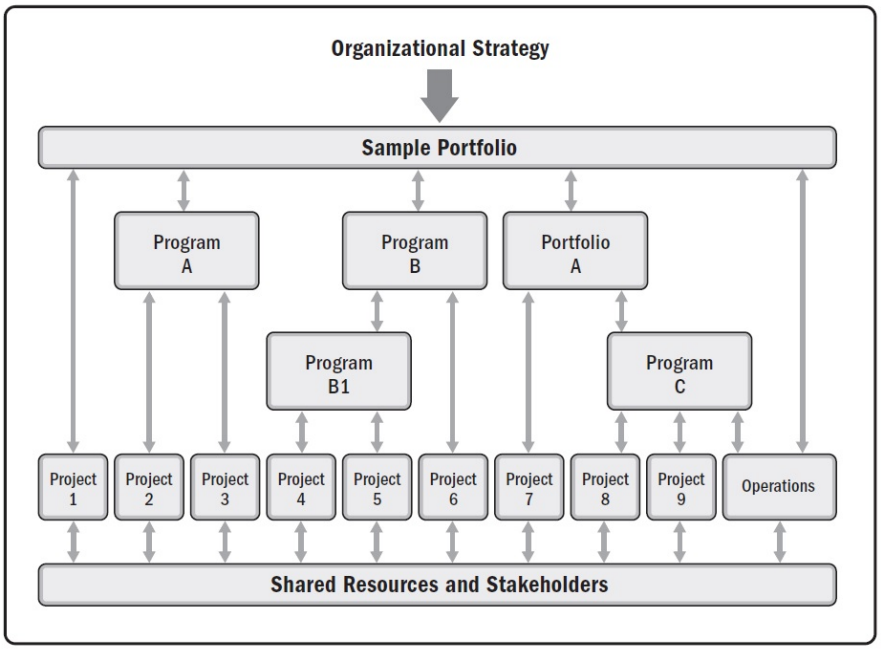

Figure 2.1: Hierarchy between portfolios,programmes and projcts, [2] ch. 1.3

2.2 Portfolio management practices

The collection of activities required to manage a portfolio goes under the name of portfolio management and includes: processes to ensure the alignment with the company's strategy, balancing the resources allocation, prioritization of components, communication with the top executives and other numerous tasks.

The prioritisation of projects is strictly related to the objectives of the portfolio. The PPM (portfolio project manager) must evaluate different opportunities and understand how they could contribute to the achievement of the goal of the portfolio and classify them. Furthermore, the resources must be wisely allocated and balanced between the projects/programmes accordingly to their importance. All the activity require an ongoing effort by the PPM since they must be applied thought the whole life-cycle of the portfolio in order to adapt to changes in requirements and environment.

In short, the activities' goals may be summarised in some categories:

- pursue superiority in strategy execution;
- build and maintain a transparent communication system in which sustainability, responsibility and accountability are promoted;
- promote a culture that consider, evaluate and take risks;
- equilibrate the whole portfolio against risk;
- obtain and maintain engagement with key stakeholders and top executives;
- constant monitoring of the alignment of efforts with company's strategy;
- ensure that the right resource is available and applied to the right project.

In order to better explain portfolio management practices is advisable to expand more the relation between portfolio, organizational strategy and business execution.

2.3 Relationship with internal decisional levels

At the top of the hierarchical organization pyramid (2.2) there is the vision of the company. The vision is generally composed by one of few sentences and can be easily understood by everyone. The vision represents where the company sees itself based on the chosen strategy, it's a declaration of the company's objectives to guide its internal decision process.

At the second level there is the mission that represents a statement about why the organization exists, the operations goals and the market positioning. Vision and mission generally does not change during time because they define and distinct the organization and create a "brand".

Both vision and mission define the decision-making processes at the executive level and drive the creation of the organisational strategy and objectives. The objectives are derived from the strategy goals.

On the fourth level there are the portfolios that ensure that the strategic objectives are met and in what way they are realized. For example a strategic goal could be to capture a bigger market share, this goal could lead to the objective consolidate the market position and the portfolio associated could be a new product line.

At the same time the portfolio has to deal with ongoing operations, programmes and projects, that are the lower levels of the pyramid.

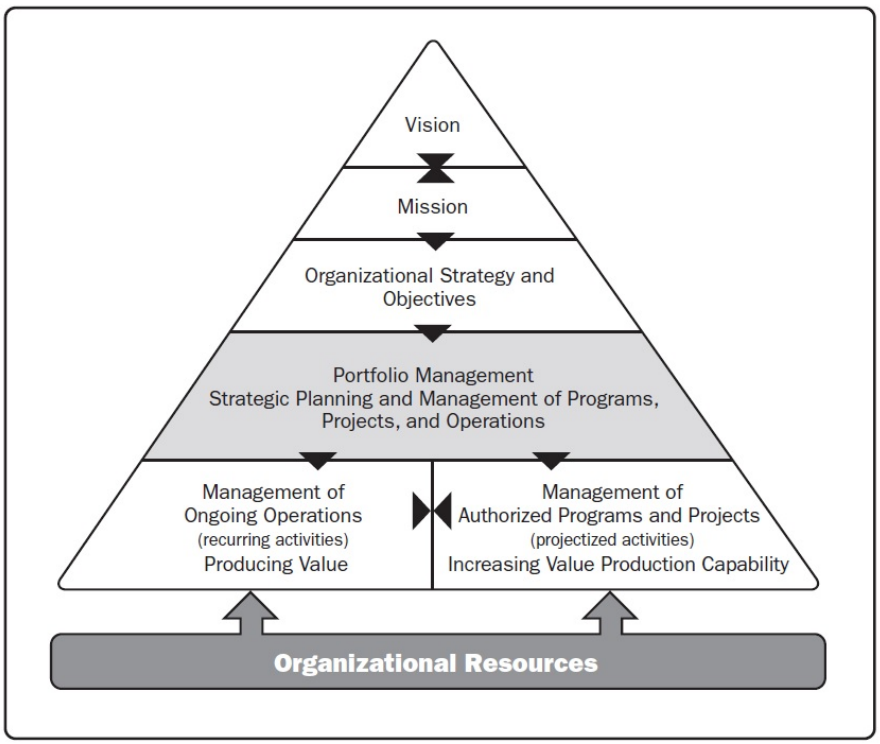

Figure 2.2: Hierarchy between portfolios,programmes and projcts, [2] ch. 1.8

2.4 Organisational project management

Projects, programmes and portfolios are integrated with the organisational project management (OPM) framework and they strive to achieve the company's strategic objectives. Once an element of the portfolio is approved the corresponding program or project manager would take control of the element and apply monitoring and control practices to ensure that the actual performance reflects the planned one and reports to the PPM giving feedback in an ongoing way. Consequently, PPM needs to confront with an information overload without adequate actionable insight.

In order to understand such a complex environment that includes interests that often overlap of are in conflict, a wider perspective must be adopted. The PPM must be in the position to predict the future performance of the portfolio in order to take

preventive decisions and therefore, he should focus on the system as a whole. To this extent, the goal is integrate the portfolio with business execution and organizational strategy to generate an equilibrate feasible plan that will support the organization to achieve its goals.

The connection between the portfolio and the organisational strategy is profound and its regulated through six management domains listed below in the graph.

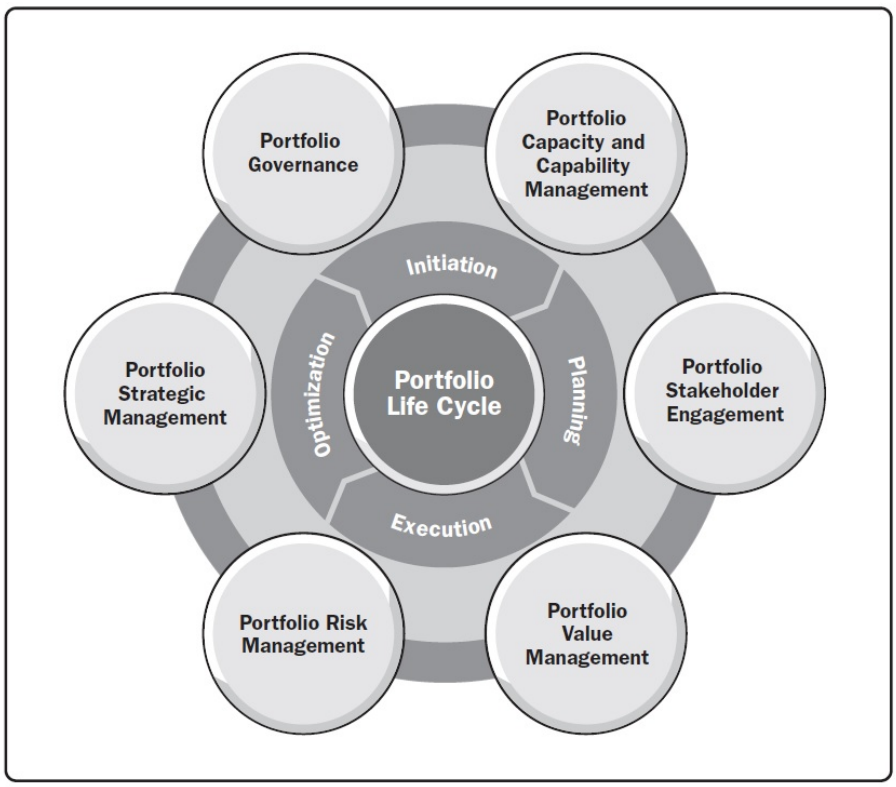

Figure 2.3: Portfolio management key areas, [2] ch. 1.8.2

These six domains represent a collection of good practices that should be applied. As for projects and programmes also portfolios go through a life cycle composed by: initiating, planning, execution and optimization. During the application of these stages the PPM must take into account the every domain and must adapt the decision-making process to the continuously changing environment.

2.5 Portfolio life-cycle

The constant request to be flexible and adaptable in order to promptly respond to changing requirements and the necessity to remain competitive and financially stable in the market from the organization is translated into a series of processes collected in the portfolio life-cycle. These activities represent an ongoing effort to manage the portfolio (and its components) within a time frame. Evaluation and approval of portfolio elements is part of the life-cycle and are included in the periodic planning and strategic review (annual or quarterly). Once the portfolio has been launched, unless modifications are requester to comply with changes in the organisation, the management is an ongoing practice. Performance measurement and value-added metrics represent the main activity during the implementation.

The phases are not necessarily performed sequentially but a portfolio could undergo various iteration of planning and then proceed into the execution phase. At the same time phases may be applied again when a change in the portfolio is required after a periodic review (i.e. new government regulation).

2.5.1 Initiating

The first step in the realisation of a portfolio is the initiating phase. It sets the ground, the approach and the guidelines for major processes that will structure how the portfolio will be managed.

The main goal of this phase is to determine and validate the business requirements and the strategy of the organisation, evaluate and prioritise the element of the portfolio and define a long term road map. The road map may define the governance structure,

the communication framework, the portfolio metrics and the risk threshold.
Activities included in this phase could be (but not limited to):

- Strategy and management plan;
- Governance and communication planning;
- Selection and prioritisation criteria;
- Portfolio charter;
- Performance metrics;
- Road-map.

2.5.2 Planning

During the planning phase the portfolio management plan is developed further. The first aspect considered is the understanding of the dependences of the portfolio components as well as the resources needed and the related budget. Later the risk assessment is performed and a response plan is produced. At the same time some confirmation and refinement activities are executed. The governance is reinforced, accountability is promoted, component's scope is revised and metrics are determined. Together with the metrics, periodic goals and objectives are set.
A possible list of the activities performed might be the following:

- yearly goals planning;
- governance framework revised;
- capability and capacity planning;
- strategic alignment reviewed;

- metrics determined
- road-map revised;
- periodic time frame.

2.5.3 Execution

The execution phase deals primarily with the realisation of all the deliverables of all the components of the portfolio, managing the resources available. At the same time a great management effort is needed to predict risks and solve issues. During the execution a clear and efficient communication system between all the parties involved must be maintained with particular focus to the monitoring and controlling reports. Thanks to the latter promptly changes can be put in place to deal with the changing environment, re-evaluate the priority of the subsidiary portfolios and components might be needed.

2.5.4 Optimisation-monitoring and control

In order to exploit all the potential of a portfolio the PPM must ensure that all the resources (material, financial and human) are always applied to the appropriate task and that the portfolio is maintained efficient and effective levelling resources, constraints and opportunities. At the same time the monitoring and controlling activities are crucial to evaluate when and if some changes are required in order to better deal with the environment and the requirements. This, often requires documentation, communication and execution.

2.6 Portfolio management key areas

As mentioned in 2.4 a portfolio has several aspects that must be managed. The interconnection between the management domains is fundamental to the success of the portfolio, they are hereby listed and explained in detail but it is noteworthy that during day to day activities the distinction is not sharp and they overlap while applying processes.

2.6.1 Portfolio strategy

During the initiating phase the PPM has the duty to list, evaluate and prioritize the collected projects and decide what to include inside the portfolio. Along with several factors the PPM has to consider the company's strategy. As previously mentioned in 2.3, the company is driven by its mission, that is ultimately translated into objectives. The portfolio strategic management is the set of activities that ensure the alignment between the components of the portfolio and the senior managers and stakeholder expectations. Practically speaking it can be summarised with the question: "are we developing and executing the right projects?".

According to [5], one of the main cause of poor performance of a portfolio resides in the absence of a link between strategy and project selection. As stated by S. Kaplan and P. Norton [6] an efficient and effective instrument that helps aligning the strategy with goals and ultimately with projects is the balance scorecard (BSC). In their opinion a reliance only on financial indicators could incentive processes that sacrifice long-term vision for short-term objectives. The BSC relies on lead and lag indicators to promote a framework for value-creating strategies connecting tangible and intangible assets.

The strategy map (BSC) focuses on four perspectives:

- Financial - profitability and growth (shareholder).

- Customer - value creation and differentiation (customer).
- Internal processes - prioritization of business processes.
- Learning and growth - drivers of innovation, growth and organisational changes.

All the objectives are linked to key performance indicators that are constantly monitored during the execution of the portfolio.

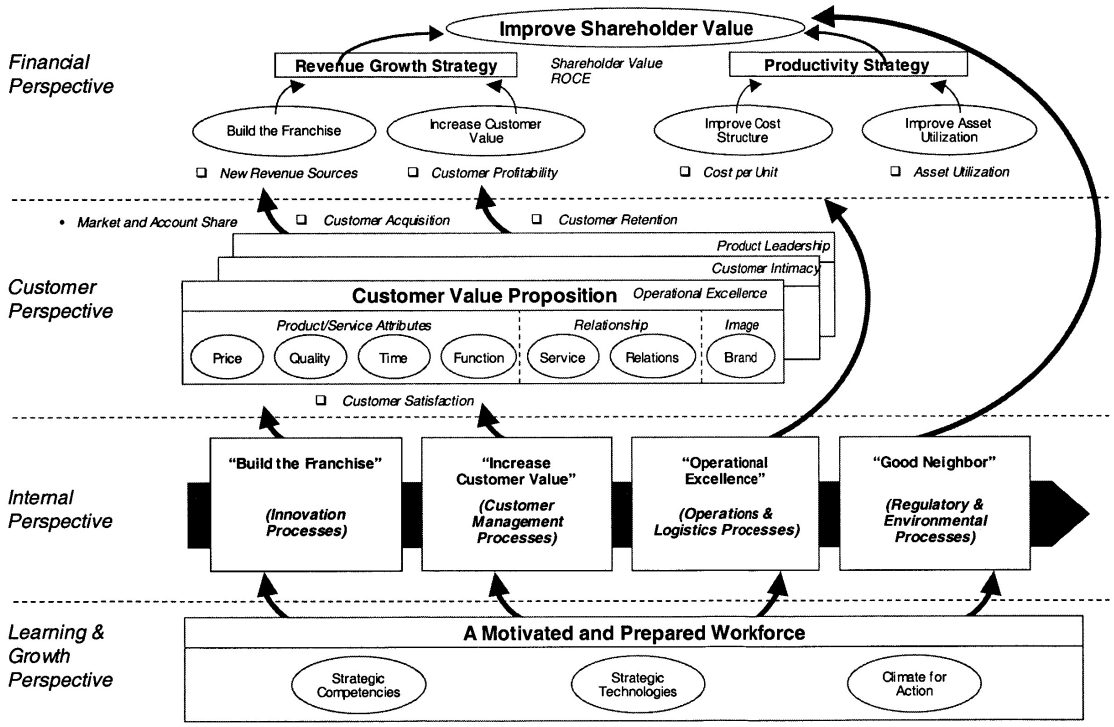

Figure 2.4: Strategy map example, [6]

2.6.2 Portfolio governance

According to [2] the portfolio governance is a collection of activities and functions implemented in the organizational company's framework that are developed following a set of norms and rules in order to support the portfolio during day to day practices and to support the decision making process. The concept of governance can also be considered as a frame for controls and process relationships.
The framework comprehends:

- decision making - deals with management authority and its levels along the portfolio components.
- integration - supports the execution of strategic alignment processes.
- control - provides guidelines for monitoring, reporting and controlling during the life cycle.
- oversight - promotes leadership principles and proposes the direction for the portfolio and its components.

The structure established should support the team in avoiding and/or resolving conflicts, issues and misunderstanding that could emerge during the life cycle of the portfolio. When developing the infrastructure several factors must be taken into account, such as: legislative and regulatory environment, decision making hierarchy and alignment with organizational governance and culture.
Generally it is possible to highlight some roles inside the portfolio governance framework, those are: the sponsor, the governance board and the audit organization.
The sponsor is often an executive member of the governance board and has a direct role in managing the organization, he has the responsibility for the achievement of

the portfolio objectives, goals, the alignment with the strategic vision and frequently acts as the chair of the board. At the same time the sponsor ensures the approval of the funds, the resources and manage the relationship between the top executives and the portfolio team.

The governance board reinforces the governance framework increasing the probability that the portfolio, the programmes and projects follow the established governance principles. The board is often composed by executive level stakeholder who have insight and decision making authority. This role covers a vast range of activities that also include management responsibilities. Some of them are: ensuring the alignment with the strategy, component selection, prioritization, definition of key performance targets, determining the risk/financial investment/return and resolving issues and conflicts.

Finally, the audit organization body that could be internal or external, is the responsible for the definition and planning of audits, both at portfolio and components level. Even tough audits are viewed as a time consuming endeavours that overload the components, they are a precious occasion for identify risks and reduce the amount of corrective actions needed.

2.6.3 Portfolio capacity and capability

The balance between capacity and capability covers an important role in the portfolio management of an organization.

According to [7], the capacity corresponds to what an organization can accomplish using the available resources, whether the capability refers to what the organization could do potentially. The resources are both human, financial, intellectual or other asset owned. The strategic planning, monitoring and optimization of the resources is

fundamental towards realizing the expected value of the portfolio.
These activities must be performed through the whole portfolio life-cycle in order to maximise its potential and the success probability. When selecting the components and prioritizing them, the portfolio manager must look for elements that not only meet the strategic objectives of the company but also are reasonably achievable considering the resources available. Consequently, the balance between the capability to reach strategic objectives and the capacity to fulfil individual components is crucial.
A possible way to balance the portfolio is by using the right mix of components in terms of: dimension, duration, resources required, forecast risk and benefits. For example an unbalanced portfolio composed mainly by long-term projects could lead to cash-flows issues.
The primary functions of this key area are:

- Capacity Management - it guarantees that the demand of resources of the portfolio and its elements it is constantly and efficiently met, without waste or unused resources.

- Capacity Planning - It establish the resources needed by the portfolio by measuring the component's requirements and comparing them with the available resources in the organization. It includes: Estimate future capacity requirement, evaluate existing overall capacity, ordinate resources into pools, set utilization percentages and identify resource gaps by resource gap analysis.

- Supply and demand management - Supply and demand curve help to predict the resources needed throughout the portfolio life-cycle. To determine the curves the component's requirements must be evaluated and several analysis must be performed like: Scenario analysis, qualitative and quantitative analysis and risk

analysis.

- Demand optimization - The demand must be monitored during the portfolio execution and it is fundamental that the resources are allocated to the right project at the right time.

- Reporting and metrics - Metrics, key indicators, patterns and trends must be developed and recorded. They contribute to create an historical database for future applications.

- Capability assessment - research to assess the strengths and weaknesses of the organization in terms of resources. Strengths can be leveraged to establish a competitive advantage while weaknesses lack development and must be enhanced.

2.6.4 Portfolio stakeholder management

In order to implement correctly the strategy and maximise the probability of success of the portfolio it is necessary to determine all the individuals or organizations that are involved directly or indirectly to the portfolio. In other terms all the individuals or organizations that affect, are influenced by or feel themselves concerned must be considered as stakeholders.

The most important part of this group of activities is the communication management, that is composed by a communication management plan and the dissemination of information among the stakeholders. The communication strategy is developed in order to obtain all the information needed to make effective decisions, fulfil the stakeholders' needs, promote transparency, accountability, responsibility and fairness. Key steps in the stakeholder management area are:

- Identification and analysis - Determine the stakeholders involved, the grade to which they are involved and importance. The focus in on stakeholders at the strategic level.
- Engagement planning - Determine the structure and the modality of the communication plan in order to facilitate the exchange of information and the periodic review of the portfolio to ensure alignment and proper execution.
- Engagement activities - Distribution in a timely manner of portfolio/ portfolio components assessment, current performance and issues/risks.

Stakeholder Groups	Stakeholder Roles	Stakeholder Interests	Stakeholder Expectations
Portfolio Sponsors	• Provide funding • Provide resources • Provide high-level scoping	• Benefits and outcomes that meet the organization's goals	• To be informed regularly of portfolio return on investment, key portfolio milestones, risks, costs, and schedule
Portfolio Governance	• Oversees the portfolio • Sets priorities • Manages the spending • Reports progress • Manages timely delivery of benefits	• Portfolio performance • Governance decisions • Change decisions • Concerns of sponsors and governing body	• To be the most knowledgeable party of portfolio progress against goals • To be aware of all developments of consequence
PMO	• Ensures that portfolio management best practices are being followed	• Project progress • Lessons learned • Developing PMO materials for future use	• To receive notification of all portfolio changes and portfolio needs
Contract Management Team (vendors, legal)	• Ensures that funding is intact • Manages the contract • Ensures efficient availability of contractor staff	• Financial standings • Project progress • Contract impacts and changes	• To be made aware of progress against contractual deliverables • To be made aware of any changes to the contract including increased resource requirements
Portfolio Component Teams	• Report progress and completion of components	• Portfolio changes • Portfolio risks and issues	• To receive notification of all portfolio changes, risks, and issues
Portfolio Manager	• Establishes and implements portfolio management • Ensures proper communication and coordination among components • Designs and improves appropriate processes • Adjusts portfolio components • Communicates with the portfolio governing body	• Alignment of the portfolio with strategic goals • Creating value for the organization through balanced portfolio components • Effective communication between portfolio stakeholders and component managers • Efficient use of portfolio resources	• To be fully informed of organizational strategic goals and objectives • To be provided with sufficient resources for portfolio components • To be empowered to communicate with all portfolio stakeholders
External Stakeholders	• Stay informed of the funding and direction of the portfolio and its component(s) • Execute work decisions based on the progress of respective components	• Effect of portfolio and component execution on their requirements and interests	• Full and open communications on portfolio and component execution and progress • Appropriate consideration of their interests and concerns in the implementation of the portfolio and components

Figure 2.5: Stakeholder interest table, [2]

2.6.5 Portfolio value

The value of a portfolio can be seen in different ways and it is contextual. It can be defined as an indicator of the impact that an organization delivers and can be tangible or intangible. Examples of tangible values are economic value, market share and client satisfaction while examples of intangible values are brand awareness and organization's reputation.

Value management activities must ensure the alignment of the investments with the organization's strategy, balance the portfolio value against excessive risk, maximize the value and ensure that it is realised. In order to determine the value produced some metrics are required, and must be chosen accordingly to the value (tangible/intangible) and sometimes the measuring process is not straightforward.

One of the main activities in this group is the negotiation of the expected value. This task must be performed both at strategic level, considering the portfolio as a whole and establishing the expected return but also at the component level, where each component expected value is set in order to better achieve the overall expectations. This process is fundamental and allows to have a balance between expectation and risk appetite, avoiding the risk of underachievement. Some specific analysis must be performed as: trade-off analysis, market pay-off variability, time-to-market variability and the efficient frontier.

Once the expected value is set the portfolio team tries to maximize the ROI of the portfolio lowering the cost, without affecting the value. It is common and easy to focus on the costs, loosing the main aspect that is the value and jeopardizing the portfolio results.

Later the value must be realized, monitored and reported, highlighting the variance with the forecast plan.

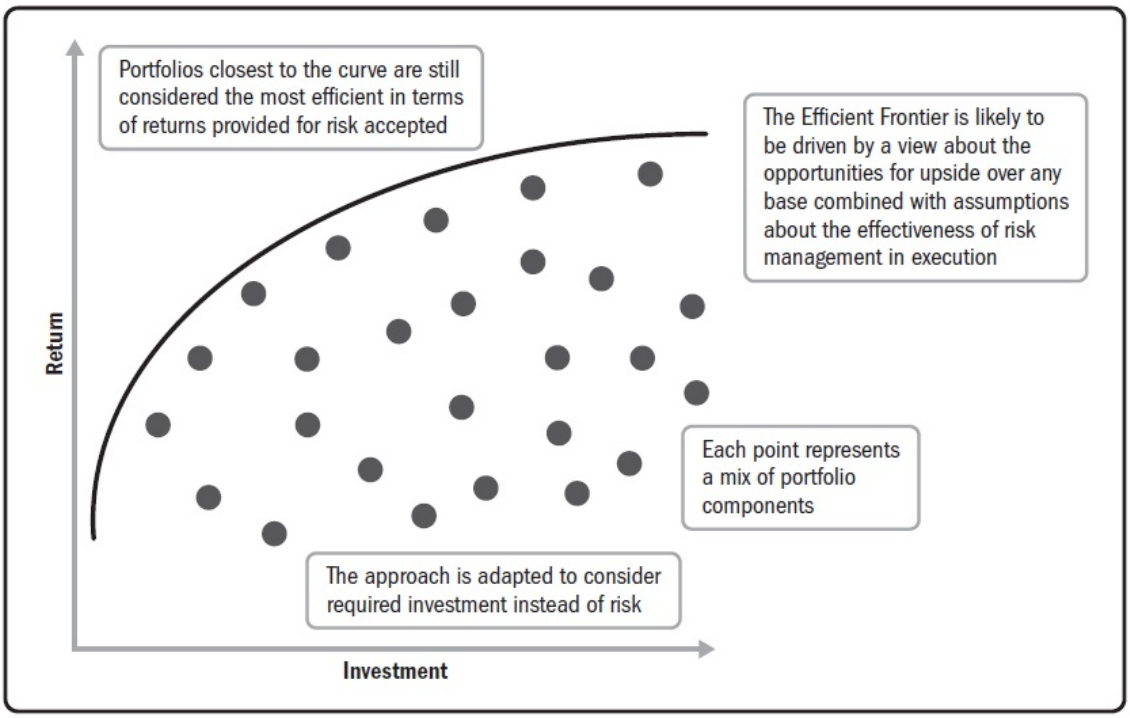

Figure 2.6: Efficiency frotier analysis, [7]

2.6.6 Portfolio risk

Risk management covers one of the most crucial activities within portfolio management practices. At portfolio level risk must be dealt with a different approach than at program or project level. The intrinsic complexity of the portfolio requires not only the need to exploit opportunities and minimize threats but also a wider view that includes organizational strategy, risk attitude and environmental factors.

The aim of portfolio risk management is to meet the value proposition of the portfolio, while at the same time ensure that the risk is aligned with the organizational threshold that means maximize the risk reward in order to increase the value delivered but maintaining an acceptable risk level.

At the portfolio level is required an effort to look beyond mere metrics, since often the portfolio manager has to rely on perceptions. The PPM has to promote a culture

that embrace risk, such as entering more quickly in a new market or investing in a new product development in order to exploit new opportunities and maximize the reward.

As the value and the complexity of a portfolio increase, so does the impact or the risks. The portfolio manager should take into consideration the effect of low probability but high impact threats like a collapse of a financial sector, a new standard or a pandemic as just happened.

In some cases the absence of an effective deterministic approach leaves open uncertainties that make the decision making process harder and limit the strategic response. Often several sub-optimal options (various strengths and weaknesses for each solution) are available and there is no unique approach that maximise the outcome. Numeric approaches as EMV (earned monetary value) are generally used when a choice between options must be made. The difficulty is further increased by the lead time required by the responses strategies in order to anticipate the risky event in order to maximize the benefit (opportunity) or minimize the threat. There are four determinant activities in the portfolio risk management group: risk planning, risk identification, risk analysis and risk response.

2.7 IT Portfolio features

The essence of an IT portfolio could be summarised in the expression "flexibility and adaptability". While standard portfolios are created and executed to fulfil a specific need, for example a car manufacturer could develop a portfolio to target a particular market segment, minimizing the risk and increasing the return, IT portfolios are built on changing needs and shifting objectives.

In order to better adapt to changing requirements and to realign promptly to the busi-

ness strategy the standard waterfall methodology (requirements, design, implement, QA, Rollout) has been substituted. IT project's functionalities have been divided in release cycles and an iterative approach is used 2.7.

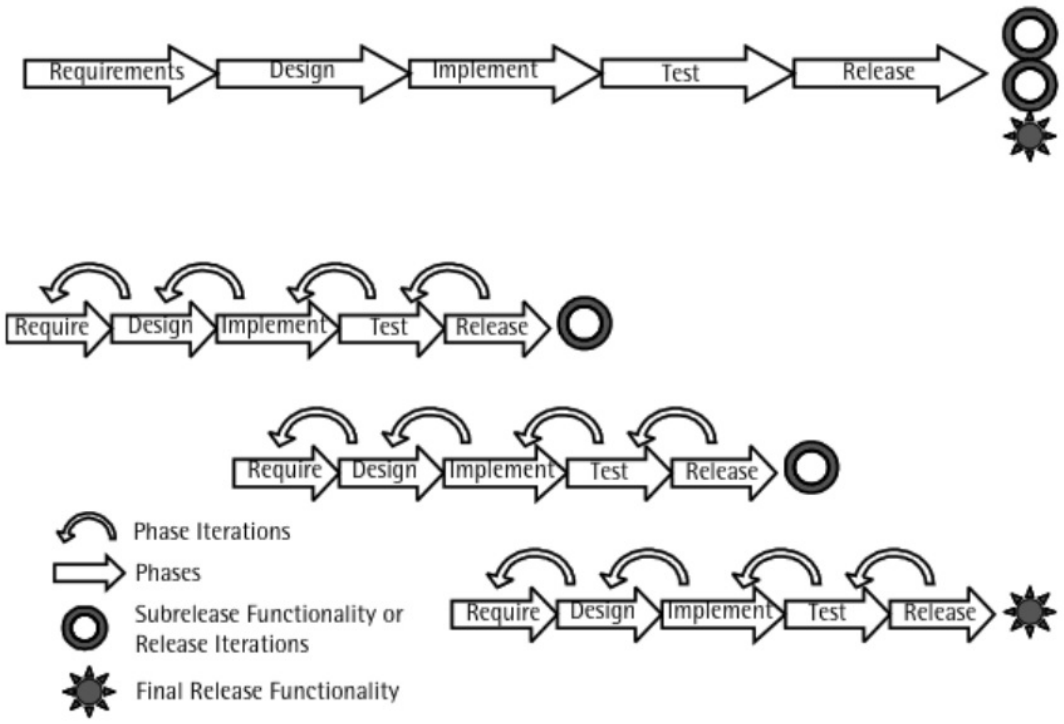

Figure 2.7: Division of the funcitonalities in release cycles, [8]

This iterative approach, combined with the release cycles allows the portfolio project manager to timely react to environmental and strategy changes and align again the projects with the new requirements as in 2.8

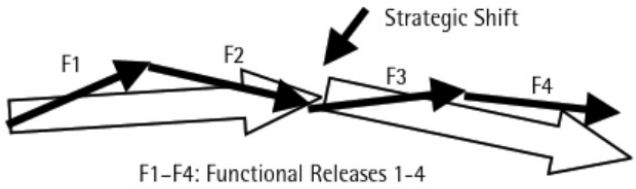

Figure 2.8: Stretegic re-alinment with release with split functionalities, [8]

To this extent, IT portfolios can be adjusted in scope rather than closed if environmental changes are experienced. Furthermore, this approach facilitates the management of big projects with a lot of functionalities to be developed.
Common use in the IT sector is the mantra that a project that does not supply a solution within six months from the start it will most likely fail. This saying underlines the fact that the environment changes so quickly in a six months time frame that any functionality developed by the project will be based on old requirements.

Chapter 3

Monitoring and controlling activities

According to Rajegopal: "Continuous change is the only constant that will ring a bell with those who are in business today" [9]. Continuous change is intrinsic in the nature of a portfolio of projects. The environment in which projects are developed borrows almost on a daily basis. For this reason the organization must react in a timely manner and adjust the portfolio activities.

Diverse factors, both internal and external could influence the multi-project environment: a new technology may cancel the planned benefit of some projects, other projects could not provide the same level of planned value or loose the alignment with the organisation's strategy.

Since the main goal of portfolio management is to maximise project's value added (and consequently the portfolio's value) and thrive the organisation to reach its strategic goals, it is crucial to address the main aspects that must be analysed during the monitoring and controlling activities, highlighting the main issues and addressing them in an adequate way. Noteworthy is to stress out that monitoring and controlling activities require an ongoing effort throughout the life cycle of the portfolio, following an iterative procedure, including after the realisation phase. Furthermore according

to Elonen and Artto [10], if the organisation for some reason fails to put in place an effective and efficient monitoring and controlling structure and consequently does not measure the project's performances, projects are more likely to be kept in place even when it is clear that they will not provide the expected benefits.

3.1 Benefits of a structured system

Even though it could seem obvious that a structured monitoring and controlling system has a positive impact on the success of a portfolio of projects, sometimes it results difficult to measure and quantify an outcome of an activity performed, especially when evaluating aspects as alignment with the company's strategy or assessing the quality of the deliverables.

De Reyck and Grushka-Cockayne [11] developed a study to assess whether or not there is a correspondence between the implementation of PPM processes and an improvement in the performance of the portfolio.

The study addressed two major research questions:

1. Improve PPM practices reduces project related problems

2. Improve PPM practices boosts the performance of the portfolio.

According to the literature [11], understanding the progress that portfolio is making towards the achievement of the goals and objectives, and establishing confidence in achieving a desired objective are two of the major steps to ensure the success of the portfolio.

The result of the preliminary survey conducted by De Reyck and Grushka-Cockayne to evaluate the diffusion if PPM activities shows that only 50% of the companies object

of the research have a centralized tracking of the benefits of each project. Positive instead, is the data about the periodic re-assessment of the overall portfolio: 75% (at least once a year).

On the contrary, the fact that only 29% of the participants use a specialized portfolio management software to keep track of the progress opens a possible research topic about the efficiency of the various monitoring and controlling mechanism (3.2).

Three stages of optimisation has been analysed:

- Stage I: Very few processes to optimise the portfolio are in place. Some effort is spent in generating regular project portfolio reporting.
- Stage II: Frequently have regular project portfolio reporting and annually, or more frequently, the overall project portfolio is prioritised.
- Stage III: In general, processes to optimise the portfolio are frequently applied. Project outcomes are always compared with the original targets and project benefits are frequently centrally tracked.

According to fig. 3.1 it is evident the benefit of the increased level of the optimisation processes put in place on a project issues level (higher value = higher severity of the issue). A cascade effect is registered: a more clear communication and an increase in coordination between projects reduce the conflicts between projects and increase the alignment with the organization's strategy. In all the area proposed the benefits of an higher level of optimisation are clear, with an incredible improvement in the one highlighted before.

Nonetheless the application of a stage III structure, some areas still appear critical for the organisations at a project level. Late delivery of projects seems to remain a strong issue and requires a further analysis. The reasons behind the late delivery of

a project even though related directly to the PPM practices put in place could be various and not always under strict control.

On the contrary, the resistance to organisational change is strongly related to internal factors and must be addressed with dedicated activities aimed to establish a culture open to change, risks and flexibility.

The section too many projects and people constrains instead are, in the opinion of the author, related. When projects are not strategically selected, effectively prioritized and a systematic period review in terms of alignment and accountability is not performed the organisation will experience a people constraint. The constraint is not often related to a lack of resources but to an excessive number of projects.

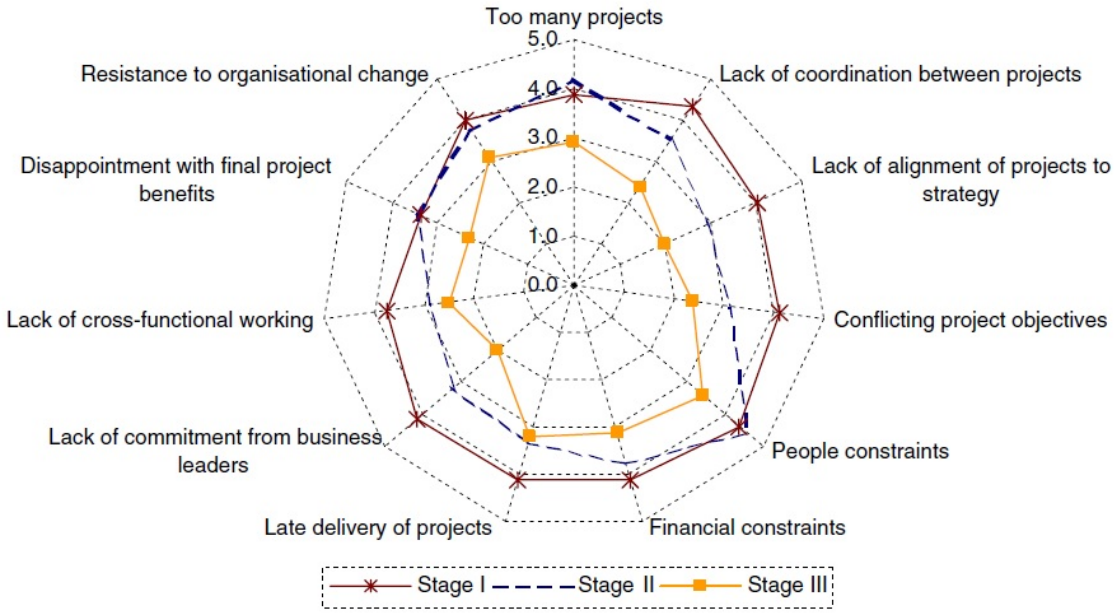

Figure 3.1: Map of project issues per stage of PPM application, [11]

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In figure 3.2 instead it is possible to see how an established monitoring and control system is reflected at the portfolio management level.

The main improvements are found in "high management level activities" such as : Lack of commitment of business leaders, lack of appropriate way to measure project benefits and lack of a clear company strategy.

A structured PPM approach drastically reduces the severity of the challenges previously mentioned and in the author's opinion reveals a relation regarding the activities in charge of the project portfolio committee that could be further analysed.

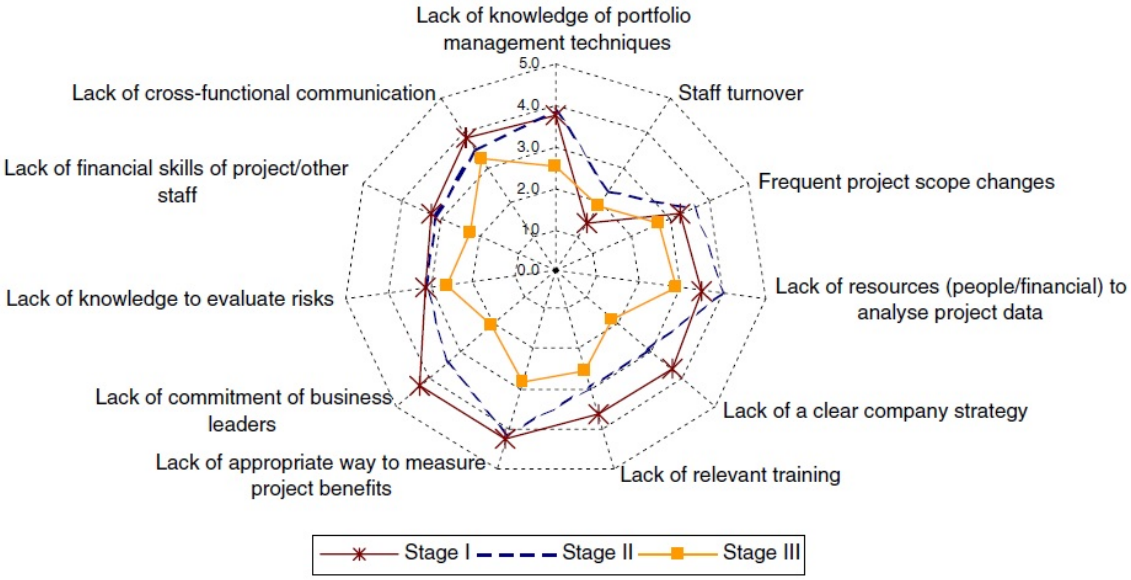

Figure 3.2: Map of portfolio challenges per stage of PPM application, [11]

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3.2 Formal and informal mechanisms

According to the PMI Standards committee [13], control is defined as: "the process of comparing actual performance with planned performance, analysing variances, evaluating possible alternatives and taking appropriate corrective actions if needed".
When dealing with a complex environment like a portfolio of projects a broader interpretation of control activities must be used since desired outcomes, guidelines and corrective actions are not unique and trivial to measure and implement.
For these reasons the model proposed by Laurie S. Kirsch [12] seems to better fit the needs of a dynamic and elaborate environment of a portfolio of projects.
The model presents four types of control: behaviour, outcome, clan and self. The first two fall within the "Formal" category while the last two in the "informal" one.

3.2.1 Formal mechanisms

Behavioural controls aim to implement specific procedures and rules which could lead to the desired outcomes if implemented. Obviously, behavioural controls can be put in place only when appropriate successful behaviours are known or when are observable to the controller. This is the case of the Project management office (PMO).
Outcome controls instead, focus on the products of an activity. Performance targets, interim milestones or specific project goals are viable options. Controllees are then rewarded or sanctioned for meeting or missing the target. Outcome controls can be easily implemented when outcomes are measurable and observable. In this category the major control method is the Earned Value Management (EVM) that measures time, cost and scope of the project/portfolio.

3.2.2 Informal mechanisms

Formal control mechanisms tend to represent control processes under a numerical and mechanistic point of view, ignoring self regulating human dynamics or interpersonal relations that are also determinant on the behaviour and consequently on the outcome.

Even though informal control are often unrecorded and differ in terms of application and aggregation level their impact can not be neglected. According to [12] informal control are divided in group and individual level.

Group controls are put in place by promoting common values, beliefs and ideology within a group of individuals who share common goals. Instead of requiring employees to follow a written set of rules, interpersonal processes aim to identify and reinforce acceptable behaviours, especially when goals or objectives evolve during time. Self-management control practices instead, aim to set individual goals and self-rewarding/sanctioning processes creating intrinsic motivation. As for group control mechanisms individual ones are also often undocumented.

3.3 Key factors

This chapter aims to analyse the current literature to establish what are the main problems and problem areas in project portfolio management, with a particular focus on monitoring and controlling section.

Later in chapter 4 the findings are compared to the ones experienced in a real case scenario and the differences are highlighted.

The literature analysed is mainly focused on what are the main goals of portfolio management activities; only a minority of the articles and books focuses on the prob-

lems that could be faced during the execution and the monitoring of a portfolio of projects. Furthermore, even in the ones the research the critical aspects that must be managed during the implementation phase, the focus is always on doing the projects right instead of doing the right projects.
According to Cooper R. [14] the main goals of portfolio management are:

- Maximizing the value of the portfolio;
- Linking the portfolio to the strategy of the organization;
- Balancing the portfolio.

It is determinant to keep in mind the goals when making decisions during the implementation and monitoring phase while dealing with problems and issues.
In the same article Cooper R. proposes a list of critical areas that are shared between the organizations in his study.
The list is composed by seven key points here reported.

- **No link between strategy and project selection**: often the spending of research and development departments for new products or for new processes does not reflect the organization's strategy. Some companies experience a lack of strategical focus during the selection of the projects that pass the bar for a portfolio. The most promising project in terms of performances will not contribute to the company's goals and objective if not in line with its strategy.
- **Poor quality portfolios**: a discrete part of new projects has weak probability of success and is mediocre. Often the project selection criteria is not enough strict to exclude half baked ideas from the pool of competitors.

- **Reluctance to kill projects**: this issue is mainly present during the monitoring and controlling activities. Once a project has started it takes on a life of its own. There is a shared beliefs in some organizations that killing a project is a failure, for the team and the project manager, hence rarely poorly performance projects are shut down during the implementation phase, even if the cause is a new business environment.

- **Scarce resources, a lack of focus**: often portfolios include too many projects with respect to the available resources. Firstly during the project selection and later during the controlling the resources are not balanced correctly. This results in a delay at completion that causes a greater time to market that could lead to lower profits. A capacity and capability analysis prior to the project selection and prioritization would help to have a balanced resources allocation.

- **Selecting short-term and easy projects**: companies sometimes prefer to execute short and easy projects in order to repay the investment in a short amount of time and avoid the risk of a market shift. At the same time by doing so they reduce their competitive advantage and future success potential.

- **Information overflow and lack of quality information**: often portfolio managers are overflown by information during the decision making process and they may not be able to determine the relevant data or the uncertainty in the data collected. Despite a complex and elegant decision making process or tool, the outcome will be poor when the input information is poor.

- **Decision making based on power**: in domains where performances are more difficult to determine and where uncertainty and disagreement are likely, power

becomes important when complex decision are to be made, specially when interdependences are present. Portfolio management activities become not only just a logical and rational decision making process but rather a commitment to generate support and consequently a political issue.

It is evident how the vast majority of these problem areas analysed are directly connected to monitoring and controlling practices.

Starting from the results of the research previously recalled by Cooper R. [14], S. Elonen and K.A. Artto [10] proposed a different classification of problem areas faced by some companies analysed during the implementation phase of a portfolio of projects based on an empirical study. The results show a similar picture but they highlight different aspects that are relevant for a further development in the following section of this chapter.

The problem areas are visible in fig.3.3 with the distribution percentage, outcome of the empirical study.

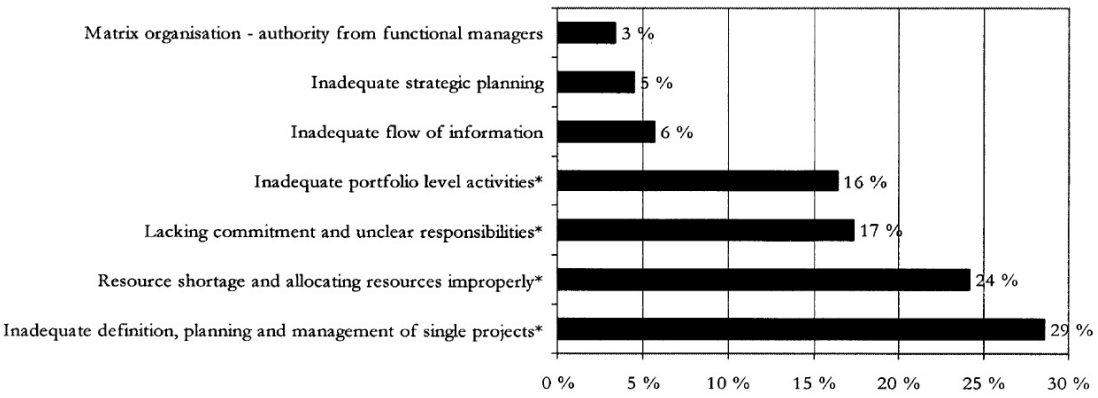

Figure 3.3: Problem areas faced by the analysed companies in the implementation phase, [10]

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The main 4 problem areas are here analysed more in detail.

- **Inadequate definition, planning and management of single projects**: not enough effort is put into the assessment phase of the projects, the scope if not sufficiently detailed and consequently effort estimates, benefits and requirement of the projects are not reliable. Furthermore, the schedules and the resources estimate do not take into account sufficient buffers and often are too strict. Finally, budget consumed in terms of resources is not reported and monitored accurately and periodically. The project's outputs are ultimately not aligned with the objectives because of a changing requirements and environment and an absence of a structure monitoring structure.

  This issue often is experienced when projects are too long and are not broken down to several smaller projects, hence the border are not well defined. The project management activities are concentrated in the hands of few experts and monitoring and controlling of cost and resources is not frequent if no put in place at all.

- **Resource shortage and allocating resources improperly**: there are too many projects that cause a resources shortage. A capacity analysis is not performed and go decisions on projects are made without considering available resources and furthermore projects are not prioritised correctly. Resources are also not assigned efficiently and frequently people are included in the team to ensure commitment rather than add value to the project.

- **Lacking commitment and unclear responsibilities**: Organisational responsibilities are not defined clearly and authority issues between projects are not considered. It is difficult to have an overview of the projects inside the portfolio and to identify overlaps in projects between organisational level an units.

Portfolio managers make decisions also on operational project issues, there are not methods or structured approaches for making decisions at portfolio level. Finally, management is not committed to review the projects regularly, if not for large strategic projects.

- **Inadequate portfolio level activities**: repeatedly projects and tasks overlap both within a unit and units, project's objectives are not integrated into the strategy or into an holistic view. Furthermore, a lack of a structured method for projects selection and prioritization is experienced. A partial cause can be researched in an absence of information about the projects, an absence of a transparent database containing all the projects and a non efficient flow of information between units and levels. The owner of the strategy of the portfolio is not defined and since several bodies inside the organization are allowed to approve projects and allocate resources, the projects are scattered and no integration exists between them.

3.3.1 Monitoring and controlling main problem ares

All of the problem areas highlighted in the literature review are determinant and relevant in ensuring the success of a portfolio of project. The author wants to focus even more on the issues highly connected with monitoring and controlling activities and therefore propose his own model trying to find possible solutions and guidelines for a correct implementation.

Some issues overlap in causes and effects, hence they must not be addressed only individually but also from a wider point of view implementing a 365° solution.

Hereby are listed, according to the opinion of the author, the biggest problems that must be solved in order to have an efficient and effective implementation of a portfolio

of projects.

1. Resource shortage and improper allocation;
2. Inefficient project prioritization and selection procedures during portfolio reviews;
3. Decision making system is not based on quality, reliable, accurate and updated information and data;
4. Reluctance to kill poor performing projects and non structured decision making process;

Resource shortage and improper allocation

Not having enough resources could seem a universal complaint but when it comes to portfolio management it is a real issue experienced by a numerous amount of organizations.

The dynamic of the nowadays market forces the company to strive to maintain their competitive advantage and this need translates to the tentative to go enter in the market with updated and new products. Consequently new processes and products are included in portfolios as new high priority projects.

The issue has multiple causes, from one side it is possible to address the problem to budget cuts that coupled with an inefficient project selection and prioritization compromise the way in which strategic projects are executed, reducing the quality of the deliverable, increasing the go to market time and ultimately lower the expected benefits of the initiative.

On the other hand, resourced are not allocated efficiently partly because of poor portfolio tools and methodologies and partly because of a lack of will from the senior

management to "say no" to some half baked ideas.

The resources balancing has two aspects: from one side project selection techniques (NPV, scoring models etc.) only evaluate projects from a financial point of view, without considering the internal availability of resources and this leads to over-allocating some key strategic members that find themselves crushed between several demanding projects. On the other side the portfolio's needs change constantly and so do the projects requirements with changes in scope and dimension. Consequently the resources must be balanced and distributed at each portfolio review but if needed also on a ad hoc basis.

In addition, even when the resources effort estimate is taken into account during the project selection, rarely is considered the effect of the introduction of that project on the other projects already present.

This implies that resources are assigned to projects without checking their actual workload and this causes an over-allocation of resources that sometimes exceeds 150% or more. The projects in the queue increases in length and so does the individual workload.

In order to meet the deadlines people start to cut corners and execute activities in hustle, the quality of the deliverables start to suffer and ultimately the failure rate of a project (and so the one of the portfolio) increases. Last but not least the full potential of the projects is not exploited. In this way "urgent" activities overcome "important" activities.

Inefficient project prioritization and selection procedures during portfolio reviews

This issue is experienced by organizations both during the initial planning phase of the portfolio and during portfolio reviews during the monitoring and controlling one.

Most project selection, scoring and financial tools compare the projects to a threshold that works as a minimum acceptable value. The problem resides in the fact that often a lot of projects pass the hurdle and are being added to the queue. They are evaluated according to objective parameters but they are rarely rated against one another and consequently there is not a discrimination between the projects. In this way the method fails to highlight top priority activities from the rest and resources might be allocated in a sub-optimal way.

Scoring models usually consider parameters as: market attractiveness, strategic fit, gain in competitive advantage and profit opportunity. All of this are objective criteria and the main issue is that all the projects tend to scale 60 out of 100 and the whole model fails to discriminate in term of priority.

By forcing the comparison between projects it is possible to create a ranked prioritized list with the best projects at the top. Resources are assigned until the business runs out of resources. After that point all the remaining projects are put on hold or killed. Unfortunately frequently these tough decisions are not made by the executives. On the other hand it is common to find at the top of the list big-hit projects and small ones at the end. It is also often the case that big-hit projects require a lot of resources, while other projects, although having lower scores, might be easy and inexpensive to implement. This means that the notion of efficient allocation is missed and "bang-for-bucks" projects are not selected.

A bubble diagram with resources and score on the axes would help to have a general overview of the portfolio and balance the type of projects included.

This issue is faced also during the periodic portfolio reviews during the monitoring and controlling phase. In particular all the projects experience changes in terms of alignment with strategy, scope and dimensions and consequently there must be an

evaluation of all the projects at every portfolio review in light of the changes in order to re-prioritize them and balance the resources assigned.

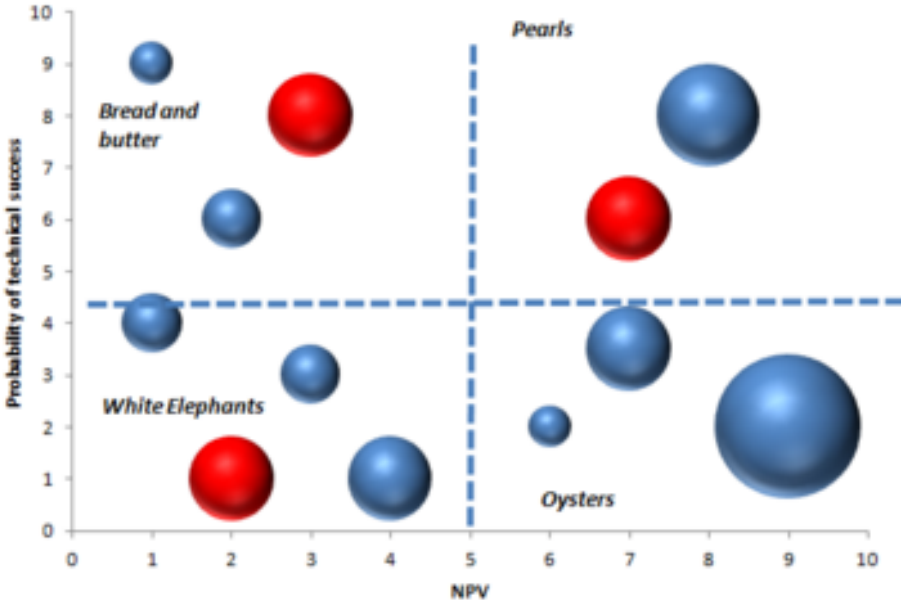

Figure 3.4: Bubble diagram, portfolio balancing method

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Decision making system is not based on quality, reliable, accurate and updated information and data

A lot of effort is put by businesses to build complex and elaborated decision making tools. Nonetheless this development commitment, if the information in input is poor and inaccurate so it would be the outcome.

In order to monitor and control properly a portfolio of projects, the owner and the steering committee must rely on an updated and accurate information system.

Fundamental is a structured reporting system, divided in short and long term reporting from every project manager. The short-term reporting helps the portfolio manager to have an overview of the progress of each project between two consecutive portfolio

reviews or two consecutive project stage gates. Even though the level of information would be higher in the short term reporting with respect to the long term one it allows the management to perform changes in a timely manner or to react promptly to issues that could endanger the correct execution of the project.

The long term reporting instead (portfolio review/stage gate) contains more details and KPIs and set the basis for a deeper review from the committee. Time, cost, alignment with the scope, resources used, remaining budget and a risk analysis represent some of the main features that must be included.

Frequently a structured reporting system is seen by the project managers as an additional workload that does not add value to the project and consequently are reluctant to spend time providing accurate and reliable data, specially when KPIs for the steering committee are different than the ones used in the single project. A strong project management culture helps putting in place a reliable information system.

It is important to promote accountability and responsibility as well as define accurately the deliverables planned for each phase of the projects. If realignment or a change in scope occurs they must be integrated in the planning and managed re-evaluating the portfolio.

Reluctance to kill poor performing projects and non structured decision making process

A lot of organizations share a reluctance to kill poor performing projects or projects no longer aligned with the strategy due to a change in the business or technological environment. This tendency worsen the scarcity of resources and increases the inefficiency of the portfolio since the planned benefits of those projects may not be existing any more.

It is evident how this issue is strictly connected to the first three highlighted in this section. There is a vicious circle where each issue influences the overall performances following a waterfall effect, for example if a decision making process, even when well structured, relies on poor information is not effective.

Often the reluctance to kill project is connected to the association of the "failed" project with the project manager and the related team. The project and the human resources assigned to it must not be merged. Consequently if the business environment changes and a project is no longer required or the benefits are no longer the expected one and it must be killed there must not be any repercussion on the team. On the contrary the project must be used as an experience to which learn from.

At the same time internal power often creates obstacles when making internal decision on projects. The decisions should be objective and not influenced by politics.

Furthermore, and additional study must be performed on poor performing projects, even if they are killed, in order to determine and understand the causes and avoid or solve them in the future.

A structured approach to data, together with a periodic review of the portfolio help to put in place an objective decision making process. A possible example is the "Stage gate" method highlighted in the following section.

3.4 Stage gate methods

A possible solution to some the problems listed before is the Stage gate method. This method is used by a large portion of US based multinational organizations and by imposing a strong structure on the development of new projects, allow them to obtain better quality informations, put in place an objective decision making system and re-evaluate projects at each stage completion.

Depending on the modality used to put the method in place it is possible to strengthen some processes with respect to others.
Cooper G. proposed in his article "New problems, new solutions: making portfolio management more effective" [14] two stage gate methods, highlighting the differences and integrating portfolio management practices. Stage gate processes are determinant in improving the structure or the project development, in particular they define:

- the key tasks, activities and accountabilities for each stage;
- the deliverables needed for each gate decisions. At every stage completion the senior management has to make some effective decisions Go/Kill/Adjust and the team is aware of the objectives for the next stage.
- the criteria against which each project is evaluated from the senior management such as competitive advantage, technical feasibility, strategic fit, market attractiveness but also internal project parameters like cost, time, alignment with scope and budget.

In order to put in place a system that allows the management to deal with the issues listed in the previous paragraph it is necessary to follow two consecutive steps. The first one is to implement correctly the stage gate process and the second one is to integrate portfolio management practices in order to compensate the areas where the stage gate processes fall short: project prioritization and resources balancing.
In fig. 3.5 it is possible to see the typical generic structure of a stage gate method.

Depending on the type, the structure of the company and ultimately the nature of the products produced, different type of stage gate methods can be found but they mainly fall within two categories.

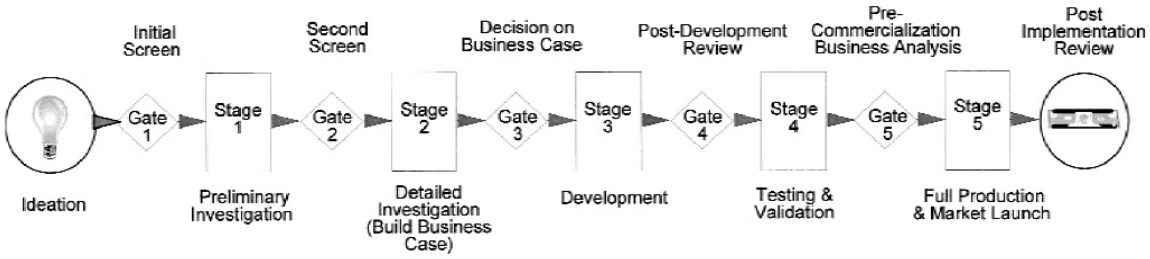

Figure 3.5: Stage gate method structure, phases and gates with senior managements decision steps [14]

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3.4.1 The gates prevail

It is common to find this method in larger companies, science based industries or where projects are complex and lengthy as in the pharmaceutical and chemical industry. This approach is characterized by a sharp decision making process at each gate, where every project is analysed individually.

The senior management executes an in depth review of the project at every stage and compares the project against absolute criteria (the hurdle), then the pass/kill decision is made. In the second part of the gate the project score (obtained with objective standards) is compared to the ones of the existing and active projects and the on hold ones. If the go decision is made, the resources are allocated and the projects goes in the following phase.

At gates, poor performing projects should be detected and eliminated from the portfolio and great ones prioritized and highlighted. In this way the gate becomes a two way decision making process. Decisions and resources allocation decisions are made in real time at each gate but the other projects are not discussed and re-prioritized, only the project analysed is ranked with respect to the others.

The projects are evaluated altogether only during the portfolio reviews, generally held

once or twice a year where the portfolio manager and the committee evaluate if the portfolio is balanced, the right mix of projects is executed, the projects are strategically aligned and the right priority is assigned between them.

If the stage method is implemented correctly, portfolio reviews should be only a mere check and major corrective actions should not be required.

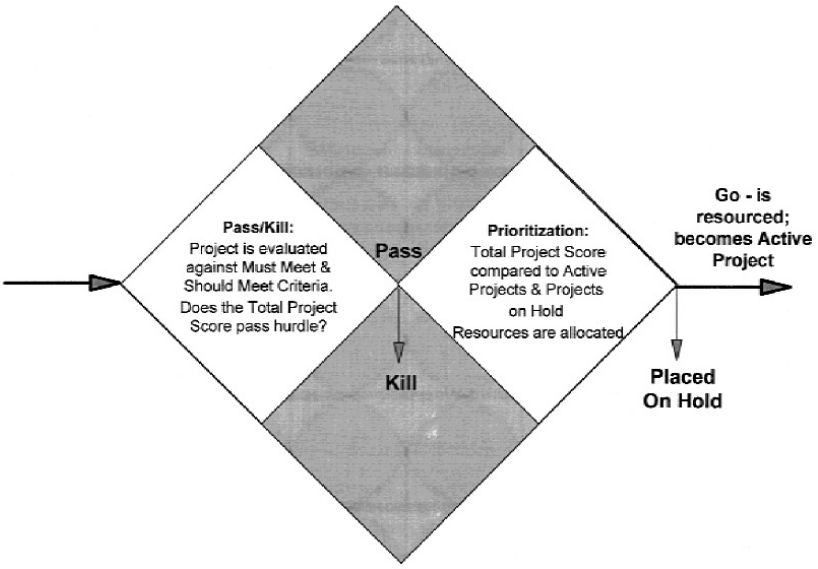

Figure 3.6: Scheme of the gate decision makin process in gates prevail approach, [14]

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3.4.2 The portfolio review prevails

This reasoning behind this approach is completely different from the previous one. The idea is that each project must compete against the others and this decision making process substitutes one gate in the flow.

The committee makes go/kill decisions and prioritises projects during each portfolio review evaluating all the projects together between two to four times per year. All the other gates ensures only that the projects are running according to the schedule, on budget and remain aligned.

The result of this approach is a more dynamic portfolio that better fit continuously changing needs and environment. For this reason is more used by faster-paced organisations like software companies.

On the other end it requires a strong commitment by the senior management during the activities looking in depth at all the projects various times a year.

Even though the tools used to evaluate and prioritize projects are the same in both the approaches, the way in which they are used is different. For example the main difference resides in the stage 2/ portfolio decision meeting. All the new projects that reach stage two and all the existing projects even at following stages are reviewed and compared one against another and go/kill decisions together with shifting of resources are executed. These activities consequently take place during this process (between two and four times a year) and not during each stage and for this reason the portfolio review is more in depth and requires more effort with respect to the first approach.

Following this logic, stages after the second one are merely check points to analyse whether or not the projects are on time, on schedule, that the workload is balanced and that the business case and the environment is still viable.

If this is not the case, the project can be immediately kill at the stage or the decision

can be postponed to the next portfolio review/gate 2.

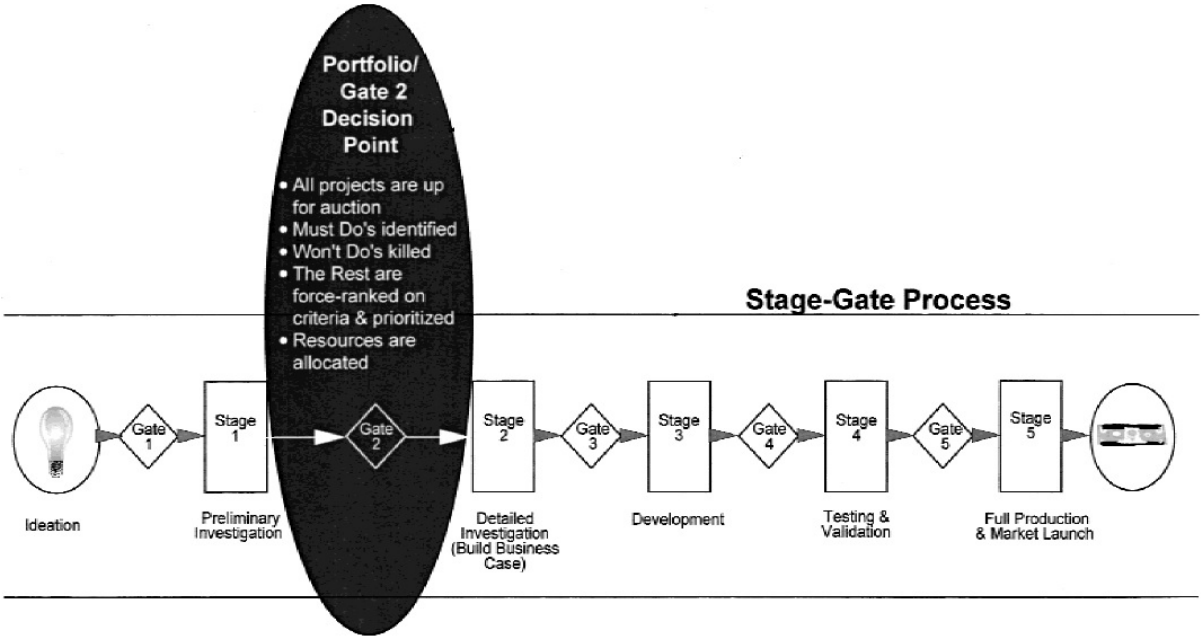

Figure 3.7: Scheme of the integration of portfolio mangement review with the stage gate approach, [14]

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Both approaches are viable options and depending on the nature of the business one outperforms the other.

3.5 Proposed approach

The stage gate method proposed in the previous chapter helps to deal with some of the problem areas highlighted in monitoring and controlling practices but it is not resolutive alone and must be integrated in an inclusive system.

In today's fast paced environment the author suggest the implementation of the second method proposed since it allows the steering committee to have a more dynamic portfolio but at the same time impose a structure to the decision making process.

It is, however, necessary to consider few aspects when putting in place this system. The stage gate process sets a stronger basis for monitoring the performance of the projects during their life-cycle evaluating the defined KPIs at each gate, but also allows the senior management to make go/kill decisions in real time or postponing it to the next portfolio review.

The gates are an opportunity to evaluate the status of the project and if necessary re-align it with the strategy of the organization and consequently maintain a more valuable portfolio. At the same time, the portfolio reviews are a strong tool to prioritize and allocate resources according to the strategy of the company, avoiding the overallocation of the resources and the "mediocrity trap" of the scoring method described before.

The first aspect that must be included is the cyclic-phases concept. Often, specially in highly dynamic projects like in the IT environment, the business requirements change constantly and so the functional specifications that must be developed. For this reason, additional development or testing might be required and this means re-entering in the current phase.

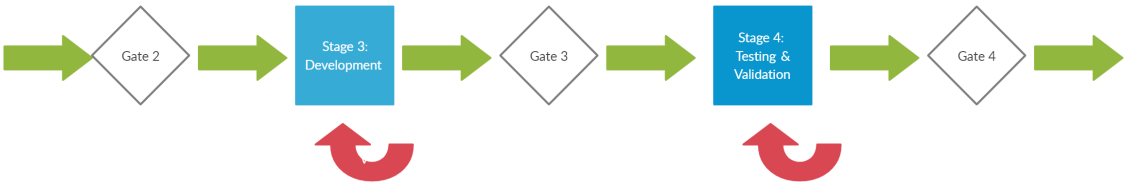

Figure 3.8: Cyclic phase system in a stage gate method

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For this reason, gates should be not only a merely check of the status of the project but an occasion to realign the project with the organization's strategy, to adapt the project to a constantly changing environment and consider the effort estimate in light

of the eventual new requirements in order to ask for additional budget at the next portfolio review.

The second aspect that must be considered is the short term reporting. As stated in this chapter, communication and reliable information are determinant to ensure the success of the portfolio and an efficient reporting system within each phase must be implemented.

A phase of a project could last months and rely only on the stage gate reviews to obtain information and take timely decision could not be sufficient. The management must obtain reports on a constant basis with the appropriate level of detail in order to filter the right information. The reports might include few KPIs established at the beginning of the project, progress updates, issues encountered and highlights. In this way the senior management could evaluate the new environment, prepare the gate following gate review and eventually if urgent, act promptly during the phase execution.

3.6 Lacking points in the literature

While reviewing the literature and developing the proposed model the author experienced a lack of research regarding key strategic performance indicators for a portfolio of projects.

In particular, how do you measure the strategic performance of a portfolio with a quantifiable aggregate indicator, considering the interconnection of the single programs and projects, having in mind the organization's strategic objectives?

Most indicators used in monitoring and controlling activities of portfolios of projects are based on financial factors and often they are based only on the single project performance according to cost, quality and schedule.

Even though it is fundamental to measure and monitor financial and quality aspects of projects in order to evaluate the "health" of a portfolio, the creation of aggregate indicators related to cost, schedule and quality it is not sufficient to describe the success of the portfolio. Aggregate earned value management analysis alone does not keep into account the link between the key benefits of a project with the portfolio's strategic objectives. Consequently, there might be poor consideration of stakeholders' needs and expectations and lack of focus on critical success factors.

Researchers identified some of the reasons why strategic benefits are difficult to appraise as (Giaglis,Mylonopoulos and Doukidis, 1999; Lin and Pervan, 2003):

- They are not immediate to realize;
- They are no easily quantifiable;
- They are interconnected with several factors, rendering them indistinguishable;
- It is difficult to plan when and if they will be realized;

- Actual methods are not appropriate to measure their value.

A first attempt has been made by Hynuk Sanchez and Benoit Robert [15] in developing an initial model based on: the contribution of projects to the achievement of the portfolio's straegic goals and the performance of projects in time. Even though this represents an interest in the research topic, additional effort should be made by researchers in collaboration with organizations to analyse this aspect.

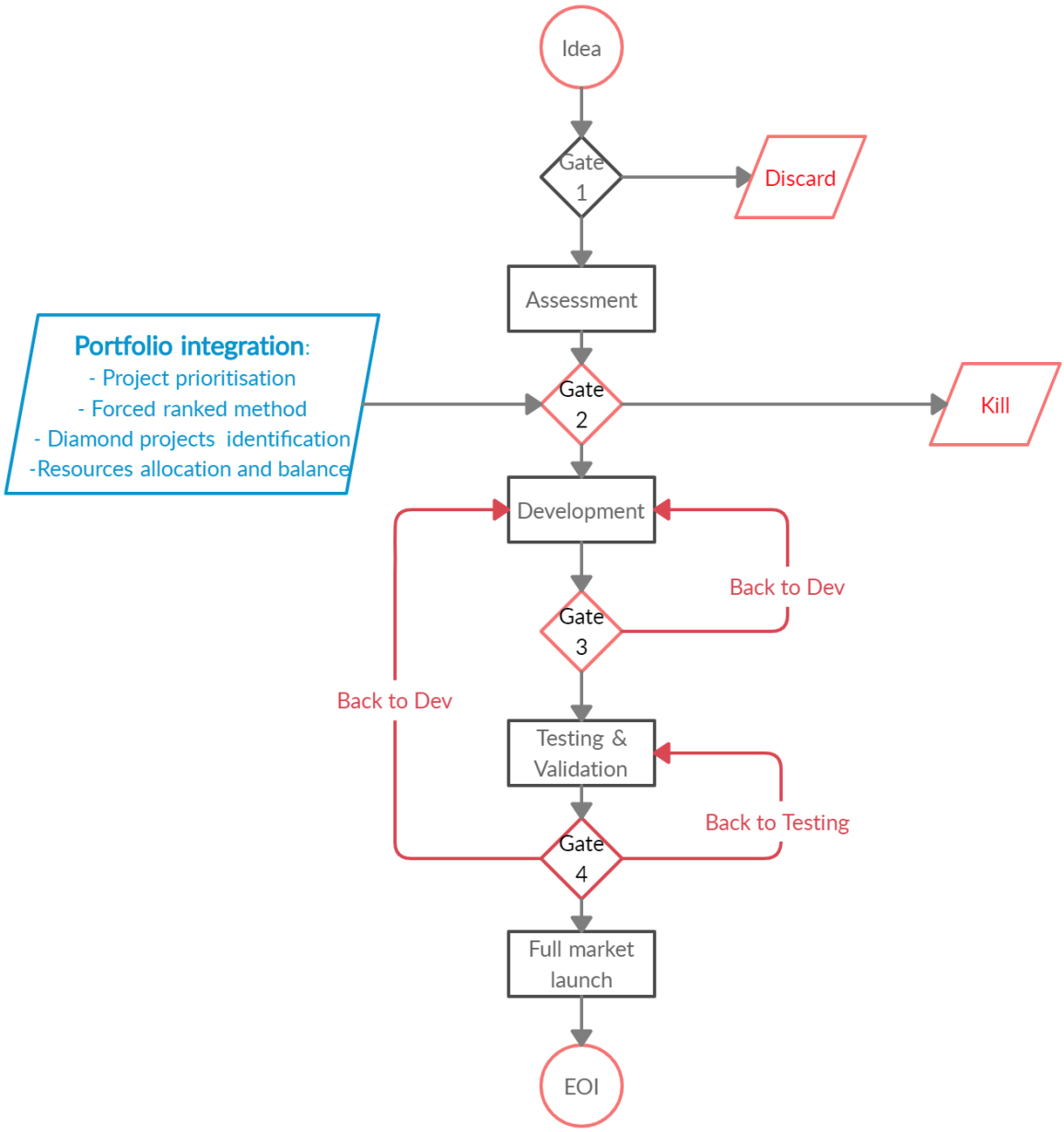


Figure 3.9: Proposed approach integrating stage gating method, portfolio management activities and cyclic loops.

Chapter 4

Case Study - Richemont International

The experience in the IT logistics department gave the author the opportunity to: face in first person the subject researched in the previous chapters, validate the research topic and implement a solution that responded to the business needs.

4.1 Business background

Richemont group (Compagnie Financiere Richemont SA) is an holding company operating in the luxury goods sector and based in Switzerland. It represents the third largest group in the world operating in that sector after LVMH and Estee Lauder with a revenue of 14.2 billion (2020) with almost 30.000 employees. Through the brands owned the group covers different market as: jewellery, watches, leather goods, pens, firearms, clothing and accessories. In 2019 Richemont results to be the fifth larger group in the Swiss stock exchange.

The group has dispersed operations in Europe, Asia-Pacific, Americas, Japan, Middle East and Africa.

The headquarters are in Bellevue (Switzerland) while the IT group functions are in the Versoix (Switzerland) site. Since the acquisition of two big on-line retail organi-

zations (Yoox and Watchfinder) the IT infrastructure has become more and more important and it is used to further enhance the business model and generate long term organic growth, specially in a crisis period like 2020.

Figure 4.1: Most known brands owned by the Richemont group

4.2 IT Logistic Department

The IT department, also known as Geas (group enterprise application services), counts more than two-hundred employees and stretches its activities through different areas. The object of the case study is the Logistic Enterprise section where the internship experience has been developed. The team manages an IT logistic portfolio of projects worldwide that creates and integrates new platforms, supports logistic processes, enhances new facilities and improves the existing ones.

In particular the majority of the projects covers the SAP- ERP/eWM implementa-

tion, integrating brands operations with the group and the third parties logistic ones. The business area manager (BAM) of the division acts as the portfolio manager of the IT logistics portfolio and furthermore as a direct supervisor during the internship. The BAM together with the integration and roll-out manager have the responsibility to monitor and control the projects, ask for revisions of the schedule, budget and ensure the success of the portfolio.

The particular period in which the experience has been developed (Covid-19 lock-down) has been very delicate for the department that had to readjust the strategy and the goals for the year. A new prioritization of the project has been conducted and the resources have been reassigned to strategic projects that could have helped the recovery of the group. At the same time, the new smart-working policies have increased the challenge that the department was facing, increasing the pressure on the system that had to significantly readjust and improve. Nonetheless the inevitable delay in some activities, the division reacted promptly and realigned with the new way of working.

4.3 Scope of the study and Survey design

Considering the remote working polices put in place during this period a survey modality is chosen in order to gather information regarding portfolio management activities with a particular focus on monitoring and controlling practices, validate or reject with experimental findings what is stressed out in the literature review and the model proposed by the author in the previous chapter.

Furthermore, after the result analysis some problem areas present both in the literature review and in the experimental findings are addressed and a tentative solution developed.

The assessment was conducted using a survey composed by multiple choice questions with anonymous responses, in order to require the least amount of time possible from the project managers, guarantee honesty in the answers and increase the response rate. The questions in the survey are divided in thematic areas as: general overview, formal/informal procedures, IT tools, KPIs, critical success factors and problem areas, resources management, rewarding system, managing risk and failures, internal politics and organisational learning.

The survey was sent to the Logistic enterprise and PMO departments for a total of twenty-two members (questions in appendix). The response rate was 50% and consequently eleven responses were collected.

4.4 Survey results

In this section the empirical findings are discussed and divided by thematic area. Comparison with the literature review are made and improvement areas are detected. The analysis starts with a general overview of the implementation status of projects and portfolio management activities and then it moves to more detailed areas.

Implemented practices

The survey shows that the organization has a structured project and portfolio management system in place, although some aspects could be substantially improved.

To start with 81% or the respondents stated the projects are reviewed, balanced and re-aligned on a regular basis with the organisation's strategy. This is determinant in maintaining the portfolio in shape and in ensuring that the value initially planned is still achievable.

On the contrary, the same amount of the interviewees (81%) declared that projects

are reviewed only according to an ad-hoc basis. It is true that each project has its own time line and schedule but at the same time common evaluation points should be considered. Furthermore, only 55% of the project managers are confident that the projects are re-evaluated right after strategic changes at business level and timely actions are put in place.

A combination of formal and informal monitoring and control mechanisms are executed and 72% of the respondents stated that the applied mix is effective and efficient. An excessively formal approach may generate an additional workload on the project managers that could subtract too much disposable time from the actual management of the projects but at the same time only an informal approach is not sufficiently structured and does not keep track of the status of the projects. To this extend, 100% of the interviewees agreed (55% of which strongly agreed) that a structured monitoring and controlling approach helps the implementation of a project but an heavy structure could be counter productive.

In addition, the organisation has a stage gate management method put in place but more controversial results are noticed. Only 55% of the interviewed peopled stated the system is regularly applied. Even though a strict time line is followed, go/kill/change decisions are not established at each project gate, specially kill/change ones.

IT tools and key parameters

In order to monitor and control the projects the most used tools are Microsoft Project and available templates provided by the project management office or distributed internally in the team: 82% of the respondents use MS project, 82% available templates and only 36% MS office.

Furthermore, the vast majority (82%) stated that the used IT tools work well in each

phase of the project from the assessment to the hyper care (monitoring after the implementation of the solution) period.

Once the monitoring and controlling tools are determined it is important to consider which parameters are crucial in the reporting system. To this extent, 91% of the interviewed project managers do monitor time and cost, 82% the alignment with the scope, 45% the resources workload, and only 27% the quality of the deliverables and meeting the client expectations. Specially in IT projects where the release schedule is very strict, monitor the schedule is determinant to ensure a proper implementation.

Noteworthy is the result emerged from the survey from the critical success factor question. Almost all the respondents (91%) stated the main key factor to obtain a successful portfolio of projects is a strong project management structure. Secondly, 82% agreed that is determinant to have clear objectives, strategic alignment and efficient communications. The reporting system must be updated regularly in order to allow the senior management to make timely decisions in order to guarantee the alignment and to deliver the expected results. A minor portion instead, considered important the following features: efficient and effective work methodologies, processes and principles (45%), commitment from the client and the top management (36%), access to key resources and key competences (28%).

Resources and risk management

This section is highly relevant to enforce and validate what highlighted in the literature review. In particular 92% of the interviewed managers experience a shortage of resources during the execution of a project and furthermore, 27% of them strongly suffer from this issue.

In addition, 72% of the respondents address the issue to an excessive number of project

in the portfolio and a lack of capacity to prioritize the existing projects and allocating the available resources and 27% of them firmly impute the cause of the shortage to this problem. This is strongly connected to the first critical area listed in chapter 3.3.1.

Indeed, 55% of the answers to the dedicated question showed a disagreement regarding the capacity of the steering committee to select and prioritize the projects in an optimal way.

On the contrary, a positive results comes from the replies of the 91% of the respondents that stated that during the project selection and prioritization short-term and easy projects are not preferred with respect to new innovative but complex options. This shows that even though there is an issue with the approval of projects by the steering committee, innovation is not discouraged.

Moreover, 82% of the responders stated that risk is not detected in a timely manner and not managed in an optimal way, and only the remaining small portion was confident that the actual structure put in place could be able to properly deal with risk.

Non performing projects

The survey dived deep into the thematic area of non performing projects in order to understand how the monitoring and controlling system manages them. In chapter 3.3.1 the author highlighted that it is often present a reluctance to kill poor performing projects and the survey found evidence of that also in the case study.

The totality of the respondents agreed that is uncommon that non performing projects are killed at the gate, 82% of them went further stating that it is rare and 9% that are never killed.

It is also important to understand why projects are shut down. The main reason appears to be a change in the business environment that annihilates the value planned for that project (82%). Secondly (64%), it happens because of internal politics and only in the third position it is located the overspending cause with 54% of the votes. Often, poorly performing projects are not killed because the act of killing a project is considered a failure for the team and the organisation. Apparently, this is not the case for the company in object since the totality (100%) of the respondents stated that a killed project is not a failure and furthermore 82% of them believes that it represents an experience from which the organization could learn from.
Coherently, the main consequences of a killed projects are for the client (82% of the answers) and few of them for the project manager and the team, respectively 36% and 27%. Almost no consequences are expected for the portfolio manager.

Organisational learning and internal politics

Even though in the previous paragraph 82% of the respondents stated that a killed project is an experience the organisation can learn from, the situation seems to be different regarding the regular organisational learning. The figures show that the opinion regarding the regular consultation of the organisational learning when developing a new project is divergent: 37% agreed that it is constantly reviewed, 54% disagreed and 9% strongly disagreed with the statement.
It is relevant the fact that the same exact proportion in the replies is obtained when discussing a correct further investigation regarding poor performing projects (37% agreed, 54% disagreed, 9% strongly disagreed).
Internal politics scored second in the causes because of which a project might be killed at a gate with 64% of the replies share, but when it comes to regular decision making

regarding projects, internal politics/power is clearly seen as an obstacle since 82% agreed with the statement.

For all the listed reasons all the interviewees (82%) believes that the monitoring and controlling system along with the decision making process could be improved.

Last but not least, it is proposed to evaluate to switch to a team rewarding system rather than a single performance evaluation since the totality (100%) of the respondents agreed that it could impact positively on the success probability of a portfolio of projects, promoting collaboration and communications rather than individual performance.

4.5 Process structure

As highlighted in chapter 2.7 IT projects are peculiar to manage and they must be managed accordingly since the environment is highly dynamic and changes continuously. In order to deal with these projects, the company in object has a structured system since it implemented a customised version of the stage gate methods described in chapter 3.4.

When a project has been approved, all the requirements are collected, prioritised and divided in release cycle accordingly. The division of the functionalities allow the team to deliver an initial version of the solution with the basic requirements and later build and customise even more the solution. This procedure simplifies the execution of the project and easier the development and testing of the functionalities.

Moreover, the release cycles permit to re-align the project to the company's strategy, adapting the development to the changing environment and deliver each portion of the project in short term and consequently in a still actual environment. Each release cycle follows the flow in fig 4.2 along with a rigid schedule.

Every gate represents a decision making point where the project can go further in the next phase or can go back at the beginning of the current phase for further actions. This cyclic approach guarantees quick adjustments without waiting for the following release cycle. The dual approach gives an high flexibility and better suits the features of IT projects.

The main decision making points are at gate 2 and gate 5 (in figure 4.2 called Go Live). The second gate represents the main point, if not the only one, where the project could be shut down, all the other gates represent a mere check point to measure cost, time and alignment of the functionalities. The last gate represents instead a decision making point where the management could decide to not implement into production the solution. Generally, this decision is driven by the need of further development/testing and for this reason the project re-enters in the loop but it is not killed.

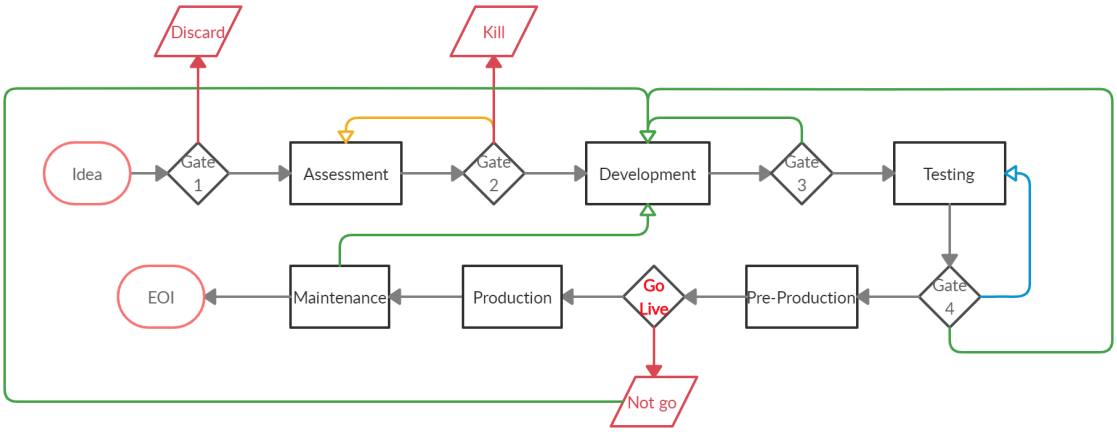


Figure 4.2: Customised version of the stage gate method

To this extent the structured used is for a certain extent similar to the Portfolio reviews dominate approach described in section 3.4.2. Nonetheless the similarities, the integration of portfolio management activities is not put in place in the described way

and represents one of the main improvement areas that the organisation is evaluating.

4.6 Resources management

The first problem area described in chapter 3.3.1 stressed the improper resources allocation issue. As stated, the problem area has a dual cause: the shortage caused by an excessive amount of projects inside the portfolio and the improper allocation of the available resources between the existing projects. Even if the prevalent cause is the first one, it must be addressed at a senior management level and for this reason the focus in this paragraph is on the resources allocation activity for which a tool has been developed in order to improve the current system.

As analysed in the previous chapters, IT projects are peculiar and they are developed in a dynamic environment, they variate in scope dimension and schedule very easily and consequently a correct resources allocation represents a challenge for the management.

Furthermore, since more resources are assigned to several projects it is determinant to maximise their usage but at the same time do not over-estimate their availability and consequently over-allocate them.

The complexity of the problem also resides in the high variability of the schedule that forces the portfolio manager to reallocate the resources frequently in order to deal with the changes and obtain a match with the allocated budget in terms of working days used with the revised planed one.

For this reason, the solution must have a dashboard with a variable time horizon in order to span within several scheduling constraints (daily, weekly, monthly, yearly). Moreover, the team is composed by internal and external resources that must be bal-

anced according to the planned budget that also must be revised constantly.
The solution proposed is to implement an yearly plan (that matches the fiscal year) that contains all the projects approved and all the resources available on an excel file. Given the planned starting date of each project and the planned effort estimate it is possible to allocate to each project the predefined work share of every resource involved on a daily basis (i.e. 30% of resource A every day means $0.3 * 8 = 2.4hrs$) dealing with the milestones.
It is possible to check the allocation of all the resources with a pivot table and ensure that they are not over-allocated.
Once the planned scenario is completed it is possible to revise the document by shifting the starting/ending date of the project, changing the allocation of each resource, change the duration of the phases of the projects and compare the actual performance with the planned one.

4.7 Short-term reporting

The third problem area highlighted in chapter 3.3.1 dealt with an inefficient information system. The same issue has been detected in the organisation in object and a tentative solution has been proposed. In particular, the aspect addressed is the one connected with the sort-term reporting. Even if the functionalities of a project are divided in release cycles, each phase of a project could last different months and progress meetings are required. A common reporting structure could easier the projects progress update system.
A shared template between all the project managers would allow the portfolio manager to have an overview of the status of all the projects in between the gates and the

portfolio reviews. For this reason the level of details inserted in the report should be enough to keep track of the progress and predict imminent risks and possible issues but without diving in, otherwise it would become as time consuming as a project gate review.

It is important not to focus only on few metrics but also have a wider overview so that the portfolio manager can intervene in a timely manner if needed. For this reason the reporting form has been divided into four sections:

1. General data and overview;
2. Task list and milestones;
3. Risk / issues / next steps / dependencies;
4. Resources overview.

The template created more structure in the reporting process and required less time to prepare and conduct the progress update meetings.

4.8 Final considerations

Even though further research on a bigger pool of organisations is needed in order to validate on a large scale the key problem areas highlighted in chapter 3.3.1, the experimental study showed that to a certain extent they are present in the case study organisation.

For this reason, when an organisation is analysing the efficiency and the health of its portfolio management activities it should look deep into the following problem areas, understand if and to what degree they are present and begin a correction plan.

- Resource shortage and improper allocation;

- Inefficient project prioritization and selection procedures during portfolio reviews;
- Decision making system is not based on quality, reliable, accurate and updated information and data;
- Reluctance to kill poor performing projects and non structured decision making process;

As stated in chapter 3.4 and 3.5 a possible solution is to put in place a stage gate method integrated with portfolio management practices as project selection and prioritisation, forced ranking, resource balance and allocation and go/kill decisions.
The case company correctly implements a stage gate method that allow them to give a structure to the developing and execution of all the projects present in the portfolio. The projects are properly reviewed at each stage gate and they are realigned with the strategy.
On the contrary, project portfolio management practices could be better integrated in the system in order to better select and prioritise the projects, limit the resources shortage and execute more accurate go/kill decisions.

Chapter 5

Conclusions

"Your success in life is not based on your ability to simply change. It is based on your ability to change faster than your competition, customers and business" [16].

The citation from Mark Sanborn truly embraces the essence of the continuous change that the nowadays businesses are forced to face. This pattern is reflected in their portfolios of projects that strive to deliver the planned value and ensure that the strategic goals of the organizations are met.

For this reason, monitoring and controlling activities represent a crucial part of the life cycle of a portfolio of projects, adjusting and realigning the projects to the changing environment.

The work proposed itself as a guideline for a correct implementation of monitoring and controlling processes, in which the literature review allowed the author to understand how portfolio management practices are structured and implemented, how to maximise the success probability of the portfolio and ensure that the projects stay "on track". Understanding the portfolio life-cycle and the relationship with internal decisional level was determinant for the development of the work.

The theoretical research of the author quantified and assessed the benefits of a well designed monitoring and controlling system and highlighted the key problem areas

that could be faced during the implementation of monitoring and controlling activities both from a project and portfolio points of view.

The critical areas detected are divided into four categories: resources shortage and improper allocation, inefficient project selection and prioritization methods during portfolio reviews, non structured decision making system based on poor quality and unreliable data and biased by internal politics and reluctance to kill poor performing projects.

The stage gate method proposed aimed to deals with the issues previously detected by imposing a structure on the implementation of the portfolio and on the monitoring and controlling processes. To this extent, particular attention has been paid to the portfolio management activities integration with financial and progress standard reporting. The integration between the gates and management activities ensures not only that the organisation is doing the projects right but also that it is doing the right projects, realigning the portfolio with the company's strategy and maintaining the portfolio on shape.

The case study represented an opportunity to assess with a survey the state of the art of portfolio management implementation practices inside the case organisation, to develop some of them in first person and to validate the model proposed by the author.

From a research point of view the work could be further developed analysing an higher number of organizations in order to understand to which extent the problem detected are present on a larger scale. The following step would be to compare the portfolio management system they have in place with a particular focus on the monitoring and controlling practices, highlighting the differences.

For the organisations that present a simple and inefficient portfolio management sys-

tem and do experience the problems described, a stage gate approach with the integration of portfolio reviews should be implemented and progress tracked.

Finally, a new research topic has been proposed regarding aggregate key strategic performance indicators for portfolios of projecs.

Appendix

7/23/2020 Microsoft Forms

Forms Monitoring & Contro... - Saved ? MONTI Matteo (.. MM

Monitoring & Control of projects

11	28:27	Active	
Responses	Average time to complete	Status	Ideas

1. In your organisation projects are reviewed, balanced and realigned on a regular basis.

Strongly disagree	0
Disagree	2
Agree	9
Strongly agree	0

2. If yes, how often:

Bi-weekly	0
Monthly	0
Quarterly	1
Half yearly	1
Ad Hoc	9

3. In your organisation projects are re-evaluated after strategic changes at business level.

Strongly disagree	0
Disagree	5
Agree	6
Strongly agree	0

4. A combination of formal and informal control mechanism is the most efficient solution.

Strongly disagree	1
Disagree	2
Agree	8
Strongly agree	0

5. Which of the following formal IT tools do you usually adopt to monitor projects?

MS Office	4
MS Project	9
Available templates	9
SAP reports	0
Dedicated softwares	0
Other	0

6. The chosen IT tool works well in each phase of the project.

Strongly disagree	0
Disagree	2
Agree	9
Strongly agree	0

7. The tollgate methodology is regularly applied (proceed, change or kill the project at each phase completion).

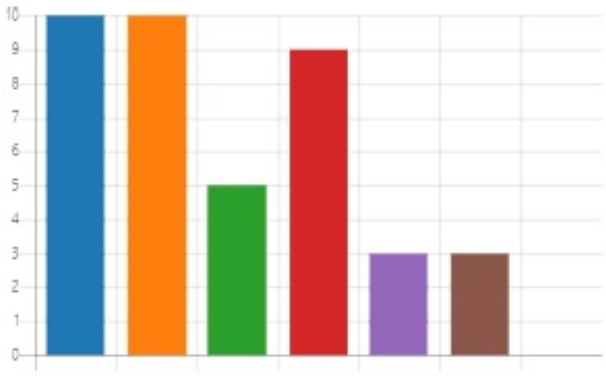
Strongly disagree	0
Disagree	5
Agree	6
Strongly agree	0

8. A structured PM approach helps the implementation of a project but an heavy structure could be counterproductive.

Strongly disagree	0
Disagree	0
Agree	6
Strongly agree	5

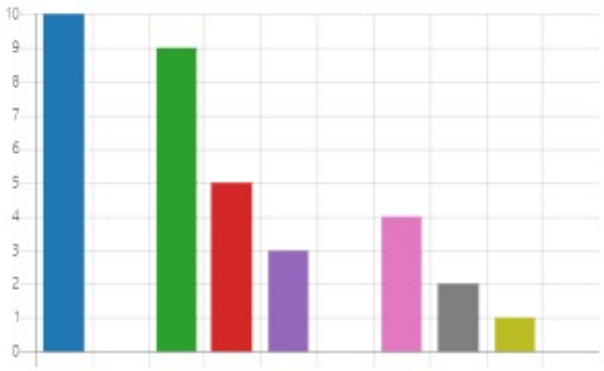
9. What aspects do you normally measure when monitoring and controlling the projects you supervise:

Cost	10
Time	10
Resource workload	5
Alignment with the scope	9
Quality of the deliverables	3
Meeting the client expectations	3
Other	0



10. In your opinion, what factors are most determinant for the success of the project: (Max 3 answ.)

Strong Project Management	10
Appropriate IT tools	0
Clear objectives and strategic ...	9
Efficient and effective work m...	5
Access to resources and key c...	3
Incentive system	0
Commitment from client and t...	4
Updated documentation	2
Established project culture	1
Other	0



11. Often you experience a shortage of resources during the execution of a project.

Strongly disagree	0
Disagree	1
Agree	7
Strongly agree	3

12. A possible shortage of resources would be caused by an excessive number of projects rather than an inefficient allocation.

Strongly disagree	0
Disagree	3
Agree	5
Strongly agree	3

13. The monitoring, controlling and reporting structure efficiency could be substantially improved.

Strongly disagree	0
Disagree	0
Agree	11
Strongly agree	0

14. Internal politic/power represents an obstacle when making decisions regarding projects.

Strongly disagree	0
Disagree	2
Agree	9
Strongly agree	0

15. The risk is detected in a timely manner and managed in an optimal way.

Strongly disagree	0
Disagree	9
Agree	2
Strongly agree	0

16. During project selection and prioritization short-term and easy projects are preferred rather than new innovative but complex options.

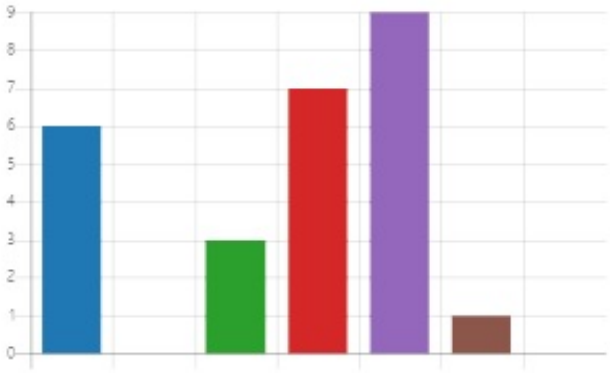
Strongly disagree	0
Disagree	10
Agree	1
Strongly agree	0

17. How often a nonperforming project is killed during its life-cycle?

Never	1
Rarely	8
Uncommon	2
Common	0

18. If some projects are killed, why? (Max 3 answ.)

Overspending	6
Poor quality	0
Non sufficient resources	3
Internal politics	7
New business environment	9
New technological environment	1
Other	0

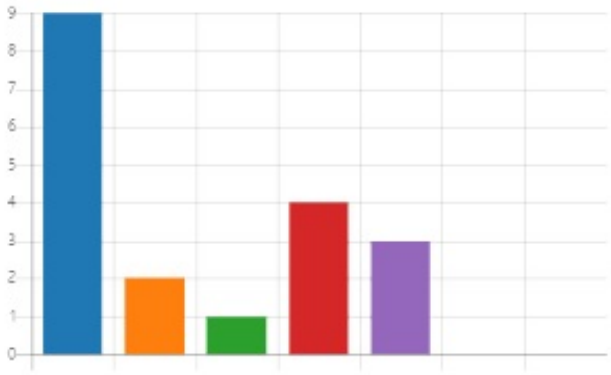


19. Killing a project is considered a failure.

Strongly disagree	0
Disagree	11
Agree	0
Strongly agree	0

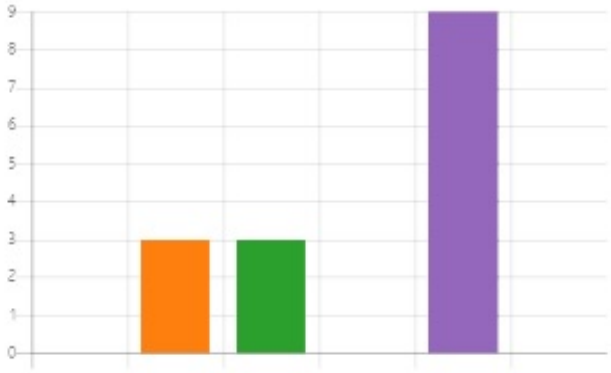
20. In your organisation, poor performing and "failed" projects have consequences for:

Client	9
Steering committee	2
Portfolio manager	1
Project manager	4
Team members	3
None	0
Other	0



21. For the stakeholders previously mentioned a failed project could have the following consequences:

None	0
Less career opportunities	3
Less opportunities to be invol...	3
Worse reputation	0
An experience the organizatio...	9
Other	0



22. A team-rewarding system influences the success probability of a portfolio of projects.

Strongly disagree	0
Disagree	0
Agree	10
Strongly agree	0

23. Organisational learning from previous projects is implemented and regularly consulted for new projects.

Strongly disagree	1
Disagree	6
Agree	4
Strongly agree	0

24. Further investigation is performed regarding poor performing projects.

Strongly disagree	1
Disagree	6
Agree	4
Strongly agree	0

25. The company's steering committee selects and prioritizes projects in an optimal way.

Strongly disagree	1
Disagree	6
Agree	4
Strongly agree	0

26. Comments, suggestions, remarks:

0

Responses

Latest Responses

List of Figures

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