

PROJECT PORTFOLIO MANAGEMENT AND CORPORATE STRATEGY

The Solution to Allocate Resources and Align Projects toward
Strategic Objectives

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ABSTRACT

Recent industry structural changes and increasing global competitiveness have deeply affected the way corporations manage corporate strategy. Overall success of a corporation now depends on how major projects are aligned in order to acquire synergic benefits based on strategic objectives, not by unarticulated and scattered benefit. This study examines the connection between strategic objective, corporate strategy and project portfolio management in order to make corporate strategy implementation both more effective and efficient. The primary logic suggests that a connection link between corporate strategic objective and project portfolio should be stronger when a corporation encounters challenges in allocating resource and aligning projects for synergy value.

Earlier studies have shown evidences of possible relationship between these concepts; however there is currently no articulated theory about project portfolio management as a solution for effective corporate strategy implementation. This study will bring up the reason why certain major projects were underperformed and incoherently articulated with corporate strategy. It then demonstrates how project portfolio management is a suitable solution in allocating resources and aligning projects with corporate strategic goals.

Based on existing relevant publications, a coherent theory concerning corporate strategic objectives, project portfolio management, project portfolio optimization and strategic objective is developed. The writer's analysis of the connection between project portfolio management and corporate strategy will emphasize the roles of efficiency and effectiveness in delivering result which is aligned with strategic objectives. Consequently, this theory provides a strategic recommendation for corporations on how to effectively execute project portfolio management in order to achieve their corporate strategic objectives. Additionally, this theory can also be used in future empirical research related to project portfolio management issues.

Keyword: Project Portfolio Management, Optimization, Project Management, Corporate Strategy, Strategic Objectives.

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LIST OF ABBREVIATIONS

BSC	Balanced Scorecard
CAPM	Capital asset pricing model
CPSP	Resources constrained project scheduling problem
Euronext 100	The blue chip index of the NYSE Euronext
IRR	Internal rate of return
JSP	Job-shop problem
NPV	Net Present Value
P&O	Peninsular and Oriental Steam Navigation Company
POSET	Partial ordered set
PPM	Project portfolio management
ROI	Return on investment
RPN	Royal P&O Nedlloyd
SBU	Strategic business unit
SMEs	Small and medium enterprises

1 INTRODUCTION

This chapter introduces the thesis topic and outlines the purpose of this thesis. Then, it highlights the research question to be studied, the reason why it would be considered essential to corporate practice and its significance in impacting project portfolio management results. In addition, possible gaps between theoretical framework and practice are addressed by proposing an approach which would possibly be the solution for this circumstance.

1.1 Thesis Background

Recently, project portfolio management discipline has developed significantly to establish theories of practice framework in order to improve project portfolio results (Checkland 1998). However, these substantial efforts by academics and professionals have not yet fully addressed common corporate strategy issues such as resource allocation and project alignment at the enterprise level (Hodgson 2002). This gap is addressed by Morris and Jamieson (2004) who indicate that project portfolio management concept is not a well-researched topic based on the evidences which show little literature on how corporate strategy is translated into project execution.

On the contrary, it would appear to be a recommendation that responsible executives prefer project managers to limit their approaches to traditional project management responsibilities such as scope, acquirement, cost and time while not to intervene in what could be considered as corporate strategy areas of concern (Thomas et al. 2002, 71-82). In addition, the differences between theoretical framework and practice are also related to how projects should be approved and executed at an enterprise level where executives regularly have to decide between competing demands of different projects with the seemingly high needs for scarce resources.

In most of these cases, corporations are not equipped with necessary approaches of choosing projects which should be carried out in order to contribute synergic benefits toward the corporation's objectives. Consequently, projects are ineffectively selected while resources are inefficiently allocated within the corporation. Therefore, the scope of this thesis is to substantiate an executable standardized

methodology in order to support corporations in solving complexities within project portfolio management and corporate strategy performance contexts.

Regarding the information sources of this topic which include academic journals and text books, there is a substantial lack of particular theories on the solution to the mentioned problem. As the result, this fact indicates the lack of project portfolio management involvement in corporate strategy establishment and project selection. This is derived from a common assumption that projects selected by executives at enterprise level could considerably be strategic and the primary responsibilities of project manager are to execute and deliver the predefined objectives. It could be considered as over-simplification and corporations might not achieve intended result on overall strategic benefits if they use this assumption as an approach to corporate strategy.

1.2 Purpose of the Study

The purpose of this study is to:

1. Examine how current project portfolio management approach addresses corporate strategy performance issues.
2. Clarify the process of project portfolio management implementation in the corporation.
3. Explore how resource allocation could solve the problem of inefficiency in corporate strategy management.
4. Explore how project alignment could solve the problem of ineffectiveness in corporate strategy management.
5. Explore how project portfolio management would be a solution in both allocating resources and aligning projects toward corporation's strategic objectives.

Since alignment between projects and strategy is one of the purposes of project portfolio management, it would be considered that the connection between corporate strategy and project outcome's contribution is one fundamental aspect in the proposed approach. This indicates a demand for project portfolio management as a solution for corporations to understand strategic perspectives while appropriate-

ly connect different individual outcomes within the portfolio toward strategic objectives.

1.3 Gaps in Current Practice

It is noteworthy that a recent survey also indicates that 90% of US corporations do not implement a correct project portfolio management methodology (Gartner Group 2004). A recent report by Steven Institute of Technology in partnering with Aalto University which measures the performance of project portfolio management points out the following facts (IMPM 2010):

- 45% of top executives agree to the need of project portfolio management as they believe it is impacting on business success.
- 32% of corporations admit the redundancies in their project portfolios.
- Only 12% of corporations execute the right number of projects.
- Only 19% of corporations terminate inefficient projects as the consequence
- Only 23% of corporations allocate resources according to strategy

The participants within this study belong to the Euronext 100 Index which represents the most highly capitalized corporations in Europe. These figures indicate the existing gap between project portfolio management theoretical framework and practice.

The missing links between corporate strategy and its implementation are directly related to unaligned projects and misallocated resource management (Skinner 1969, 201-208). The focus is then shifted to transforming corporation into project focused corporation. Therefore, project portfolio management could be seen as a solution to effectively plan specific set of projects in order for corporations to achieve strategic objectives (Archer 1999: 76-80).

Nevertheless, underappreciated attention has been given to the connection between corporate strategy performance and corporate strategy, which the writer believed is crucial in effective strategic implementation in terms of profitability and corporate efficiency. As a result, the corporation with both clearly defined corporate strategy and optimized project portfolio would perform better than those without these configurations. Later demonstration in this empirical study perhaps

strengthens the relationship between corporate strategy and project portfolio management. It also proves the dependency between accomplishing strategic objectives and project portfolio management, which has not yet been studied by the corporation.

This essential lack of acknowledgement within corporations for the value of project portfolio management could be associated with what Carr (2003) describes as a lack of strategic involvement and contribution. He also indicates the fact that the possible contribution of project portfolio management is too narrowly defined, which could limit the strategic benefit of the approach to the corporation. Morris & Jamieson (2004) support this argument as they point out that if corporation could understand how corporate strategy can be translated into project portfolio management, the corporation's overall performance would be considerably improved, and consequently, project portfolio management would acquire a higher profile in corporate management generally.

To explore these complicated gaps further, the author would make a distinction between three concepts which are "project portfolio management", "program management" and "multiple projects management". Although these three concepts are usually confused by professionals and client corporations, they are not exactly the same thing. Morris (2004) finds out in a survey that 70% of project management professionals pointed out that they had used project portfolio management approach in different versions. However, most corporations in the same survey mistakenly perceived project portfolio management to be about "multiple projects management" based on common objectives or functions which is a common definition of program management.

Morris claims that the correct interpretation would be "maintaining a balanced portfolio of projects through selection of the right projects and assignment of appropriate resources" (Morris 2004). Without this correct interpretation, evidences indicate that the corporations tend to show under-appreciation toward two critical elements of project portfolio management which are resource allocation and project alignment. These are the two focused applications within the scope of this thesis.

Within the scope of this thesis, the proposed project portfolio management approach is primarily relied on establishing and implementing decision support

models to help managers within the corporation making optimize portfolio decision before and during execution based on efficient allocated resources. This approach requires purposeful decision by executives within the corporation to intentionally execute particular corporate strategy trade-offs by defining which projects are approved and launched in what manner. As Ghasemzadeh (2000) points out, project portfolio management approach treats all projects, both new and undertaken, as one integrated dynamic portfolio drawing from a common resource pool with the purpose of optimizing strategic results.

The contribution of project portfolio management toward corporation is more clarified and developed in theory. Different methodologies have been implemented in practice in most highly capitalized corporations but are still in the emerging phases. In addition, practical knowledge and project portfolio management applications are limited because the proposed approach would be considered to be new in corporate management theory.

However, current ineffective implementation of project portfolio management within corporations creates a significant challenge in realizing its full capacity of strategic contribution. Consequently, this thesis concentrates in answering the proposed research question for further examination within this context. The proposed project portfolio management approach would be considered to be a solution in addressing the mentioned corporate strategy issues.

1.4 Research Questions and Propositions

The problem the author would address in this study has been substantially described above. It is crucial to establish particular research questions and propositions which this study will attempt to answer. The aim of this thesis is to elaborate the solution to allocate resource and align projects toward corporate strategic objectives. Based on this, the main research question and its sub-questions are:

Main research question: “How project portfolio management could be a solution to allocate resources and align projects toward corporate strategic objectives?”

Sub-question #1: “How project portfolio management could impact resource allocation?”

Sub-question #2: How project portfolio management could impact project alignment?

The research proposition related to this main question is that project portfolio management could be seen as an instrument for corporations in implementing corporate strategy into practice. To establish this argument as validated, the proposed project portfolio management approach would have to be supported by both well-grounded theoretical foundations. Additionally, the proposed approach would also contribute value by helping corporations with project selection, resource allocation and portfolio optimization considering their particular strategic context rather than purely concentrate on financial returns. This is the aim of this study.

1.5 Scope of the Study

The concentration of this thesis is primarily on project portfolio management approach in project focused corporation with high degree of project development and strategic capacity. However, the writer pays distinctive attention to project portfolio management as the solution in allocating resources and aligning project toward strategic objectives. Because of greater demands for meeting strategic objectives, concept such as strategic-focused corporation, strategic implementation and competitive advantage creation are the current trends of corporate strategy development. However, the writer presents that these trends probably not stay true for project based corporation in term of efficiently realizing benefit/revenue. Consequently, the writer uses a contingency approach in establishing standard solution for effective corporate strategy implementation by project portfolio management.

This thesis concentrates in examining the impacts of project portfolio management implementation on the corporation's corporate strategic capacity. In this study, resource allocation and project alignment are the two main focuses in the project portfolio management context. Consequently, the boundaries of this thesis are limited by project corporate strategy, project portfolio management, resource allocation, project alignment and highly relevant measurement metrics such as analytics scorecard utilized in the implementation process. In addition, the corporation within the case study is a highly capitalized global logistics corporation. Therefore, issues such as organizational leadership or project portfolio management implementation within SMEs contexts would be considered to be outside these boundaries, thus they would not be studied within the scope of this thesis.

1.6 Research Limitation

The first limitation of this thesis was directly connected to rigor mathematical algorithm uses in defining criteria in project alignment and resource allocation. The use of project portfolio management system applications was highly complex which required the user to have experiences and background in mathematical optimization algorithm. Therefore, mathematical details of project portfolio management formulation in this case remained unaddressed both because of limited algorithm construction skills and research participation's confidentiality agreement.

Secondly, the scope of this thesis primarily concentrated on high capitalized global corporation which operates within logistics industry. Due to the lack of resources and supports from other corporations, the author was unable to address other comparative sector (i.e., biotechnology and pharmaceutical) or corresponded type of corporation (i.e., SMEs).

Thirdly, as project portfolio management system consumes large amounts of internal corporation's resources and external consulting corporation's expertise, most of fundamental technical implementation remained highly confidential. Access to data sources regarding project portfolio management system implementation was highly limited. This explains a low frequency of project portfolio management system/technology references within this thesis.

In addition, the author was not fully capable to totally address the problems of project portfolio management complexity and cost in corresponding to its strategic benefit by using empirical data or even valuable validated qualitative evidence. Therefore, this question was remained quantitatively unaddressed within this thesis. However, the evidences based on interviews and review of relevant official reports conducted during the thesis research would indicated that this specific corporation had concluded that the overall strategic benefits dominate the cost of approach implementation. The case study also indicated a high degree of satisfaction with the project portfolio management system in term of improving corporate strategy performance.

1.7 Thesis Structure

The thesis paper contributes the writer's understanding of the connection between corporate strategy and project portfolio management. The thesis is structured in the following order. Firstly, the writer presents an in-depth study and analysis on corporate strategy and its issues concerning implementation process. It also includes summary of previous conceptual studies on the issues. Secondly, the writer presents an analysis on fundamentals of project portfolio management, project alignment and resource allocation to conduct an argument on why often critical corporate strategy is unsuccessfully implemented by traditional sets of projects. Thirdly, the writer describes the methodology applied in the empirical study, which is conducted in the fourth chapter. Next, the case study is presented. It is systematically clarified, analyzed and discussed with respects to the solution in implementing corporate strategy by project portfolio management. Finally, the thesis ends with the conclusion and recommendation.

2 CORPORATE STRATEGY AND PERFORMANCE MEASUREMENT

Before conducting the research, it is crucial to review relevant topics with regards to this study from existing academic publications in order to define how they related to the research topic and to examine their possible connection. Completing the literature review is also an obligatory of validated thesis research. Fundamentally, it is critical to assure that this thesis study is original and the research findings can contribute to existing body of knowledge in the field of corporate strategy and project portfolio management.

The standard for a thesis research is not to provide a total survey of literature within relevant field, but to analyze and summarize relevant literature to validate and corroborate the main concepts of the research in practice. As a consequence, the main purpose of this chapter is to combine the collectivity of current literature toward the circumstance where most relevant perspectives from current body of knowledge which are directly utilized in the study are reported. This concentrates on theoretical body of knowledge in the field while authenticating a directive of relevant theory.

Generally, together with particular references contained below, the author also conducts a comprehensive references list at the end of this research which shows the extent of corporate strategy and project portfolio management literature that was taken in consideration in this section. The summary of the relevance of particular literature within the context of proposed research problem is presented later in the conceptual model.

This aims to clarify the relationship between the current existed diversified body of knowledge and the fundamental of particular issue in order to contribute to current body of knowledge. Based on the fact that this thesis is an expansion of current theory, it is critical to define the boundaries of existing methodology against proposed methodology. Therefore, the author can ensure that the research problem has not already been significantly approached by other researchers. Finally, this primarily aims to support the author in discovering common assumptions relevant to the theoretical framework.

2.1 Fundamental of Corporate Strategy

Corporate strategy concept is defined briefly by D'Aveni as “the direction and scope of a corporation over the long term, which achieves advantage in a changing environment through its configuration of resources and competences with the aim of fulfilling stakeholder expectation” (D'Aveni 2007, 18-21). At this point, corporate strategy should be separated from operative management as corporate strategy is the answer to “why” and “what” question while operative management is the response to “how” (Swaim 2009, 37 – 41).

This thesis research primarily focuses in solving strategy questions within private corporation context. These strategy questions are concerned with the clarification of corporate strategy; its capacity to impact other relevant factors in corporation to work accordingly and the effectiveness of the system used to define corporation's strategy. These questions have been substantially addressed by key authors in business strategy field such as Porter, Prahalad, Rumelt, Mintzberg and others. Their concentration is on locating and defining related corporate strategy formulation in business context, which might consists of recommendation on particular sector's strategy as well.

Examining this body of literature in academic and practice, the author would emphasize that there is sufficient evidence in these literature addressing the factors that compose effective corporate strategy formulation and number of recommendation on models and strategic applications to implement varied types of strategy assignment. It would be repetitious to narrate wide range of literature on this comprehensive topic. However, the author would strongly emphasize the fact that thoroughly constructed corporate strategy which is executable is vital for success in any corporation, regardless the circumstances.

2.1.1 Corporate Strategy and Internal Business Structure

In fact, the fundamental of corporate strategy within this thesis context is not its planning approach but rather its execution. It is noteworthy that within project portfolio management approach, selecting and aligning projects are constantly strategic rather than traditional financially efficient. As indicated by Morris (2004), this fact is not thoroughly understood by many corporations. Regarding this issue, the issues have not yet been particularly investigated in within corpora-

tion context. Therefore, it is vital for corporations to look beyond high number of written corporate strategy formulation in order to drive toward more effective approach of executing strategy in a corporation context.

A critical area of particular interest to this thesis contained within the primary corporate strategy is focused academic publication on strategic alignment to business, specifically in project context. It would be clear that original literature on project prioritization is vital to successful corporate strategic alignment. Henderson (1993, 17) emphasizes the need of strategic alignment as “toward a more strategic role that support the corporation” and also recommend a framework to achieve this. Recently, Ciborra (2000, 102-160) has addressed the theme of globalization, competition and strategic alignment by analyzing five in-depth empirical studies. These points out the emerging demand of strategic alignment in high capitalized global corporation. However, the area of prioritizing and aligning strategic project toward corporate strategy is still lack of exploration as mentioned in the relevant literature.

In the scope of thesis, business structure is highly influenced by the practice of corporate strategy and therefore, the author would analyze this dependency relationship within this chapter. Relatively, one of the most significant conceptual discussions in corporate strategy is what factors drives the development of strategy. In this chapter, the writer emphasizes the strong connection between the transformation of business structure and the development strategy. Besides, the writer demonstrates that changing business structure was one of the key drivers of corporate strategy development.

The main concern of corporate strategy closely is connected with the expansion of volume, geographical dispersion, vertical integration and product diversification. Furthermore, other priorities are generating a structure centralized (functionally departmentalized structure) or possibly multidivisional. It has been noted that decentralized structure can be considered as the remarkable beginning of corporate strategy (Chandler & Dupont 1962, 36-50).

There was a visible correlation between the establishment of strategy and change in business structure. Raising population, income and the technology have resulted in higher demand. Historically, growth and opportunity in industrialization age of the 60s resulted in the demand of how to make use of those chances. When

the term “strategic planning” was first emphasized by Boston Consulting Group in their early development stage, it was most concerned with how to organize and maximize the use of current resource in the way that increase profitability (Kiechel 2010, 16-20). As Chandler and Dupont (1962, 120-151) indicate in their work:

“A new strategy required a new or at least refashioned structure if the enlarged enterprise was to be operated efficiently. The failure to develop a new internal structure, like the failure to respond to new external opportunities and needs, was a consequence of over-concentration on operational activities by the executives responsible for the destiny of their enterprises, or from their inability, because of past training and education and present position, to develop an entrepreneurial outlook”

Foss (1997) points out corporate strategy is a planning process based on judgments which is made by consideration of business structure, industry structure, competitive environment and the positions corporations strategically target. Foss proves in his work that:

“Because of competition, corporations have choices to make if they are to survive. Those that are strategic include: the selection of goals; the choice of products and services to offer; the design and configuration of policies determining how the corporation positions itself to compete in product markets; choice of an appropriate level of scope and diversity the design of corporation structure, administrative system and policies used to define the coordinate work. It is the integration among these choices that makes a set a strategy.”

By implementing strategy, the main purpose of corporation during this stage was to become “profit-oriented business corporation involved in the handling of goods in some or all of the successive industrial processes from the procurement of the raw material to the sale to the ultimate customer” (Chandler & Dupont 1962, 120). In this process, several necessary policies and procedures were established. Two main operation areas are clearly indicated:

- Strategic area is mainly concerned on macro-level. Planning and execution in this area help corporations to maintain their profitability and governance. Figure 1 gives an overview on the dependent relationship between corporate strategy development and corporate internal structure.
- Tactical area is mainly concerned on micro-level. The main purpose is to create efficient day by day task and maintain smooth connection between activities.

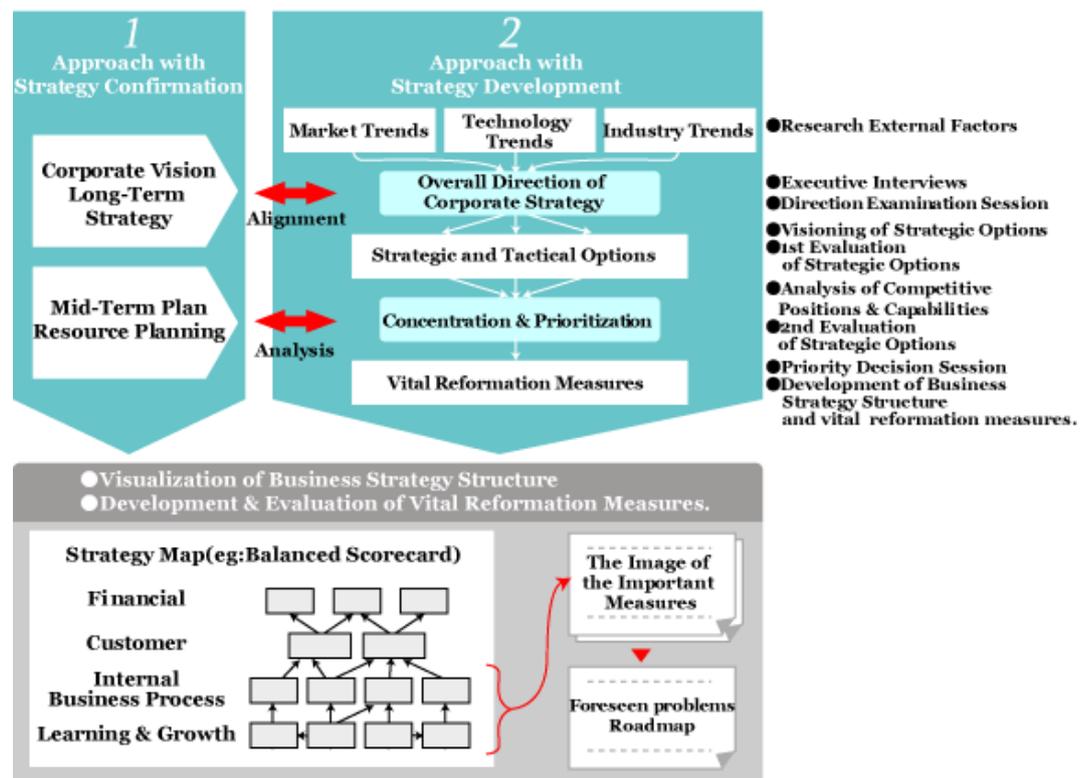


Figure 1. Relationship between corporate strategy and internal business structure (Atstream 2010)

In conclusion, the business structure was dramatically influenced by the implementation of strategy. As Peng (2000, 42) indicates in his work on reformation of business model: “Strategies served functionally as an instrument to accessing market, develop corporation knowledge and result in deep restructuring”. This closely link between business structure and corporate strategy provides a substantial foundation for an argument that strategy should be integrated with the corporation as a whole.

2.1.2 Corporate Strategy from External Perspective

The main role of strategic management within business operation is to represent business disciplines. In terms of business operation, corporate strategy does not only support corporations in maintaining their position but also improve organizational performance. In this process, strategy could be both cause and consequence. It is noteworthy that corporate strategy can only be executed when corporations meet the requirement for capacity. Therefore, strategy plays important role in developing interrelationship between these functional areas within corporation. Implementing corporate strategy would result in generating values toward different stakeholders.

One of the most important momentums of corporate strategy is the industry competition. According to Porter (1989, 5), these threats of competition included:

- Threat of entry, barriers to entry.
- Economies of scale
- Product differentiation
- Capital requirement
- Cost disadvantages independent of size
- Access to distributional channels
- Government policy

The process of threat analysis would be presented in the practical parts of the essay. These threats are key players in forming the corporation's attitude toward strategy. The interest includes the potential rewards by implementing corporate strategy and the risk of suffering possible consequences by not implementing it. In this process, competition once again was a pressure in relevant strategic decision making.

From these evidences, it could be considered that the competition is the main concept in terms of corporate strategy formulation and implementation. This argument is supported by the following relevant findings:

- Business relationship and individual interaction are often conceptualized as either competitive or cooperative in nature (Argyle 1991, 72-73).

- Competition may be built into legal and social norms and expectation which are themselves a type of corporate structure (Wilkinson & Young 1993, 24-28).

On the other hand, the competitive relationship between corporations and their components are also the main driver for developing strategy. High competition describes large demand for appropriate corporate strategy implementation through enhancing organizational effectiveness. By implementing the right corporate strategy, the corporation would be able to generate practical solution based on their predefined objectives. It provides the foundation for the corporation to facilitate growth and profitability.

Beside industry competition, the link between corporate strategy and the external market should be taken into consideration. In defining this connection, economic performance from acquiring resources and applying corporate strategy within certain market situation clearly indicate the interconnection of corporate strategy and the market. This concept is called “strategic factor markets” which is used to define necessary resources to implement strategy according to the external environment. Barney (2000, 62) points out the importance of this concept toward modern corporate strategy implementation:

“If strategic factor markets are perfect, then the cost of acquiring strategic resources will approximately equal the economic value of those resources once they are used to implement product market strategies. Even if such strategies create imperfectly competitive product markets, they will not generate above normal economic performance for a corporation, for their full value would have been anticipated when the resources necessary for implementation were acquired. However, strategic factor markets will be imperfectly competitive when different corporations have different expectations about the future value of a strategic resource. In these settings, corporations may obtain above normal economic performance from acquiring strategic resources and implementing strategies. We show that other apparent strategic factor market imperfections, including when a corporation already controls all the resources needed to implement a strategy, when a corporation controls

unique resources, when only a small number of corporations attempt to implement a strategy, and when some corporations have access to lower cost capital than others, and so on, are all special cases of differences in expectations held by corporations about the future value of a strategic resource.“

Another barrier in applying corporate strategy in the corporation is the management of corporation. The nature of management in the corporation indicates the existence of proportion of both cooperation and isolation (Wilkinson & Young 1993, 40). Therefore, the purpose of corporate strategy implementation is to create appropriate environment for predefined tactics to be executed. In order to make corporate strategic solutions work in practice, organizations should be considered to function in the interconnected way. Additionally, functional department can only be aligned based on mutual understanding with clear metric-based portfolio management approach (Pham 2010, 8).

2.1.1 Corporate Strategy Critical Characteristics

Standard practice of corporate strategy includes certain critical characteristics. By determining these characteristics, a general view of appropriate corporate strategy implementation would be established. Within the scope of this study, five critical strategic characteristics which are highly relevant to the case study in this thesis are presented below:

- **Objective Orientation:** Long term vision is compulsory in forming corporate strategy. Therefore, corporation’s decisions should be taken based on predefined strategic objectives. Additionally, the determination of the basic long-term goals and objectives of an enterprise and the adoption of courses of action and the allocation of resources necessary for carrying out these goals (Wilkinson & Young 1993, 32)
- **Prioritization:** Proposed projects would have varied priority status due to limited resources availability within the corporation. Therefore, effective corporate strategy execution should reflect the project portfolio prioritization.
- **Measurability:** Relevant data should be considered in strategic decision making process. It consists of critical intelligences such as trends, competition situation, internal strategic capacity and resource. The data

should reflect current strategic position of the corporation both internally and externally. In the case study of this thesis, the author would point out the reason why making decision based on measurable data is vital in improving corporation's strategic capacity.

- **Practicality:** corporate strategy is considered to be conducted in the conceptualized way of thinking. However, corporate strategy should be concrete and practical in practice. Practicality would allow the corporation to implement corporate strategy by establishing executable solution. As a result, immeasurable abstract project proposals should be minimized. Moreover, the corporation devised to administer these enlarged activities and resources. Practicality of corporate strategy depends on the design of corporation through which the enterprise is administered (Wilkinson & Young 1993, 18).
- **Alternation:** Corporate strategy would be considered as flexible according to the its perceived benefit and risk. In practice, several corporate strategy alternatives allow corporations to conduct relevant comparison in order to optimize the available resource. In the process of corporate strategy implementation, modification would possibly occur as corporate strategy execution is a continuous process (Komisar & Mullins 2009, 17 – 22).

Later in the case study, the framework for project portfolio management implementation was based on these characteristics in order to ensure the strategic impacts of the proposed approach.

2.2 Fundamental of Performance Measurement

In this chapter, the author would present the reason why implementing performance measurement system is critical in improving organizational efficiency. Besides, the writer would demonstrate that risk is one of the key momentums that force corporation to measure and manage their performance. The writer would also prove that performance measurement and performance management will minimize the risk occurred by error within corporate strategy implementing process. Studies in the last chapter indicate that the strategic behaviors are consequence of “dynamic interaction” between corporation and external environment. As a result,

it would be considered as a fundamental component of this process. In addition, unexpected variants during execution process separate the theoretical framework from reality function as performance is unlikely to be absolutely evaluated” (Wilkinson & Young 1993, 90-103).

Applying corporate strategy without a proper performance measurement system would hinder the organizational development. Stehle (1975, 24) points out that the role of subjective risk influences the decision making process of investors by shaping their perceptions and reactions. Perceived risk is an extent measure which may be based on past returns, fundamental analysis, present hunches, and all other information that portfolio managers and analysts believe to be the core instrument in the process. As a consequence, performance measurement serves as the analyzing instrument for executives to analyze and control the project portfolio management system.

2.2.1 The Need for Performance Measurement and Performance Management

The implementation process of corporate strategy is highly influenced by the variants. This problem makes the implementation’s result vary from foreseen one. As implementing corporate strategy also connected with certain committed resources, a measuring instrument should be applied in order to calculate the benefit of the implemented strategy against its risk. Therefore, the performance of corporate strategy should be regularly evaluated by the corporation in measuring its current strategic capacity.

As a result, modified activities can be executed when intervention is needed. Two themes are recurring in order to stimulate corporate strategy measurement. The first was the role of institutions in shaping corporate strategies. The second was the role of networks in societies with an incomplete institutional framework. Therefore, corporate strategy is developed between theoretical interactions of these variables (Peng 2000, 42-44).

Without appropriate performance management, risks and its negative consequences are not realized and immediately intercepted by the corporation. On the other hand, corporate strategy and project portfolio management implementation without appropriate performance measurement could be considered as risk taking

activities. Performance measurement also supports the corporation in predicting possible project portfolio risks. In this context, fact-based measurement is a key instrument for executives to evaluate trade-offs. Therefore, corporations could possibly avoid an over-confidence attitude that can damage the project selection process. Ricciardi explains this issue as the use of quick and easy heuristics when forming judgments and the bias toward seeking confirmation rather than refutation of the ideas can give rise to the overconfidence phenomenon which is an overestimation of the accuracy of the current knowledge.” (Ricciardi 2000, 42)

In conclusion, performance measurement and performance management is crucial components of corporate strategy. They support strategic management in terms of observing and supervising the process of implementation. From these points, effectiveness and efficiency of the strategy would be clearly measured. Additionally, performance measurement system provides a clear indication of the current project portfolio completion. From these results, intervention activities for adjusting the project portfolio management implementation can be taken if necessary.

2.2.2 Balanced Scorecard

The balanced scorecards concept was first introduced by Robert Kaplan and David Norton in “The Balance Scorecard – Measures that Drive Performance” in 1992. The main purpose of the method is to support executives to control or monitor current performance within their operational areas. This method could support executives in avoiding weaknesses of previous management approaches. Kaplan & Norton (1996) described their exploration as:

"The balanced scorecard retains traditional financial measures. But financial measures tell the story of past events, an adequate story for industrial age corporations for which investments in long-term capabilities and customer relationships were not critical for success. These financial measures are inadequate, however, for guiding and evaluating the journey that information age corporations should make to create future value through investment in customers, suppliers, employees, processes, technology, and innovation."

Within the scope of project portfolio management implementation, balanced Scorecard approach can be divided into three perspectives:

- Financial perspective: Both traditional and contemporary financial questions should be asked. Based on the nature of corporation, ROI, ROE, ROA, risk or revenue will be the right measures. In defining the measurement criteria, the connection between project's input and output should be indicated to avoid unconnected factor.
- Internal business process perspective: The value of business, products and service should be addressed appropriately. This allows project portfolio management implementation to adapt into current strategic capacity efficiently.
- Learning and growth perspective: serves as a supportive indicator for all three perspectives. It aims at developing expertise among the personnel within corporation in order to optimize the benefit of project portfolio management.

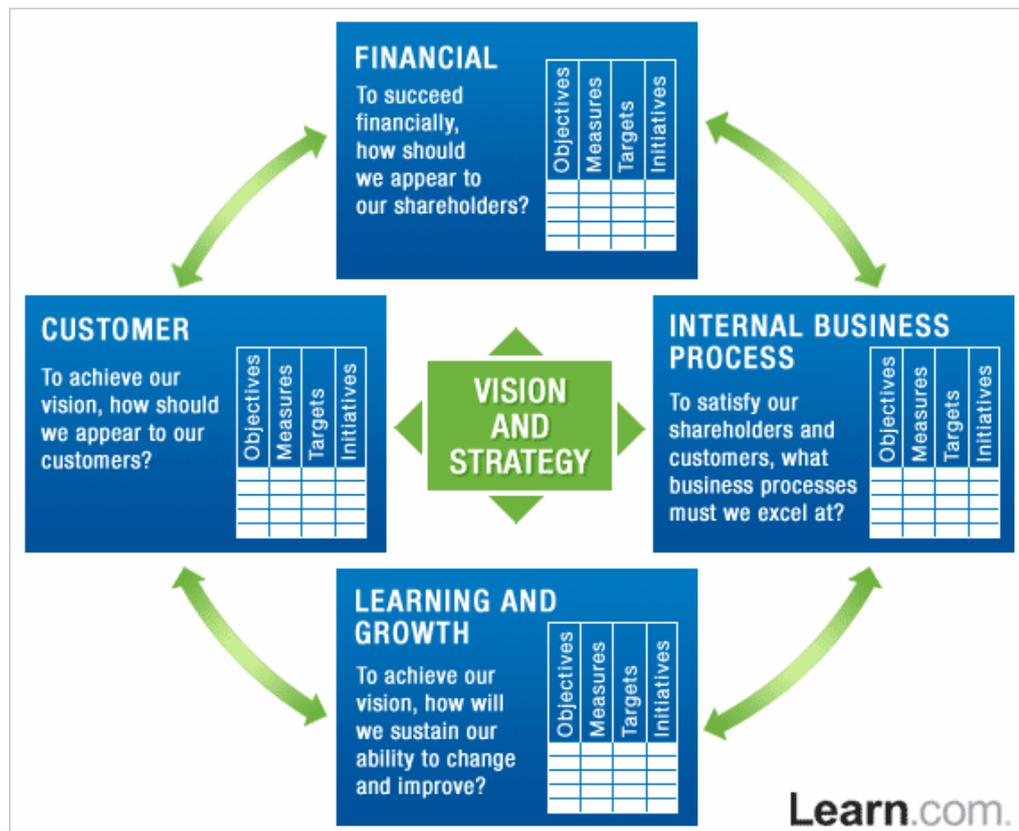


Figure 2: Balanced Scorecard (Learn.com, 2010)

Based on its functional approach, it can also be applied for designing and communicate performance results within board range of metrics which would be utilized in project portfolio management implementation. This measurement approach is used in both resource allocation and project alignment applications. However,

most importantly, using Balanced Scorecard would allow the portfolio manager to observe and control different aspects of corporate strategy and project portfolio management implementation as Kaplan and Norton emphasize in their work:

“Strategies for superior performance will generally require significant investment in people, system and processes that build organizational capabilities. Consequently, objectives and measures for these enablers of superior performance in the future should be an integral part of any corporation’s Balanced Scorecard.” (Kaplan & Norton 1996, 146)

From the perspective of enterprise level, Balanced Scorecard is the connecting instrument between corporation mission, corporate strategy and detailed strategic objectives that can be evaluated. Kaplan & Norton (1996, 149) indicate that every measure selected for a Balanced Scorecard should be an element of a chain of cause-and-effect relationships that communicates the meaning of the business unit's strategy to the corporation.

Based on this core principle, balanced scorecard should has balance of both side which means certain necessary performance drivers and outcomes are involved in the scorecard for each individual unit.

- **Indicator of the outcome:** It is the objective of certain project or corporate strategy. For examples, increasing resource optimization or developing productivity level within corporation.
- **Performance drivers:** It is the leading indicator for components which could be considered as inputs. It would be a single unique “measurement unit” for different strategic unit. For example, input measures for project’s activities, revenue per project or time ratio.

From a strategic management perspective, using Balanced Scorecard could result in several advantages. First, the manager will have the ability to measure the performance of their planned strategy. The measurement aims at maintaining the balance of responsibilities which are assigned to specific individuals. Furthermore, data regarding the corporate strategy can be collected for further needs on decision making. As a result, the corporation will have a clear view on the link between the project portfolio management and strategic objectives.

2.2.3 The Use of Scorecard in Project Portfolio Management

Merriam Webster Dictionary defines synergies as “a mutually advantageous conjunction or compatibility of distinct business participants or elements” (Merriam Webster, 2010). In a business sense, it is used to describe the state of aligning business activities or organizational units in order to create appropriate values in highly competitive environment. Within the corporation, a model that allows different departments to both collaborate and self-functioned is necessary. Furthermore, aligning projects with the organizational strategy would be the main priority based on this thesis. At this point, the author will examine how Balanced Scorecard can provide suitable environment of synergies development for project portfolio management:

- **Financial Synergies:** Concentrated resource placement and effective financial management will be the key point. The value of financial instrument is highly affected by the ability of the corporation to distribute the capital with proper risk management. The following metrics will be implemented within project portfolio management contexts: Return on Capital and Return on Equity. The receiving value will establish an internal capital resource for the corporation. This financial source generates benefit for business units in comparison to traditional financial market. As Leland notes in his work:

“Financial synergies can be sizable in identified situation. Principal financial synergies are often cited as reason for structured finance, and our model shows potentially significant financial benefits.”
(Leland 2007, 34)

- **Stakeholder’s Synergies:** The collaboration between functional areas of the corporation allows higher value toward different stakeholders. It is the opportunity for trading multiple products or establishes fully integrated solutions. The combination will result in high value service/product based on value chain reasoning. For example, customer satisfaction would be improved and loyalty will be strengthened. It provides the corporation new source of competitive advantages comparing to competitors, both tangibly and intangibly (Kaplan & Norton 2000, 90).

- **Internal Process Synergies and Learning and Growth Synergies:** Sharing production process and inner process will allow cross business units to minimize the cost. These costs include logistics and data processing. On the other hand, critical expertise and knowledge can be utilized by different units which can integrate in the whole progress. These sharing components allow business to acquire remarkable opportunity for growth. Furthermore, the corporation with high synergic human capital would be the leader in this era (Pham 2010, 14). Therefore, corporation's leadership and strategic management would create additional values for corporations. These intangible assets such as knowledge and expertise would be the key advantages in competing with opponents. Furthermore, these synergies would create suitable circumstance for the development of project portfolio management. These factors would positively and independently influence the corporate practices and generate benefits for the corporation (Kaplan & Norton 2006, 77 - 107).

Another purpose of the synergy establishment is to improve strategy alignment across the corporation. Scorecard would be the key instrument in monitoring the progress of synergy and would support the corporation as the connection instrument between different units, especially when they tend to be over-independence and make a decision that damage the interest of the whole corporation.

Although Balanced Scorecard is a break-through idea in strategic management, there is still disadvantages existed. At this point, the momentum that drives the evolution of scorecard within project portfolio management contexts would be demonstrated. The author would claim that the new type of scorecard can effectively replaced traditional ones. Within this process, the measurement management process of the corporation would be strengthened.

In the current stage of the evolution, the next generation of performance measurement - analytics scorecards - has the following characteristics which are highly relevant to project portfolio management approach:

- Predictable metrics more than lagging ones
- Singular metrics on macro-level scorecards
- Metrics are aligned with goals, strategies and plans

- Improvement initiatives are linked to one or more scorecard metrics
- Scorecards implemented fully on all level
- Performance review are utilized by real time data

This measurement instrument would also be utilized for supportive units within project portfolio management. Within the project portfolio management context, support units should also evaluate their performance using techniques such as service-level agreements, internal customer feedback, customer ratings and internal audits (Kaplan & Norton 2006, 132).

In conclusion, the purpose of creating synergies is to enhance efficiency and effectiveness within project portfolio management. It proves the balance scorecard's involvement in resource allocation and project alignment. Performance measurement plays an important role in establishing corporate synergies. As Kaplan and Norton emphasize in their studies:

Strategy execution is not a matter of luck. It is the result of a conscious attention, combining both corporate strategy and project portfolio management processes to describe and measure the strategy, to align internal and external organizational units with the strategy, to align employees with the strategy through intrinsic and extrinsic motivation and targeted competency development programs and finally, to align existing management processes, reports and review meetings, with the execution, monitoring and adapting of the strategy (Kaplan & Norton 2006, 18-20).

In conclusion, performance measurement and management could be utilized in project portfolio management implementation process. The proposed approach requires the new measurement structure for the corporation to prevent disadvantages of traditional strategic management methodology. Additionally, a modern type of scorecard allows executives to focus on monitoring metrics effectively while improving corporate strategy performance.

2.3 Implications of Corporate Strategy and Performance Measurement in the Empirical Part

The table below briefly presents the connection between the concepts which are studied in this chapter and their implications in the empirical research:

Table 1: Implications of Corporate Strategy and Performance Measurement in the Empirical Part

Concept	The scope of the studied concept	Relevant factor in the empirical part	Connection toward theoretical implications in the empirical part
Corporate Strategy	Internal factors that directly affect corporate strategy	Project portfolio management Resource allocation Project alignment	Internal factors directly affect the resources availability for project portfolio management especially in terms of resource allocation and project alignment.
	External factors that directly affect corporate strategy	Project portfolio management Project alignment	External factors are carefully considered during project alignment as corporation would optimize the project portfolio impacts in terms of strengthening profitability and competitiveness.
	Corporate strategy critical characteristics	Project portfolio management as a solution to improve corporate strategy performance	The critical characteristics define the theoretical framework for a project portfolio management implementation. The proposed approach should address corporation's issues in a way which can strengthen these characteristics.
Performance measurement	Fundamental of analytic based scorecard and its application	Project portfolio management Project alignment algorithm framework Resource allocation algorithm framework	Analytic based scorecard allows corporation to develop measurable strategic and financial metrics for resource allocation and project alignment applications.

3 PROJECT PORTFOLIO MANAGEMENT

Project portfolio management can be briefly described as an approach in implementing corporate strategy across corporation. This approach creates intended impacts on corporate strategy performance through allocating strategic resources and aligning projects toward corporate objectives.

3.1 Fundamental of Project Portfolio Management

In order to clarify project portfolio management concept, the author would point out the definition of project portfolio. Project portfolio is a set of projects that are managed within the same strategic business unit. Project portfolio has a distinctive characteristics which is its individual projects have to together share strategic objectives and available resources. At this point, Eskerod (2005, 496) defines project portfolio management as “a tool-supported process for analyzing and managing the project portfolio with the goal of maximizing total value, while accounting for risk and the organization's willingness to accept risk. The concepts and techniques are similar to those used by financial managers to optimize investment portfolios. The main focus of project portfolio management is determining which projects to accept, postpone, reject and kill.”

Project portfolio management is then can be defined as an approach which corporations do not focus in managing each individual project with independent objective but rather managing a collection of projects with the same strategic objectives.

Moreover, portfolio management is acknowledged to be an effective decision making approach with its project selection process which can modify and update projects. Especially in project focus corporation, project portfolio selection concentrates on measuring the possible risks with its trade-offs benefits in project proposals phase. This is also carried out in order to ensure project outcomes are aligned with corporation's strategic benefits. In order to achieve project portfolio optimization, corporation needs to conduct three different perspective of project portfolio management which is: project selection, project prioritization and project alignment (Kerzner 2004: 57). Additionally, in his research, Levin indicates that project portfolio selection focuses on the management of corporation's strategic

project portfolio at an aggregate level (Levin 2007, 9-18). Figure 3 below clarifies the use of project portfolio selection within the corporation:

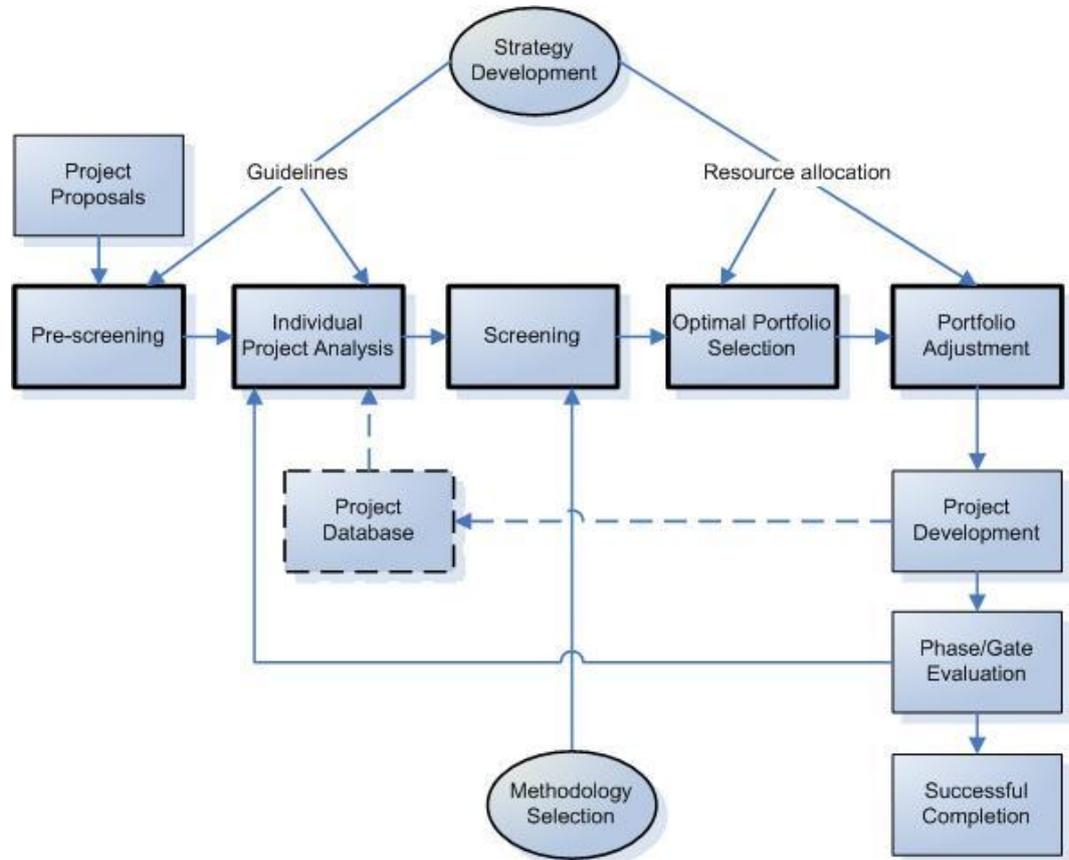


Figure 3: Framework for project portfolio selection (Archer 1999)

The main purpose of project portfolio management is to optimize the value of the portfolio of project and balancing it in terms of finance or strategy. In addition, project portfolio management connects corporate strategy to practice by reflecting the calibration between projects, strategic benefits and resource allocation based on predefined strategic objectives. This fact is supported by a finding on strategic corporation by Checkland (1999) which points out that a corporation is a social collectively that arranges itself strategic goals that it can pursue predefined purpose that individuals could not accomplish on their own. Within this approach, prioritizing projects is a vital approach to determine the required resources and to indicate the optimized way which project portfolio can be delivered (Hobbs 2005, 36-47). Therefore, project portfolio management establishes a quantitative and metric-based foundation to terminate projects that no longer support corporation overall strategic benefits while utilizing available critical resources to align projects with strategic objectives.

Relevant theory indicates that creating an effective project based corporation with appropriate resource allocation (including project portfolio management) would result in strategic alignment within corporation. Based on this framework, corporation begins to assign responsible personnel to new position which would have the responsibility and capacity for facilitating competences in project portfolio management. Within this modern approach to corporate strategy management, successful project portfolio is defined by the following factors:

1. Project portfolio management capability is constantly improved in order to monitor different business fronts. The corporation should focus on developing concept, improving methods and adjusting the project portfolio management portion. It is also crucial to give description about project inventory, inform shareholders/participants. This progress is assessed by a defined metrics. The list of projects reasonably fall under three categories: strategic, compliance and operational.
2. Project is executed according to schedule and within planned budget. Based on significant risks taken and certain corporation changes occurred, it was best for this plan to implement progressive elaboration. The aim is to constantly monitored, adjusted and improved appointed project portfolio.
3. Effective personnel training to adapt new standard practice project portfolio management methodology by the establishment of official training program for project managers and project key shareholder. Key guidelines for personnel would be developed.
4. Implement enterprise project management tool which can be accessed through information technology. Project portfolio management performance is evaluated by appropriate model which is selected through wide range of assessment models.

In order to achieve those objectives in early initiative phrase, project portfolio management needs to align with relevant internal activities. The intended impacts aim at improving strategic planning process, monitoring progress using scorecard and managing resources are inter-connected. Thus, it can be linked to project portfolio management. For example, balanced scorecard and other modern perfor-

mance measurement tool as mentioned above in this thesis can integrate with project portfolio management for better strategic execution. One important collaboration case in this context is between project portfolio management and financial area. Project funding is assessed and determined by financial department. The key principle is to simplify the justification process. As a result, the corporation is able to use project portfolio management to align project funding with corporate strategic objective (Norrie 2006, 40).

At this point, the author would like to make a distinction between the benefit at corporation level and individual project level. Relevant evidences indicate the fact that project portfolio management practice can only considered being effective when they drive the corporation activity toward intended strategic benefits. It is clearly indicated in relevant literature that in order for project portfolio management to become strategic toward corporation, possible strategic benefit and contribution of a single project should be evaluated in precise measurable metrics (Cochrane 1993, 93-102). The author also see project portfolio management in its early form which concentrated on realizing benefit and meeting intended success criteria by connecting the portfolio outcome with external remarked impacts.

As a result, project selection process within corporation become highly selective where corporation establish project optimization by prioritizing projects which deliver strategic contribution while terminating inappropriate ones. In their research, Kaplan and Norton stated that project portfolio management is a channel to establish standardized methodology to project optimization (Kaplan & Norton 2001, 97-103).

3.1.1 Project Portfolio Management as an Approach to Implement Corporate Strategy

The author would argue that besides this definition, project portfolio management can also be considered as an integration approach to implement corporate strategy. The argument based on the following evidences:

1. Project portfolio management lifecycle has a higher level of comprehensive compared to its counterpart in program management and single project management (Cleland 2006, 48-52). Additionally, project portfolio management provides relevant tools which address strategic objectives (Checkland 1999, 281-

284). It is also constantly evaluating each project's individual contribution, their synergic benefits and alignment toward enterprise objectives.

2. Project portfolio management process analyzes corporation's strategic options such as opportunities and its trade-off risks. (Gareis 2002, 68-82).

3. Project portfolio management support enterprises by selecting projects, planning and executing approved projects (Salle 2005, 323-349).

4. Project portfolio management addresses the measurement of project performance toward organizational overall strategic benefits. (Kezner 2005, 13-15)

Even though these evidences are individually addressed by mentioned authors, based on the author knowledge, it has not yet been a validated theory of viewing project portfolio management as integration approach to align enterprise as a whole.

Despite of the complexity in terms of constructive algorithm, the fundamental outcome of project portfolio management process is an optimized set of projects. Project optimization indicates that the within a portfolio, the project which contribute significantly to corporation strategic benefits should be prioritized to received its needed resources. In a standard framework, strategy focused corporation would have one portfolio which consists of all projects that the corporation carries out.

The practice has showed different variants based on the business situation. Within global corporation contexts, evidences shows that it would be more practical to have project portfolio for each strategic business unit (Lowe 2006, 58-71). Each of these portfolios consists of projects related to a particular theme or objective. Otherwise, project portfolio might be divided based on its functional area of capacity. At this point, the author would claimed that based on business structure, a single portfolio is more complicated than multi portfolio due to its optimization challenge. If corporation adopts a single portfolio approach, it would encounter increasing complexity in optimization across different strategic level within corporation.

One of the factors that highly influences project portfolio is the resources available to it. In particular, in order for project portfolio management to be fully implemented, annual budget has to be appropriately allocated across approved

projects. As indicated earlier, limited resources are proved to be a factor that appears to restrict project portfolio performance. It is also a clear sign for resource and cash flow issue. The lack of resource allocation leads to higher time required to complete projects or in certain case, the termination of the projects (Artto et al. 2001, 49). As a result, resource allocation is a vital part of project portfolio management. Based on the predefined objectives, the corporation resources should be measured to see whether it can meet the demands of projects or not. Therefore, effectively measurement and evaluation of resource availability would support corporation in making effective project investment decision.

Besides measuring the required resources, project portfolio management also concentrates in analyzing risks associated against its counterpart benefits within a strategic business unit. During the process of conducting this thesis study, the author identifies the fact the cost and resource corporation committed in implementing project portfolio management are associated to its three perspectives: data processing and analysis, implementation training and adapting the system based on corporation's needs. However, project portfolio management implementation is proved to have significant impact on corporation's strategic capacity and organizational efficiency (Wells 2004, 513-524).

3.1.2 Measurement Instrument in Project Portfolio Management

A common challenge of implementing project portfolio management is how to address the gaps of selection criteria within its basic mechanic. Fundamentally, corporations within the private sector context have the primary purpose to maximize benefits which is the same as the characteristics of all project portfolio selection approach. The majority of relevant literature to project portfolio management indicates that the corporations need to utilize the use of measurement metrics to make relative decisions between projects in terms of predetermined benefits and tradeoffs risks (Ghasmzadeh 1999).

Common criteria which could be used in this situation is economic return measurement such as NPV, IRR, ROI and PPB. Project portfolio management allows the corporation to use more complex variation measurement instruments such as capital asset pricing model (CAPM), Monte-Carlo stimulation and Bayesian statistical model. Generally, the main purpose of utilizing these assessments is to balance the potential benefits against foreseeable risks within the same portfolio.

3.2 Fundamental of Resource Allocation

In this part, the author will present resource allocation as a critical application of project portfolio management and resource allocation measurement. Resource allocation can be defined as the process of managing available resources aims at efficiency. Within the scope of project portfolio management, resource allocation can also referred to the arrangement process of both resources and activities which emphasizes in the utilization of resource input. Resources in this context cover a board range from corporate input such as portfolio fund and talented human resources to time.

Resource allocation process starts with corporation making fundamental resources-related decision which defines funded items to the portfolio. In the context of the proposed approach, the next phase in resource allocation process is to establish a metric-based ranking system to modify the relationship between resources and their counterpart benefits. In detail, it can be considered as a system to decide which projects should acquired more input in case of resource was elevated. The author would emphasize in this research that three main purposes of constructing strong discipline of resource allocation are: (1) to develop resource management efficiency, (2) to decrease the possibility of wasted resources and (3) to weigh important resources against project risks.

The first time the connection between resources allocation and corporate strategy being considered by the corporation to be strategic significant is when they began to view their resource allocation perspective as a boarder concept in terms of finance and non-finance resources. Additionally, resources allocation is diverse and complicated due to its quality-central characteristic. Grants (1991, 134) proves that the corporation can acquire resources by acquire externally and generate internally. Corporation is able to identify the separation between internal and external resources based on their clarification. Within this theory, capabilities are acquired in unique ways. Before allocating resource, corporation had to gain access to certain unique resources and combine them. Grants states that:

“Conventional approaches to developing resources and capabilities have emphasized gap analysis – identifying discrepancies between the current position and the desired future position, and then adopting policies to fill those gaps. Such approaches are of limited value. In the case of resources, investing in areas of weak-

ness – whether it is proprietary technology or manufacturing facilities – can be very expensive and, because of the complex complementarities between different resources, such investments may deliver limited returns. In the case of capabilities, because we know little about their structure or operation, developing them is a hazardous endeavor (Grant 1991, 133-136).”

This is true when compared to Prahalad’s “core competences” theory which states that the corporations establish competitive edges by combine diversified sets of corporate resources and integrate them into corporate strategy (Prahalad 2005, 86-86). Therefore, the author would claim that the long-term corporate strategy success needs to be based on resources alignment. This theory is constructed based on unique articulated resources which are impossible to acquire or substitute by other competitors. In this context, Schendel (1994) helps to complete this argument by indicating that

“The way in which a broad reading of ‘resources’ can cut across arbitrary distinctions - such as those between the external and internal foci, between formulation and implementation, and between content and process - and demonstrate the interdependence of these facets of strategy, is one of the keys to its recent success.”

Cusumano and Nobeoka (1988, 49-53) indicate that major issues concerning project portfolio management is to align sacred resources based on corporate strategic objectives. The main reason is multiple projects often create the situation where shared resources have to be shared by various projects. If resource characteristics are more limited and unique, the situation will be more complex as departments will compete over resources for their own project. The writer will argue this logic on two deeper levels:

1. Inefficient resource allocation will lead to internal competition between different departments, which is then result in internal disagreements. Therefore, share strategic resources had to be well-organized and balanced by linking projects with corporate strategic objectives, corporate strategy and resource management plan. This argument is supported by Platje (1994, 79), he indicates that: “The objectives of projects under multiple project schemes must be interdependent and emphasizes the importance of overall corporate strategic objectives. And therefore, project portfolio

management represents the integration between projects, prioritization of resource and a reduction in overall management effort.”

2. Without the engagement of proper project portfolio management, efforts to allocating resources between departments are confused regarding to differences in project activities level, deadline and negative consequences of incomplete projects.

At this point, the author would like to indicate the differences between resource allocation and prioritization. Resource prioritization is conducted by key executives in enterprise level and the outcome is a metric-based priority which is then utilized by responsible manager who allocates resource. In traditional strategy management approach, resource allocation is a foundation to establish resource prioritization. However, in the scope of this thesis, the author would emphasize a second approach which is allocating resource based on prioritization. This approach is utilized in the proposed project portfolio management methodology as it presents a board combination of options based on a given amount of resources.

The three type of resources allocation which is utilized in project portfolio management within the scope of this thesis are:

1. Corporate finance resource allocation: the appraisal of individual project's benefit is evaluated by NPV (Net Present Value). In this type, project is approved only if it shows potential positive NPV which clearly indicates benefits dominate cost (Marcus, et al 1995, 128-134). In strategic project where project is carried out even though its returns would be less than its peers, resource allocation applied cost-benefit analysis which takes into consideration strategic metric-based criteria in order to convert non-monetary benefits to present monetary values (Treasury 2003, 39-42). In this circumstance, when benefits and costs are able to be measured in monetary values, Net Present Value can be evaluated. In case of this empirical research, due to limited budget within each department, the corporation uses also the ratio of NPV against investment cost (profitability measurement for value of money) rather than only NPV. It is noteworthy that in the case study, discounted rate is applied to risky projects in each year's total cash flow. The more risk accommodated in the project, the higher discount rate is applied. At this point, resource allocation is an

evaluation tool of risk associated with each project which is different from risk of the corporation.

2. **Benefit optimization resource allocation:** is an approach to maximize the total benefits of every invested item based on a predefined constant budget. It aims is to fulfill the portfolio with most valuable/strategic beneficial projects considered the limited resources of the portfolio (Newman 2003, 413-419). This approach can be simplified to a straightforward optimization model, however it needs to be modified before it can function in practical business life. In addition, it emphasizes in the comparison between synergies, decisions, life cycles and additional affects rather than the trade-off risk of not acquiring intended benefits. Benefit optimization is utilized if cost is not an objective; and if cost is an objective, it is included in objective hierarch and be considered as a constraint of optimizing benefits over arrange of total cost constraint value. If utilized this, the department regularly has to explain why replacing a higher benefit-cost alternative with a more costly lower benefit-cost alternative for the best interest of the corporation based on strategic objectives (Lootsma 1981: 28-35).
3. **Decision analysis resource allocation:** consists of two different methods which are conducted in the case study corporation. The first approach called conservative decision trees which measure project risk and its risk management decision which should be taken in the future based on relevant data. Lawrence indicated in his work that this typically the consequences of each project are modeled in financial terms, often using NPV as the criterion with the discount rate set as a risk-free rate, since all uncertainties about future events have been modeled as probabilities in the decision tree. The NPVs are weighted by probabilities and the resulting expected monetary values become the basis for ordering the options or when divided by costs, providing indices for constructing portfolio (Lawrence 1984: 58-61). The second approach is based on multi metric decision analysis for evaluating the consequences of resource allocation choices. It changes from viewing risk as a negative probability to treating it as criteria.

These three types of resource allocation present a wide view on how prioritization should be addressed within corporation. However, in the case study within this research, the corporation often utilized the first two methodologies in their project portfolio management system.

3.2.1 Resource Allocation in Project Portfolio Management

Within the case study corporation, the evidences indicate there are significant differences between resource allocation within project management and project portfolio management context. The author will present validated advantages of project portfolio management compared to project management in terms resources allocation in the table below.

Table 2. Resource allocation in project management and project portfolio management

Project Management in allocating resources	Project Portfolio Management in allocating resources
Refers to the establishment or acquisition of resources from different parts of a corporation to complete a particular project in a limited amount of time.	Refers to the establishment or acquisition of resources from different parts of a corporation to complete certain amount of project in a limited amount of time.
The resources are dismissed only after the project is complete and the resources then are allocated to other projects.	The resources can be dismissed when the project is pending, allocated to another strategic project which needs it and then return back to the original project. The strategic resources then can be repeatedly distributed by resource planning within project portfolio schedule.
Resources in traditional approach to Project Management are considered independent to other projects.	Resources in Project Portfolio Management approach are considered interconnected and dependent to other projects.

It is common for strategic projects to depend heavily on limited number of critical resources. Hendriks (1998, 72) supports this opinion by indicated that strategic

resources had to take into account the availability of scarce resources and the need for special allocated expertise. Each project is totally geared towards realizing its objectives through optimal use of allocated resources. These resources are generally expensive and rare. Laslo (2009, 6) clearly points out that regular matrix model used for allocating resources has been proven to be efficient non-scarce resources; however it is inapplicable for limited resources. Therefore, Laslo (2009, 9) suggests that project portfolio management and its optimization application such as resource planning and scheduling to be an alternative approach to solve the problem. His approach focuses on resource optimization which determines the input sources and output deliverables in order to maximize benefits. Laslo concludes project portfolio management and resources allocation are vital to strategic objectives based on the following arguments:

Multiple projects contending for limited resources complicate the task of resource allocating that arises in the daily corporate management. Therefore, resource allocating decisions are extremely important to identify and evaluate the corporate strategic variables in terms of the future posture of the corporate projects with regards to constraints on existing resources (Laslo 2001, 59).

However, the writer will argue that regardless the effort for optimize resource through allocation process, responsible personnel should expect critical changes during project activity. In reality, planning and scheduling aim at resource allocation are affected by changes which results in strategic resources eventually be unavailable for designated project. Fundamentally, resources allocation is exposed to the risk of external and internal alteration. This argument is clarified by Bregman's (2009, 114-115) finding:

“If the disturbances (meaning the alteration occurred in reality compared to what was planned) are significant, then optimal solutions to the original problem may turn out to be deficient in practice, the probability of completing those projects within a prescribed due date might be unacceptably low”

3.2.2 Current Models for Resource Allocation

At this point, the author will briefly mention current models for resource allocation within project portfolio management context:

- CPSP: Resources Constrained Project Scheduling Problem. It was created by Bartusch and Mohring in 1998. The main method is to plan the activities of a project have to be scheduled subject to precedence and resource constraints. The objective is to minimize the make span of the project (Harman 2002, 433-437).
- POSET: Partial Ordered Set. It was created by Billaut and Roubellat (1996). The model suggest to generate for every resource a so-called group sequence, i.e. a totally or partially ordered set of groups of operations, and to consider all the schedules obtained by an arbitrary choice of the ordering of the operations inside each group. POSET is explained in details below:

“A relation R on a set A is called a partial ordering or partial order if it is reflexive, anti-symmetric, and transitive. (A, R) is called a partially ordered set, or POSET. Two elements a and b of a POSET (A, B) are comparable if either a belongs to b or b belongs to a . They are incomparable if a belongs to b and b belongs to a . If (A, B) is a POSET and every two elements of A are comparable, then A is called a totally ordered or linearly ordered set, and B is called a total order or a linear order. A totally ordered set is also called a chain. E.g., (Z, B) is totally ordered’. Additionally, a POSET may be represented by a digraph. (Lipschutz, 1997, 37)

- JSP: Job-Shop Problem. It was recently created by Laslo (2010) to become an alternative resource planning and scheduling model in the context of project portfolio management optimization.

“Back-propagation neural nets are used to solve job shop scheduling problems with several job types, exhibiting different arrival patterns, process plans, precedence sequences and batch sizes. Training examples were generated to train the neural network to select the correct characterization of the manufacturing environments suitable for various scheduling policies and the chosen performance criteria. In order to generate training samples, a performance simulation of the dispatching rules available for the manufacturing system was carried out. To

carry out this training, a special, input-feature space was developed. This space contained both job characteristics (such as types, number of jobs in each type, routings, due dates, and processing times) and shop characteristics (such as number of machines and their capacities). The output of the neural network represented the relative ranking of the available dispatching rules for that specific scheduling problem and the selected performance criteria. The neural networks were tested in numerous problems.” (Rabelo 1990, 25-27)

The main principle for resource allocation is summarized by Laslo (2008, 215) as the following:

“Resource allocation method assumed that there was a random execution duration with a given distribution density. The actual start of the project execution is random, but depends on the availability of an appropriate individual expert and can never occur before the project is accepted. Since we consider that once the project activity execution starts the execution proceeds continuously until the activity is accomplished, the random actual completion time of the project activity is determined as its start time plus its execution duration, both of them being random. The partial order of the project activities determines that the start of the project activities execution requires that all its predecessor activities are accomplished. The project is accomplished when all its activities, or more specifically, when all the project activities ending at the project’s sink node are accomplished. The random end of the makespan is by definition the point of time when all the projects are accomplished.”

However, the writer will argue that resources allocation methodology should be carefully considered before applied as an exact planning program. It is extracted from the fact that project portfolio management focus on strategic objectives which sometimes cannot be measured in terms of quantitative model. The writer also finds out those important factors in project portfolio management implementation such as: (1) unforeseeable risk of alternation and (2) variants between allocation plan and execution are unable to measure by quantitative model. The list of

these factors is pointed out by Chen & Huang (2009, 105). These factors consist of staffing quality, collective learning, innovation and specific individual experts.

In conclusion, even though there are differences between resource allocation models but their objectives are similar, which is mainly to attain the state of optimal resource usage. Resource allocation methods concentrate on the variety of resources, projects and their realized benefits. The method solve the planning issue by addressing economic benefits, including the maximization of outcome while minimize the total cost of activities. Moreover, the methods have realized the issue on meeting multiple objectives on limited execution times (Elmaghraby 2005, 309).

3.3 Fundamentals of Project Alignment

Project alignment is defined as the process to progressively correlate internal and external factors by utilizing information system. The key factors which would be considered within this process are corporation's structure, industry structure, competitiveness, resources and corporate strategy (Henderson 1993, 17). In this process, Chandler's research indicates possible conflict in the process of defining correlation between internal arrangements and external positioning based on economic performance (Chandler 1962, 327). He also claims that project alignment is closely connected to the use of information technology within corporation and these information technology applications should reflect the corporation's internal response with corporate strategy. However, Jarvenpaa (1994) criticizes that over-dependency between information technology and corporate strategy might decrease strategic flexibility.

Project alignment could be considered to be a connection link between corporate strategy management and practices. The case study indicated the fact that this link utilizes information technology and geometry model in order to connect the changes in different concepts. However, the method to translate this geometry model outcome to project alignment performance was not revealed by the interviewees within this study. In fact, current evidence points out project alignment within project portfolio management scope requires high amount of finance and expertise resource to be implemented. In recent research, Argyris (1996, 97) proves that in most project-focused corporation, corporate strategy and resource allocation are not strongly connected due to poor project portfolio management

performance. This argument is supported by Dreyfus (1994, 147) which consequently strengthen the importance of project portfolio management in aligning project. His research indicates the complex world of strategic alignment within corporations such as arrangements of project, personnel and facilities with strategic objective. As a result, the alignment could be seen as problematic without the appropriate foundation established by project portfolio management approach. At this point, accurate project portfolio management model such as project alignment geometrical model can accurately measure the corporation current strategic alignment.

3.3.1 Project Alignment Process

In the case study within this thesis, general project alignment process consists of four phases:

1. Define and measure individual project objectives: the corporation begins with assigning project objectives into a decision model and evaluates the significance of these objectives by using AHP Pairwise Comparison methodology. Based on the result analysis, the corporation will prioritize individual project objectives. AHP uses a five-step process to solve decision problems. They are:
 - Create a decision hierarchy by breaking down the problem into a hierarchy of decision elements.
 - Collect input by a pair wise comparison of decision elements.
 - Determine whether the input data satisfies a consistency test. If it does not, go back to Step 2 and redo the pair wise comparisons.
 - Calculate the relative weights of the decision elements.
 - Aggregate the relative weights to obtain scores and hence rankings for the decision alternatives (Karapetrovic 1999, 2).
2. One of the major reasons for the popularity of AHP is that the decision maker does not require advanced knowledge of either mathematics or decision analysis to perform first two steps
3. Define project's contribution toward portfolio strategic output: the corporation builds evaluation criteria matrix to measure individual project's con-

tribution toward strategic objectives. The project's benefits are then be evaluated against portfolio overall strategic objectives by using Sensitivity Analysis Model. The mentioned model allows personnel to examine the impact of individual project on corporate strategy performance by comparing alternative results in case of project's priority is modified.

4. Define project's risk: the corporation constructs a list of possible risk factors during alignment process. Based on the proposed risks, corporation builds evaluation criteria matrix concerning individual project's risk.
5. Finalize project alignment process by constructing the optimized set of projects: based on the assessed benefits and risks, corporation makes decision on creating an optimal combination between projects within the portfolio. Additional constraints are integrated if necessary. Finally, executives compare the constructed portfolio against corporation's resource availability to decide the optimal level of resource allocation. It could be considered effective practice when individual project performance is linked to both strategic objectives and financial performances.

3.3.2 Project Alignment and Corporate Strategy Performance

Project alignment supports a corporation by establishing options and flexibility to respond to strategic opportunities, assisting corporation in achieve portfolio optimization which directly results in a competitive advantage and optimizing the return on corporation's investment (Weil 1998, 216). This is supported by Tomos (2002, 357) as he indicates project alignment applications would facilitate better corporate strategy performance which directly influences the profitability and competitive advantages of the corporation. This is enhanced by establishing the right correlation between internal arrangements and external positioning (Ciborra 1997). Project alignment would be considered a solution which can addressed project portfolio outcome synergy, business plan development, organizational efficiency and profitability.

However, this study indicated the fact that project alignment is a problematic concept concerning uncertainty and personnel's psychology which cannot be measured by rigor algorithm concepts. It would possibly result in challenges encountered by the corporation in terms of strategic intent articulation (Cibora 1997,

108). Project alignment approach in the case study assumes corporate management is able to acquire full control over the corporation and purposefully implied the organizational capacity in generating strategic benefit. This rarely true in project portfolio management practice, therefore, project alignment approach would take these critical factors as constraints within its evaluation.

In conclusion, the author would examine project alignment approach in single context which is limited by the impact of project portfolio management on corporate strategy. Findings within relevant literature suggest the significant correlation between high performance in project alignment performance and in project portfolio performance in terms of synergic benefits. As an integrated component of project portfolio management, project alignment should be considered to be implemented by the corporations as a progressive approach to deliver flexibility and effectiveness within corporation.

The theoretical part in this thesis examined the body of knowledge of areas related to this study (corporate strategy, performance measurement, project portfolio management, project alignment, and resource allocation) which established a well-grounded foundation for this study. Each relevant area was explored with a perspective towards the applicability for project portfolio management implementation in practice and the scope of this thesis rather than for the subject itself. The theoretical concepts presented in the above chapters connect each area to the conceptual framework of the thesis topic. The main purposes are to establish a fundamental understanding of the relevant issues and to indicate the relevance of the mentioned theoretical framework which would be connected in this thesis to support the conclusions.

3.4 Implications of Project Portfolio Management, Resource Allocation and Project Alignment in the Empirical Part

The table below briefly presents the connection between the concepts which are studied in this chapter and their implications in the empirical study:

Table 3. Implications of Project Portfolio Management, Resource Allocation and Project Alignment in the Empirical Part

Concept	The scope of the studied concept	Relevant factor in the empirical part	Connection toward theoretical implications in the empirical part
Project portfolio management	Fundamental of project portfolio management	Project portfolio management	Establish the foundation to understand the concept of project portfolio management.
	Project portfolio management process	Project portfolio management system implementation in the studied corporation	Project portfolio management implementation process in term of theoretical framework is used latter to compare with corporation's practice. The gap is addressed in the thesis findings.
Resource allocation	Fundamental of resource allocation and resource allocation approaches	Project portfolio management Resource allocation	Establish the foundation for readers to understand the resource allocation applications in the project portfolio management context. Different approaches to resource allocation such as cost benefit analysis and benefit optimization are utilized in the case study to address the corporation's methodology to manage its internal resources.
Project alignment	Fundamental of project alignment. Rigor geometrical and mathematical models are not mentioned to the scope of this study	Project alignment	Establish the foundation for the reader to understand the concept of project alignment and the considered standard project alignment process utilized by the corporation.

4 RESEARCH METHODOLOGY

The empirical research is a single case study with an exploratory nature. It was carried out to examine the relationship between project portfolio management and corporate strategy with regards to the intended impacts on corporation's effectiveness and efficiency.

4.1 Conceptual Model

The empirical part of this thesis is conducted based on the conceptual model which is derived from the previous presented theory. The conceptual model can be seen below in Figure:

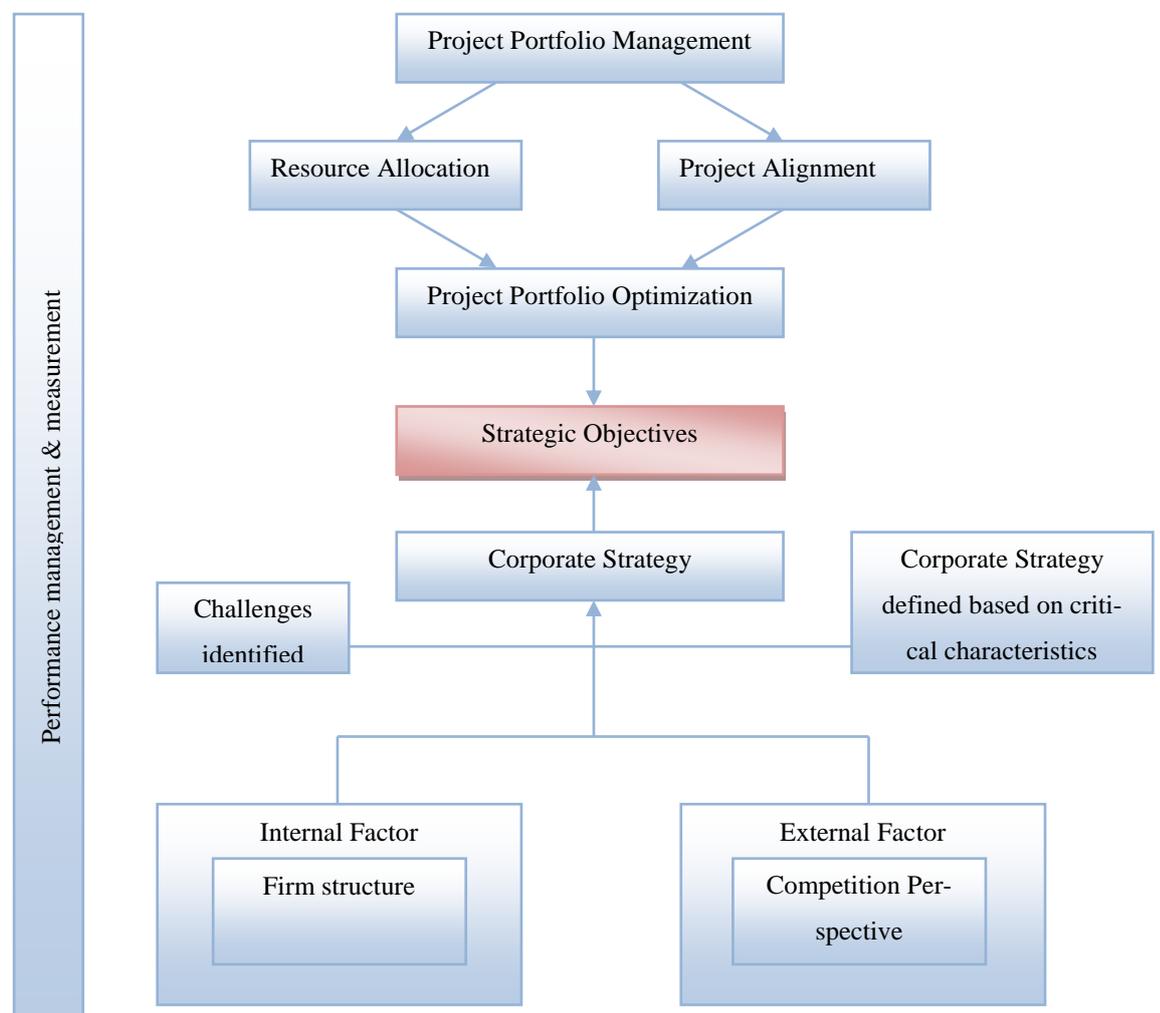


Figure 4. The conceptual model

In the empirical section, data collection and data analysis are based on this model. Firstly, the data concerning corporate strategy of the case company regarding its internal corporate structure and current external competition is collected. Second-

ly, the project portfolio management implementation process within the case company is analyzed. Finally, based on these analyses, the author would draw a conclusion about how project portfolio management could be a solution in allocating resources and aligning projects toward strategic objectives.

4.2 Case Study Methodology

This thesis studies project portfolio management as a solution for implementing corporate strategy. Therefore, case study is the most suitable method to construct a solution based on comparative logic. Even though being stereotyped as a free-form method, it demands high methodological accuracy in the process of building and testing theory. Case study methodology allows the writer to create concise and measurable concept, which is vital in founding well-grounded theory (Eisenhardt 1991, 258).

Case study approach can be a powerful method of creating theory as they allow the researcher to analyze duplicate phenomenon and enlargement among individual case. The individual case then possibly is used as independent evidence to confirm a specific theory. This approach helps the writer to perceive the pattern more effectively, in this case, the implementation pattern of corporate strategy and project portfolio management.

Moreover, case study approach often emphasizes complementary aspects of a phenomenon. By piecing together the individual patterns, the researcher can draw a more complete theoretical picture (Eisenhardt 1989, 182-184).

As this thesis emphasizes the methodological accuracy, the research questions need well constructed instruments for studying the case. In this thesis, those instruments include interview and corporation reports. The selected corporation for this case study is decided based on their logical connection in term of participated industry and project portfolio management implementation phrases. Following this, the writer will be able to limit unnecessary variations and criterias within the single case while building a more coherent theory. Fundamentally, other reasons for choosing case study methodology based on these characteristics:

- Case study allows the writer to acquire in-depth qualitative research data

- Case study provide illustrative approach to emphasize a phenomenon
- Flexibility allows the writer to explore new concepts and issues in research process. Therefore, the writer had strong foundation in proving that case study would be the most suitable methodology in this thesis.

4.3 Candidate Corporations for the Case Study

There are five corporations which are shortlisted for the empirical research; three of them fail to organizing appropriate interview schedule and maintaining re-search objective; the fourth is not selected as this corporation requests the writer to change the topic to marketing research for a particular project management information system. The selected case company meet the thesis requirement for theory-driven, which means collectable data is aligned with theoretical construct in this thesis. The research case is based on this project-focused corporation which is in global logistics sector. The frame therefore limited within global logistics sector and the scope limited to the corporation which had already successfully implement project portfolio management.

Conducting analysis from corporation which already has considerably high capability of project portfolio management allows the writer to create in-depth comparative concept between cases (King 2009, 276). Therefore, the chosen corporation for the case study in this thesis is Royal P&O Nedlloyd.

4.4 Data Collection

Data collection methods in this thesis research include:

1. Open ended interview recorded as a transcript: the interview are focused and structured. Open ended questions allow the writer to discover new concepts in relation with project portfolio management. This interview concentrates on implementation process of project portfolio management in a multinational firm. Particular consideration is given to organizational efficiency, multiple project management methodology and performance measurement. This questionnaire is answered by two points of view: (1) a group of external consultant deeply involved in project portfolio manage-

ment implementation of the firm for 5 months and (2) an unnamed project manager from the firm who also involved in the same project.

The interview is divided into three different sections. The first section focuses on the purpose and importance of project portfolio management toward the firm. The second section focuses on the implementation process of project portfolio management within the firm. The third section addresses how corporate strategy is implemented using two project portfolio applications: “resources allocation” and “projects alignment”

2. Observation as an outsider: an outsider position can result in lack of in-depth practical knowledge, cultural understanding and on the job experiences in conducting research. However, outsider position allows the writer to have a fair scientific view on the issue without psychological intervention or one-way preconception. Being independent in thinking and analyzing is mostly the advantage of observing as an outsider.
3. Documents: Includes progress chart, agendas, letters and latest 5 years annual reports of the corporation include operation statement. Other documents include press releases and information through secondary data sources.
4. Archival records: Includes planned budgets and organizational charts.

The writer will use triangulation and evaluate multiple sources of research evidence to increase validity of the research. Thus, the thesis finding will be presented based on a strong chain of evidence which can easily be certified latter.

During the case study, observation of the implementation system and its deliverables were utilized. Moreover, data from the actual project (such as relevant operation reports focus in organizational effectiveness) were presented which accommodate evidence of amplitude of project portfolio management implementation within the corporation.

Additionally, the technique of constructive open-ended questions allowed the writer to gain in-depth understanding of (1) the external consulting corporation’s perspective on this project portfolio application and (2) Royal P&O Nedlloyd’s perspective on its own project management behavior and methodology. When indirect observations and interviews are integrated, the author was capable to cor-

relate conclusions about the impact of the project portfolio management implementation with available data. The strategic pattern was compactness in associated research objective. This results in pre/post comparisons with these interviews data specifically valid and important.

Finally, during interviews with external consulting group and an operation regional executive, three sessions were divided in order to clarify the process of implementing project portfolio management in term of resource allocation and project strategic alignment. Once methodize, results of these interviews perhaps would generate additional insights into project portfolio management's impact on corporate strategic objectives before and after the implementation.

4.5 Data Analysis

The choice of data analysis method in this thesis is determined by:

1. Ability to address most significant issue of the empirical studies on the connection between corporate strategy and project portfolio management
2. Dependency on relevant collected data
3. Prior theoretical knowledge is utilized in the studies
4. Ability to express the setbacks of the empirical studies

The writer will used cross-case analysis strategy in order to establish a new theory on corporate strategy implementation and project portfolio management. The writer will rely on theoretical prepositions in analyzing this single case study. The well analyzed theoretical orientation will guide the data analysis process. It allows the writer to analyze selective data while ignore other irrelevant data.

Based on the research questions, it is mostly suitable to use time series analysis analytic techniques together with pattern matching analytic technique. They are the main technique to analyze and empirically compare current patterns with predicted ones. Moreover, these techniques are also appropriate for answering the "how" and "why" research questions (Yin 1994, 163-174). Additionally, they allow the researcher to analyze the relationships between two variations (in this case, corporate strategy and project portfolio management). To use the technique in proving the dependency between these two concepts, chain of events should first be analyzed. It then will indicate a path of theoretically sequences that are

anticipated to result in certain outcome. Then, the researcher will compare this flow to the flow of empirical data and the flow of traditional project management method to cross the irrelevant variations out.

4.6 Research Plan

The table below shows the process of designing and conducting the empirical part of this study.

Table 4. Research Plan

Phase in single case study approach	Action on how the phase conducted in this thesis
Preparation and contacts identification	<p>Write a brief rationale description summary on the study with clear objectives. The summary also indicates methods of collecting data and the sources of data.</p> <p>Decide there would be one case study.</p> <p>Identify contacts which need to be approached.</p> <p>Work with stakeholders (thesis supervisor) in designing the empirical studies.</p>
Questions establishment and case selection	<p>Brainstorm, analyze and select the relevant set of questions for corporate strategy and project portfolio management.</p> <p>Define the key question in empirical studies which is: “How project portfolio management is a solution in allocating resources and aligning projects toward strategic objectives”.</p> <p>Define critical criteria in choosing the case: data availability, data accessibility and time efficiency in collecting data within case.</p> <p>Select right type of material to review.</p> <p>Define the timeline for empirical studies.</p> <p>Define the method of analysis and report.</p> <p>Promote the corporation in the case study through seminar and publication.</p> <p>Define and follow ethical standard in research such as voluntary participation, manage risk of</p>

	harm, confidentiality and anonymity.
Data collection	<p>Compile a list of stakeholders. Each stakeholder represents deferent perspective of the issue.</p> <p>Individual interview with key person in perspective of implementing project portfolio management.</p> <p>Interview conducted in an open questions manner.</p> <p>Record interviews in order to create accurate quotation. Make sure there is an agreement on what information can be used.</p> <p>Analyze and research relevant material (evaluation reports, annual reports, operation reports, other Internet materials).</p>
Data analysis	<p>Put the collected data in structural theme according to Project Portfolio Management topic depends on data complexity.</p> <p>Write the findings for selected themes and recognize factual error.</p> <p>Cross-cased analysis and be able to adapt research them if encounter unpredictable issues.</p> <p>Analyze patterns between corporate strategy implementation and project portfolio management (search for differences and likeliness of the phenomenon).</p> <p>Summarize the finding from various case studies.</p>
Report writing and report distribution	<p>Define key criteria which are to be factual.</p> <p>Follow thesis reporting guideline of LAMK.</p>

5 PROJECT PORTFOLIO MANAGEMENT CASE STUDY – ROYAL P&O NEDLLOYD

This chapter aims to report the findings of a case study based on the presented methodology in private sector circumstance. This case study was also a result of expertise in project portfolio management methodology from key stakeholders in implementation process. The representative from P&O Nedlloyd and external consulting team had expressed the interest of participating in this case study. The interests were built based on the potential of two project portfolio management applications toward organizational benefits. At the time of conducting the research, these two applications (resources allocation and project alignment) are still being utilized by P&O which shows potential development for project portfolio management approach in the industry.

The case study was constructed in the following order: the author would first depict the corporation structure and its operation during the point of time chosen for the study; then the author would characterize the case study methodology and analyze qualitative data to clarify findings according to research question earlier.

5.1 Royal P&O Nedlloyd

The candidate corporation for the first case study is Royal P&O Nedlloyd Line Limited - an Anglo-Dutch worldwide container shipping and operation business. At the time of observation, the corporation owned over 160 vessels with the capacity of 635.000 TEU. Royal P&O Nedlloyd had over 12.000 employees in 138 countries. The corporation was found in 1997 in a merger between P&O Containers and Royal Nedlloyd which is the first merger in international shipping industry. Based on industry timeline observation, the author would claim that this merger was a one of the first starting points of shipping industry merger, consolidation and partnership. P&O Nedlloyd was acquired by Maersk Line in 2005. The value of this transaction was 2.4 billion Euros (MacAlister, 2005).

Additionally, the first case study also considers the project portfolio management system in one highly relevant corporation: P&O Corporation. The corporation is found in 1837, originated from the United Kingdom. It was acquired by Dubai Port Worlds in March 2006 at the value of 4 billion GBP. The brand name and management structure (including project portfolio management system) have been

maintained. Before the acquisition by Dubai Port Worlds, it was one of the 100 most highly capitalized British corporations listed on the London Stock Exchange, which consequently constituted the FTSE 100 Index.

Royal P&O Nedlloyd organizational structure was separated into different operational area and unit. Regarding board wide view of the corporation, centralized foundation functions is Finance, Human Resources, Strategy, Legal, Marketing and Oversea Departments (includes great number of branches globally). Overall, the corporation is governed by the head office located in Rotterdam (Laarman & Associates 2011). Internally, The Board is responsible for the corporation internal management system and evaluation of its effectiveness. A system is constructed to manage rather than terminate the risk of inefficient project in order to achieve corporate strategic objectives. Its main benefit to the corporation is providing few methodologies to assure against risk of project portfolio failure.

In the scope of this thesis, the author will concentrates on the corporation corporate strategy and objective in term of their relevance to the research proposition. Therefore, Royal P&O Nedlloyd finance objective such as “target net sales of decentralized properties: 325 million GBP” and “target cost base reduction of the business: 20%” will not be mentioned. Therefore, Royal P&O Nedlloyd corporate strategic objectives regarding at the time of observation were indicated below:

Table 5. Royal P&O Nedlloyd's Corporate Strategy

Royal P&O Nedlloyd Corporate Strategic objectives during observed period of time	Royal P&O Nedlloyd Corporate Strategy during observed period of time	Related Concept in Research Proposition	Important comments by interviewee and consulting associates
Growth Objective: Increase market share in emerging markets by 6%	Extend existing international operation into China and South East Asia market	Resource allocation of finance and personnel Project portfolio management	Emphasis in accumulative benefits and cost efficiency in this strategy
Management Objective: Total value of incoherent project disposal account for 10% of total project value	Ensure the project portfolio is balanced and concentrated on key shipping business area	Project alignment Project portfolio management	Emphasis in board areas covered which aligned with strategic objectives and strategic capabilities
Management Objective: Have a standardized model capable of aligning projects to strategic objectives	Develop a model for effective portfolio selection to maximize invested resource	Project alignment Project portfolio optimization	The objective is maximizing the benefits earned on invested resources. Moreover, minimizing the cost is irrelevant as it was not the main objective
Administrative objective: Have a standard IT applications for organizational usage of project portfolio management	Implement IT applications to improve efficiency in project portfolio management	Project portfolio management	Emphasize in the establishment of corporate portal and a platform solution for project portfolio management

In this case study, Royal P&O Nedlloyd main products were ports operating and logistics services within high level. Demands for their products are primarily from major container shipping lines, break bulk and vehicle carriers. Within logistics context, they operated directly with transport corporations, manufactures and traders. In order to meet client's expectation, Royal P&O Nedlloyd emphasized organizational efficiency in delivering excellent value to customers. In the beginning of this research, it is quite obvious to agree that corporate strategies related to strategic objectives are obligatory to this corporation and execution should already be authorized. However, the corporate strategies in this context are conceptual. They are problematic in execution based on their dependency on corporation policy. The nature of global shipping industry also affects the execution of corporate strategy in the following manners:

The core of the industry are closely relates to balanced outcomes such as effective use of resources (fleet and oil), management practices and the use of technology in managing business operation and the corporation advantages compared to competitors.

Therefore, these corporate strategies are complex due to their nature of high number of stakeholders given (The board, head of geographical area, finance department, IT department and external consulting corporation).

These are the reasons why the author will postulate that current project portfolio management theory is the exact solution in this context. The main argument based on a strong emphasis in this context for financial efficiency and rate of return in achieving overall project objectives. The corporate objectives had clearly indicated the needs for profitability and efficiency of Royal P&O Nedlloyd during the observed period. These are outcomes of both corporation core strategy and its corporate management practices which focus in the use of project portfolio management.

Consequently, in the beginning of this case study, the corporation was struggling with the strategic problem of how to make corporate strategy more practical through project portfolio management. The corporation wanted to focus on determining (1) what are critical factors that are missing in this corporate strategy im-

plementation process; (2) what are the drivers of the success of project portfolio management and (3) how to organize and adjust the corporation resources while optimize project selection to realize strategic benefits.

The problems Royal P&O Nedlloyd encountered are a classic representation of the gap between corporate strategy and current project portfolio management applications. Based on profitability purpose, project portfolio management and its view as a single unconnected concept within corporation would not be capable for adopting this level of variety in strategic intention. The level of complexity in this case required a systematic solution that can support multiple project portfolio selection while efficiently deal with resource allocation. Therefore, the author has integrated the logic of project alignment with strategic flexibility of resource allocation in this case study.

Additionally, for 6 years before the time observed in this case study, the corporation was encountering the problem of adopting too many (usually equally treated) projects and integrating them directly to the project portfolio system. Norrie referred to this phenomenon as “project fatigue” within corporation. He also indicates the following pattern for project fatigue: “the overwhelming flow of data, requirement and requisite activity was creating chaos at the department with managers increasingly finding it impossible to cope with what was expected due to work overload” (Norrie 2006, 102).

Consequently, different departments started to make their own independent decision on what project should be done and these decisions are regarded as absolute decision within execution of corporate strategy. Therefore even though the projects were authorized and accepted to launch, evidences from the case indicate that they would frequently fail to accomplish the necessary strategic impact toward corporate overall goal. Hence, overall project portfolio management objectives were clearly unable to achieve based on corporation’s current available resources and capabilities. In this context, it is necessary to emphasize that those faults are not intentionally committed by individuals from different departments. It is rather the deficiency of current project portfolio management system. Norrie (2006, 109) explains that within the current system, each single project which was proposed for permission was done so with the best of intentions and a sense from originating department of its compelling impact on corporate objective.

Yet, since no strict resources allocation and project alignment were in place to support the project portfolio management effort, there were little Royal P&O Nedlloyd could do to select and adopt the right projects which can create synergic values.

Based on the complex volume of activity occurred in the corporation, Royal P&O Nedlloyd personnel found it difficult to define which projects were truly affect the corporation overall strategic objectives versus simply affect individual scattered objectives. The author would claim that the simplest method for corporations to adopt project alignment concept is to answer the question: “Among wide selection of projects, which one were totally essential to the success of the corporation measured by corporate strategic objectives?” The personnel found they are unable to address this critical question from project portfolio management perspective. This current situation indicated a fact that inability to consciously decide high impact projects will inevitably result in unaligned project portfolio. Another consequence was that it would be impossible for projects to access the needed limited resources if project prioritization system did not exist.

Eventually, this creates a political oriented internal corporation where project priority is assigned only based on the status of a project sponsor. The more senior the person who proposes the project, the more priority it has and the more resources it gets.

The outcome of this situation was a precise decision in the beginning of 2003 by the Royal P&O Nedlloyd executive team to implement two applications of project portfolio management which are resources allocation and project alignment to accomplish strategic objectives. Two party of interviewee in this study were directly involved in this decision. Laarman and his associates from Project Partner LLC participated as external consultants. An unnamed P&O Nedlloyd Europe Regional Operation Manager participated as a professional who directly involved in project portfolio management and used to analyze the impact of this project portfolio management implementation on Royal P&O Nedlloyd. The author of this thesis was not directly involved in this case.

In doing so, one of the primary changes they adopted was a change in focus from individual project central management to manage project portfolio of the corporation as a whole. The team of interviewed external consultants had the opportunity

and advantage of designing the project alignment and resource allocation system directly. An interviewed unnamed regional operation manager had used the system created by the Project Partner LLC consultant teams. He indicated the fact that this project portfolio management system (which focuses on resource allocation and project management) at the time of this writing is still continue to be used by P&O personnel.

This fact signified the success of the external consulting team in creating a project portfolio management system which is transferred from Royal P&O Nedlloyd to P&O during 2004. At the time of this writing, P&O corporation has been utilized this specific project portfolio management system for more than 6 years. As this project portfolio management system still remained useful when transferring from one corporation to another, the author would argue that the system created by these external consultants were highly practical and relevant toward similar industries.

While the addressed problems are concentrated on internal operation effectiveness (i.e., project optimization, project alignment and resource allocation within multiple projects), the author's expectation is that the methodology should transfer effectively into other similar context to generate valuable insights in project portfolio management practices.

5.2 Project Portfolio Management Implementation Process in Practice

The author will utilize the timeline problem solving model to summarize the steps which were taken in this case study. The project portfolio management implementation process is presented below together with the objective for each phase and detailed work of the external consulting group:

Step 1: Define the critical issues regarding corporate strategy implementation.

The executive board of Royal P&O Nedlloyd indentify the main problem was great number of projects are launched; however most of them are deficient and unaligned with overall strategic objectives. Evidences showed that clear methodology for project portfolio management did not exist internally. In 1999, the corporation did implement a project portfolio management system; however its impacts

on organizational effectiveness and efficiency were not as high as expected.

Therefore, in 2002, a high level operation executive suggested that building another valuable project portfolio management would drive corporate strategy toward defined strategic objective based on best interest of the corporation. That operation executive then contacted and shortlisted four external consulting corporations including Laarman's consulting team. While each corporation was responsible for different parts of building project portfolio management, the interviewee consulting team was responsible for allocating resource and project selection process. The expectation of corporation and external consulting team in this phase was to define current problems and agree with executive board that intervention is necessary. This happened as expected.

Step 2: Establish a solution for defined problems

After receiving permission from the executive board, the consulting team engaged in a series of observe, research and develop appropriate project portfolio management applications (resource allocation and project strategic alignment). The detailed agreement between the corporation and the consulting team defined the scope of the project, framework, timeline and cost. The expectation in this phase is to achieve particular written agreement on project portfolio management deliverables. The details of this written agreement remain confidential due to request of Royal P&O Nedlloyd and Project Partner LLC.

Step 3: Implement execution plan

The implementation was executed by the external consulting team and supported by internal group of selected senior project managers. In this case, there were three steps in project portfolio management implementation which were executed by external consulting team:

1. Develop and implement project portfolio management system and its specialized applications in resource allocation and project alignment
2. Conduct standard consulting practices which include: joint work sessions, group training sessions, process design collaboration, and individual mentoring on building portfolio model. Careful consideration was given to ensure the corporation's stakeholders were engaged and motivated by potential effects of this project portfolio management implementation on organizational effectiveness. The external consulting team approached the corporation operation carefully in order to avoid organizational "immunity/resistance to change". The necessary resources were designed to efficiently flow to this implementation.
3. Validate and standardize project portfolio management system.

The expectation in this phase is to successfully design and implement a detailed project portfolio management process which will improve the corporation approach to multiple project management and project portfolio optimization. This requirement was meeting within 7 months.

Step 4: Evaluate the impact of project portfolio management implementation

External consulting team will measure the intended effects of new project portfolio management system and confirm whether the intended objectives have been achieved or not. The evaluation criteria were based on the target impact of this intervention on organizational efficiency and project prioritization. The external consulting team utilized qualitative data such as questionnaires and interviews in measuring these results. The author of this thesis indirectly observes the corporation performance.

The expectation in this phase was to evaluate the previously designed project portfolio management system by an external consult-

ing team for its application in a more global competitive sector industry such as logistics/shipping. From these results, the consulting team would be able to indicate the benefits and existing problems in order to validate this project portfolio management system. If there are variables, necessary medication will be made.

The execution of these phases are carefully observed based on different interviews of two different parties consistently involved in this process: an external consulting group and an internal regional executive of Royal P&O Nedlloyd. The author also uses triangulation method to double check the result by cross examination. The case is analyzed by the author based on the research methods mentioned in Research Methodology chapter. This straightens the reliability and validity of conclusions drawn from this research. Although Royal P&O Nedlloyd does not represent the whole private industry itself, the corporation is conceptually similar with others in global shipping industry where correlations exist; therefore this might be beneficial findings for global logistics professionals and researchers.

The assignment with this objective started in January 2003 with a discussion of the whole executive group addressing current organizational effectiveness and challenges of project portfolio management related approach to implementation. The external consulting team dive in-depth description for project alignment and resource allocation methodology and they proposed the corporation to undertake. Due to an unnamed operation regional officer, the report was comprehensive on how project portfolio management is proposed and suggested for implementation to executive group when he was collaborating with them on the issue.

The approach chosen by the external consulting group was to started by providing executive the current possible differences in strategic plan and practice. Once the gap was introduced and analyzed with project portfolio management methodology as suggested, there was an overview agreement on the corporation demand to continue the construction and implementation of a new project portfolio management system for internal use. The behavior in this case indicated the executive group clearly and instantly realized the value of the method being proposed. The corporation's CEO provided his support to authorization of an implementation project which is lead by Royal P&O Nedlloyd corporate project management office to carry out this assignment.

Beginning in February 2003, important assignment to evaluate the current project portfolio management practices was undertaken by the external consulting group with the internal representative team. Moreover, the external consulting group also conducted relevant interviews with executives and project management officers within the corporation. The result from these interviews was a three-step implementation process, which is presented as follows:

Step I: Project portfolio management system design

Step II: Implementation of project portfolio management system and its applications concentrated on resource allocation and project alignment

Step III: Validate and standardize project portfolio management system

The planned timeline for this implementation process was estimated about 8 months with the condition that committed internal resources concentrated primarily on every single phase. The project plan was discussed with the executive group in March 2003 and given permission to proceed. Corporate practices were evaluated and for the next two weeks, as a component of project portfolio management system design, strategic document and code of practice were established and approved by the executive group. These assignments were guided by existing framework practices of corporate project portfolio management within the corporation. This allow external consulting group to create advantage as executive group has corporation appreciate of project portfolio management.

In the mean time, the corporate project management office and the external consulting group started discussion on the process of establishing project portfolio management system which would be utilized to integrated strategic objectives measurement into project resource proposals and project portfolio selection/alignment process. The required components in this strategic model included resource allocation and project alignment would be first tested within certain departments. In addition, a strategic model exclusively designed by Project Partner LLC was presented to the internal representative group and they started to design the project portfolio management system for Royal P&O Nedlloyd that would then be applicable for P&O for the next 8 years. Due to the confidentiality agreement, this strategic information developed for Royal P&O Nedlloyd is not showed in this publication.

In April 2003, the external consulting group conducted their standard consultation practices with main stakeholders in a specialized workshop and coaching seminar to describe the new project portfolio management system. Representatives from departments that would be impacted by this new system are assembled to create a cross-department group. The purpose of the workshop was for the external consulting group and corporate project management office to explain the objective, mechanism and application of the new project portfolio management system. Based on the feedback from critical stakeholders, there was a significant increase from Average to High-Very High in credibility of the external consulting group after the workshop. The suggestion in these feedbacks also results in significant improvement on certain edges of project alignment solution. This had important effects on the complicated final system design. As this phase was effectively executed by external consulting group, these feedbacks were also the chance for the corporation to “learn together with the progress”. This insight was proved to be a capable method of project portfolio management system design and implementation which can be considered in similar implementation situation as a methodology to strengthen the process generally.

After finishing the project portfolio management system design, step II started with the internal representatives group to define fundamental mechanism within Royal P&O Nedlloyd which would possibly affected by this system implementation. They were also responsible for addressing key stakeholders to indicate the necessary organizational changes that would appropriately support the new project portfolio management implementation. This step consequently creates a network of direct project portfolio management impacted as follow:

- Information Technology Department: impacted as it was responsible for software development, estimating algorithm, resource calculation, resource allocation and project timeline tracking model.
- Reporting Department: impacted as it was responsible for integrating new strategic measurement metrics into reporting framework.
- Human Resources Department: impacted as it was responsible for defining critical resources such as talented individuals and specific costs.

- Finance Department: impacted as it was responsible for defining criteria for selecting, facilitating and documenting project portfolio.

In the case, all these departments gave necessary approval and support for project portfolio management implementation process. Thus potential results were significantly enhanced in term of cross-functional usage. In July, the implementation process was completed and the corporation reported significant increase in organizational effectiveness of project portfolio management system. Based on a detail feedback, the new project portfolio management performance was rated between High to Very High in term of its capacity to directly connect projects with corporate strategy within Royal P&O Nedlloyd. This project portfolio management system was also adopted by a high capitalized corporation closely relevant to Royal P&O Nedlloyd: Peninsular and Oriental Steam Navigation Corporation. At the time of this writing, it was still be utilized seven year later. This fact was confirmed by an unnamed operation regional executive who was originally in the transferring process between Royal P&O Nedlloyd and P&O.

Royal P&O Nedlloyd was equipped with the capacity to standardize corporate strategy and articulate project portfolio. Although the formulation of project portfolio management was fundamental finance, the internal use of this system highly influenced organizational efficiency in term of benefit optimization. One primary benefit that was realized by the mentioned regional executive is project portfolio management methodology was strategically articulated in form of resource allocation and project alignment. The regional executive also emphasized that project portfolio management had strongly support P&O in shifting strategic formation to corporate strategy execution. This occurred as project portfolio management had generated a consequences that increasing demand for corporate activities - especially current project portfolio – to be deeply connected with strategic objectives. This is done by integrating the outcomes of the project or portfolio with measurable benefits toward corporate strategic objectives. In data analysis chapter later in this writing, the range of interviewee's experiences in the foreseeable impacts of this project portfolio management implementation on strategic methodology will be presented to clarify these benefits. On the other hand, in project portfolio management implementation within Royal P&O Nedlloyd, current and proposed projects which no longer contributing benefits to strategic objectives were sub-

stantially terminated. This factor is critical to project portfolio optimization, therefore later in this thesis, the author will clarify this point by using constructive interviews.

Step III had completed the process of project portfolio management in August 2003 and external consulting group's work was finalized and closed at this point. At this point, project portfolio management system concentrated on resource allocation and project alignment was fully implemented within the corporation. These are the primary focus of this research and the author would argue that this would be an appropriate foundation for future research referred to project portfolio management process and organizational optimization. However, other relevant problems are still intentionally remaining outside the scope of this research.

5.3 Analysis of Data

As presented in Research Methodology chapter, there are two possible data sources which can be acquired and analyzed regarding project portfolio management implementation and their impacts on the corporation. Firstly, the structured interviews with one external consulting group and one operation executive which deeply involved in the implementation process allow the author to acquire useful data. These structured interviews focused on the response of new project portfolio management methodology in practices to generate strategic patterns and insight on the implementation. Secondly, secondary sources such as corporation operation report and official annual report are used for cross examination to check the reliability of interview data. The external consulting group also granted the author access to their project summary and key stakeholders feedback for use in this thesis. This additional source of data was relevant to the finding of this research. However, this is a third party data in this case context rather than direct observation of the writer, consequently, the writer has certain limited of control over its quality than the first two sources of data.

The outcomes of external consulting group interviews within the scope of their assignment in Royal P&O Nedlloyd were informative for improving the project portfolio management system. This interview both aim at acquiring comments to provide insights into project portfolio management practices but also validate the expected objectives of the assignment were actually achieved.

5.3.1 Resource Allocation Data Analysis

Based on the external consulting group perspective on how project portfolio management was implemented versus the traditional methodology of the corporation, it is important to consider the frequency of comments on the importance of project portfolio management as fundamental criteria. The author then shifts the focus to internal executive who together with external consulting group define and optimize project portfolio for their strategic objectives rather than based on traditional department proposal. Eighty percent of the answers from both external consulting group and one internal executive pointed out that the project portfolio management has create high impact to resource allocation and project alignment performance within the corporation. This is a critical development that project portfolio management was aimed to be delivering in term of organizational efficiency. Answers by external consulting group and internal executive provide validity for this interpretation:

Resource allocation in internal executive's perspective (Unnamed Regional Executive 2011):

"I tried to be very efficient with my department spending as my main goal was to manage profitability based on this specific market. The old system delivers uncertainty in financial estimation due to inaccurate resource calculation, therefore, we spent exceptional large amount of resource to conduct tests in order to minimize these risks."

" We rarely had any project ranking criteria, for example in term of supply chain issues and market demand, therefore sets of projects under consideration were unable to be constantly expanded."

"We all agreed that the newly implemented project portfolio management has positive impact on our corporation. From across different departments, thirteen executives evaluated the project portfolio management system has created high level impact on organizational efficiency. Other five gave a very high level impact result, while only two have different ideas. In this meeting, one of our executives make a motion that this system should be multiple in our

other offices to solve the current project portfolio management. And within my knowledge, I believe P&O still using this system in their everyday operation.”

Resource allocation in external consulting group’s perspective (Laarman & Associates, 2011)

“I think it was helpful basically because it has addressed resource allocation issue firstly in this corporation. More efficient resource allocation really allows the corporation to review their resource usage monthly and quarterly with their key stakeholders and even international partner corporation.”

“We notice a large proportion of their spending was on testing to minimize risk. In our first pilot implementation in one key department, resource allocation allows the personnel to manage the risks effectively because the flow of information on actual resource usage constantly delivered to the department. This is the point where resource alignment was directly connected with project selection and portfolio optimization. Accurate information in risk management process allows better ranking system which then inevitably results in higher performance in project selection process.”

“In our pilot implementation, their top eight strategic projects were partly reprioritized based on new resource allocation system and the corporation encouraged this act. Well, I think in brief, since departments and objectives are all different from time to time, resource allocation and portfolio optimization are likely to be reprioritize.”

“Thus, risk was minimized and fewer tests were conducted. We are not allowed to discuss information on the cost that is saved through this project portfolio management implementation. But our logistic industry clients during 2003-2008 had showed the average direct reduction in cost of 13.5 percent.”

The answer above indicates the importance of resource allocation application in connecting corporate strategy and practices. These comments indicate the senior executive group of the corporation was highly motivated in debating whether this

project portfolio management application has delivered the result in term of resource efficiency or not. However, the internal executive and external consulting group together mentioned the fact that resource allocation process became politicized. It was highly influenced by inferred hierarchy by function and title. Specifically, marketing department was proved to have better advantages in getting projects approval and required resource flow. Analyzed this point, the author would claim that the main reason is high foreseeable risk of loss of revenue stream if projects and resources were not approved. This result in a hypothesis that even though project portfolio management and resource allocation support corporation in solving corporate strategy issues, predetermined priority based on hierarchy which results in inequality between departments are still existed. With project portfolio management, corporation need to justify projects portfolio against pre-determined criteria as it would result in a reduction of the behavior above. Briefly, based on organizational efficiency and corporate strategic benefit, resource allocation has linked corporate strategy with practices as a result of project portfolio management implementation. This is validated by operation report of the corporation in the time of observation.

Additionally, there is notable comments provide the insight of perceived values of project portfolio management implementation regarding reducing quantity of the projects while assure that they are aligned to strategic benefits of the corporation. There was a comment by internal executive concerning the cost and complexity of the corporation's traditional methodology before and after project portfolio management implementation (Unnamed Regional Executive 2011):

“In our former approach to corporate strategy, projects proposals are usually informal and ad hoc (which means they were considered as equal and not prioritized). I think it did result in an excessive amount of below average quality projects on the output. Other corporation was having trouble with having too little product selection inputs therefore reduce the quality and quantity of the output, we encountered the opposite.

“After the end of 2003, this project portfolio management system allowed us to define the quality of projects based on its calculated resource consumption and contribution toward strategic benefits. The

issue regarding high number of project proposals was solved. The long list of well-constructed project proposals allows you to make trade-offs between them. Even though it takes time our people need to learn how to use project alignment algorithms, it did support us in strategic alignment”

The internal executive and external consulting group both agreed that during the time of observation, the corporation support for the project portfolio management was high. In addition, most of the executive group prefers to use it as a main project selection and alignment tool once they had understood how to use the method. In one post implementation survey conducted by external consulting group on Royal P&O Nedlloyd about this topic, approximately sixty percents of the managers would recommend this project portfolio management system to peers and other corporation to add value in term of effectiveness.

5.3.2 Project Alignment Data Analysis

Both secondary documents and interviews with internal executive and external consulting group indicate that more than seventy percents of the representatives who involve in using project portfolio management have positive feedback on project alignment application. Based on this, several topics emerged. Briefly, project alignment implementation overall performance were rated between High and Very High in term of strategic conduct and effectiveness. Consequently, it addressed the capacity of departments in understanding strategic benefits and roles of each projects toward the corporation. The internal executive pointed out these departments’ representatives was motivated by these impacts.

However, external consulting group presented the most common issues were that the corporation personnel had expressed project portfolio management as a “corporate management awkwardness”. The internal executive explained it as the reflection of the issue that the corporation has nothing similar to project alignment process before. Therefore, the author will argue that the intervention by external consulting group probably create these psychological affects as project portfolio management is a work intensive process and high profile investment of the corporation. The initiative phase was essentially belongs in executive level who plan to refine organizational effectiveness. In a note presented by external consulting group, comments on this issue in the initiative phase are summarized as below:

- Project portfolio management can help department select project, optimize portfolio, however personnel think executive might intervene the approval process to give permission to their own project.
- Project alignment process might result in slower projects approval speed and this might pull the corporation back to the traditional methodology.

External consulting group indicates that some department view four consulting corporation which involved in these projects is IT intervention rather than management consultant. Based on this fact, the author would claim that within certain similar industry, personnel often view the intensive presence of IT group as it would imply the technological process on departments to control their behavior. This common perception focuses on the usual disagreement between business and IT in term of technological process certainty and management methodology. Insufficient integration between these departments resulted in cultural fragment within the first phase of project portfolio management implementation. However, this is beyond the control of external consulting group and also outside the scope of this thesis.

The internal executive confirmed this fact. However, he points out that in the late third phase and after nine months of the implementation, the corporation had dramatically shifted from traditional project selection process to strategically prioritized basis. Even though little skepticism was remained, external consulting group and internal executive both confirm that “resistant to changes” were common for high profile investment like this. This was closely connected to the concept of immunity to change introduced earlier in this research.

Project alignment in internal executive perspective (Unnamed regional executive 2011)

“I have a quiet experience in establishing project alignment in my department. After six months since project portfolio management system was implemented, I was responsible for terminating projects which are not aligned to the corporation total strategic benefits anymore.”

“Project alignment methodology supports my department in managing the cost efficiently by creating portfolio selection process.

Within the process, when the project proposals come in, it has to be first checked on estimated project cost and possible merit. Based on the risk of the project, we would ask for more details and then we would assign a cross-functional team to review the project. In project alignment, our executive group emphasized minimizing cost was not necessarily an objective. Our key objective is to maximize the benefit of the invested resources.”

“Because of this reason, we would review projects which are running 10 percent higher than planned budget. In the review, before implementing project alignment methodology, the corporation’s objective is to cut down the spending to achieve the target budget. However, after using project alignment methodology, our main objective in the review is to see what kind of changes occurred during project execution. This is the cornerstone in our department as before we assumed a project which costs 1.5 million Euros are not likely to get any investment. Now project alignment application allows us to indicate solid strategic benefits and if these benefits are right to the corporation, we are willing to halt smaller projects to fund this strategic project.”

These data indicate the connection between corporation overall strategic success and project alignment within the portfolio. The corporation also pointed out their priority of having a combination of portfolio covered which can support strategic objectives of the corporation. Consequently, it resulted in the reduction of individual areas of investment while focuses on generating synergic benefits toward corporate objective based on dynamic connections between projects. In addition, this results in corporation high capacity in maximizing organizational productivity and efficiency. However in this case, restraint to project portfolio management implementation also includes political factors which are out of the research scope. Analyzed these data, it can be seen that projects are traditionally terminated due to budget exceed. However, the implementation of project alignment has created fundamental changes in this methodology. The corporation began to concentrate on understanding the reason of excessive resource usage and other factors influenced when cost differs. Project alignment allows the corporation to accurately

predict project's benefits and how it associates with corporation strategic objectives. If perceived benefits are appropriate with required resource, corporation would be willing to invest in the project. In this case, project portfolio management had generated a fundamental development in the way the corporation views cost and benefits in term of budget overrun.

Project alignment in external consulting group perspective (Laarman & Associates, 2011)

“Our strategic project alignment application deals with measuring metrics in term of corporation corporate objective such as ROI, operational risk, payback period and internal rate of return. We advise the corporation to include these metrics in their analysis to choose strategic projects where the top line is usually low. In this case, we had consulted and designed an integrated solution that uses both these metrics and other prioritization approach. The performance report of the pilot department indicates a combination of measurement metrics is far more effective than using single metric.”

“In our approach, we create a strategic aligned portfolio by combining mathematical optimization algorithm and discussions with key stakeholder who own useful perspectives on particular implementation. I must stress that within corporation, it is people who made the final decision rather than mathematical algorithm. The simple yet valuable tool in strategic alignment is what-if analysis which the corporation had done regularly to support the selection of different projects by pointing out the strategic impacts.”

These comments indicate the importance of project alignment applications in project portfolio management. Within this case, the combination of strategic alignment analysis of portfolio and personnel discussion is proved to be an effective solution. In addition, the author would claim that this combination would allow the assignment to build strong foundation and encourage personnel engagement while contributing strategic benefits.

These answers also clarify the relationship between project portfolio management applications and executive manual selection. Corporation often assumed project

portfolio management to be a solution for replacing manual selection process with metric-driven selection algorithm. This case shows evidences against this assumption as manual selection and project alignment are combined to create ad hoc evaluation with portfolio optimization objective. Based on the involvement of manual project selection, project alignment process would be highly beneficial by acquiring mathematical strictness and accuracy. An example for this project alignment application within the proposed project portfolio management approach is presented in Figure below:

Alternative	Benefits	Likelihoods of Success	Benefits * Risks	Costs	D/S	Funded Benefits	Funded Costs	B/C
Universal Life Insurance	0.816	0.992	0.809472	5500	1	0.809472	5500	1.471767273
Repricing Term Life Insurance	0.495	0.694	0.34353	4200	1	0.34353	4200	0.817928571
Bank Owned Life Insurance	0.659	0.296	0.195064	7800	0	0	0	0.250082051
Enhanced Second to Die	0.108	0.196	0.021168	3900	0	0	0	0.053052632
Universal Life Financial Re-Insurance	0.939	0.871	0.817869	5717	1	0.817869	5717	1.430591219
Enhance Client Database	0.321	0.167	0.053607	560	0	0	0	0.974672727
Web Interface to Existing Banking Pro	0.869	0.942	0.818598	1200	1	0.818598	1200	6.82165
Web Enable Upscale Investors	0.505	0.28	0.1414	3120	0	0	0	0.453205128
			Total Portfolio Value			2.789489	16617	
						Budget	17000	(Thousands)

Figure 5. Example of project alignment within the project portfolio management approach (Laarman & Associates, 2011)

Finally, based on one survey conducted by external consulting group on new project portfolio management system a year after implemented, the range of comments was regularly positive. At this point of time, most relevant personnel are familiar to project portfolio management methodology and their comments are based on consistent exposed with the approach. Positive feedback patterns were clear and summarized below:

- The project portfolio planning was clarified and simplified compared to the traditional approach
- Project portfolio management allows manager to terminate deficient projects which no more contribute to corporation overall strategic objectives. This happened as a result of clear parameters within project alignment process
- Although there are short term disadvantage such as resistant to changes and complicated system design, project portfolio management clearly help corporation to acquired long term strategic benefit.

- After project portfolio management was validated and standardized, organizational effectiveness was higher based on rate of return metric measurement.

Based on these comments, the author realized an absence of unsupportive and extreme negative feedback in this survey. Therefore, using cross-examination with an internal executive, he reported the to be involved in one specific project portfolio management feedback meeting and confirmed there were no negative comments by more than 120 feedback forms across different department. This data source is not directly acquired by the author as this was an industry networking driven process rather than a component of formal thesis research. However, the outcome of these feedbacks would support the qualitative research conclusion in term of corporation's satisfaction with implemented project portfolio management.

5.4 Summary of Findings

5.4.1 Project Portfolio Management Implementation as a Solution in Aligning Project and Allocating Resource

Based on the case study data analysis, the author briefly summarizes conceptual findings on project portfolio management influences on corporate strategic benefits in the table below:

Table 6. Summary of Findings

Findings concerning project portfolio management implementation	Findings concerning resource allocation as a project portfolio management application	Findings concerning project alignment as a project portfolio management application
<p>Beneficial value</p> <p>Project portfolio management has created intended impacts on organizational effectiveness and corporate strategy performance by addressing resource allocation and project alignment</p>	<p>Beneficial value</p> <p>Resource allocation supports corporation in defining key ranking criteria based on supply chain, marketing and financial impact.</p> <p>Resource allocation influences organizational</p>	<p>Beneficial value</p> <p>Project alignment support corporation in constructing an effective project selection process.</p> <p>A combination of high number of project proposals and effective project alignment system</p>

<p>issues.</p> <p>Project portfolio management results in fundamental development in the way corporation conducts cost/benefits analysis within budget excessive circumstances.</p>	<p>efficiency by creating better alignment between costs and benefits across the corporation.</p> <p>Resource allocation directly connects with project alignment and portfolio optimization as it was a basis for portfolio decision making.</p>	<p>results in organizational innovation.</p> <p>Project alignment fundamentally addresses corporation's capacity to understand strategic benefits of each project toward strategic objectives.</p> <p>Resource allocation results in fundamental changes in the way corporation analyze factors that influence project cost.</p>
<p>Trade-off</p> <p>Project portfolio management system could be considered as costly due to high resources required to be fully implemented and delivered.</p> <p>Short term setbacks such as resistant to changes frequently occurred in initiative phase which is a critical challenge in project portfolio management implementation.</p>	<p>Trade-off</p> <p>Despite supporting corporation in solving corporate strategy performance issue, predetermined criteria based on hierarchy and inequality between departments still existed.</p>	<p>Trade-off</p> <p>Project alignment is not applicable for single project/portfolio which has political or contractual background.</p>

5.4.2 Validation of Project Portfolio Management Methodology & Evidence of Organizational Impacts

It is clear that there is strong cross-department support for the proposed project portfolio management methodology and evidence of strategic impact within the corporation. Strategic impacts on corporate strategy performance were consistently accomplished by project portfolio management implementation and its two major applications: resource allocation and project alignment. This is a significant finding of this thesis research. There is embodiment of corporate strategy problem – the need for project portfolio management implementation which support corpo-

ration in optimizing portfolio to achieve strategic objectives – and a perception that project portfolio management approach can accurately address this. There are evidences which indicate the value of project portfolio management from external consulting groups and internal executive's point of view and confirmation of the fact that *project portfolio management, project alignment and resource allocation solution* capable to address the defined issues.

5.4.3 Acceptance of Project Portfolio Management Complexity

After project portfolio management was fully implemented and validated, the corporation need additional time to adapt corporate operation into complexity required to execute the proposed methodology. There are three main concerns which were expressed in term of project portfolio management complexity within the corporation. The first concern was raised around the investment cost required to implemented project portfolio management system. This concern emphasizes the amount of committed resources and support – specifically within IT and Finance department – in order to implement the system. The second concern focuses on political nature between departments in term of getting project approval within project alignment process. The third concern concentrates in the short term complexity of resource allocation application which might result in organizational resistant to change. The author was aware of these issues during the research. This finding of this authenticated case study fully recognized these issues as organizational challenges in project portfolio management implementation which required advanced exploration.

5.4.4 Support for Modifying Current Theory

From an association of referenced data sources and observation, it can be seen that the proposed project portfolio management implementation is corroborated as accomplishing their intended effects on strategic objective and corporate strategy performance. In addition, (1) corporate strategy and organizational effectiveness issues are confirmed to be existed in corporation operation and (2) proposed project portfolio management solution is verified to be capable to address project alignment and resource allocation problems. Fundamentally, it appears to be appropriate to advance with supplementary case studies in other industries to examine the correlation and alteration between project portfolio management practices between two different contexts.

6 CONCLUSION AND RECOMMENDATION

This chapter aim to summarize the theoretical implication for practice which is speculated based on a case study in relation with the thesis research question. This is done by presenting the core research question in Chapter 1 and conducting a conclusion addressing it.

In implementing the objectives and guidelines of a bachelor thesis to contribute to the body of knowledge in a way that influences practice, the summary is concentrated on professionals-related insights. In this chapter, the author presented a constructive conclusion rather than re-statement of data and evidence which was seen in the body of this research. The chapter ends by accentuating unintended additional findings and useful threads delivered in the research process. The author also provides suggestions for further relevant research which probably advance project portfolio management approach in corporation practice.

6.1 Relationship between Research Findings and Improvement in Practice

Given the relatively new concept of project portfolio management, the research started with this methodology was assumed by most corporations as incompetent to address the complexities in selecting project and maximizing resources issues. Specifically, if project portfolio management was relied primarily on cost efficiency, the corporation would likely to make less decision on optimizing strategic benefits within a highly competitive industry. If this particular approach translated into complicated corporate strategy, it would be insufficient as a project portfolio management method. The root of this issue can be traced back to the common assumptions that typical strategic project portfolio mainly contains project which result in high individual performance conducted by individual strategic business unit. This is perhaps not true for some situation as pointed out in earlier empirical research as the intended impact of project portfolio management implementation was to maximize strategic benefits with given cost/resources.

Project portfolio management approaches used in private sector nowadays were often seen as overcomplicated for only limited profits if it was not consistently implemented. Based on the argument earlier in this thesis, the author would concluded that (1) without worthwhile improvements, most corporations would not often decide to implement project portfolio management in its original form and

(2) corporations did decide to use project portfolio management would face a substantial risk of implementation failure due to differences between theory and practices. In this context, trade-off between overall organizational effectiveness and simplicity of traditional approach can result in high operation risk. The research findings also bring up the reason why certain major projects were underperformed and incoherently articulated with corporate strategy. It indicates how project portfolio management is a solution in allocating resources and aligning projects with corporate strategic goals. Consequently, the research findings provide an in-depth review and recommendation for corporations on how to effectively execute project portfolio management in order to achieve their corporate strategic objectives. Based on the research findings, it is notable that project portfolio management implementation system at corporate level is tightly connected with complexity and time consuming efforts required from corporation than any single or multiple project management approaches.

The congenital issues of project portfolio management perhaps can only be addressed by increasing the system practicality and strategic deliverables by utilizing resource allocation and project alignment as proposed in this research. This results in a possible scope of alternatives solutions that could be acknowledged as possible developments for project portfolio management practices. In the author's opinion, implementing this proposed approach would promptly actualize the investment of time, resource and effort required in most corporations to implement a project portfolio management process. Additionally, the proposed approach would influence the project portfolio results by assuring they contribute strategic benefit toward corporate objective. Based on the evidences within the case study, organizational changes concerning the implementation of project portfolio management are presented in the table below:

Table 7. Impacts of project portfolio management implementation

Before project portfolio management was implemented	After project portfolio management was fully implemented and standardized.
Project portfolio not coherently defined regarding prioritization and resource allocation. Few projects are aligned with corporate strategy	Project portfolio prioritizes projects and allocates resources effectively. Projects are coherently aligned with corporate strategic objectives
Project portfolio management benchmarks neither not clearly indicated nor implemented thoroughly	Project portfolio management benchmark is clearly indicated and implemented based on defined standard
Personnel and managers role need clear description on responsibility. Training for organizational personnel is not personalized.	Personnel/managers role and responsibilities have clear description. This information is easily acquired by all stakeholders
Project portfolio evaluation and report method need improve. Risk management is contradictory with certain variants	Project portfolio evaluation and report method is consistently adopted. Risk management method is standardized and enabled for all projects

By reviewing the relevant literature for framework practices for project portfolio management, the author concluded that project portfolio management was utilized by the corporation for two purposes. The first purpose is to support the corporation in selecting, optimizing and managing a strategic project portfolio which would results in effective execution of strategy. The second purpose is to compare different projects based on pre-defined metrics such as financial impacts, strategic

impacts or synergic benefits. This fact has been confirmed in the empirical research.

Consequently, the primary contribution of this thesis is to proposed and confirmed in term of theory and practice that the implementation of resource allocation and project alignment applications can enhance both project portfolio management and corporate strategy performance for most corporations. This is a momentous discovery which might support corporations in dealing with advancing issue of corporate strategy execution that they regularly encounter.

Specifically in the global logistics corporation case study, a critical phenomenon within business today was shown: in the lack of specialized models which support corporation to evaluate strategic contribution of particular projects to corporate strategy, corporation may regularly decide to use simplified and non-strategic selection model in aligning projects. In this case, the clear example of this phenomenon is presented. Before the new project portfolio management system was implemented, departments often use internal political influences and hierarchy as an approach to select and prioritize projects. To avoid misconceive, the author would stress that this fact does not imply incompetence of executive. However, it would be deficient to select project and strategically prioritized it by only based on individual judgment. Based on this research, the author would claim that in term of project selection and activation, corporations without project portfolio management system could benefit more from typical measurable or metrics-based model that integrated strategic objective compared to individual favoritism.

The leading global logistics corporation case studies addresses a common issue found in similar industry: overwhelming quantity of project proposals which are set for accomplishment by central departments in contrast with the resource available to the corporation. High level of resource constraint in this corporation is a common issue which emerged apparently as corporation challenge in corporate strategy performance. Within the limited resources in term of both finance and non-finance, it is likely that advanced research of this topic would indicate similar issues across private sector.

Consequently, the implementation of project portfolio management support corporation in addressing this challenge, however the benefits in this area perhaps have been under-accomplished due to lack of appropriate support approaches such

as project alignment and resource allocation. It is clearly more complicated to halt or terminate project by only based on the fact that it generate considerate lower return than peers. If corporation executing this approach in strategy execution, they would turned back to traditional resource-constraint methodology and as a result, would not approve projects which were lower in term of finance-prioritized. This then is a dangerous circumstance for corporations when a great number of project proposals would be: (1) selected by personal preference which influences project alignment by manipulating the prioritized portfolio or (2) un-constructively allocating resources by terminate available resources to politically get their projects approved.

As a result, it establishes a question on strategic capacity which accordingly defines corporate strategy. Based on resource allocation, this is totally non-optimal as it would inevitably result in a common approach of careless disregard which could damage corporation's strategic project portfolio management. If corporation narrow projects selection and resource allocation down to approval based on budget and available resources at a given time, corporation might ends up choosing project/portfolio which only efficiently consumer resource against higher cost resources which may eventually been more effective and synergic beneficial to complete. At single project level, this is a classic choice between effective-trade-offs and simplification/efficiency that can be observed in other business area. In order to be effective in project portfolio management, corporation has to abandon the approach of defining corporate strategy based on resource benchmark. Consequently, this result in an innovated corporate strategy chain which is corporate strategy defines appropriate project portfolio; and then portfolio defines it necessary resource and capacity consumption.

Bringing the corporation into a debating position in term of manipulating resources and influencing project approval hierarchically, the author would claim that this is a classic political competition in fundamental. This would not yield any optimized yet sustainable result for the corporation. Based on the empirical research, when the author combine this with the reality that personal preferences in approving project is regularly a determinant in most corporation within this circumstances, the author synthesize a negative outcome in term of corporate strategy execution and strategic objectives impact. At this point, the author would ar-

gued that by implementing project portfolio management, corporation can adopt a metrics-based neutral validation of projects against traditional pre-defined criteria of total strategic contribution; it would allow corporation to shift the internal hierarchical debate on projects approval to a more constructive concentration on ensuring that most strategic opportunities attainable to the corporation is able to be completed. Fundamentally, project alignment and resource allocation application play critical roles in shortening these gaps. Even though appears to be divergent, this is a critical result of using the proposed project portfolio management approach.

6.2 Resolution of the Research Questions and Thesis Conclusion

Regarding the concern about validity and reliability within the scope earlier in this thesis, it would seem substantiated to conclude that the proposed research question has been accordingly informed by the empirical study and that conclusion is capable to be drawn as a result. Briefly, the main research question defined in the first chapter was:

“How project portfolio management is the solution for allocating resources and aligning projects toward corporate strategy?”

The research addresses this question consistently by conducting and exploring answer to it. It was critical to define simultaneously the implications for theory which appear as an outcome of completing thesis. In order to support the clarification of theory implication, it is appropriate to come back to the original thesis research propositions connected with this question:

Concerning the research question, the writer argument is that traditional project management methodology is not fully capable in implementing corporate strategy. It also increases the writer understanding of how projects are unaligned with strategic objectives together with misallocated resources. In order to clarify and deliver the project portfolio management solution, both theoretical development and empirical study is required. The aim of this thesis is to elaborate the solution to allocate resource and align projects toward corporate strategic objectives.

There is clear evidence from the case study which indicates the corporation's increasing capacity to evaluate strategic contribution of a project in metric-based terms after intervention of project portfolio management approach than it was

previously. By using resource allocation, corporations acquire an alternative method to the traditional financial/cost performance based for selecting and approving projects. At the time of this writing, this alternative approach is still accurate and reliable which is more based on strategic contribution toward corporate objectives rather than narrowed concentration on financial efficiency. Specifically, two involving party within project portfolio management implementation reported a clear pattern of deciding which project contributes strategically to the corporation or not after using the approach. It can be clearly seen in the case study that stakeholders were more convenient in using project portfolio management system to adopt previous uncertain corporate strategy and translate it into measurable benefits which could be connect to project/portfolio benefits after the implementation complete. At the time of this writing, the project portfolio management system is still be utilized in P&O and several corporations which used to be under ownership this logistic giant.

The logic behind this adoption of the proposed project portfolio management approach is based on the case study in this thesis. The case study has clearly indicated that current methodology often fails to consider non-financial metrics. Thus, this lack of success as a general theoretical framework needs adjustments in order to solve the existing gap. Even though theoretically there is not yet any proper affirmation that current proposed approach would perfectly solve the strategic optimization issues within corporation context; the writer will argue that project portfolio management approach would be obviously more capable than current status quo financial models. This would also establish a starting point for advanced researchers to clarify the long-term benefits of project alignment and resource allocation as powerful supporting tools to current project portfolio management in term of achieving strategic objectives.

While the case study clearly indicates the benefits of project portfolio management methodology and justifies its overall strategic contribution, it also apparently shows the committed costs and resources related to methodology implementation which are not previously considered by the corporation. While the costs and resources appeared most clear in the initial phase of the implementation, it was neutralize after the approach was validated and standardized within corporation. However, the case study research presumes that the complexities and costs of

project portfolio management methodology recommends its implementation would be limited to high capitalized global corporation where the complexity and volume of the project portfolio optimization process required a substantially rigorous approach in which benefits dominate the cost. Additionally, the author would emphasize that constructive conclusions in this topic which concentrated on resource constraint should be issued for advanced research which would allow the investigation of particular criteria; therefore recommend the benefits of the proposed approach in corresponding to other project portfolio prioritization by the corporation. The author would claim that this can be an appropriate indicator in measuring corporation long-term strategic benefits.

As the outcome of this research, the corporation indicates that project portfolio management applications - in particular project alignment and resource allocation - in long term would generate useful supporting for the corporation's strategic objectives and corporate strategy performance through optimizing project portfolio. This fact was confirmed by (1) interviews with both an external consulting group and a highly relevant internal executive; (2) feedback from participants and (3) cross examination between data sources. Finally, the brief summary of the thesis finding is presented in the table below:

Table 8. Resolution of the Research Questions

Proposed research question	Thesis findings
How project portfolio management is the solution for allocating resources and aligning projects toward corporate strategy	Project portfolio management critically improves corporate strategy performance by aligning projects portfolio outcome with corporation's strategic objectives through implementing resource allocation and project alignment approaches.
How project portfolio management impacts resource allocation	Resource allocation supports corporation in defining key ranking criteria based on supply chain, marketing and financial impact and influencing organizational efficiency by creating better alignment between costs and benefits across the corporation. It directly connects with project alignment and portfolio optimization as it was a basis for portfolio decision making.
How project portfolio management impacts project alignment	Project alignment support corporation in constructing an effective project selection process. This application fundamentally addresses corporation's capacity to understand strategic benefits of each project toward strategic objectives.

6.3 Unintended Additional Benefits of the Research Finding

During this thesis research, other potential valuable insights were mentioned by interviewees. However, given the nature of these interviews, these benefits would not be academically validated beyond being identified. These unintended additional benefits cover a broad area of corporate strategy practices and project portfolio management. They are worthy of developing longer term theoretical framework. If validated in advanced researches, they would effectively contribute additional value to the proposed project portfolio management approach. The author will efficiently summarize the additional benefits below:

Project budgeting

In many corporations, the planning and budgeting process is conducted in ineffective ways. The budgeting which is not integrated with strategic based metrics would result in competition between resources across departments rather than constructive distribution of resources. This is identified in a private corporation where the interviewee expressed that traditional method for budgeting was not totally effective. This issue can be identified through establishing a combination of metric-based selection criteria and traditional financial metrics to create experiment changes in the approach which might translate into project portfolio management approach incentives.

Project quality control

Project and project portfolio are the results of a large number of decisions. In theory, these ideas should be ideally aligned to corporate overall strategic output. However, in practice, it is not easy to align personnel to a common quality decision making framework if they do not share integrated criteria for project quality control. In the case study, before project portfolio management was implemented, departments used centralized project decision making in determining project quality. With resource allocation and project alignment, project portfolio management approach can support the corporation by establishing a decision making framework based on measurable strategic metrics. After the approach is implemented, the frequency of exceptional project proposals decreases therefore result in higher efficiency in project quality control. In this situation, the proposed methodology

supports the corporation by allowing them to make decisions based on measurable factors that affect project quality.

Communication in project portfolio management

Based on the empirical research, the interviewees regularly indicated that personnel who have the chance to be involved in high level project portfolio management process often develop their capacity to communicate in terms of corporate strategy and strategic objective to their department. By establishing a framework for communicating measureable benefits, project portfolio management reduced the risk of misconception within project prioritization process. This allows a corporate objective to be clearly communicated which makes the personnel effectively understand the link between their work and the strategic objective of the corporation. Thus, it would increase productivity and preciseness of the assignment.

Project approval process

Project portfolio management integrates project alignment and resource allocation in the project approval process. As a result, corporations are obligated to consider both project priority and the availability of critical resources; therefore, approved projects can contribute synergic benefit to overall strategic objectives. Within the proposed methodology, a corporation approves projects primarily based on the priority and available critical resources.

Within the author's knowledge, it is not apparent that these unintended additional benefits could be validated in a broad context. It is also not clear that project approval process, project budgeting, communication and quality control would appear in the same way in different corporate level. However, the author would claim that there is existing value in reporting these unintended additional findings. These findings can be seen as qualitative evidences of supplementary benefits which project portfolio management implementation may result in practices. These evidences can also offer other authors suggestions of possible themes for their advanced research and most importantly, to validate or discard these benefits in their context.

6.4 Suggestions for Future Researchers

Importantly, additional issues defined above – project budgeting, project approval process, project quality control and communication within project portfolio man-

agement context – need to be investigated more intensively. Although the evidences in this case study might recommend the starting point within current practice context, there is no in-depth data that signifies unintended additional issues. However, further research can be carried out to define and explore these issues in order to construct new practice framework for project portfolio management approach. Consistently learning and refining are fundamental aspects of education and professionalism, therefore, this thesis is closed by indicating significant future research questions which the author anticipates other researchers in relevant areas will together start to explore.

The author would recommend the research focus to be an insight analysis of a relation between variants in strategic metrics and its risk counterpart in measuring financial returns. This would directly influence standard project portfolio optimization practice in respect to cost efficiency. Therefore, the answer to this critical question remains unaddressed at the time of this writing.

Apparently, the scope of the research could be broadened in term of geography. Project portfolio management might appear similarly or alternatively across the globe. This could be investigated further and in case of high quality co-ordination, it would be ideal to define best practice framework. Consequently, if this thesis can be confirmed across regions as manifested in the same direction, it might be possible to establish standardized solutions to indentify corporate strategy issues.

The scope of this thesis was limited and thus the research cannot solve every issue linked to this study area. Therefore, critical research questions are remained unaddressed which offer high potential of demand for researchers in project portfolio management and the corporate strategy field. In conclusion, the author hopes both professionals and academic researchers will acquire this opportunity to optimize the strategic benefit of the proposed concept to its fullest potential.

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List of Interviews

Laarman G. & Associates. External Consulting Group. Project Partners LLC. Interview 18 December 2010, 09 January 2011 & 14 February 2011.

Unnamed Regional Executive. Royal P&O Nedlloyd. Interview 18 January 2011
& 27 January 2011.

APPENDICES

Appendix 1. Interview questions for the external consulting group

1. In your opinion, what are the main objectives of project portfolio management?
 - a. How did you use project portfolio management to provide critical indicators of corporate strategy performance?
 - b. How did you optimize a single project portfolio in term of marginal return for different level of investment?
 - c. What was the current situation in Royal P&O Nedlloyd when your team was assigned there?
2. How did your team implement the proposed project portfolio management approach in a corporation such as Royal P&O Nedlloyd?
 - a. What are the challenges in implementing a project portfolio management system within a corporation such as Royal P&O Nedlloyd?
 - b. What is your framework in establishing project portfolio management? Was this framework applicable in the case of Royal P&O Nedlloyd.
 - c. How did your team solve those challenges?
 - d. How did the stakeholders react before, during and after the implementation?
 - e. What are the problems that project portfolio management implementation is able/unable to address?
3. How did corporate strategy fit into this project portfolio management implementation context?
 - a. What are the models/systems that your team established within Royal P&O Nedlloyd? How does the corporation adopt them?
 - b. How could these models/systems support Royal P&O Nedlloyd in implementing their current corporate strategy?
 - c. What was the impact on corporate strategy performance after the system had been standardized and finalized?
4. How did your team implement the resource allocation application within the proposed project portfolio management methodology?

- a. What were the metrics your team used in the pilot project? Are there any differences between the pilot metrics and the finalized metrics in the corporation? How did you split the metrics and use them for every project?
 - b. What were you intentionally deciding not to adopt in this case?
5. How did your team implement the project alignment application within the proposed project portfolio management methodology?
 - a. Before the implementation, did Royal P&O Nedlloyd conduct comparison between different projects in order to create optimization?
 - b. How did you implement project alignment applications in Royal P&O Nedlloyd? What were the intended impacts on corporate effectiveness? How could you compare the intended impacts with the real impacts?

Appendix 2. Interview questions for the unnamed regional executive

1. How do you describe the states of corporate strategy/strategic objectives before and after the implementation of project portfolio management?
 - a. Were the current strategic objectives likely to remain strategic beneficial in long term? Why/Why not?
 - b. Was the proposed project portfolio management approach applicable for different strategic business unit?
2. How the proposed project portfolio management approach support your department in linking different projects to strategic goals?
 - a. How did it affect the effectiveness/efficiency of Royal P&O Nedlloyd's project selection process?
 - b. How did your department measure portfolio risks before and after the proposed implementation?
3. How was the collaboration between different departments before and after the implementation of project portfolio management?
 - a. Did project portfolio management support you in decreasing the amount of administrative work?
 - b. How did you use project portfolio management to track your strategic projects incrementally?
 - c. How project portfolio management support you in managing risk in the interim?
 - d. How was the project portfolio management process adapted across different departments?
4. What processes were necessary to be carried out before you could manage projects and portfolios efficiently?
 - a. How did you use project portfolio management as a tool to provide critical indicators of corporate strategy performance?
 - b. Did you track the beneficial contribution of the project? And how?
 - c. Which metrics did you adopt and making decision on?
 - d. How did you manage the trade-offs between strategic project and financial incentive project?
 - e. How did the proposed implementation support you in optimizing your portfolio?