PROJECT PROFILING: ADAPTIVE PROJECT MANAGEMENT USING PROJECT CHARACTER CLUES

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ABSTRACT

Projects are temporary and unique endeavours, each providing its own set of managerial challenges. Metaphorically speaking, a project's individual character is an aggregate of features and traits that form the very nature of the project. The purpose of this paper is to examine how the complex of project characteristics might be evaluated to provide critical insight in determining the appropriate management approach.

Using a qualitative research approach, a case study of ten individual projects was conducted from a project portfolio in a financial services organization. Each project was measured against every competence factor of the IPMA Eye of Competence in terms of importance, and against the four dimensions of the Diamond Model; novelty, technology, complexity and pace.

With ascending project characteristics score, the challenge increases of managing the project effectively and successfully - thus forming a basis for a sliding scale of project individuals of growing character strength.

1. INTRODUCTION

Organizations must thrive in ever increasing turbulence of international competition and growing demand for performance, adaptability and speed of innovation (Briner, Hastings and Geddes, 1990). Projects play a crucial part in the growth and sustainability of an organization and some even argue that the only way an organization can change, implement a strategy or gain competitive advantage is through projects (Shenhar and Dvir, 2007).

In order for an organization to effectively apply project management to deliver their chosen projects successfully, it must understand the nature of each project and adopt the proper management and leadership style (Turner et. al, 2007, Crawford et. al, 2006).

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Metaphorically speaking, the essence or nature of a project can be considered an aggregate of attributes or characteristics that form the character of a project. Being able to profile the character of a project at an early stage would be beneficial to an organization by providing indications of proper management processes and leadership style.

This paper examines how profiling the project character might provide useful clues in determining the appropriate management approach. Using a case study based on project portfolio data in a financial services organization, an attempt is made to shed light on the following strategic research question:

> *How might the complex of project characteristics – the project character – be evaluated to provide critical insight in determining the appropriate project management approach and leadership style for a project?*

2. LITERATURE REVIEW

The research question in this paper is in line with the emphasis made by the Contingency school of thought in project management (Turner et. al, 2007). This school recognizes the difference between distinct types of projects and project organizations, looking to adapt the appropriate project management processes to the needs of the project.

In the literary review the three major components of the research question will be examined; the project characteristics, project classification and implications on project management approach.

Characteristics of a project

Given a particular undertaking, a reasonable initial question to consider is whether or not it is a project at all. Fangel (2008) posed the question of what would be the determining conditions for applying the project concept. To this end, he proposed a check list of ten different project characteristics that could serve as discussion areas on the management effort; the more prevailing characteristics, the more project management would be needed.

Ingason and Jónasson (2012) further developed Fangel's idea and created the measure of project characteristics presented in Table 1. The measure consists of ten characteristics from three key dimensions of projects: scope, execution and environment. The purpose of the measure is to provide a simple way to discuss and evaluate key characteristics and determine if the undertaking in question has prevailing characteristics of a project.

The measure in Table 1 is applied by scoring each characteristic against two extreme assertions producing a value on a scale from 1 to 10. For instance, for the first scope characteristic we would evaluate on a scale from 1 to 10 if we consider the time ample for the undertaking or if the timeframe is short. If the timeframe is short, the score would be higher (e.g. 8) and lower if the timeframe is longer (e.g. 2). The total sum of the of all characteristics values can thus range from 10 to 100 and Ingason and Jónasson suggest a total sum of 60 or higher would indicate prevailing characteristic of a project.

Table 1
A measure of ten project characteristics (source: Ingason and Jónasson, 2012)

Scope		
1	Long timeframe	Short timeframe
2	Repeated	Unique
3	Covers part of life-cycle	Covers entire life-cycle
Execution		
4	Special organization not needed	Special organization necessary
5	Similar participant background	Diverse participants
6	Necessary knowledge in one place	Extensive collaboration needed
Environment		
7	Certainty and predictability	Uncertainty and/or opportunity
8	Does not lead to much change	Leads to substantial changes
9	Outcome not affected by environment	Outcome dependant on environment
10	Few connected and well known	Many connected and not all known
	1 2 3 4 5	6 7 8 9 10

Shenhar and Dvir (2007) claimed that an organization's activity might be divided into two general categories: operations and projects. Operations are the activities involving ongoing processes, whereas projects are unique initiatives driving business innovation and change. Cioffi (2006) has a comparable proposition where he suggests projects be placed on a "newness" spectrum from operations to projects.

Using the metaphor of a project character, the composite measure of project characteristics in Table 1 can therefore suggest a spectrum of project character, ranging from operational activities to intricate projects. The characteristics in Table 1 are however only representative of a subset of potential project attributes, and might not necessarily represent an accurate or useful profile of a project.

The degree of uncertainty is an example of an attribute that is considered an important aspect of projects but is only represented in the above table in terms of environmental uncertainty. Thamhain (2012) suggests dividing uncertainty into four categories by how various segments of the project may be impacted: variations, contingencies, accidents and unknown-unknowns. Shenhar and Dvir (2007) divide uncertainty into two dimensions: novelty for goal or market uncertainty, and technology for technological uncertainty.

Another important but elusive project attribute is complexity. Like uncertainty, complexity is a compound attribute on which there are differing views on ideal composition. Ingason and Jónasson (2012) suggest a view of complexity composed of three dimensions: organizational, resource and technical complexity. Thamain (2012) offers a wider perspective of complexity as having two aspects: complexity *in* projects and complexity *of* projects. The former focuses on complexities surrounding the project organization and the latter looks more specifically at the project. Shenhar and Dvir (2007) define complexity along the lines of complexity *of* projects calling it "system scope" containing three levels of increasing complexity: assembly, system and array.

Distinguishing among projects

If a project's character is defined by an aggregate of characteristics, a simplified view of such a character might be a type classification of projects, each with a limited set of common attributes. Kerzner (2010) suggest a classification to address the different project management requirements by industry. Another common approach is to examine the nature of project outcome, dividing projects into such diverse categories as construction, software development, research, organizational, event management and product development projects (Ingason and Jónasson, 2012).

These classifications might work across different industries but do however have limited value for an organization in say, the construction or software development industry.

According to Crawford, Hobbs and Turner (2006) there are two main elements to categorization systems: the first is the purpose for which projects are categorized and the second is the attributes used to categorize projects. Let us look at a few classification schemes that have been suggested in the literature.

The purpose of the diamond model suggested by Shenhar and Dvir (2006) is to make decisions about projects and how they should be run. The four attributes used for categorization are levels of novelty, technology, complexity and pace. The aim of the authors was to create a context-free framework independent of industry, technology or specific organization.

The project excellence model put forward by Westerveld (2003) uses five attributes (size, outcome clarity, dynamism, complexity and working method clarity) to set up, manage and evaluate projects focusing on results and organization.

Turner (1999) proposed a simple classification producing four different types of projects based on two attributes: project goals and method definitions. Each of the attributes could be assigned two values (well defined, not well defined) thus producing a two-by-two matrix of four project types.

To understand and define content for project strategy, Artto et. al (2007) suggested a classification based on the complexity of stakeholder environment and the level of project autonomy.

Jung and Lim (2007) suggested a systems view of project classification in the spirit of Six Sigma, measuring system capability change and system controllability.

Based on change management and its impact evaluation on organization, Zurich (2011) suggested a classification of four project types identified by type of change, size of stakeholder group and leadership qualities required.

In order to create a common overview of the classification schemes discussed thus far, each of the attributes within each scheme can be aligned with one of the three main dimensions of projects; scope, environment and execution. The result is presented in Table 2.

Table 2
Summary of project classification and characteristics discussed in the paper

Project classification		Characteristics of project classification		
Classification	**Purpose**	**Scope Characteristics**	**Environment Characteristics**	**Execution Characteristics**
Projects by industry Kerzner (2010)	To indicate formality of project management based on industry requirements	• Time management difficulties	• Organizational structure • Project manager's supervisor • Conflict intensity	• Interpersonal skills • Meetings • Sponsor present • Cost control level • Level of planning
Project vs. operations Fangel (2008), Ingason & Jónasson (2012)	To answer the question: "does it have prevailing characteristics of a project?"	• Time constraints • Uniqueness • Lifespan	• Uncertainty • Change impact • Interdependence	• Organization • Homogeneity • Knowledge
The Diamond Model Shenhar & Dvir (2006)	To make decisions about projects and how they should be run.	• Novelty • Pace	• Complexity	• Technology
Project Excellence Model Westerveld (2003)	To set up, manage and evaluate projects focusing on results and organization.	• Size • Outcome clarity	• Dynamism	• Complexity • Working method clarity
Strategy types for Innovation projects Artto et. al (2007)	To understand and define content for project strategy.		• Complexity of stakeholder environment	• Level of project autonomy
Goals and methods matrix Turner & Payne (1999)	To indicate required approach for project planning and control.	• Goals definition (well defined / not well defined)		• Methods definition (well defined / not well defined)
Six Sigma Jung & Lim (2007)	To better categorize potential projects in terms of performance indicators.	• System capability change		• System controllability
Change management Zurich (2011)	To identify project leadership skills required	• Type of change	• Size of stakeholder group	• Leadership qualities required

Project management implications for different projects

Crawford, Hobbs and Turner (2006) conclude that there are two main reasons for categorizing projects within an organization:

1) to align projects with strategic intent, and so prioritize projects for assigning resources (choosing to do the right projects)
2) to assign and develop appropriate capabilities to manage the projects selected (doing the chosen projects correctly)

To address the latter issue of developing appropriate capabilities to manage projects, let us revisit the idea of a spectrum of project character ranging from operational work to intricate projects. Collyer and Warren (2008) adapt a similar idea of a sliding scale of unknowns that apply to projects (see Figure 1). Unknowns are taken to refer to any aspect of the project, including the objectives, the methods to achieve it and the environment it has to operate in – analogous to the three key dimensions adapted in this paper of scope, execution and environment.

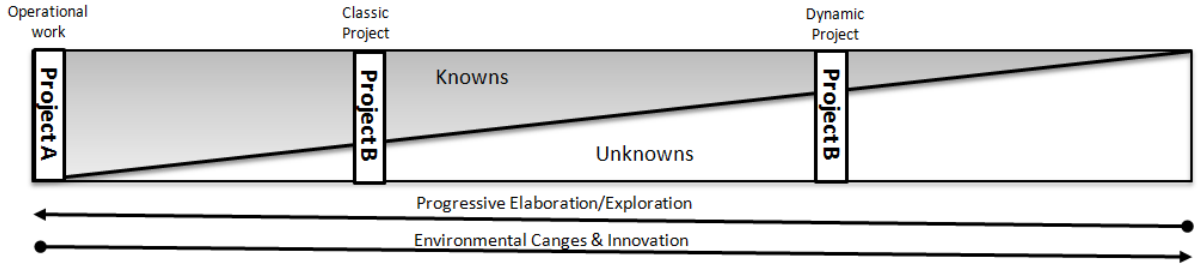

Figure 1 The sliding scale of environmental change (source: Collyer and Warren, 2008)

In Figure **1**, Collyer and Warren (2008) provide an example of three different projects with different level of unknowns. Project A might be a minor change to a current production line whereas project B might be a construction project with more unknowns at the start but most of them would be resolved in the early stages. Project C might be a software development project for a new business, and needs to deal with changing business processes, new technologies and other changing factors during the course of execution. The more dynamic the project is, the higher the rate of environmental changes leading to an increasingly challenging race of resolving the unknowns.

In their paper, Collyer and Warren (2008) give a literature overview of project management approaches for dynamic environments. The approaches are strategies dealing with dynamic projects and in this paper we will summarize these strategies by scope, execution and environment. An overview of the strategies discussed is represented in Figure 2.

Strategies for addressing scope issues of dynamic projects are for example to break the project into smaller stages, delivering proof of concept or allowing for different parts of the project to be managed in different ways. Shenhar and Dvir (2007) have similar approach when it comes to projects of high novelty. Developing a product of high novelty means that limited market data is available and to address this issue they suggest obtaining early customer feedback. Another scope issue is pace, and Shenhar and Dvir suggest that since high pace indicates increased attention to deadlines, the project teams need greater room for autonomy.

Strategies for dealing with execution of dynamic projects include several ways to move from a pre-planning, prescriptive approach over to learning, discovery and iterations (Collyer and Warren, 2008). These include lifecycle strategies of moving to a learning approach with iterations as opposed to planning approach with waterfall. It is also suggested that with higher levels of change and volatility comes a need for a discovery phase, testing several ideas in parallel but at the same time setting clear limits or rules about timeframes and stages. Regarding planning and control approaches, Payne and Turner (1999) suggest an emergent exploratory approach for dealing with high level of dynamism and avoid relying on process controls.

Shenhar and Dvir (2007) discuss the impact of technology on execution and suggest that higher technology requires increased design, better interaction among team members and higher technical skills. To counter these challenges a delayed design freeze is necessary containing more design cycles.

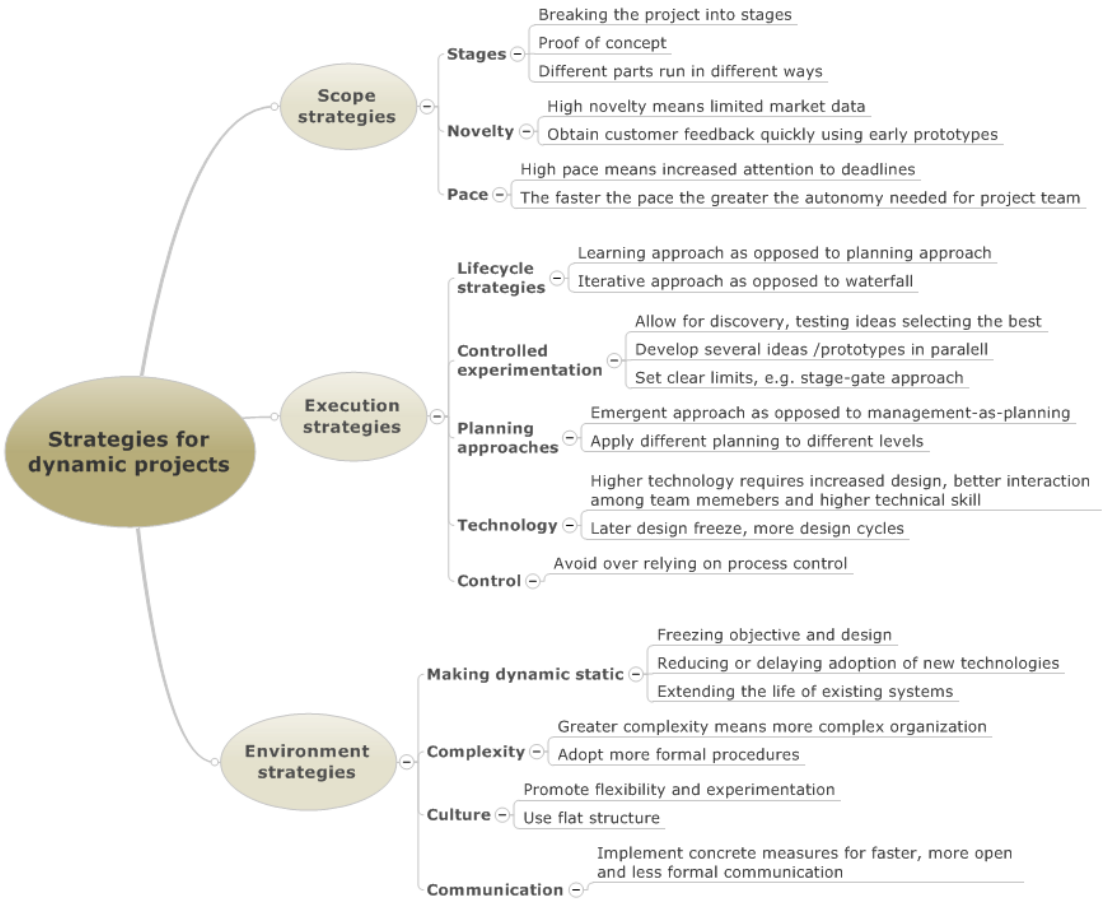

Figure 2 Overview of strategies dealing with dynamic projects

When both goals (scope) and solutions (execution) are unclear and there is high volatility, Fernandez and Fernandez (2009) point out that Agile practices could be a valuable approach. Agile practices, including project management, grew out of a need to manage projects characterized by complexity and uncertainty with responsiveness and adaptability.

Strategies to address environment issues aim to make the environment more static, to promote flexibility and experimentation, using flat structure and to implement faster, more open and less formal communication. However, Shenhar and Dvir (2007) suggest a greater complexity requires more complex organization and therefore would need to adopt more formal procedures.

On the subject of complexity, Pundir et. al (2007), argue that since projects exhibit characteristics of a complex system, the method to manage such a project cannot be predicted *a priori,* but rather will emerge from the interactions between the project elements and the environment. Thus the project cannot be viewed independent of its surrounding context as well as its history. This would support the need for developing models that are *descriptive* rather than *prescriptive*.

In addition to the three dimensions of scope, execution and environment, Collyer and Warren (2008) also point out the importance of leadership style in dealing with dynamic projects where leaders should preferably have good knowledge of the subject and use fast, informal and participatory style.

As an example from industry, Zurich (2011) proposes a model of leadership competences based on the level of change imposed by the project. For projects aimed at well defined problems, qualities such as precision and effectiveness are suggested, while projects aimed at new business models or new ideas require leadership competences such vision, intuition and creativity.

3. RESEARCH PROJECT

A case study was conducted within a financial services organization, where project portfolio processes for selecting, prioritizing and monitoring strategically important projects have been in operation for little over a year. The project management office (PMO) is responsible for managing the portfolio, but ownership and final decision on portfolio content lies with the Board of Executives.

Research description and objectives

In order to address the strategic research question of how the project characteristics might provide clues in determining the appropriate management approach, further questions were developed to address the three major components of the original question.

a) Characteristics: What characteristics are being evaluated at project initiation and how useful are they?
b) Project character: What kind of classification or categorization is being used or would be useful?
c) Management approach: What indication on management approach can be derived from project characteristics and/or categorization?

Background information and case selection

In the project portfolio being examined, each project has been ranked as a part of its initial evaluation process. Among other criteria, each project has been evaluated in

terms of strategic alignment and the ten project characteristics score, presented in Table 1.

The strategic alignment process is performed by evaluating how strongly the project might support each of the organization four key strategic categories. Although the projects in the portfolio often do affect more than one strategic category, each of them has a main focus on a particular category with an emphasis on a major factor within that category. Figure 3 depicts the four strategic categories and underlying factors.

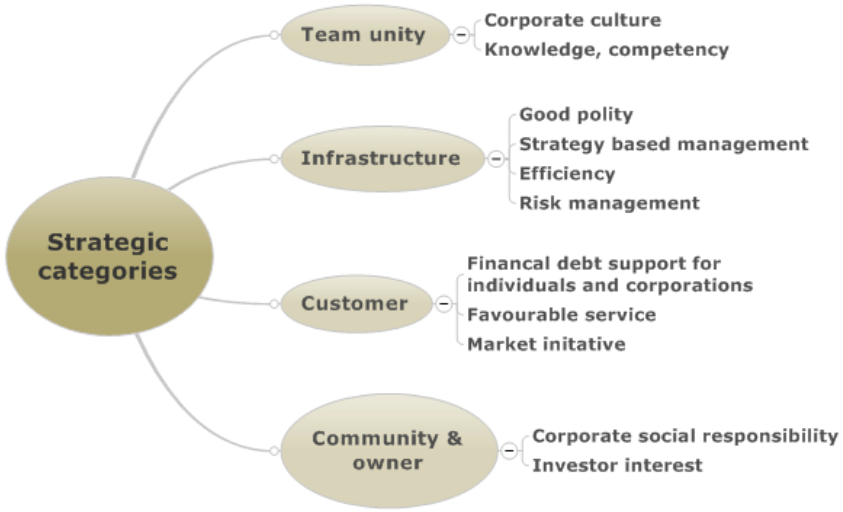

Figure 3 Strategic categories and underlying factors

Similarly, the project characteristics evaluation process is done by assessing each of the ten characteristics presented in Table 1 by assigning each a value from 1 to 10. The accumulated project score can thus range from 10 to 100.

Table 3
Projects in case study: characteristic score and strategic category

Project	Characteristics score	Strategic category	Major strategic factor
Project 1	43	Community and owner	Corporate Social responsibility
Project 2	54	Infrastructure	Efficiency
Project 3	59	Infrastructure	Efficiency
Project 4	64	Community and owner	Investor interest
Project 5	65	Infrastructure	Risk management
Project 6	71	Customer	Market initiative
Project 7	80	Customer	Favourable service
Project 8	81	Customer	Favourable service
Project 9	88	Community and owner	Corporate Social Responsibility
Project 10	95	Infrastructure	Strategy based management

To select a representative cross-section of projects from the portfolio, a subset of 10 projects were chosen, from the lowest total characteristics score of 43 up to the highest score of 95. This selection is presented in table 3, along with the strategic category and major underlying factor for each project. For purposes of the

research, the projects have been renamed Project 1 through Project 10 in ascending characteristics score order.

Research methodology

With a contemporary case study involving uncovering both explicit and implicit use of project attributes in management, the research methodology adopted was a dialectical and exploratory research through interviews and discussion.

PMO management was interviewed on the process for evaluating strategic category and project characteristics before projects are officially initiated.

The project managers for the set of projects in Table 3 were individually interviewed and to encourage a critical and fruitful discussion, the project in question was evaluated using two different models. Firstly by a qualitative evaluation of competence factors of the IPMA "Eye of Competence" (EOC) introduced by the IPMA in 2006, and secondly by estimating the four attributes of the Diamond model: Novelty, technology, complexity and pace.

The EOC, shown in Figure 4 consists of three dimensions, each having several competence elements, as follows:

- *Technical competences*: Project management success, interested parties, project requirements and objectives, risk and opportunity, quality, project organization, teamwork, problem resolution, project structures, scope and deliverables, time and project phases, resources, cost and finance, procurement and contracts, changes, control and reports, information and documentation, communication, start-up and closeout.
- *Behavioural competences*: Leadership, engagement and motivation, self-control, assertiveness, relaxation, openness, creativity, results of orientation, efficiency, consultation, negotiation, conflict and crisis, reliability, value appreciation and ethics.
- *Contextual competences*: Project orientation, program orientation, portfolio orientation, permanent organization, business, systems products and technology, personnel management, health, security, safety and environment, finance and legal.

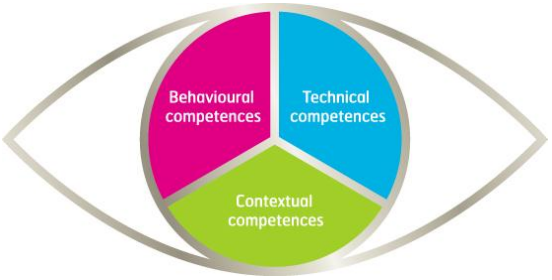

Figure 4 The Eye of Competence (EOC) - IPMA

To evaluate the projects against the EOC, each competence factor was ranked in terms of importance to the success of the project. Each factor would be explained and discussed during the interview to gain common understanding of it, and then the project manager would score the factor according to his perception of importance of the factor to project success.

4. RESEARCH RESULTS AND IMPACT

In this section, the research results are presented on the topics of strategy related project implication, project characteristics and individual project case studies. Closing the section, a comprehensive view is offered linking case study results with the literary review.

Strategy related project implications

Interviewing PMO management on the strategic alignment process exposed several implicit assumptions about project characteristics. The strategic categories each imply aspects of both project core focus and associated skills or competences required for successfully managing the project. For instance, the strategic category of "team unity" deals with corporate culture, employee skills, and employee satisfaction. In PMO management view, the project management and leadership skills required to deal with such a project imply communication skills, personnel management capabilities and leadership.

For projects supporting the strategic category of "infrastructure" its core focus points to improvements in structure, systems, organization and processes. In PMO management view this calls for knowledge of systems, IT competence, analysis capabilities and process improvement.

Table 4 summarizes implied project characteristics mentioned during the interviews and the management skills required for each of the four major strategic categories.

Table 4
Implied project characteristics and required management skills and focus

Strategy category	Project core focus	Implied project management skills
Team unity	Corporate culture, employee skills, employee contentment	Leadership, communication, personnel management
Infrastructure	Improvement of structure, system, organization or processes.	Knowledge of systems, IT competence, analysis capabilities, process improvement knowledge
Customer	Product development, innovation, service improvement	Knowledge of product catalogue, strategy management, service orientation, process improvement
Community and owner	Corporate social responsibility	Understanding of corporate social responsibility, stakeholder management, structure and organization

These project characteristics and implications are not being recorded explicitly or applied directly to adapt the management approach but rather they are used implicitly to aid selection of the appropriate project manager.

Project characteristics

Reviewing the experience of evaluating the ten project characteristics presented in Table 1, PMO management came up with a few notes on each of the characteristics both in terms of usability and implications. The results are summarized in table 5.

For the *scope* characteristics, evaluating if the project covers the entire life-cycle was considered to have questionable value for the process. This particular characteristic tended to be scored high since most if not all projects in the portfolio dealt with the entire life-cycle. Regarding the time constraint, it was pointed out that a short timeframe did indeed imply a need for strict project management, but on the other hand so would an extended timeframe. Projects of long duration tend to require stamina in engagement and motivation and thus need experienced project managers.

Additional scope-related characteristics considered to be important and pointed out during the research were size, quality and budget. Project size can be defined in different ways but could entail important information for appropriate management. Constraints imposed by quality and budget were also mentioned as being important indicators for management approach.

Table 5
Review results in applying the characteristics evaluation process for projects

Characteristics		Notes
Scope		
1	Low: Long timeframe High: Short timeframe	Short timeframe usually implies external demands or constraints.
2	Low: Repeated High: Unique	Repeated should indicate existing experience or prescriptive documentation
3	Low: Part of life-cycle High: Entire life-cycle	This characteristic is difficult to evaluate, and of questionable value. Tends to be high.
Execution		
4	Low: Special organization not needed High: Special organization needed	Low value indicates operations work rather than project. High value implies need for experienced project manager.
5	Low: Similar background High: Diverse participants	Related to characteristic 4 High value indicates a need for business analyst to manage different expertise areas.
6	Low: Knowledge in one place High: Collaboration needed	Related to characteristic 5 and tends to have very similar values.
Environment		
7	Low: Certainty High: Uncertainty	High value implies dynamism and changes over the lifetime of project
8	Low: Little change High: Substantial change	Indicates need for change management.
9	Low: Not affected by environment High: Dependant on environment	Evaluating this characteristic has proven to be somewhat unclear.
10	Low: Few connected High: Many connected	High value implies need for communication, increased need for follow-through in implementation

The *execution* characteristics were considered to be highly interwoven and according to available data, characteristics 5 and 6 were consistently scored equal or very close. This has raised questions of the need to evaluate both characteristics.

Additional important execution-related characteristics were resource availability and the need for external consultants. These characteristics might partly be represented in characteristic 6 (necessary knowledge not in one place).

As for *environment* characteristics, evaluating characteristic 9 (outcome affected by environment) has proven to be somewhat unclear.

Project cases evaluation

Comparing results from different project case evaluations, there are a few important points to consider (refer to Table 3 for an overview of the case study projects). Firstly, the projects selected were at a different stage in their life-cycle. For instance, project 4 had already been completed and closed while project 9 was still in its planning phase; thus indicating a different level of uncertainty regarding evaluation of project characteristics and success factors. Secondly, the projects varied substantially in size and scope, and two of them, project 9 and 10, can be considered to be programmes rather than projects.

The results from the "Eye of competence" (EOC) competence ranking is presented in Table 6. Each element of the three dimensions (technical, behavioural and contextual) is evaluated in terms of perceived importance to the project success. The score for each element ranges from 0 ("does not affect the project") up to 9 ("key factor for the project").

The first observation of the results in Table 6 is that the total score for competences (presented as a total number at the bottom) is ascending, although not strictly linear, with ascending characteristics score of projects 1 through 10. This indicates, not surprisingly, that the more prevailing characteristics of projects, the more competency elements are required. The projects (programmes) in 9 and 10 are extreme examples. The project managers of these programmes considered all of the behavioural elements to be key factors for project success, as well as over half of the technical elements and one-third of the contextual elements.

Referring back to Table 4, it is interesting to compare the implied project management skills according to project strategic category to the competency elements perceived important to the project managers. For instance, projects 2, 3 and 5 all fall into the strategic category of *infrastructure*, implying a need for skills in IT, strategy management, service orientation and process improvement. The critical competence element common to all three projects was deemed stakeholder management by the project managers and then diverse elements such as teamwork, leadership and negotiation. This could indicate that project classification by strategic category would not create classes of great commonalities in project character.

Table 6

Competence scoring of case study projects against the IPMA Eye of competence

Competence scoring *Question: What is the importance of each competence element for project success*? 9 = Key factor for the project 6 = High importance for the project 3 = Fairly important for the project 1 = Low importance for the project 0 = Does not affect the project		Projects in case study									
		Project 1	Project 2	Project 3	Project 4	Project 5	Project 6	Project 7	Project 8	Project 9	Project 10
Technical competence elements	1.01 Project management success	6	1	6	1	3	3	6	6	9	9
	1.02 Interested parties	3	9	9	6	9	6	9	9	9	9
	1.03 Project requirements & objectives	3	6	6	1	6	3	6	6	9	9
	1.04 Risk & opportunity	1	6	1	3	3	6	6	6	6	6
	1.05 Quality	9	0	0	0	0	1	3	1	6	6
	1.06 Project organisation	6	3	6	1	6	3	6	6	9	9
	1.07 Teamwork	6	6	9	3	6	9	9	6	6	6
	1.08 Problem resolution	1	6	3	1	3	1	3	3	6	9
	1.09 Project structures	6	1	3	6	3	6	6	6	9	9
	1.10 Scope & deliverables	9	6	6	1	6	3	6	6	9	9
	1.11 Time & project phases	3	6	3	6	6	6	6	6	6	6
	1.12 Resources	6	3	6	1	3	3	6	6	9	9
	1.13 Cost & finance	3	0	1	0	0	1	3	3	3	0
	1.14 Procurement & contract	6	3	9	0	0	3	3	6	9	3
	1.15 Changes	6	3	3	1	3	1	1	6	6	6
	1.16 Control & reports	1	3	3	1	3	6	3	6	9	6
	1.17 Information & documentation	3	3	6	3	6	9	6	6	6	6
	1.18 Communication	6	3	6	3	6	6	9	9	9	9
	1.19 Start-up	9	3	6	3	6	9	6	9	9	3
	1.20 Close-out	9	6	6	3	6	1	6	6	9	3
Behavioural competence elements	2.01 Leadership	9	6	6	9	9	6	9	9	9	9
	2.02 Engagement & motivation	6	6	3	6	6	6	9	6	9	9
	2.03 Self-control	1	6	1	1	3	1	9	3	9	9
	2.04 Assertiveness	6	6	1	3	3	1	6	3	9	9
	2.05 Relaxation	1	6	0	0	1	1	6	1	9	9
	2.06 Openness	3	6	6	3	3	9	9	9	9	9
	2.07 Creativity	6	3	6	0	3	9	6	6	9	9
	2.08 Results orientation	9	3	6	1	3	6	6	9	9	9
	2.09 Efficiency	1	3	6	3	1	3	3	3	9	9
	2.10 Consultation	6	6	9	6	6	6	6	6	9	9
	2.11 Negotiation	1	9	6	1	1	1	9	6	9	9
	2.12 Conflict & crisis	0	9	3	0	1	0	6	3	9	9
	2.13 Reliability	1	6	6	3	3	3	6	3	9	9
	2.14 Values appreciation	1	3	3	1	3	6	6	6	9	9
	2.15 Ethics	0	3	1	6	3	3	3	3	9	9
Contextual competence elements	3.01 Project orientation	6	3	6	6	3	3	6	6	9	9
	3.02 Programme orientation	1	0	3	1	0	0	6	3	9	9
	3.03 Portfolio orientation	1	0	1	0	0	1	1	0	6	3
	3.04 Project, programme & portfolio implementation	6	0	0	0	0	3	6	3	9	6
	3.05 Permanent organisation	1	0	3	3	0	3	6	0	6	9
	3.06 Business	3	0	6	3	3	0	3	0	6	6
	3.07 Systems, products & technology	1	3	3	0	3	0	6	6	6	3
	3.08 Personnel management	6	6	1	0	3	1	6	3	9	9
	3.09 Health, security, safety & environment	6	3	0	0	0	1	3	0	6	0
	3.10 Finance	3	3	3	6	0	1	3	3	3	3
	3.11 Legal	0	6	0	9	0	3	3	6	6	0
	total	187	182	187	115	145	163	257	224	363	324

Table 7
Evaluation of case study projects against the four dimensions of the diamond model

Projects in case study	Novelty Derivative Platform Breakthrough	Technology Low-tech Medium-tech High-tech Super-high-tech	Complexity Assemb ly System Array	Pace Regular Fast/competitive Time-critical Blitz
Project 1	Derivative	Low-tech	Assembly	Regular
Project 2	Derivative	Medium-tech	System	Fast/competitive
Project 3	Derivative	Low-tech	Assembly	Regular
Project 4	Derivative	Low-tech	Assembly	Fast/competitive
Project 5	Derivative	Medium-tech	Assembly	Regular
Project 6	Platform	Low-tech	System	Fast/competitive
Project 7	Platform	High-tech	System	Fast/competitive
Project 8	Platform	High-tech	System	Fast/competitive
Project 9	Platform	Low-tech	System	Regular
Project 10	Platform	Low-tech	Array	Regular

As a part of the analysis in each project case, the projects were evaluated for each of the four dimensions of the diamond model (Shenhar and Dvir, 2007). The dimensions of the model are novelty, technology, complexity and pace, each including three to four levels along a spectrum in which a project might fall. The results are presented in **Table 7** and a graphical representation of the resulting diamond shape for each project is presented in figures Figure **5** and 6.

A few observations can be made about the resulting diamond shapes for the case projects. First, complexity is the only dimension of the diamond model in which a case project scores a maximum level ("array"). No project manages to reach to top levels in technology ("super high-tech") and novelty ("breakthrough") and the top two levels in pace ("time-critical" and "blitz") are out of reach in all cases. This could indicate that the levels of the dimensions are not adequately suited to reflect the spectrum of projects for this organization and could require the levels to be refined.

Second, the correlation between ascending characteristics score and the dimensions of the diamond model are limited to novelty and complexity. One would expect novelty and complexity to increase with prevailing project characteristics, so this would be an intuitive assumption. However, the levels of the dimensions are broad; for example half of the case projects are classified in novelty levels as "derivative" and the other half as "platform". Again, pointing to the need of further refining the dimension levels.

Third, although some of the project cases had identical diamond shapes there was evidence of different approaches needed. For instance, project 7 and 8 were evaluated at the same level in all dimensions, resulting in an identical diamond shape (see Figure 5). However, there was a substantial difference in other project characteristics such as duration, size and change implication within the organization thus requiring different sets of competences and approach.

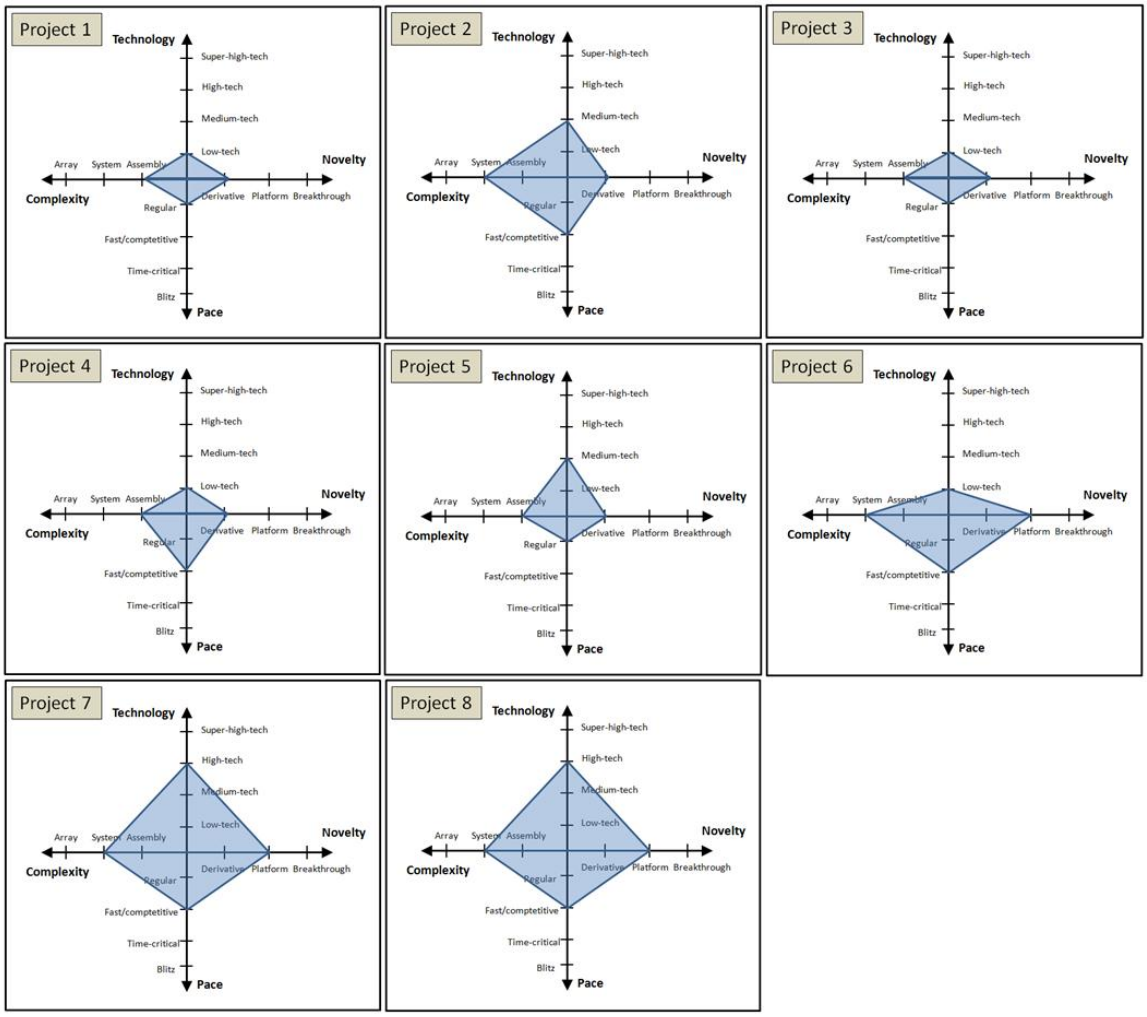

Figure 5 A graphical representation of the diamond model for projects 1 through 8

To summarize the results of applying the diamond model to the project cases, it seemed to add limited value to the managerial approach needed. The levels of the dimensions are broad and many projects fall into the same diamond shape. Perhaps the model is better suited for classifying innovative technical product development than the project spectrum of a financial services organization.

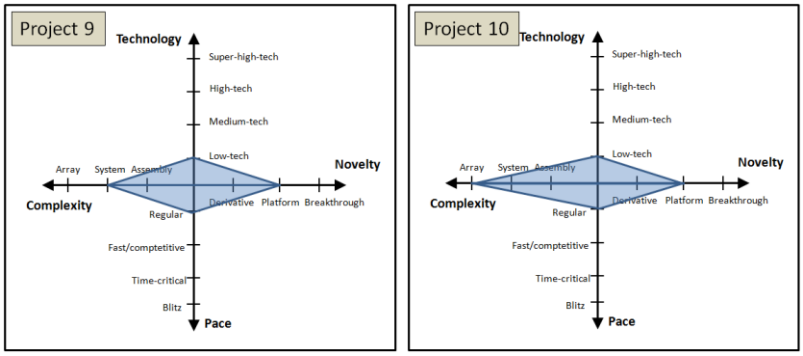

Figure 6 A graphical representation of the diamond model for projects 9 and 10

Implementation and exploitation

Leveraging the case study and the literature review, a comprehensive way for an organization to exploit the results might be create a sliding scale view of its projects based on characteristics evaluation. An example is depicted in Figure 7 using the accumulative sum of ten characteristics from the case study, placing the projects on a sliding scale from 43 to 95.

A characteristics score based on the three dimensions of scope, execution and environment is a simple and effective way of firstly deciding if the subject is a project or not and secondly placing it on a scale of relative context to other projects. The scale represents the organization's view of the type of work required and the range of unknowns in terms of goal, methods and environment.

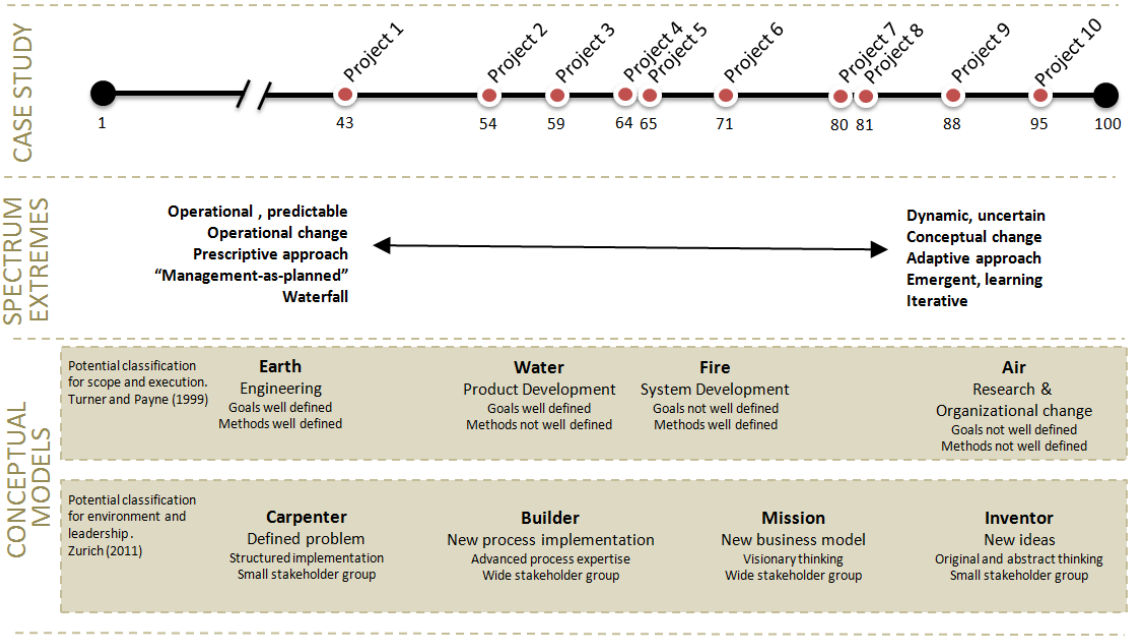

Figure 7 "The sliding scale of project character"

Conceptual models such as the "goals and methods matrix" (Turner and Payne, 1999) or other classification schemes from Table 2 can be used to aid the discussion on project management approach as well as on leadership and competence requirements. For a further development of appropriate management approach based on relative position on the sliding scale, the overview of strategies in Figure 2 could provide clues as to the relevant scope, execution and environment management strategies.

5. CONCLUSIONS

This paper has examined how the project character - being an aggregate of its characteristics - might be used to help determine the appropriate management approach and leadership style. Numerous classification schemes for projects exist,

each serving a certain purpose and can be seen as a simplified view of a project's character.

In the case study described in this paper it is apparent that numerous project characteristics are being evaluated, either explicitly or implicitly. However, these characteristics are not being exploited to adapt the project management effort in context with other projects and the organization.

Building on a simple project characteristics score from scope, execution and environment attributes, the sliding scale of project character offers a simple way of evaluating projects in terms of organizational context. It places the project on a scale ranging from operational work to intrinsic projects, from predictability to uncertainty, from prescriptive to adaptive; thus forming a starting point for project managers to explore the appropriate strategies needed for project success.

Most importantly, it can serve as a learning tool for project managers, project offices and organizations. The value of discussion and rationalization of appropriate management approach given certain project situation is immensely important for the development of project management competence and culture.

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