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# Adoption of structured project management methodologies: a project manager's gain?

Introductory paper to the Master's thesis

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2009-2010

# Overview

# 1. Introduction

The main goal of this introductory paper is to initiate research on the assumption that structured project management methodologies are more efficient than other, more basic methods (McHugh & Hogan, 2010), and so, that a project manager will gain by adopting these structured methods.

I chose this subject after leading several student projects on and around the university campus. After a few minor deficiencies within these projects it became clear that more structure was needed to manage risks, stakeholders, etc. This led to the desire to concentrate my studies on project management (PM), but with an absence of any PM related courses in the curriculum it was up to me to find a way to get familiar with the subject, its methodologies and its career opportunities. This last part was a major influence in the choice for this topic and the formation of the hypothesis.

Before working out this hypothesis, it is necessary to lay-out and define several concepts that are closely related to PM. How to define structured methodologies and their differences with other methodologies? What has to be understood when speaking of possible gain?

As this paper is a lead-in for the master's thesis, it will focus on setting a perimeter by formulating an initial hypothesis and proposing empirical research to test this hypothesis. It also includes an extensive bibliography to support the research. Keywords in the composition of this bibliography were "project management" combined with "methodologies" and "measuring performance", with separate searches for the different methodologies.

A lot of these methodologies have their origins in IT project management. This may become evident in the bibliography or any other section of this paper, but the subject of this paper and master's thesis will still be general PM.

The structure of the following sections is clear-cut: section 2 (Definitions) includes a clarification of the used terms, illustrated by a list of examples of methodologies. Section 3 (Research) states the hypothesis and the proposed empirical research, and section 4 (Conclusion) gives a final summary of the paper.

# 2. Definitions

## 2.1. Project management methodologies

A project manager has different ways to approach a project. For simple projects it might suffice to use common sense to avoid going over budget/schedule/.., while more complicated projects (in scale and/or scope) would fail if it was only the project manager's savvy that was used. These projects might need structured methodologies (Dutta et al., 1998), often built up by specialized organizations using the experience of many project managers over time (Project Management Institute, 2008, p.XXII; UK Office of Government Commerce, 2010).

### 2.1.1. Structured project management methodologies

Using structured project management methodologies starts with using standards. Understanding each other is critical to a project's success (Clarke, 1999); this includes using the same framework and terminology (Garcia, 2005).

Over the past 60 years of project management research several methodologies have been developed from an academic or practitioners' background (Turner, 2010), and only a few have made it to internationally-recognized standards.

**Internationally-recognized methodologies: PRINCE2 and PMBoK**

PRINCE2 (PRojects IN Controlled Environments) and PMBoK (Project Management Body of Knowledge) provide flexible frameworks that can be easily adapted to specific needs (McHugh & Hogan, 2010). They offer a standard using established norms, processes and practices (Project Management Institute, 2008, p.3; UK Office of Government Commerce, 2009b).

PRINCE was originally developed to manage IT projects of the British government, but evolved to a general methodology (UK Office of Government Commerce, 2009b), while PMBoK is a product of the Project Management Institute (PMI), an organization managed and built by practitioners (Project Management Institute, 2010b).

A survey of the Institute of Project Management Ireland indicates that 30% of the responding organizations used either the PMBoK methodology (25%) or the PRINCE2 methodology (5%) (McHugh & Hogan, 2010). Because no other methodologies were mentioned in the results it can be assumed that these two methodologies are the most important, and that the rest of the organizations use internally-developed or less popular methodologies, or no methodologies at all.

This 30% might not be applicable to the rest of Europe; Ireland houses a lot of European subdivisions of US companies, who prefer the use of internationally-recognized methodologies

(Naughton & Kavanagh, 2005). Nevertheless, reviewed literature shows no signs of other major methodologies.

### In-house developed methodologies

If the standard methodology and the organization are a mismatch the disadvantages will outweigh the benefits of using the standard methodology (Garcia, 2005). This is why a lot of organizations will either tailor an existing methodology (Zielinski, 2005), or create their own method from square one to fit all projects and retain consistency throughout the organization (McHugh & Hogan, 2010)[i].

It is noted though that companies are moving away from internally-developed to more broadly recognized methodologies (McHugh & Hogan, 2010)[ii].

## 2.1.2. Basic project management methodologies

While advanced project management might require structured methodologies, a small straightforward project could probably rely on the instincts of its manager and team. Despite that, even in these situations frameworks can be recognized, with or without the aspiration of the project manager. The waterfall model for instance is in its roots a clear-cut sequence of phases: conception, initiation, analysis, design, construction, testing and maintenance. But even before the conception of its name, the waterfall model was already pegged as an example of a flawed, non-working model (Royce, 1970).

A lot of companies still use these basic methods like the Gantt chart (Maylor, 2001), perhaps due to the lack of certified project managers (Project Management Institute, 2010a) or because they are taking "a very limited approach to the subject" (Maylor, 2001), but Maylor is clear in his plead to "move on" from the century-old scheduling technique that is the Gantt chart (that is; if it is used as a stand-alone instrument).

CPM (Critical Path Method) and Pert (Program Evaluation and Review Technique) can also be considered as basic methodologies, but the more applicable term could be tools/techniques as these scheduling and time management tools are for instance also included in the Project Management Body of Knowledge (Project Management Institute, 2008, p.130, p.150).

## 2.1.3. Software development processes

There is a wide range of methodologies in use to develop software. This varies from basic methodologies like Rapid Application Development (RAD) to more structured methodologies like Scrum and IBM Rational Unified Process (RUP).

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i McHugh & Hogan (2010) refer to the 2001 edition of Kerzner (2009) - not yet consulted.

ii McHugh & Hogan (2010) refer to a 2005 research of Forrester (http://forrester.com) - not consulted.

Some (software development) methodologies like RAD are specifically designed to allow constant changes during the project; this shortens the planning phase and allows for faster and cheaper development (Beynon-Davies et al., 1999). But if applied incorrectly this could lead to a chaotic process fittingly termed cowboy coding (Wood & Kleb, 2002).

In the past 10 years a new term has emerged; agile software development (Fowler & Highsmith, 2001). This embodies the majority of today's methodologies, as listed by Fowler & Highsmith: Extreme Programming, Crystal Methodologies, Scrum, Adaptive Software Development, Feature-Driven Development, Dynamic Systems Development Methodology and others. In their 2001 manifesto Fowler and Highsmith point out the principles that (should) drive these methodologies, with "[the] highest priority [being] to satisfy the customer through early and continuous delivery of valuable software". This can only be achieved through an incremental or iterative style of software development.

### 2.1.4. Distinction in this research

This research will create two distinct groups by using the terms "without training" or "untrained" for project managers who don't use internationally-recognized structured methodologies and "trained" or "certified" for those who do. The focus of the research will be on PRINCE2 and PMBoK as they are the two major internationally-recognized methodologies.

## 2.2. The possible gain of adoption

The general consensus seems to be that (advanced) project management requires the use of structured methodologies. But does a project manager really gain by becoming a certified user of methods like PRINCE2 or PMBoK? To research this, measurable benefits need to be defined.

**Measurable benefits**

The following list of possible benefits is based on Maylor (2001)'s "Beyond The Gantt Chart (BTGC) approach", Cao & Hoffman (2010)'s productivity metrics, and Atkinson (1999)'s systems measures. Also Fowler & Highsmith's principles listed in their 2001 manifesto are taken into account.

Every component is phrased in a question that can be answered using a scale (1 to 10). The questions focus on 1 project, but can easily be changed to a wider scope.

- Is there an increase in customer satisfaction? These are perhaps the most important (Naughton & Kavanagh, 2005) because the client (or shareholder) is the first person who needs to benefit from the results of the project.

- Is the project more strategy driven? This is strengthened by better communication between the project (manager) and the organization.

- Conformance & performance: the iron triangle of project management:
  - Are the results more conform to the expectations? Time: as planned? Cost: as budgeted? Quality: as specified?
  - OR Is there a surge in performance? Time: shorter? Cost: cheaper? Quality: more customer delight?
- Is the workload in the project more sustainable? In the long term it is important that the project manager and his team can maintain a constant pace indefinitely.
- Is there less perceived uncertainty? One of the main benefits promoted by PRINCE2 and PMBoK is their ability to reduce uncertainty by a better management of stakeholders.
- Is the communication within the team smoother and of higher quality? Less miscommunication is essential for a better project.
- Are the results of the project more durable, reliable and serviceable? This component might only be applicable to manufacturing (product-based), so less to a service.
- Is the documentation of the project better suited for reuse in future projects?

**Disadvantages of structured project management methodologies**

Structured project management demands a lot of documentation (Abbasi & Al-Mharmah, 2000; Dicks, 2000) and a substantial use of policies and procedures, guidelines and checklists (Project Management Institute, 2008). This can be time consuming and can be considered as the biggest drawback of structured project management methodologies: more constraints.

As mentioned before more documentation and more structure can also have advantages; reuse in future projects, less uncertainty,... Which one, structure or less constraints, has the upper hand will be one of the main questions in the research.

# 3. Research

## 3.1. Hypothesis

If project managers use a structured methodology to plan, execute and evaluate their projects, then they will make better use of their resources and will manage limitations better.

This may also be restated as a derived hypothesis: untrained project managers will be less able to stay on schedule and within their budget, while achieving the required quality levels, compared to certified project managers.

The benefits of training have to outweigh the (opportunity) costs. If the results of the research confirm the hypothesis, it would indicate that it is worth spending time, money and energy on getting certified as a project management professional.

## 3.2. Empirical research

The empirical research will include both a survey of recently certified project managers and interviews with experienced project managers.

In the first group, a survey will be conducted before and after their training (adopting a structured methodology). In the latter, the focus of the interview will be on experienced usefulness of structured methodologies and the perceived value to the project managers' careers.

While it might be hard to objectively test the hypothesis via the interviews, the survey gives more options to compare the performance over time.

Three groups will be created for the survey:

- Control group 1: project managers without training who don't foresee adopting a structured methodology in the near future.
- Control group 2: certified project managers (with a PMP or PRINCE2 certificate).
- Experimental group: project managers without training who will adopt or have very recently adopted a structured methodology (PMP or PRINCE2).

In each group the change in performance will be measured over a period of 4 to 6 months. This period should leave enough time for the project managers to perceive a difference in their (projects') performance and in the ease with which they can achieve it.

Using 2 control groups gives the option to examine the learning curve of untrained vs. experienced / certified project managers. This can be compared to the learning curve of the experimental group with recently trained project managers who might lack experience.
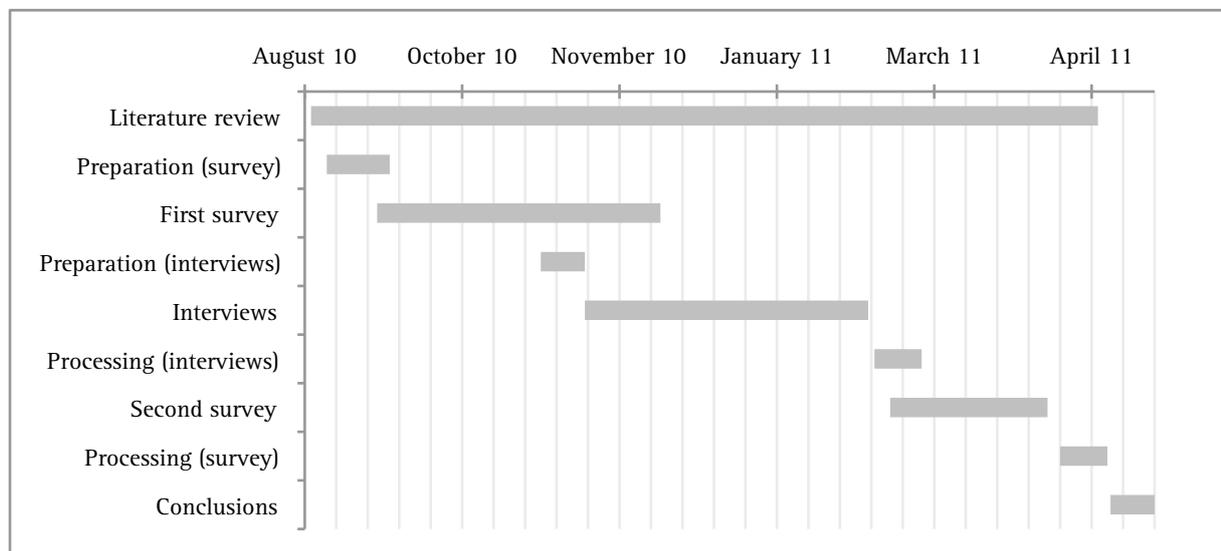
To find the right people for the experimental group the local certified trainers of PMI and PRINCE2 can be contacted. Fanuel Dewever (Managing Partner at 83 Degrees South Ltd. and certified practitioner of PRINCE2) has already signaled his willingness to collaborate.

For the 2 other groups random medium to large companies can be approached, and the network of the cooperating project managers can be called upon.

The survey will be in the form of a questionnaire, possibly accessible online.

Alongside the survey, interviews will be conducted. A small group of experienced project managers will be contacted for a semi-structured face-to-face interview, mainly focusing on their career path in project management and the evolution of their usage of methodologies. It will be partially based on the questions asked in McHugh & Hogan (2010).

The intended schedule for the master's thesis visualized in a basic Gantt chart:

| | August 10 | October 10 | November 10 | January 11 | March 11 | April 11 |
|---|---|---|---|---|---|---|
| Literature review | | | | | | |
| Preparation (survey) | | | | | | |
| First survey | | | | | | |
| Preparation (interviews) | | | | | | |
| Interviews | | | | | | |
| Processing (interviews) | | | | | | |
| Second survey | | | | | | |
| Processing (survey) | | | | | | |
| Conclusions | | | | | | |

# 4. Conclusion

This introductory paper was written with a distinct motivation; to become familiar with project management and its most common practices, and the role of the project manager.

The choice to focus on the methodologies matched this motivation as it asks for a literature review of the complete project management discipline and involves best practices, performance indicators, etc.

To avoid this broad literature review to be a burden on the research, this paper defined 2 contrasting groups (trained/certified vs. untrained) and further limited the research to PRINCE2 and PMBoK as the two main certifications for general project management.

The research will answer one central question: will the project manager gain by adopting PRINCE2 or PMBoK? This will be researched with a survey and interviews, of which the results will be reported and analyzed in the master's thesis.

**Final notes:**

- The definitions of "project" and "project management" are left out: I would like to refer to Maylor (2001) and others for thorough definitions.

- Thanks to prof. dr. Patrick Uyttendaele and Fanuel Dewever for their ideas and feedback.

- This paper can be downloaded at: http://jandm.be/docs/2010/paper

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