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Towards the Facilitation of Project Change Risks
By Apostolopoulos, Halikias,
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Towards the Facilitation of Project Change Risks: An IT Service Management Perspective

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Abstract

Risk Management has been at the heart of every kind of project; from its simplest form to its most complex structure. Best practice in project management dictates that the creation and maintenance of a Risk Register is a must-have in order to monitor and control risks throughout the endeavour of achieving project targets. The absence of Risk Management can signal the presence of uncontrolled changes which might affect a project's success or even the organisation's coherence. A number of global project management frameworks and methodologies have accounted for Risk Management strategies irrespective of project deliverables. This paper aims to provide a comparative overview of contemporary project management frameworks specifically for Risk Management focusing also in services management provision.

Key words: Project Management, Risk Management, IT Service Management

1 Introduction

The science of modern project management is not new ([1], [2], [3]) as it started to emerge in 1990s. Actually, what seems to have changed over the past decade is the evolution of techniques applying theory into practice. This has had as a consequence, the need to structure frameworks and process driven methodologies of project management, in detail, based on professional panels with accumulated experience so as to formally document these best practices. In this light, change management mostly observed and utilised as an integrated process within project management, is a rational process for exploring decision making and behavioural alternatives in an attempt to save 'sidetracked' deliverables due to change and ensure project success.

Every project is subject to change, simply because the business environment changes. One of the aims of structured project management methodologies is to adapt to changes and, in effect, minimise risk and finally ensure project success. Every project has significant differences, in terms of several factors, including factors that are the well-established, such as cost, time, scope and quality.

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www.pmworldjournal.net   Featured Paper   Maroukian & Tsaramirsis

On the other hand, high project failure rates ([4], [5], [6], [7], [8]) has given the incentive to institutions, agencies and even individuals to develop and establish standards for project management methodologies, such as: PMBOK®, PRINCE2®, ITIL®, APMBOK®, SCRUM, ISO 21500 and others. These are not simply good practice guidelines, but also legal requirements for complex projects. The main strength of such frameworks lies in their comprehensive formality, narrative of collective experience and accuracy in describing specific processes for specific purposes. Nevertheless, there can be found many reasons a project can fail; lack of user input and clarifications, change in requirements and specifications, unrealistic budgeting, lack of risk estimation policies and poor requirements definition ([8[, [9]).

In a similar context, project failure was categorised as technical, data, user and organisational [11]. In another approach, the significance of organisational and economic factors as far as project management is concerned was raised [12]. Actually, these explain about twice as much of the variance in profit as do the economic factors.

Based on an independent study 'The changing face of project management', examining the project panorama in UK [13], some interesting results were released:

- 30% budget over-runs; (1 in 6 projects surpass this limit);
- 50% over budget; (10 out of 29 projects on the go at any one time will come in over budget);
- Inaccuracy concerning scope and forecasting; (50% cause for budget over-run);
- Only 35% of the companies check whether initiatives are aligned with objectives;
- 74% struggle to access critical skills.

Specifically for IT and software projects, another report indicated that 68% of software projects do not meet time/cost/scope targets. In greater details, only 32% of projects were completed on time, within budget and delivered measurable business and stakeholder benefits [14]. However, for IT service management, ITIL® can be regarded as a set of best practices used in the public and private sectors internationally.

IT Service Management (ITSM) derives enormous benefits from a best practice approach, focusing on the alignment of IT services with the needs of business. The trademark (ITIL®) ownership is listed with HM Government rather than the Office of Government Commerce (OGC); however, there are dominant similarities with PRINCE2® in certain themes. For example, as far as Risk Management Processes are concerned ITIL® uses PRINCE2® terminology and processes. PRINCE2® is concerned with Project Management whereas ITIL® with IT Services Management. For the effective framework's comparison and in accordance to the paper's aims, PRINCE2® and PMBOK® will be mainly discussed and analysed.

PMBOK® a project management framework and PRINCE2® a process-driven methodology are both highly detailed and structured; PMBOK® (2013) consists of 47 processes mapped in 5 distinct process groups split into 10 knowledge areas, is recognised by the American National Standards Institute (ANSI) as an American National Standard (ANSI/PMI 99-001-2008). On the other hand, PRINCE2® (2009) consists of more than 47 separate activities which are organised into 7 themes ([14, [15]).

PM World *Journal*
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Maroukian & Tsaramirsis

Regarding IT Services Management, ITIL[®] consists of five volumes: ITIL[®] Service Strategy, ITIL[®] Service Design, ITIL[®] Service Transition, ITIL[®] Service Operation, ITIL[®] Service Improvement. Risk is mainly discussed in the ITIL[®] Service Transition volume.

Organisations, in order to succeed they have to balance two parallel competitive imperatives. The first one is related to current business operations maintenance (for example: profitability, service quality, productivity, customer relationships) and the second one to business operation transformation [15, p.2]. PRINCE2[®] also explains that risk management has to take the form of a systematic process and as should not be based on chance.

On the other hand, PMBOK[®] measures project success in terms of product and project quality, timeliness, budget compliance and degree to customer satisfaction [16, p.7].

Nonetheless, the processes of change management and risk assessment are usually regarded as separate entities and ones which should be generally implemented during the initial stages of a project. Besides the generic need for change, implementing change is often difficult to achieve due to several cultural or even behavioural reasons, often resulting in failure of the overall process [17].

Further to the introduction, this paper is organised as follows: section (2) presents existing literature findings. Section (3) discusses a comparison of the project management techniques presented and finally, section (4) discusses the conclusions drawn out of this paper.

2   Literature Review

There are certain predominant global project management frameworks which have a significant impact and contribution to global teams performing according to a set of project goals, with specific deliverables e.g. a report, a project or quality plan, in IT, finance, banking, manufacturing, e-commerce, transportation, construction, healthcare sectors.

These frameworks, such as PMBOK[®], provide baseline information on what needs to be in place for an organisation or a project team to have the setup, that will facilitate the project to its successful accomplishment in terms of scope, cost and time. Other modern process-driven project management methodologies such as PRINCE2[®] provide a thorough insight into how to conduct effective project management, following a specific set of step-by-step rules. Both contemporary frameworks extensively discuss Risk and accompanying strategies in order to accommodate potential risk impact with a view of risk control.

More specifically, the Project Management Body of Knowledge (PMBOK[®]) has been developed by the Project Management Institute (PMI), based in the US, whereas the PRojects IN Controlled Environments (PRINCE2[®]) was developed by the Office of Government Commerce (OGC), in the United Kingdom. The term "Body of Knowledge" signifies the complete set of concepts, terms and activities that make up a professional domain.

A 'professional domain' can be characterised as customer, company, contact, location, airport, gas station [18]. Most organisations work in only a few domains. They repeatedly build similar systems within a given domain with variations to meet different customer needs. 'Domain

PM World Journal
Vol. III, Issue VI – June 2014
www.pmworldjournal.net

Towards the Facilitation of Project Change Risks
By Apostolopoulos, Halikias,
Maroukian & Tsaramirsis

Featured Paper

Engineering' also known as product line engineering is the entire process of reusing domain knowledge in the production of new software systems. An essential idea in systematic software reuse is the application domain, a software area that contains systems sharing commonalities [19].

So, a 'Professional Domain Engineering' could mean, the process of systematic reuse of domain knowledge such as 'business documentation' e.g. solution proposals to RFPs, project plan, communication plan, risk management plan, change management plan, etc. in projects of any nature and specialised industry e.g. pharmaceutical, aerospace, petroleum, retail, telecommunications, etc., in order to attain financial and productivity gains by avoiding to repeat tasks of building the solution from scratch.

Risk can be very simply identified as "any potential problem that threatens the success of a project" [7]. Focus on project risk management has moved from quantitative methods to structured risk management processes with a view to understanding and embedding risk management throughout the project's life cycle [20]. More specifically Risk Management being a process allows individual risk events or overall risk to be managed proactively, optimising success [21]. Table 1 shows the definitions based on PRINCE2[®], ITIL[®] and PMBOK[®].

Table 1. Risk Definition

OGC PRINCE2[®] (2009)	ITIL[®] v3	PMI PMBOK[®] (2013)
An uncertain event or set of events that, should it occur, will have an effect on the achievement of objectives. A risk is measured by a combination of the probability of a perceived treat or opportunity occurring and the magnitude of its impact on objectives [15, p.311]	A possible event that could cause harm or loss, or affect the ability to achieve objectives [22, p.243].	An uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives [16, p.558]

From a quick look the definitions share similarities. Furthermore, PRINCE2[®] (2009) explains that projects bring about change and consequently change incurs risk; more specifically risk taking in projects is inevitable. In certain cases, where the project is complex, a dedicated risk manager may be appointed to facilitate the risk management processes.

OGC also publishes a supplement guide, M_o_R[®] (Management of Risk: Guidance for Practitioners) as an effective framework for taking decisions about risks that affect business performance objectives; as seen below:

1. Aligns with objectives;
2. Fits the context;
3. Engages stakeholders;
4. Provides clear guidance;
5. Informs decision-making;
6. Facilitates continual improvement;
7. Creates a supportive culture;
8. Achieves measurable value.

PM World *Journal*
Vol. III, Issue VI – June 2014
www.pmworldjournal.net

Towards the Facilitation of Project Change Risks
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Featured Paper   Maroukian & Tsaramirsis

In summary, M_o_R® describes the management of risk process in four categories: identification, assess, plan, implement integrated with PRINCE2® framework [23].

In contrast, PMI has its own relative publication named 'Practice Standard for Project Risk Management' in an attempt to provide a standard for project management practitioners and other stakeholders. The underlying principles are as follows [24, p.3]:

- Plan Risk Management
- Identify Risks
- Perform Qualitative Risk Analysis
- Perform Quantitative Risk Analysis
- Plan Risk Responses
- Monitor and Control Risks

There is no project without risk, as risks are inevitable; nevertheless, with the aid of project risk management some of them are predictable and manageable. In fact there is an impressive 90% problems reduction in projects after risk management procedures have been engaged [25].

As illustrated by Figure 1, risks have a tendency to grow exponentially with time is left unmanaged.
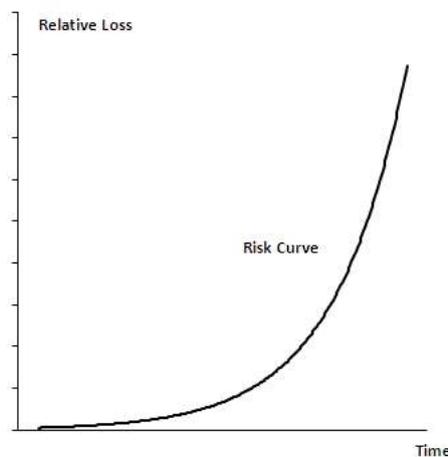

Fig. 1. Risk Profile [22, p.143]

Risks that are worth investigated can be highlighted through analysis to their high probability of occurrence or the high associated impact [26]. Especially during risk estimation, four items have to be accomplished. The first step requires that variable values are determined. Usually, this step is accomplished by selecting an appropriate scale, which measures the variables. The second step regards the identification of the various consequences of an event and the third concerns the magnitude of risk to be determined. The final and fourth objective is to eliminate any unexpected or unplanned events from occurring [27].

PM World *Journal*   *Towards the Facilitation of Project Change Risks*
Vol. III, Issue VI – June 2014   *By Apostolopoulos, Halikias,*
www.pmworldjournal.net   Featured Paper   Maroukian & Tsaramirsis

3 Project Risk Management Comparative Overview

PRINCE2® recommends the following five steps for facilitating risk management procedures [15, p.79]:

1. Identify (context and risk)
2. Assess (estimate and evaluate)
3. Plan
4. Implement
5. Communicate

Specifically, for PRINCE2® (2009) communication runs in parallel with the rest four sequential steps. Taking as an example services delivery; communication, prior to services delivery is as important as communication after the services delivery. The whole communication process should be targeted to meet the specific needs of each stakeholder and should be reflected within the overall project communications strategy.

The primary goal of *Identify Risks* is to recognise the threats and opportunities that may affect the project's objectives in the following actions. Identified threats and opportunities are captured in the Risk Register.

According to most people's beliefs, risk is synonymous to uncertainty and fear for the unknown, meaning that it is mainly related to future actions or events; nevertheless, it can be looked under a number of different perspectives. In particular for Service Management, as a generic example, the following questions may arise when project services changes are anticipated:

- What are the applicable SLAs?
- Who is the process owner i.e. Change Manager/Risk Manager, who will ultimately be the decision maker?
- What are the resources available for this change?
- What are the time constraints for this change?
- What are the available funds for this change?
- What risk aversion actions apply in case things go wrong?

Overall, risk management has to take the form of a systematic process and as PRINCE2® explains, it should not be based on chance. It is rather related to proactive actions of identification, assessment and control of risks that might affect the delivery or the project's objectives.

Concerning risks, an assessment is made to determine whether the level of risk(s) is within the tolerance of the project which regards the following:

a) The probability of threats and opportunities in terms of likelihood of occurrence;
b) The impact of each threat and opportunity in terms of the project's objectives;
c) The proximity of these threats and opportunities regarding to when they might materialise; and
d) How the impact of the threats and opportunities may change over the project's lifecycle [15, p.83].

PM World *Journal*
Vol. III, Issue VI – June 2014
www.pmworldjournal.net

Towards the Facilitation of Project Change Risks
By Apostolopoulos, Halikias,
Featured Paper
Maroukian & Tsaramirsis

PMBOK [®] (2013) risk strategies shares some similarities with PRINCE2[®] (2009):

- Plan Risk Management
- Identify Risks
- Perform Qualitative Risk Analysis
- Perform Quantitative Risk Analysis
- Plan Risk Responses
- Monitor and Control Risks

In contrast, PMBOK[®] defines more compact set of response strategies to risk [16, pp. 334-345], as seen in table 2. The responses of risk do not necessarily remove the inherent risk, which might have as an effect to leave residual risk. This residual risk may be significant if the risk response is partially successful. On per case basis, more than one risk response can be selected [15, p.84].

Table 2. Summarised Risk Responses/Strategies Comparison

OGC PRINCE2[®] (2009)	PMI PMBOK[®] (2013)	
Avoid (threat)	Avoid	
Reduce (threat)	Transfer	Negative Risks (Threats)
Fallback (threat)	Mitigate	
Transfer (threat)	Accept	
Accept (threat/opportunity)		
Share (opportunity)	Exploit	
Exploit (opportunity)	Enhance	Positive Risks (Opportunities)
Enhance (opportunity)	Share	
Reject (opportunity)	Accept	

As a result, any given risk is likely to lead to appropriate actions in any or some of the above categories. Selection of risk is related to balancing the risk.

PMI defines specifically the project risk management process as follows [24, p.308]:

Plan Risk Management: Defines the scope and objectives, ensuring that the risk process is fully integrated into wider project management. In addition, the purpose and objectives of the plan risk management process is to develop the overall risk management strategy and decide how this will be executed. The level of risk acceptance in a project depends on the risk attitudes of the relevant stakeholders. The higher the control on the risk factor, the higher the probability of project success [24, p.22].

Identify Risks: Aims to list the risks and identify the risk owners. The earlier the risk identification the better, as this will allow for example project managers to pursue action that can realign the course of project activities the soonest possible. This is because time availability is maximised and in effect the response is in turn also earlier. PMBOK[®] dictates that each of the identified risk process should relate to at least one project objective (for example, time cost, quality, etc), clearly described in simple words or phrases.

PM World *Journal*
Vol. III, Issue VI – June 2014
www.pmworldjournal.net

Towards the Facilitation of Project Change Risks
By Apostolopoulos, Halikias,
Maroukian & Tsaramirsis

Featured Paper

Perform Qualitative Risk Analysis: Qualitative risk analysis evaluates the probability that each risk will occur and the effect of each individual risk on the project's objective. Other factors may be considered in determining the importance of risk: urgency (proximity), manageability and impact/s external to the project.

Concerning manageability, not all risks are manageable and resources may be wasted in an attempt to address them. There is an analogy of risk importance and level of impact. Since risks do not have the similar levels of impact on projects, they are often categorised based on the severity they possess as low, medium or high.

Provided that it is almost impossible to know beforehand all the risks that may occur in a project, the identification and qualitative analysis process should be repeated periodically for each risk [24, p.33]. Table 3 illustrates a comparison between PRINCE2® and PMBOK® risk accommodation techniques.

Table 3. Contemporary Project Management Frameworks Risk Accommodation

OGC PRINCE2® (2009)		PMI PMBOK® (2013)	
Identify (Context and Risks)		Plan Risk Management	Select Risk Characteristics
		Qualitative Risk Analysis	Collect and Analyse Data
Assess (Estimation and Evaluation)	Communicate	Quantitave Risk Analysis	Prioritise Risks
Plan		Plan Risk Responses	Categorise Risk Causes
Implement		Monitor and Control Risks	Document Results

4 Conclusions

Each project may require different changes and risk handling which may be reflected in culture, leadership, decision making, norms and directives and consequently in the general way of implementing and managing projects.

Contemporary project management frameworks dictate structured ways (processes) of managing complex projects. On the other hand, risk management can be considered a part of the overall integrated project management approach where change management (change requests) can be integrated in the control and monitoring processes.

Projects do fail for a variety of reasons; nevertheless, not all risks are the same or have the same priorities. By priority it is meant the determination of the evaluation criteria the individual risk consequences are going to be measured against.

The level (impact) of risk can have immediate consequences on the success or failure of a project. Effectively, it should have a low damage impact and fairly high level of predictability.

PM World **Journal**   *Towards the Facilitation of Project Change Risks*
Vol. III, Issue VI – June 2014   *By Apostolopoulos, Halikias,*
www.pmworldjournal.net   Featured Paper   *Maroukian & Tsaramirsis*

For this case, Pareto's rule can be described as follows: 80 per cent of the negative consequences are caused by 20 percent of the risks.

Successful change risk management and adaptation is not for heroes, it is an analytical process that requires commitment to organisations strategic goals, a process which at the end must conform to what the customer has requested or agreed upon.

Since change and risks cannot be avoided, services stakeholders have to take into account the levels of risk they can tolerate. IT Service Management is about service configuration to become as customer-oriented as possible. This configuration might necessitate the use of tools such as strategic planning on the set of technologies to be utilised by an organisation. Overall, Change and Risk management integration for managing projects successfully seems necessary.

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PM World *Journal*

Vol. III, Issue VI – June 2014

www.pmworldjournal.net

Towards the Facilitation of Project Change Risks

By Apostolopoulos, Halikias,

Featured Paper

Maroukian & Tsaramirsis

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PM World *Journal*   *Towards the Facilitation of Project Change Risks*
Vol. III, Issue VI – June 2014   By Apostolopoulos, Halikias,
www.pmworldjournal.net   Featured Paper   Maroukian & Tsaramirsis

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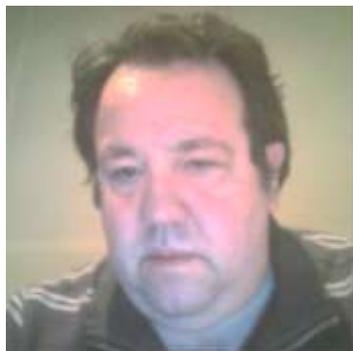
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PM World Journal
Vol. III, Issue VI – June 2014
www.pmworldjournal.net

Towards the Facilitation of Project Change Risks
By Apostolopoulos, Halikias,
Featured Paper
Maroukian & Tsaramirsis

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