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Public-Private Partnerships (PPPs) are cooperative arrangements between private firms and government covering major projects. Although many of these ventures have been successful, there have been some major failures [33-55] in meeting projected goals resulting in major losses. There are many spectacular examples where PPP projects have failed to add value to society. Better management, innovation, and performance based risk distribution were promised by the private sector taking on a high proportion of project risk through their commercial expertise. However, the reality is often far from the rhetoric. The Sydney Harbour Tunnel is typical of a project that threatened big losses that had to be underwritten by government to protect the viability of the private partners. Tunnel Motorists have had to wear a rapid rise in toll charges to cover commercial miscalculations. Other examples include the multi-billion dollar Waratah Train project where Government needed to provide a bail out. The Sydney Airport rail link is another PPP example of the public purse coming to the rescue and Sydney’s Cross City Tunnel, called upon the public purse support yet another commercial miscalculation. This is not a new phenomena or unique to Australia. The Anglo/French Channel Tunnel PPP project, although a spectacular engineering success envisaged by Margaret Thatcher in the 1980’s has failed to deliver a financial return to this day. There are many such examples throughout the world. This work puts forward a view that there is a great deal of commonality in the reasons for these big loss failures and suggests strategic initiatives aimed at assuring a greater PPP success.

This paper is based on the PhD work of Aftab Siddiqui, who is involved in an on-going investigation into the critical success factors of PPP’s in Australia and ways to avoid some of the reputed big losses that have resulted from these types of projects. For the last ten years Aftab has been working as project manager and managing and delivering complex, multi-disciplinary rail signaling infrastructure assets and program. Overall Aftab has 30 years experience in dealing with millions of dollars public educational buildings and rail infrastructure asset and services with major focus on program management governance, risk, reliability, safety management and delivering value for money. Aftab led and delivered high value, complex, multi-disciplinary rail signaling infrastructure design and construct project in brown field area and in a rail operating environment using traditional delivery method. Aftab achieved AIPM state winner award
for his organization for the project in 2015 in the category of Construction/Engineering for demonstrating through narratives and documentary evidence, outstanding achievement in the application of advanced project management processes and practices. The paper analyses existing reports, research papers, and related literature and discusses positive and negative strategic outcomes. There are four main areas of economic and strategic advantage in PPPs, namely economies of scale, scope, learning/experience and sharing. Proposals are then presented in the form of Strategic Initiatives aimed at assuring success in the application of PPP’s to engineering projects. The study concludes that the success of PPP’s is a function of the structure, strategy and the tactics employed and discusses optimal solutions aimed at better outcomes and the avoidance of losses. Key Words: strategy, tactics, technological prowess, PPP initiatives, technology management strategies

1. Introduction

This study is based on a step by step analysis of existing results, reports [1] and research papers [2],[3],[4],[11]. Positive and negative viewpoints are presented and gaps identified with the aim of presenting a strategic solution for ‘How, Why and When’ of PPP’s methods in procurement.

2. Strategic Analyses Procedure

a) Study of existing research reports

A detailed report on the performance of PPPs made to Infrastructure Partnerships Australia is considered [1], [2], [9-10], [12-13], [19]. Papers relevant to PPP published in leading construction management journals are reviewed [3] in conjunction with newspapers and media releases highlighting strategic issues, difficulties and failures.

<table>
<thead>
<tr>
<th>Journal Title</th>
<th>Number of Papers</th>
</tr>
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<tbody>
<tr>
<td>Journal of Construction Engineering and Management</td>
<td>35</td>
</tr>
<tr>
<td>International Journal of Project Management</td>
<td>25</td>
</tr>
<tr>
<td>Construction Management and Economics</td>
<td>23</td>
</tr>
<tr>
<td>Engineering Construction and Architectural Management</td>
<td>14</td>
</tr>
<tr>
<td>Journal of Management in Engineering</td>
<td>6</td>
</tr>
<tr>
<td>Building Research and Information</td>
<td>4</td>
</tr>
<tr>
<td>Australian Institute of Project Management’s Project Manager</td>
<td>14</td>
</tr>
<tr>
<td>Others</td>
<td>15</td>
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</table>

Table 1: Number of articles that were found to be related to PPP studies in the selected journals from 1998 to 2016 [3]

Table 1 indicates that the subject of PPP has already widely drawn research attention in the delivery of infrastructure assets and services.

Tang L et al in his 2010 review [3] of studies on PPP projects in construction industry has further classified papers of interest. He found that around 57 case studies had been studied. He postulated that it is relevant for scholars to draw some implications from real cases than from other research methods. Survey and literature review ranked second and third with around 43and 34 papers respectively, followed by around 19 papers based on interviews. There were also papers found using workshops to get opinions from academic scholars and industry practitioners.
b) Examination of gaps in PPP research

It was discovered that there is presently a dearth of academically rigorous strategic understanding of the concept, theory and practice of PPPs, [14], [15-17]. The vast majority of publications in the field come from industry sources [18] and typically rely on reviews of individual projects that the author has had some involvement in, and offer mostly anecdotal guidance.

Indeed, there are a number of industry case studies of projects [9-10], [11], [13], [19]. It is not the aim of this research to review the projects concerned from a project financial or detailed legal perspective. Rather, the aim of this research is the generation of strategic understanding of the issues [20], [21] to work towards an appropriate sustainable solution to the long standing problem that hinders achieving short and long term project and program. Of particular interest for investigation is the use by participants of the news media to engage in ‘media warfare’ with a view to extracting political concessions from partners. No existing literature has been located dealing with this topic. Accordingly, this research aims to be of useful to participants in future PPPs.

c) Scope and limitations of research

Four PPP projects/arrangements have been selected from Infrastructure Partnerships Australia [11] to cover a variety of different types of PPPs. These are:

- **Victorian Rail Franchising** (Service Provision, partially government subsidised)
- **The Spencer Street Station Redevelopment** (Social Infrastructure)
- **The Cross City Tunnel** (Economic Infrastructure)
- **Waratah Rolling Stock Project** (Equipment Supply) involving private sector financing, designing, manufacturing and commissioning

This cross section of projects attempts to ensure that the strategic understanding developed will not be limited to a particular type of PPP project.

The key limitation is the relatively small number of PPP projects surveyed. This is partly unavoidable due to a paucity of available data on completed PPP projects. Further, mostly successful PPP projects have been reported with the result that there is little information available on less successful projects.

Of the PPP projects where disputes have arisen, or strain between the participants would have existed, much information is hidden in commercial in confidence agreements between the parties. It has, and continues to be a key criticism of PPPs that they are less than transparent. Indeed even in the case of Waratah Rolling Stock Project, attempts to discuss issues with the project participants, were thwarted by legal professional privilege.

3. National PPP Forum Reports to Infrastructure Partnerships Australia

This report details findings of a high level analysis of 25 PPP projects and 42 traditional projects from 7 Australian jurisdictions [1].

The projects were divided into the following categories:

<table>
<thead>
<tr>
<th></th>
<th>CWT</th>
<th>NSW</th>
<th>NT</th>
<th>QL</th>
<th>TAS</th>
<th>VIC</th>
<th>WA</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total PPP</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>15</td>
<td>0</td>
<td>25</td>
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</table>
This Colin Duffield, Peter Raisbeck and Allan Consulting Group (2007) study statistically analysed [1], [2] the relative efficacy of PPPs and Traditional procurement in relation to cost and time over-runs and concluded that (i) PPPs demonstrate clearly superior cost efficiencies over traditional procurement, (ii) PPP cost advantage was found to be economically and statistically significant (iii) with respect to time over-runs, on a value weighted basis, Traditional projects were likely to be completed later than PPPs relative to budget. The overall conclusion was that PPPs provide superior performance in both the cost and time dimensions, and that the PPP advantage increases (in absolute terms) with the size and complexity of the project.

The extent of benefits of PPPs to society has not been fully captured by the analyses shown in the study report presented [2] because: (i) there is a benefit from completing projects on time and enabling the community to have access to infrastructure facilities sooner and (ii) the benefit identified in that study did not include the effect of PPPs integrated provision of management, construction and ongoing operations. This is another source of potential PPP advantage over traditional project approaches that de-couple the management/construction and operation phases, creating additional source of in-efficiency.

Outcomes from Australian PPP projects confirm that a high level of cost certainty have been achieved but the PPP model is yet to be developed to its full potential.

4. Gaps in PPP Research and Strategic Insights into PPP Implementation

While providing different insights into the process and performance of PPPs, these studies have not explicitly or strategically sought to test the subsequent events and strategic benefits to community. A comprehensive study of the PPP alliance in the areas of infrastructure asset and services in the Australian

<table>
<thead>
<tr>
<th>Category</th>
<th>Traditional</th>
<th>PPP</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Infrastructure</td>
<td>17</td>
<td>15</td>
<td>32</td>
</tr>
<tr>
<td>Transport</td>
<td>19</td>
<td>4</td>
<td>23</td>
</tr>
<tr>
<td>Sustainability (water, waste &amp; energy)</td>
<td>5</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Information Technology</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total Projects</strong></td>
<td><strong>42</strong></td>
<td><strong>25</strong></td>
<td><strong>67</strong></td>
</tr>
</tbody>
</table>

Table 3: Project by category [1] (Source: Duffield 2008)
context indicates that strategic implication of the PPP has not been adequately explored. This provides an opportunity to build strategic understanding of the concept, theory and practice of PPP Alliances [20-21].

**a. Understanding PPP strategically**

A review of the PPP studies [14], [22], [15-17] from around the world since 1990s indicates that the key strategic issues facing public-private partnership governance are more or less the same:

- The strategic issues across countries including Australia are relatively constant. Inability to gain potential benefits of PPP’s strategically is a global issue.
- The issues barely ever change. In spite of many corporate years of effort in addressing these problems, they remain intractable. The turnover rate is actually slowing, with fewer solutions and previous issues returning.
- The strategic issues that confronted PPP executives in 1990s are in large part, the same issues that confront PPP management in 2016.
- PPP executives today are confronted with the same seemingly intractable strategic problems.
- Corporate leadership is asked year after year, to fund strategic initiatives [5] for the same set of problems. Would any other area of the business request funding for the exact same list of problems year after year and get away with it?

Over the last two decades, it has not been possible to:

- Achieve alignment of infrastructure asset and services with PPP business strategy.
- Build-cross functional systems.
- Implement PPP organisation business compatible model.
- Control strategic management cost.
- Improve the quality of collaboration.
- Develop a strategic public-private sector collaborative infrastructure asset and services management plan.

What has been achieved however, is a situation where we are about to confront the need to navigate the internal and external business value chain [32] burdened with complex traditional infrastructure and services systems.

To clarify, the problem is not that there are strategic issues. There will always be new opportunities, challenges, and problems that will need to be addressed. The problem is that for a set of issues defined a decade or two ago, little to no progress has been made. These are unquestionably important issues. Even more important, they should have been addressed. Strategic issues are issues that must be solved to achieve the core objective of building, sustaining, and compounding of competitive advantage. Regardless of the pressing PPP business challenges, if we can build advantages for the customers and stakeholders, the customers will be happy. Those with more advantages win; those with fewer advantages lose. It is really that elementary.

**b. Governance issues of strategic nature in public private partnership arrangement**

Academic research has increasingly shifted from debating the relative efficacy of state- and private-ownership to a comparative strategic approach [32] that seeks to identify the relative costs and competencies of these governance forms to deal with particular hazards in specific transactions. This research has been expanded [9-10], [23-25] to explore also hybrid or alliance forms of governance.
c. **Institutional Environment, external business environment diversity and market competitiveness**

Government must also consider which project delivery procurement model for engaging with the private sector is likely to deliver the best value for money. In addition, careful consideration should be given to the development of effective market engagement and negotiation strategies to ensure that those risks that governments are seeking to transfer are priced by the private sector within a competitive environment so as to deliver the best value for money outcome for taxpayers [7], [26].

d. **Organisational models and behaviours**

The focus of research and practice in public private partnerships is growing to incorporate strategies and strategic alignment in line with infrastructure and services business need [28].

The discussion [7], [12], [29] is an important effort in this direction. To successfully allocate risk and achieve the best value for money outcome for taxpayers, Government should thoroughly consider all of the delivery models [23] under which government can engage with the private sector for the delivery and through-life support of the infrastructure, and the provision of the associated public services. Government should evaluate each project and all possible private sector involvement on the merits of each particular case, in order to determine which strategy will best achieve value for money.

**Suggestions for Enhancing PPP Performance**

e. **Costing**

In general, research suggests that the best way to cost PPP model applications are:

- Design an overall PPP architecture that has high degree of potential resource sharing.
- Move the model to an understanding that each additional resource will take maximum advantage of what has been attained in previously completed processes.
- Demonstrate the effect of changes on cost structures. Since PPP is strategy-driven, there will be little or no effect in adding an additional transaction that in PPP might only require enhancing a single process but would require a whole new process for the traditional architecture.
- Demonstrate the effect of building an unanticipated additional process. The cost of responding to new business opportunities should not compare well with the traditional alternative.
- Include in the benefit part of the cost/benefit analysis, the option that the PPP architecture provides to the business. There is value in knowing there is untapped adaptability to deal with future business unknowns.
- Do not charge the life cycle full cost of infrastructure to the process. Since infrastructure is a public good, it should be charged at a fair amortized rate.
- Take into account the alleviation of hidden costs of the traditional model. Since PPP procurement overcomes the traditional model failings, there is little or no value in focusing on the same set of traditional issues that have occupied its attention for the last 10 years.
- If a model is superimposed on an existing model, prospects of savings are doubtful. If a traditional model is redesigned in isolation, and moved to a partnership model, prospects for savings are also doubtful. Since infrastructure procurement is designed through the PPP structure to promote sharing, the prospects for savings are excellent.
- For PPP to work well, a shared PPP architecture is necessary. Such architecture is deemed a public good. Public good should be funded by the corporate entity and not directly allocated to each project.
5. Outcomes Of Research - Relative Effectiveness of PPP as Compared to a Traditional Approach

The structural and strategic aspects [32] of PPP’s appear to be the drivers of success, underpinned by information sharing. Literature illustrates a notion that firms that attempt to enter into PPPs using existing siloed functional structures are not likely to be successful and consequently may possibly incur big losses. This work is indicating that information, risk and decision sharing are pre-requisites to success. Applications of concept, theory, and practice of strategic management to PPP forms of business, in alignment with Duffield [1], [2], revealed 12 Strategic Issues (SI). The philosophical mindsets behind each of those Strategic Initiatives is suggested below:

1. **SI**: Business reengineering through structure and strategy redesign
   - A PPP should aim to create a platform to build an innovative reengineered robust structure - strategy match.

2. **SI**: Aligning corporate and infrastructure system goals
   - PPP structure should enable access to information, sharing of resources, adoption of new technology management methods and navigation of the environmental value chain.

3. **SI**: Utilising engineering systems information and data
   - A PPP should aim to provide a decoupled structure that permits broad access to both business information and resources that are used to run the business and support critical business decisions with awareness of competitiveness

4. **SI**: Instituting cross-functional systems
   - PPP should provide the required structure that permits sharing of information and resources.

5. **SI**: Improving business systems development
   - PPP attributes of adaptability, flexibility, information and data accessibility all improve the alliance partners’ ability to rapidly deliver projects and products by reuse rather than reinventing the wheel.

6. **SI**: Integrating inter-organisational systems
   - Inter-organisation and external business jointing is at the heart of PPP.

7. **SI**: Changing technology management platforms
   - PPP provides the basis for economic efficiency and agility that will permit strategic business repositioning.

8. **SI**: Cutting infrastructure and services costs
   - PPP will provide cost savings through the downward cost curves of basic PPP technology management and massive reuse through restructuring and strategic repositioning.

9. **SI**: Capitalising on asset management advances
   - PPP is an open structure that, by design, welcomes change.

10. **SI**: Managing dispersed business operation systems
    - PPP architecture should provide the foundation structure to govern and manage inter-organisational systems

11. **SI**: Using infrastructure alliances for competitive advantage
    - Advantage is built by overlaying infrastructure asset flexibility over environmental diversity. The required flexibility should be provided by PPP.

12. **SI**: Moving to transparent, open and accountable governance systems
    - PPP must be built upon open, transparent and accountable systems.
6. Summary and Conclusions

From the literature and Strategic Initiatives considered and presented, it is clear that that the success of PPPs is a function of the structure, strategy and the tactics deployed. The manner of strategic implementation of management decisions and strategies creates success or failure. In order to achieve success in four main areas of economic and strategic advantage in PPPs, namely economies of scale, scope, learning/experience and sharing, it seems clear that a cross-functional organisational design and structure must be implemented that is commensurate with the special shared communication relationships required in PPPs. Failures often result when one or other partner attempts to act alone or conceals information from another. A PPP, like any other project involves risk. The treatment and on-going management of risk is crucial to success. Attempts by one partner or another to avoid responsibility for risk management, at the expense of the other, are extremely undesirable. It is often the public partner that underwrites a disproportionate share of risk in a PPP and as a consequence there may be large and public losses to the public purse. The authors suggest that lack of attention to strategic and structural issues in PPP’s maybe leading to unmanaged risk and hence much higher losses than appear apparent. The reader should bear in mind that far greater publicity and political 'spin' is applied to successful PPP’s than that of less successful ventures which need needs more investigation to determine optimum strategies and PPP organisational structures. The Strategic Initiatives described offer a start on the likely mindsets that are required to avoid the disappointment of many past PPP projects that were promoted as adding value to society. Unfortunately, this high ideal has been lost to short term profit and political expediency to make budgets look artificially good. PPP projects have been taken over by banks and are clearly not delivering their promised benefits. This paper provides evidence that PPP’s need a major rethink in terms of strategy and structure to avoid further big losses.
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Risky Stakeholders: Exploring the Connection between Risk and Stakeholders

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Abstract

Projects and programs are a framework within which people work together to create outcomes intended to benefit other people and their organisations. Paradoxically, people also have the potential to derail management efforts and destroy value. This means that risk managers, project managers and others involved in managing project risk must take into account the behaviours of people as well as the more traditional risk analysis procedures. Stakeholder risk management is not only about a rational process to identify, categorise and respond to events; it is about managing the relationships between the organisation, its activities and its stakeholders – the stakeholder community.

The most common and least understood aspects of managing stakeholder risk are caused by the lack of trust between the organisation’s people and the organisation’s stakeholders. When stakeholders are seen as external to the success of the work, and often as impediments to success, trust cannot exist. Recent research has identified three potential types of relationships between the organisation’s people and its stakeholders: from crisis management through stakeholder management to stakeholder engagement where stakeholders are partners in decision-making and implementation of outcomes that affect them. The greatest opportunity for success is created by engaging with stakeholders. The action of engaging with stakeholders requires the organisation to open up to its stakeholders, and involve these stakeholders in the decisions that affect them.

An approach to engage stakeholders is developed in this paper: understanding which stakeholders are key at any particular time; understanding their expectations; communicating effectively to build robust relationships. By developing trusting relationships and even partnerships, many risks can be more effectively managed. It is through strong relationships with the people affected by the work or its outcomes that many risks (known and unknown) can be better managed.

Key words: stakeholder, stakeholder engagement, risk management, culture, perception, expectations

a. Introduction

Every stakeholder is a potential risk. When stakeholder relationships are managed correctly some stakeholders can provide opportunities to enhance the project’s work, others may be potential roadblocks and threats to the project; many can be either or both, depending on the relationship developed between the stakeholder and the project team and the situation. However, it is never possible to know for certain how stakeholders will react in any particular circumstance; this generates uncertainty: risk - an uncertainty that matters. This means that risk managers, project managers and others involved in managing project risk must take into account the behaviours of people as well as applying the more traditional risk analysis procedures. Stakeholder risk management is not only about a
rational process to identify, categorise and respond to events; it is also about managing the relationships between the organisation, its activities and its stakeholders – the stakeholder community.

This conceptual paper will be organised as follows: firstly a definition of ‘stakeholder’ and ‘stakeholder risk’. A description of the differences between crisis management, stakeholder management and stakeholder engagement follows with a discussion on the connection between these categories and effective risk management. The third section describes a methodology for building and maintaining robust relationships with important stakeholders. The fourth section deals with the factors that make each stakeholder unique, including explorations of culture, an individual’s reality, individual biases, personality and gender and how these factors impact on understanding and managing risks to project success and organizational outcomes. Understanding these factors is essential for developing effective communication strategies to build and maintain the relationships essential for effective risk management.

b. Stakeholder and ‘stakeholder risk’

Organisational wealth can be created (or destroyed) through the nature of the relationships organisations or projects develop with stakeholders. In developing processes and practices for stakeholder management and engagement, successful risk managers understand how far key stakeholders will go to achieve, promote, or protect their stake, and adjust their behaviours accordingly. Equally important to organisation success is understanding what it needs to do to ensure the best relationships between the organisation, its activities and the contributions needed from key stakeholders for those activities to be successful.

i. Who are stakeholders?

Stakeholders are defined as:

Individually or groups who will be impacted by, or can influence the success or failure of an organisation’s activities. (Bourne, 2012)

From a risk management perspective stakeholders include those groups or individuals who:

- Supply critical resources needed by the organisation;
- Place something of value at risk through their investment of funds, career or time in pursuit of the organisation’s business strategies or goals;
- Oppose the organisation or some aspect of its activities;
- Are (or perceive that they are) negatively affected by a decision, action, strategy or process.
- Have unrealistic expectations about the outcome or the consequences of the outcome.

Threats can arise from situations such as:

- Stakeholders’ expectations not understood or not met;
- Commitments to stakeholders not given or not honoured;
- Decisions – purchasing, recruiting, design – made by individuals or groups that are not in the best interests of the organisation or some stakeholders;
- People or other resources not managed appropriately;
- Lack of risk ownership, and lack of will to plan, maintain and implement the appropriate risk responses;
- Inadequate reviews of risk and stakeholders.

The stakeholder risk challenge is concerned with the complexities of dealing with people, their
uniqueness and their behaviours (which generally cannot be predicted). Emergent behaviours can be extreme, driven by a combination of unidentified perceptions, fear and anxiety, miscommunication and the mismatch of risk tolerances. Stakeholder risk management is not just about defining a set of processes to identify, categorise and respond to events; it is about managing the relationships between the organisation, its activities and its stakeholders – the stakeholder community. This is stakeholder engagement.

c. Stakeholder Risk Management

Effective risk management involves more than simply gathering data, assessing probability and impact, and defining risk premiums or contingencies. Effectively managing stakeholder risk involves interacting with people’s deepest needs for control, safety, and comfort (Rock & Cox, 2012). Stakeholders interact with risk management in distinct ways:

1. A significant proportion of an organisation’s risks are directly caused by the action or inaction of stakeholders, in some circumstances this may be in excess of 90% of the identified risks.

2. The perception of what is an acceptable or unacceptable risk is unique to each stakeholder: driven by their culture, personality, age and gender and their risk attitudes – whether they are risk seeking or risk averse.

Successful risk management requires effective stakeholder engagement, supported by targeted and appropriate communication strategies. The stakeholder’s perceptions of an organisation’s success or failure is intrinsically linked to effective stakeholder risk management.

d. Risk is not rational

Perceptions, biases, attitudes and culture affect behaviours. It is these behaviours that create risks and influence reactions to perceived risks (opportunities and/or threats). The way people feel about risk is an amalgam of emotional reaction, learned experience and, to a lesser extent, rational consideration.

Because the very concept of risk is tied to perceptions and emotions, attempts to manage risk as a pragmatic, rational process will lead to suboptimal outcomes (Bourne, 2016). Rational processes are important to understanding the magnitude, probability and overall exposure of the organisation to a risk, but they cannot predict which risks are acceptable to the stakeholders affected by the work. Neither can they predict how others affected by the work will perceive the risk (usually a threat) it exposes them to, and how they will react. In addition, the way the risk manager perceives and reacts to risk will be heavily influenced by her perceptions, biases, attitudes and culture.

Some stakeholders will attempt to avoid all risk, or pretend that certain risks do not exist. The result is a refusal to discuss or even consider the possibility of an uncertain outcome, significantly increasing risk or the consequences of the risk event occurring. There is no such thing as a risk-free activity.

e. Building robust relationships

The effective management of stakeholder risk firstly requires a commitment by management and risk owners to make the effort needed to understand and manage the behaviours, expectations and risk tolerances of stakeholders supporting the development and use of effective stakeholder engagement processes.

Before developing any risk management plan or risk responses, the team must know who their
stakeholders are, and how to engage them, involving important stakeholders, where possible, in decisions that affect them (Jeffrey, 2009):8).

_Stakeholders should be given the opportunity to comment and input to the development of decisions that affect them. In today’s society, if they are not actively sought out, sooner or later they may demand to be consulted._

The value proposition for the effort involved in stakeholder engagement is derived from an understanding of the difference between crisis management, stakeholder management and stakeholder engagement. Table 1 shows the main differences.

**Table 1:** Difference between crisis management, stakeholder management and stakeholder engagement. Adapted from (Jeffrey, 2009)

<table>
<thead>
<tr>
<th></th>
<th>Crisis Management</th>
<th>Stakeholder Management</th>
<th>Stakeholder Engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stakeholder relationships</td>
<td>Reactive</td>
<td>Proactive</td>
<td>Interactive</td>
</tr>
<tr>
<td>Exposure to stakeholder issues</td>
<td>Vulnerable</td>
<td>Anticipate</td>
<td>Encourage</td>
</tr>
<tr>
<td>Stakeholder involvement invited</td>
<td>Episodic</td>
<td>Regular</td>
<td>Inclusive</td>
</tr>
<tr>
<td>Organisation/project attitude to stakeholder involvement</td>
<td>Hostile</td>
<td>Defensive</td>
<td>Prepared to change</td>
</tr>
</tbody>
</table>

The four aspects in the table are as follows:

- **Stakeholder relationships:** If the relationship between the organisation or project and stakeholders is strong through proactive or even interactive communication strategies, any issue that occurs can be resolved more effectively. When organisations are faced with crisis without a strong relationship with stakeholders it becomes difficult to resolve the crisis to the satisfaction of everyone involved. It will also add to the organisation’s costs for any necessary remedial work that is ex-budget.

- **Exposure to stakeholder issues:** Organisations are exposed to issues or crises that arise through poor attention to stakeholder relationships. The stronger the relationship the less vulnerable the organisation is to the impact of any issues or crises. In many cases, stakeholders will raise issues in meetings or other interactive communication activities. If the communication channels are not open to receiving this information, opportunities to manage the consequences of the potential issue early are lost. Early response to stakeholder issues will strengthen the relationships.

- **Stakeholder involvement invited:** The stronger the relationships between the organisation and its stakeholders the more stakeholders are treated as partners, invited to participate in decision making and other organisational activities regularly. The level of stakeholder involvement in decisions that affect the stakeholder will influence ongoing support and ‘buy-in’.

- **Organisation’s attitude to stakeholder involvement:** When organisations move from a hostile or defensive approach to their stakeholders and recognise the need to embrace the involvement and ideas of their stakeholders, many of the sources of issues of loss of trust or reputation will reduce (or even disappear).
Beyond the rational

Perception of risk - why does it matter?

Every person perceives risk differently. No-one sees the world in exactly the same way as any other person. The ability to understand another person’s perceptions of risk is complicated by how an individual constructs her ‘reality’ and further complicated through her innate bias and other factors related to personality, culture and gender.

Each person constructs a different reality: each brain sees the world according to its own wiring, and selects or ignores information. (Weick, 1995) has termed the process ‘sensemaking’ – a filter through which everything experienced, consciously or unconsciously, is passed. (Horowitz, 2013) described this phenomenon of how we ‘see’, by describing what happens when she turned a daily ‘walking around the block’ with her dog into an exercise of perception. She invited people from different professions to walk with her and describe what they ‘saw’. Each one of them drew her attention to different aspects of the same route she had walked on many times before. Each person: psychiatrist, botanist, her 19 month-old son, an architect and eight others all ‘saw’ aspects of that block that she could never have imagined.

Over time every routine process tends to become an automated subconscious action or perception that frames the person’s experiences of all new encounters (Rock & Cox, 2012). It also frames how we prefer to receive information and how we interpret that information. These factors affect people’s perceptions of risk. The same situation may spark a deep sense of concern in one person but are seen as normal by another, based on how the brain has edited observations and retrieved information.

i. The innate effect of personal characteristics on risk perception

It is not just an individual’s ‘reality’ that affects risk behaviours, other characteristics that make each person unique will affect these behaviours and the manager’s ability to interact with her. Most people are innately optimistic, over-value their personal skills and capabilities and over-value the advice of distant experts compared to the advice from someone they know well. Biases that can affect people’s reaction to risk (both threats and opportunities) include (Kahneman, 2011):

- Loss aversion means that most people are far more concerned about losing $100 than they are happy about gaining $100. People will try much harder to avoid a loss than to make a similar sized gain.
- Near-term bias is the preference for short-term gratification over long term benefits. The natural reaction is a strong bias towards not losing more money this month even if the short term gain is far outweighed by the longer term losses caused by an unwise short term focus.
- Attentional bias: how an individual perceives and analyses a situation is affected by whatever is in her mind at that time: it is also called the bandwagon effect. It is the tendency to do (or believe) things because many other people also believe them: this shows in team decision making as groupthink.
- Optimism bias: the tendency to be over-optimistic, overestimating favourable and pleasing outcomes and playing down the less pleasing ones.
- Confirmation bias: a tendency to consider evidence that supports their position, hypothesis, beliefs or desires and to disregard or discount equally valid evidence that refutes them. For example, risk experts will be focusing more strongly on their knowledge of risk, or leadership experts on leadership theories.

Personality refers to an individual’s genetically-based distinct pattern of thoughts, motives, values, attitudes and behaviours. It affects the way an individual reacts to the environment and how she prefers
to receive information.

Culture is an individual’s patterns of thinking, feeling and acting learned over a lifetime: often in ways that she is not aware of. It is learned throughout childhood and continues into adult life through:

- Language (particularly first language) and other symbols;
- Role models and heroes such as parents, friends, celebrities;
- Rituals such as recognising ‘coming of age’, courtship, marriage;
- The individual’s basic values.

Each cultural grouping exhibits a preferred style of communication, leadership, values and attitudes to work, and often attitude to risk (Hofstede, Hofstede, & Minkov, 2010).

Cultural diversity may take many forms, including:

- Generational: a stakeholder community may consist of different generational groups: baby boomers; Gen X, Y.
- Professional: managers; professionals (engineers, accountants, teachers); workers.
- National: consider a mix of Asian; Anglo-American; Latino cultures.

The social context we grow up in influences gender differences. There exists in every society a men’s culture and a women’s culture. In the more masculine culture found in the Anglo-American world, men tend to deal with facts, women with feelings (Hofstede et al., 2010). In this culture boys choose games that allow them to compete and excel, girls choose games for the enjoyment of being together and for not being left out (Tannen, 2013).

(Tannen, 2013) describes gender differences in conversation in the Anglo-American world as:

- ‘Report talk’ – the way that men communicate both formally and informally, transferring information to establish and maintain status that displays their abilities and knowledge.
- ‘Rapport talk’ – the way that women communicate both formally and informally to build and maintain connections, first validating the relationship to build rapport and then dealing with any business.

All these unique characteristics must be included in the mix of communication to foster effective stakeholder engagement and also in conversations with stakeholders about risk and how to manage it.

**f. Stakeholder engagement: introducing a tool for reducing risk**

The key challenge in stakeholder risk management is understanding who is important at any particular time and then allocating scarce resources to work with the people who matter, while maintaining a reasonable working relationship with everyone else. This can be achieved through the application of any stakeholder management methodology. Listed here are the five steps of the Stakeholder Circle methodology\(^1\) (Bourne, 2012):

- **Step 1**: identification of all stakeholders;
- **Step 2**: prioritisation to determine who is important;
- **Step 3**: visualisation to understand the overall stakeholder community;
- **Step 4**: engagement through effective communications;
- **Step 5**: monitoring the effect of the engagement.

\(^1\) The Stakeholder Circle software can be downloaded free of charge from: [http://www.stakeholdermapping.com/stakeholder-circle-methodology/](http://www.stakeholdermapping.com/stakeholder-circle-methodology/)
The application of disciplined and consistent analysis of the stakeholder community – Stakeholder Analytics - is the key to efficient and effective stakeholder engagement. This approach develops data to support actions for developing strong relationships within the stakeholder community. It also ensures that data is collected in a consistent way to support trend analysis, thus helping track the effect of communication strategies.

Identification
The first step in developing an effective stakeholder register is the identification of people, groups and organisations that can affect, or will be affected by the work, including those who merely perceive they will be affected (PMI, 2012). The process of stakeholder identification focuses on developing a complete list of stakeholders, their key attributes and the factors that drive the relationship.

Mutual interdependence between the organisation and the stakeholder is the essential ingredient for the relationship. This is an assessment of what the stakeholder wants from the organisation (expectations) and what the organisation needs from the stakeholder. This is the stakeholder’s:

- 'Stake' in the work: The stakeholder’s stake may be financial, enhancement of reputation, protection or enhancement of rights or property owned by the stakeholder.
- Importance to the work: What does the project need from the stakeholder? This can be in the form of support, funding or resources.
- Requirement from the work: What does the stakeholder expect or require from the success or failure of the work? These questions need to be considered in addition to the expectation of the ‘iron triangle’: everyone expects the project to be within budget and schedule and to specifications!

Prioritisation
The most effective way to assess the relative importance of stakeholders is to consider three factors:

- Power – to what extent can this stakeholder or group stop the work through withdrawal of funds or support, or is their ability to influence the work limited? Power is considered from perspective of the stakeholder’s ability to impose changes and a rating applied.
- Proximity – is the stakeholder closely associated or relatively remote from the project? People involved in the work can affect its success through attitude and commitment.
- Urgency - what stake does the stakeholder have in the outcomes of the work, and what is this stakeholder prepared to do to achieve that stake?

Based on the factors of power, proximity and urgency stakeholders can be arranged from high relative importance to lower relative importance.

The process of prioritisation deliberately ignores the level of support of the stakeholder and the risk profile; its purpose is to determine who is really important at the time of assessment. The next step is mapping the data to support informed decisions about where to focus resources to achieve the most beneficial outcomes for both the stakeholders and the work being managed.

i. Engagement
Some stakeholders will be supportive of the work and be willing to assist, some will be unsupportive and many will simply ignore it. Three key steps record stakeholder attitudes to the work to assist in the development of effective communication strategies for building relationship:

1. Assess the stakeholder’s current attitude towards the work and any risks attendant on her involvement, and the risk she represents to the outcomes of the work (threats and opportunities).
Attitude is a combination of the level of support for the work and the stakeholder’s willingness to receive (and act on) information about the work. In Figure 10.1 this is shown in the series of ‘X’.

2. Determine a realistic target attitude: what level of support and receptiveness to information about the work will optimise the chance of success. In figure 10.1 this is shown as ‘O’.

3. Devise a communication and risk management strategy – beyond the regular reporting cycle - to close the gap between the current and target stakeholder attitude, exploit the opportunities and mitigate the identified risks.

Attitudes can range from actively supportive of the work through to active opposition to the work, and the stakeholder may be willing to engage in communication with the team or refuse to communicate (even if they support the work).

**Figure 1: Measuring stakeholder attitude**

**Monitoring the effect of engagement**

The stakeholder in Figure 1 has been assessed at level (2) denoting a low level of support and at level (4) for a relatively high level of interest in information about the project. For project success, the engagement profile SHOULD BE (4) and (4). In this case, the gap between the current engagement profile and the target profile indicates that a high level of effort will be required to develop communication and stakeholder risk strategies for this stakeholder, to encourage a higher level of support for the work. The second assessment in Figure 1 reveals that some progress had been made, but more work is necessary to achieve the desired level of engagement. If there had been no change, it would have indicated that the stakeholder risk strategy has not been effective and that the strategy needs to be reviewed.

While the primary aim of this process is to manage threats and enhance opportunities through effective and directed stakeholder engagement and information exchange, the process will also identify the residual risks that need managing in a more traditional way. These risk and issues should be transferred to the risk and issues registers for managing within the normal risk cycles of the organisation.

**g. Conclusion**

The intention of this paper was to establish a connection between managing risk and engaging stakeholders. Managing stakeholder risks involves managing behaviours – both organisational behaviours and stakeholder behaviours, rather than an application of risk management processes. Based
on a broad definition of stakeholders, the paper developed an approach to stakeholder engagement and risk management based on the idea that robust relationships lead to effective stakeholder risk management. And effective stakeholder risk management is based on effective communication.

Where stakeholders are encouraged to be involved in decisions that affect them and when stakeholders can see that their expectations are understood and being met, much of the miscommunication and misunderstanding that leads to crises and issues can be minimised – even avoided. Engaging with stakeholders requires the organisation to open up to its stakeholders and this can create feelings of vulnerability within the organisation. The threats created by engaging with stakeholders are more than offset by the opportunities created by interaction with stakeholders, but both aspects form part of an effective stakeholder risk management system. A well-developed stakeholder risk management system should tap into the information flows in all of the other organisational systems. Where they interact with people (internal and external) they can make use of the capabilities of these systems to enhance opportunities and mitigate or avoid threats.
References


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Abstract

This is the final of five papers developing the argument that 'Building Capability' within Project Management will ultimately call for the transformation of Project Management, as a discipline, into a new Project Leadership regime.

The first paper (2012a) reported on the state of the literature on the failings of the project management framework, and the consistent conclusion about the lack of a leadership element in project management. The second paper (2012b) mapped the problems with leadership as a body of knowledge. The research indicating the existence of a core agreement about what is leadership, and a model for integrating ideas and notions about leadership was reported. The third paper (2013) laid out the options for developing leadership within teams and organisations, and the fourth paper (2015) related the notion of leadership to the cause and the solution of the ‘complexity’ of projects.

This concluding paper offers some choices that project managers and project management organisations might make in specifying a project leadership transformation within their practice, and for a transformation of their practices. A preference is shown for analytical leadership models over wisdom models to meet the needs of the organization and teams for a common language about leadership - this will enable integration. The compatibility of popular analytical leadership models is featured, and dual use of such models is explored, but a basis for choice is offered. It is also recommended, however, that the personal preferences of individual managers for particular leadership notions be fully respected by leadership development programs. Opportunities in such programs for the inclusion of study and discussion, of contrast and reinforcement, of other notions preferred by individuals, should be taken, while still enunciating a selected analytical leadership approach understood by all. The model for integrating notions on leadership (2012b) is remembered in this paper, as a means for accommodating individual preferences within an organisation's selected approach.

Capability is built, because the adoption of a leadership language by and within the organization, respectful of individual preferences, will enable leadership based planning, implementation and review of 'complexities' and other problematic situations currently dogging the completion of projects.
Introduction

The research behind this series of papers has taken the line of inquiry that moves away from the purpose of improving Project Management and onto the purpose of changing Project Management. The direction being taken is to move Project Management into a Project Leadership regime. Failures occurring in projects are the drivers for all reforms.

This change approach accepts that Project Management may not be a total approach or a holistic framework for the conduct of project work, and that the missing elements from current PM frameworks may be the cause of the failures being experienced by projects. This notion separates the Project Leadership approach from other reform initiatives such as ‘Re-thinking PM’, which may seek to find improvement from within existing management frameworks through quality reviews of failed projects.

This change approach also assumes that management is a part of leadership, that is, that leadership is the greater framework. This notion distinguishes this change approach from reform initiatives such as with ‘Complex Projects’. Studies under the banner of ‘Complex Projects’ consistently identify the importance of leadership to success in project work. The logic, however, may go only to including leadership methods and skills into project management, assuming that leadership is a part of management. Where this logic can be fairly ascribed to efforts with ‘Complex Projects’, those efforts then are directed at improving the Project Management framework, in this case, by adding leadership.

‘Leadership’ can be a total concept. While other initiatives like ‘Re-thinking PM’ and ‘Complex Projects’ may be attempting to improve existing PM frameworks, the Project Leadership approach seeks to change Project Management by incorporating the PM framework into a greater framework, into a total framework based on ‘Leadership’.

Aim

The aim is to analyse how Leadership notions might be chosen so as to transform the way that projects are currently achieved by a practitioner or by an organization using conventional Project Management. The argument to date has been developed to the establishment of a Project Leadership framework that might prepare Leadership, as a Body of Knowledge, for the role expected of it. But which leadership notions are to be chosen by any professional or by any organization so as to move their approach to Project Management into a leadership regime, and why?

Literature Review

The Failures of Project Management

McMahon (2012a) set out forty years of history on studies of the failures in Project Management. Those studies have produced a recurring theme, namely, that an absence of notions on leadership, in the Body of Knowledge on Project Management [PMBOK], has been a primary source of this continuing failure of the Project Management methodology. An international study of PRINCE II by QUT (2010), for example, looked at issues adversely affecting the utility of project management frameworks in successfully delivering projects ... the more significant organizational barrier was found to be a lack of project leadership. Remington (2011) saw leadership as the solution to the challenges posed by complex projects ... based on the summary advice from 70 project managers with the experience of success and failure in projects necessary to offer such an insight. Weaver (2012) speaks of Project Management as an emerging profession. If leadership is part of that emergence, McMahon (2012a) asked. was it now timely and reasonable for ‘Project Management’ to contemplate a development of itself into ‘Project Leadership’.
This message has since been repeated in the Green Paper on ‘Mastering Complex Projects’ produced by Engineers Australia at its 2014 Convention – eighteen (18) out of twenty-three (23) points for improving performance on projects are introduced under the heading of ‘Leadership’ (Engineers Australia, 2014).

**The Leadership Framework and Categorisation of Leadership Concepts**

The benefits of leadership, however, could be undone. The state of development of the Leadership Body of Knowledge is a likely problem. Leadership as a discipline abounds with a multiplicity of ideas and concepts. Leadership may need to be better organized as a BoK, McMahon (2012a) argued, if Project Managers, used to encompassing PM frameworks, are perplexed by the large volume of leadership concepts available.

McMahon (2012b) offered a summary of the BoK on Leadership, seeking to deal with the diversity of notions and a divergence of ideas about leadership. If notions on Leadership are different, and those differences cannot be sorted or resolved, any attempt to move Project Management to a Project Leadership regime is likely to bring more confusion to a discipline already finding matters ‘complex’ and in need of a ‘re-think’.

That paper reported on twenty years of survey research of chief executives, senior and frontline leaders that demonstrated a common understanding of leadership, despite the myriad of 80,000 books written on the topic. McMahon also reported an 89% success rate in predicting the responses of like groups of professionals to the question, ‘What is Leadership?’ The predictions were based on surveys conducted during the 1990s - 2000s.

A framework for integrating leadership notions was proposed, and is at Figure 1. The framework follows the Inputs-Processes-Outputs structure well known to Project Managers who use Project Management Book Of Knowledge [PMBOK]. A Leadership Framework that follows a structure well used in Project Management will significantly assist any transformation of Project Management into Project Leadership.

**Figure 1:** An Integrative Framework for the Body of Knowledge on Leadership

Sorting concepts of leadership according to their contribution to this leadership framework, however, does not reduce the number of such leadership concepts. Professionals seeking to build a leadership framework will need to make selections.

McMahon (2012b) selected nine well known leadership notions to demonstrate how these notions contributed leadership inputs and/or leadership processes and/or leadership outputs towards the total Leadership Framework at Figure 1. Thus Adair’s function, ‘Set an Example’, and that wisdom from Emotional Intelligence - achieve **self-knowledge** and be oneself in the leader role - are examples of
contributions to Leader Inputs. The steps to achieving change advised by Transformational Leadership (Avolio & Bass, 1988) and by Transforming Leadership (Burns, 1978) provide wisdoms regarding Leadership Processes that may be fit for purpose. There is also a choice of Leader Outcomes … ‘Readiness’ for higher levels of delegation is proposed by Hersey & Blanchard (1969), and the satisfaction of priority ‘Needs’ is advocated by Adair (1968). The framework at Figure 1, in this way, assists the practitioner to organize the many models on leadership into an integration and into an understanding of how each model contributes to the BoK.

The leadership concepts that followed are another selection, this time used to exemplify a further categorization of leadership. The selected concepts will be used again in discussing rationales that can be adopted by professionals for self-development, or by teams or entities so as to develop a common leadership language within a team or entity.

**Wisdom models** – empirically derived from successful leaders, from their explanations of success or from observations or analyses of their successes. The practitioner selects ‘wisdoms’ from these lists which are then applied to their situation. Some examples are:

**Covey’s 7 Habits.** Stephen Covey provided one quality, one discipline and five practices that have proven to be a very popular set of leadership inputs and processes. The set of habits are linked to the outcome of ‘effectiveness’ and ‘personal development’; and

1. Establish a sense of urgency
2. Form a powerful guiding coalition
3. Create a vision
4. Communicate the vision
5. Empower others to act on the vision
6. Plan for and create short-term wins
7. Consolidate improvements and further changes
8. Institutionalise new approaches

![Figure 2: Kotter’s eight stage model of change management](image)

**Kotter’s Eight Stage Process for Managing Change.** This model is an example of models that propose a selection of leadership inputs and leadership processes so as to achieve a particular leadership output. Kotter's leadership output is ‘effective change’. Kotter’s stages are set out in Figure 2.

**Analytical Models** – this category of model provides a basis for analyzing each situation so as to derive a particularized course of action – that is, the set of leadership inputs, processes and outputs to be applied in order to achieve a leadership result for that particular situation. The inputs, processes and outputs are not pre-set, as with wisdom models - they are derived from an analytical tool. There appear to be at least two bases for providing such an analytical tool. These are:

1. Decision-making, the business of being a leader, and,
2. Values (also ‘principles’ / ‘beliefs’), that influence the leader’s decision-making.

Selected examples from the list in McMahon (2012b) are summarized below.

**Hersey and Blanchard [1969]** have provided a model to guide leaders to good decision-making. Their model is analytical because it provides a measure termed ‘readiness’ with which to assess situations and thus to select the appropriate decision-making process.
According to their theory:

*follower readiness* refers to a follower's ability and willingness to accomplish a particular task. Readiness is not an assessment of an individual's personality, traits, values, age, etc. It's not a personal characteristic, but rather a summary state of readiness - how ready an individual is to perform a particular task. (Hughes et al., 2006)

Vroom and Yetton [1973] use the ‘acceptance’ by followers as the measure for analysis. As with ‘readiness’, Vroom and Yetton developed a set of questions designed to help leaders evaluate the appropriate degree of follower participation (the *process*) required in a given scenario. This would then lead to increased decision acceptance amongst followers. But, unlike the Hersey & Blanchard model, which is informative about cause and effect regarding leadership, Vroom and Yetton’s model is normative – that is, it proposes what leaders *ought* to be doing in the leader role – the model expresses or assumes values.

Adair’s Functional Leadership [1993], uses *needs* as the basis of analysis, and adopts the value that the leader has the responsibility (the *input*) to ensure that the priority needs are addressed. Action plans based on the performance of a set of functions (the *processes*) are derived to achieve these priority needs (the *output*). The priority ‘needs’ may be one or more from, or a combination of, three interdependent areas of ‘need’:

1. The Need to ACHIEVE the TASK assigned to the Followers as a Group
2. The Need to BUILD and MAINTAIN the Followers as a TEAM, and,
3. The Need to MOTIVATE and DEVELOP the INDIVIDUAL Follower
This further categorisation still has not reduced the number of notions on leadership present in the academic and popular literature. Adopting a project framework within a leadership regime will involve the professional and the team and the entity in selecting notions that will be adopted and those that will not be adopted. Figure 1, and the Wisdom v Analytical categorisation, may assist in selecting a spectrum of models and a type(s) of model, but they may not cause the selection process to arrive at a specific model. Different situations, different cultures may cause selections to vary widely. A selection once made is always open to review and change. Any model(s) chosen is open to customisation. Some ‘wisdom’ about selecting leadership models is here offered.

Making Choices

Why do choices need to be made? In addition to logistics – how many models one can learn and retain, how many models can be described in this paper - two reasons for making choices are linked to the purpose of incorporating PM into a leadership regime.

Firstly, leadership, to be most effective, needs to be a shared responsibility. The self-developed Project Leader-Manager, even in a wider entity lacking leadership, will need to communicate his or her leadership approach to the team leaders reporting to the Project Leader-Manager. Then the leadership team can work as a coherent team towards leadership goals. By adopting a well documented model(s), even with customisation or modifications, the Project Leader-Manager is assisted with credibility for their approach and assisted to the acceptability and learning of that approach by team leaders.

Secondly, the change at issue is an integration of the valuable tools for managing projects into a leadership framework. Entities building a leadership culture will build leadership action into project planning briefs, implementation plans, progress reporting, project reviews, and similar. The leadership framework will need to be expressed in terms about leadership readily understood by all, describing procedures and tools known to all, as is now the case with Project Management frameworks. The entity will need to choose a model(s), with customisation or modifications, to establish such a leadership framework.

In both cases, the choices of leadership notions employed in practice need to contribute leadership inputs, leadership processes and leadership outputs to the conduct of project work, if the individual or organization is to establish and customise, for their project work environment, a holistic Project Leadership framework in alignment with Figure 1.
The thesis is that there is a substantial ‘truth’ about leadership, and that practitioners are better able to understand it (as per the survey results on what is leadership), than they are able to define that truth and agree on it (as per the many models on leadership). However:

1. If the responses reported in McMahon (2012b) approximate that core ‘truth’, and
2. If the existing models and concepts on leadership are legitimately based on research into that core or substantial ‘truth’ about leadership, then,
3. The models may be legitimate but different perspectives of that core ‘truth’, and,
4. The challenge of integrating the many models on leadership into a single body of knowledge about leadership should be possible. Figure 1 may be a starting point or a first suggestion for integrating the many notions on leadership into a converging body of knowledge on leadership. Another simplification of the diversity of models may be gained from a useful categorization of the models.

**Wisdom Models v Analytical Models.** The uniqueness of projects, and the changes in work and personnel that projects go through, as they progress through their life cycle, give good grounds for using an Analytical Model. The Analytical Model promises a basis for deriving a leadership course of action that is focused on the actual situation currently before the Project Leader-Manager. The Analytical Model also offers a basis for deriving adjustments and additions to that leadership course of action, in a timely manner, as that actual situation changes during the stages of the project, as these stages are entered into, are moved through and are gated and closed.

The analytical leadership models based on ‘needs’ and on ‘readiness’ are the two models most widely used in Australia (McMahon, 2007). The two notions are related – what is needed to achieve readiness is the type of consideration that demonstrates the links between these two Analytical Models. Dr John Adair describes the two parameters as **‘two sides of the one coin’** (Adair - McMahon, personal communication, 5 August 2015).

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**TABLE 1:** Three Wisdom Models and the Processes Nominated in each for Leading Through Change

<table>
<thead>
<tr>
<th>Transformational Leadership</th>
<th>Change Management</th>
<th>Exemplary Leadership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish a sense of urgency</td>
<td>Form a powerful guiding coalition</td>
<td>Inspire a Shared Vision</td>
</tr>
<tr>
<td>Articulate a vision</td>
<td>Create a vision, and Communicate the Vision</td>
<td>Model the Way</td>
</tr>
<tr>
<td>Form emotional attachments with followers</td>
<td>Empower others to act on the vision</td>
<td>Challenge the Process</td>
</tr>
<tr>
<td>Align the vision with followers' value systems</td>
<td>Plan for and create short term wins</td>
<td>Enable Others to Act</td>
</tr>
<tr>
<td>Initiate and drive organisational change</td>
<td>Consolidate improvements and further changes</td>
<td>Encourage the Heart</td>
</tr>
<tr>
<td>Are controversial, leading to change and conflict</td>
<td>Institutionalise new approaches</td>
<td></td>
</tr>
</tbody>
</table>

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Rosenbach & Taylor (2006) 
Kotter (1996) 
As a British recipient, from the International Leadership Association of America, of a Lifetime Achievement Award for his contribution to the field of leadership studies, Adair has standing to consider the similarities of his model based on the parameter ‘needs’ with Hersey & Blanchard’s situational model that is based on the parameter ‘readiness’.

The choice between Wisdom and Analytical models is not black and white. An argument exists for the use of a Wisdom Model as the primary leadership notion where the contexts of project work are more common and less unique. Then the wisdoms of Covey and Kotter ‘et al’ may be more readily transferable. Projects effecting change may be an example. Projects by definition always involve change, and the effectiveness of the approach taken to managing that change in a project may dominate the project outcome.

In the same way that Analytical Models exhibit links in logic ... for example, ‘needs’ and ‘readiness’ being two sides of the one coin ... Wisdom Models on change may also have similarities. If each of the models are different perspectives of the ‘truth’ of leadership, Wisdom models like those of Kotter (1996), Kouzes & Posner (2002) and Avolio & Bass (1988) may also have similarities. Table 1 tests this possibility at a summary level.

There are clear commonalities of a generic nature – the vision, selling the vision (whether by alignment or communication or leader example), building relationships (whether by emotional attachments, by coalition, or by inspirational leadership), moving through the change (whether by initiation and driving, by empowerment and short term wins, or by enabling and encouraging others). There are also some differences, such as the sequence for stepping through the wisdom processes, if an order is prescribed for those processes.

But when does the Project Leader-Manager take the next step in the Wisdom sequence? Consider, as an example of this issue, the Wisdom Model based on the loss cycle shown in Figure 5. The overall process with this framework is that the group (and individuals) must be taken through each of these stages – there is no skipping any stage - and that is the ‘wisdom’ provided by this framework. Observations are then made and discussed against these descriptors of the progression being made by teams and by individuals through these six descriptors.

An analytical approach, however, is taken as to whether they are ready for being encouraged or led to the next stage, and/or as to what needs should be satisfied in order to move the group (and each individual) from the stage that they are at onto the next stage. In Figure 5, Adair’s three circles are the analytical component ... the overlapping circles represent the interdependence of addressing Task Needs (‘T’ in the top circle), Team Needs (‘T’ in the bottom circle) and Individual Needs (‘I’ in the other bottom circle) during the change process. Task performance falls as the change subjects people to ‘shock’, and as they ‘retreat’ and then ‘react’. Not everyone moves through these stages of loss at the same rate, so tensions can affect team cohesion. Individuals lagging behind most others, and individuals leaping to the new opportunities, may merit individual encouragement or guidance. It is necessarily an analytical approach, applied to the uniqueness of individual and group situations on a particular project, which provides the data for deciding to, say, ‘encourage the hearts’ (as per Kouzas & Posner) or ‘empower others to act’ (as per Kotter) towards the next stage on the grief or loss cycle at Figure 5.
On balance, there are advantages to using the Analytical Models, in the unique change situations accompanying the leadership of projects, which may outperform the use of the Wisdom Models by themselves. The Wisdom Models may provide a framework for stepping a project and its stakeholders through a change. The incorporation of a framework from a Wisdom Model into the Analytical Model approach strengthens the effectiveness of the Analytical approach, it is proposed.

This may be the lead as to how the diversity and competition amongst notions on leadership in the literature may be selected and organized into a suite of so termed ‘satellite’ notions or models that reinforce the primary leadership model adopted by the practitioner. Thus Adair in his books on leadership imported Tannenbaum & Schmidt’s model on decision-making, to serve his Needs based Leadership Model in an area where his Model needed to be supplemented. Tannenbaum & Schmidt’s ideas have similarities with those of Vroom & Yetton on decision-making.

Practitioners in Adair’s Functional Leadership employ several more satellite notions, such as on managing change, on team building, on organizational culture, on delegation and on communications. The Project Leader-Manager will also use PMBOK or Prince II or similar to assist in ‘Achieving the Task’ when using Adair’s Functional Leadership approach for leading a project.

A primary leadership approach, assisted by selected satellite theories, can develop into a project leadership set that comprehensively covers the inputs, processes and outputs depicted in Figure 1. This practised set of satellite notions, used in support of a primary leadership approach, can guide the Project Leader-Manager to a proper and thorough analysis of, and an effective response to, immediate and long term project situations.

A practitioner who uses Adair may still use ‘Readiness’ in planning the development of reportees by using opportunities for delegation. ‘Readiness’ is a positive concept for communicating with reportees about the levels of delegation that they are ‘ready’ to undertake. This is used within the ‘needs’ based Adair Functional Leadership model, because delegation meets the Individual Need to develop reportees, and ‘readiness’ is very helpful as a concept for facilitating positive exchanges in conversations with reportees on this topic.

Similarly, the practitioner of Hersey & Blanchard’s Readiness Model might decide to borrow the Team & Individual people distinction used by Adair. This might cause the ‘Readiness’ based practitioner to consider both the readiness of the group for a project or task, as well as the readiness of reportees for roles necessary to undertake this project or task. The distinction between showing leadership to groups and to individuals is an advantage that is unique to Adair’s Functional Leadership Model, but it is also a concept that is available for incorporation into other leadership approaches in practice. Leading through change, where the change, say, causes different groups to be either the ‘winners’ or the ‘losers’ from
the change, or where individuals can be the ‘chargers’ or the ‘stragglers’ in moving through the Loss Cycle, is one leadership situation that emphasizes the value of Adair’s unique Team & Individual construct of the people process.

Needs or Readiness, Heads or Tails. There is also a choice to be made as to which Analytical Model is to be primary if the organization is to settle upon a Project Leadership language in its internal dialogue and reporting on Project Leadership inputs, processes and outputs. Only two such models have been discussed in this paper, with mention of a third. A rationale for making a choice between Adair versus Hersey & Blanchard is offered here - both of these Models may be used, but one Model may be nominated as the primary model, it is proposed. This then provides the framework within which the other leadership notions in the set contribute additional effectiveness and completeness to the primary approach.

Whatever is in the literature, in practice the Project Leader-Manager can import good ideas from one model into the framework derived from the preferred model. Examples have already been discussed regarding delegation (importing ‘readiness’ into Adair’s Model) and change leadership (importing the Group-Individual distinction into Hersey & Blanchard’s Model).

There is, however, a body of knowledge critical to success in projects, more so with complex projects, where the ‘needs’ approach may have the advantage. That area is Stakeholder Management. The body of knowledge about managing stakeholders includes topics such as selling and marketing, negotiations and dispute resolution, relationship building and building agreements (joint arrangements, partnering and alliances). The literature on these topics is strongly wedded to the notion of ‘needs’. The one parameter, ‘needs’, has the capacity to be the basis for an analytical model, in support of the Project Leader-Manager, for both the internal challenge of leading the project and also for the external challenge of showing leadership amongst the project stakeholders.

Individual Preferences. A common language for discussing leadership of projects meets the needs of the organization and readies the team. Individual project leader-managers, however, will have their own leadership learnings and preferences for leadership concepts. An organizational leader development program will be wise to welcome strongly the diversity of approaches, regard all experiences held as legitimate, and turn those approaches valued by individuals into points of learning around the common language model-set (primary model with satellite concepts) adopted by the organization.

Opportunities in such programs for the inclusion of study and discussion, of contrast and reinforcement, of other notions preferred by individuals, should be taken, while still enunciating a selected analytical leadership approach understood by all.

Conclusion

This paper offers a rationale for ideas on leadership to be organized against a structure of inputs, processes and outputs, from which particular ideas can be selected into a set that will render Project Leadership a viable option for the future of Project Management.

Entities may consider the move to a Project Leadership regime based upon the current body of knowledge on Leadership. In this decision, organisations may give weight to:

1. Maintaining the benefit of a language within the organization about leadership and project leadership, as exists about Project Management
2. Choosing a language based upon a primary leadership approach
3. Supplementing that choice of a primary leadership approach with satellite ideas that complete and compliment the primary leadership approach
4. The advantages of an Analytical Model in matching capacity of Project Leadership to the challenges posed by projects, including complex projects
5. Welcoming the preferences of individual project leader-managers for particular leadership notions in leadership development programs.
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9. Engineers Australia, Mastering Complex Projects: Principles for Success and Reliable Performance, Engineers Media, Crows Nest, Australia, 2014.
Abstract

When you think about developing the capability of your project workforce, what do you think of first? Employees, or the community of contractors, freelancers and temporary workers that make up the flexible project workplace? Are project managers of today and the future looking for ‘permanent’ employment, or for careers driven by interesting project opportunities? Most of the research and rhetoric on career and competence development has focused on permanent employees but has paid little if any attention to the extended or contingent workforce and the evolving nature of work. Recognising this gap, Human Systems Asia Pacific initiated research to find out more about current organisational practices in resourcing and developing competence and capability in the management of projects. Interviews were conducted with 28 organisations in Europe, Australasia and the USA to provide a picture of the extent to which they rely on permanent versus temporary or contingent resources, the roles, benefits and challenges of a contingent workforce and how they developed or ensured competence in their extended enterprise. The results of this research provide useful insights for both organisations that are interested in developing their project management capability and individuals who are building careers in projects.

Introduction

Considerable effort has been devoted in the field of project management to the development of standards and methodologies but it is widely acknowledged that is it people that make the difference. Talent management and development of project workforce capability has therefore become a focus for many organisations. Although the Project Management Institute noted in their 2013 Pulse of the Profession Report (PMI, 2013) that training, career development, recruiting, hiring and managing contractors were talent management activities that could help organisations improve project management performance, the primary focus of talent management has been on the permanent workforce. Appreciating this gap, Human Systems Asia Pacific initiated a study of talent management in the extended enterprise to provide a picture of the extent to which project based organisations rely on permanent or temporary resources. The study analysed the roles, benefits and challenges of a contingent workforce and how organisations develop or ensure competence in their extended enterprise.

This paper begins with a brief review of research and literature on the challenges and opportunities of contingent work, both for organisations and individuals. A description of the research method used to provide insight into organisational responses to development of competence of their project workforce...
and highlights of the research results are then provided.

The nature, opportunities and challenges of contingent work

According to the US Bureau of Labour and Statistics, contingent work is “any job in which an individual does not have an explicit or implicit contract for long-term employment or one in which the minimum hours worked can vary in a non-systematic manner” (Polivka & Nardone, 1989, p. 11). Bolton, Houlihan and Laaser consider the defining characteristics of contingent work to be “its market driven conditionality, its individualising character, and its intrinsic relationship to risk and opportunity” (2012, p. 124). These characteristics have relevance and implications for both organisations and individual project workers.

From a human resource management (HRM) perspective, Atkinson’s (1984) flexible firm model provides a useful framework as it differentiates between core or permanently employed workers, peripheral (non-permanent) and temporary workers. Recognising the differences between business as usual and project work, several authors have suggested that greater attention should be given to the HRM needs of project work (Bredin & Söderlund, 2011; Huemann, Keegan, & Turner, 2007). However, in making such recommendations the focus remains on permanent employees who are moving between projects rather than specifically considering the case of contingent (peripheral or temporary) project workers (Becker & Smidt, 2015). In essence, HRM practices are well developed for permanent or core employees in operations or business as usual, but less well developed for those involved in project work. Although contingent or peripheral workers may be used as an HRM strategy to provide numerical or financial flexibility (Atkinson, 1984) their welfare and development is largely neglected and they are rarely considered when it comes to talent management.

While there has been little attention given specifically to the nature of contingent project work there is a considerable body of literature addressing the nature and implications of contingent work more generally. Much of this is concerned with unskilled contingent workers as distinct from those with specialist skills or valuable skillsets. Project managers may be referred to as contingent or collaborative contingent knowledge workers as they must work with others, unlike other skilled and specialist workers such as writers, physicians and IT experts who can work independently (Auer, Kao, Hemphill, Johnston, & Teasley, 2014).

Drawing on this literature, it is evident that for contingent knowledge workers and the organisations that engage them there are both challenges and opportunities, advantages and disadvantages.

Advantages and disadvantages for organisations

Organisations may choose to use contingent workers strategically to enable organisational flexibility in response to environmental uncertainty, market fluctuations, globalisation, technological and other changes. This flexibility may be in terms of headcount, financial commitment, skillsets (Atkinson, 1984; Gartside, Silverstone, Farley, & Cantrell, 2013) or even geographical location. Use of contingent workers is a natural response to the temporary nature of projects. However, project based organisations are more likely to retain a ‘permanent’ project workforce for redeployment across their many projects than organisations that focus primarily on ongoing operations or business as usual.

Contingent workers can be used as a way of improving the organisational talent pool, bringing in new skills and knowledge in a timely manner without need for upfront investment in training and development and reducing exit costs, both social and financial (Gartside et al., 2013; Matusik & Hill, 1998).

Nevertheless, there is another side to contingent workforce engagement. Use of contingent workers may represent a saving in terms of training, development and exit costs. However they may not be adequately trained, particularly in company specific skills, and they may bring with them different ways of working that do not align with the balance of the organisation (Zimmerman, Gavrilova-Aguilar, & Cullum, 2013).
Contingent workers, required to be responsible for their own employment, may also be opportunistic, self-interested and competitive (Bolton et al., 2012). This can lead to difficulties in terms of loyalty, commitment and willingness to expend extra effort when required. These difficulties can be exacerbated and negatively impact the entire workforce when permanent and contingent workers are treated differentially (Zimmerman et al., 2013). While contingent workers may introduce new skills and knowledge they may also present a security, confidentiality and intellectual property risk (Becker & Smidt, 2015), and when leaving may take their knowledge with them.

Further potential challenges are the time involved in mobilising a contingent workforce and in integrating them successfully with permanent employees (Smith, Gartside, Sloman, & Marshall, 2014).

Advantages and disadvantages for contingent workers

Those who choose contingent work will generally do so because it gives them work choice and the ability to be in command of their own destiny. Flexible work arrangements can support an effective work life balance for contingent workers. They can choose challenging assignments that enable them to develop skills and gain varied experience, enhancing their job satisfaction and building their employability while offering autonomy from organisational politics (Bolton et al., 2012; Gartside et al., 2013). There is often, but not always, a financial advantage.

Disadvantages include uncertainty and job insecurity which can lead to anxiety (Bolton et al., 2012), lack of company benefits (Zimmerman et al., 2013), the need to provide their own tools, office facilities, training and development, and the potential for social isolation (Auer et al., 2014).

The temporary nature of projects means they are a natural fit for contingent workers, although project based organisations, for whom projects are a core competence, will often maintain a permanent workforce for deployment across their many projects. As workplaces in general become more flexible, to what extent are organisations using contingent workers to resource and develop competence and capability in the management of projects? What benefits and challenges are they facing, and how are they ensuring the competence of their extended enterprise? These are the questions that underpinned this research.

Research method

Having identified that contingent workers had been largely overlooked as a significant factor in resourcing projects, Human Systems Asia Pacific commissioned research to fill this gap and provide a current picture of contingent workforce engagement in project based organisations. As this was an exploratory study, the research method chosen was qualitative, involving semi-structured interviews with the heads of project management of 28 organisations in Europe, Australasia and the USA (Figure 1) with industry distribution as shown in Figure 2. The balance for these organisations was weighted slightly towards internal (57%) vs external (43%) projects.

A theoretical sampling approach was adopted. The initial study participants were selected to provide industry and geographical representation. Study questions were then modified and further study participants selected to pursue emergent themes (Bryant & Charmaz, 2007; Glaser, 1994). The number of interviews conducted was sufficient to give theoretical saturation, being the point at which no new thematic information was being obtained from the data (Mason, 2010). Interviews were recorded and transcribed and analysis supported by use of qualitative data analysis software, Atlas.ti (Friese, 2012).
As shown in Figure 3, the percentage of permanent employees versus contingent workers varies across the entire spectrum and reflects the strategic use or otherwise of contingent workers. Some organisations aim to have only permanent employees (more than 90%) while others strategically maintain only a small permanent core of employees (less than 50%), aiming for flexibility through extensive use of contingent workers.
Another strategic issue is the roles for which organisations are most likely to use contingent workers. As shown in Figure 4, although the major trend is to use contingent workers in much the same roles as permanent employees, there is a tendency to use them in more technical and specialist than managerial roles. Even where they may be used for the same roles, there is a preference for using permanent employees for more complex projects. This is illustrated by the following comments from interviewees:

“They do exactly the same role as our in house people but they’ll be used generally on repetitive stock standard jobs. We try to develop our own people on the more complex and challenging ones.”

“When you look at someone you don’t know playing with $50million of project, and getting it wrong, it goes south very, very fast.”

“If something is core ...that’s very important, it’s the crown jewels to us, we wouldn’t want to rely on someone else to do that... if it’s core to what we do we try to keep as much of that in house as we can.”

The reference to keeping core work in-house supports Atkinson’s (1984) model of permanent employees focusing on core business, and using peripheral and temporary workers to provide flexibility to deal with workload fluctuations and variations. However, some organisations will choose to engage highly skilled project managers on a contract basis for high profile projects or where they consider they do not have the capability amongst their permanent employees.
Reasons for using contingent workers were in line with those reported in the literature. Organisational flexibility in the face of market changes such as recession, globalisation of operations, response to an aging population (bringing back retirees as contractors) and casualisation of the workplace were all cited - “Part of our strategy in using more flexible employment options is to be able to respond to what happens in the economy”.

Access to knowledge and specialist skills was also reported, including the ability to quickly change the skill mix without training time and cost - “We might bring in a contractor if we need a particular skill.... So niche skill or to bridge a gap in our existing skill base”. One organisation used the strategy of engaging contingent workers to protect the jobs of their permanent employees. Another organisation identified value in reduced legal and psychological contracts and cost as their contingent worker engagement flexed in response to a changing marketplace.

Project based work was identified as lending itself to use of contingent workers. Interestingly, no organisation reported a strategy of using contingent workers specifically to reduce fixed costs, although some indicated that headcount limitations were a factor.

A number of specific challenges represented by use of contingent workers were identified. Attraction, selection and retention of the best qualified contingent workers for project related roles was mentioned as a major concern although the process was considered generally less rigorous than for permanent employees. Ways of dealing with this included using agencies, established relationships and networks, and maintaining good relationships with the best contingent workers so they can be called upon again in future.

Management of contingent workers’ performance was another challenge raised. It was noted that although performance evaluations are conducted for permanent staff, they are not normally undertaken for contingent workers who are substantively employed by someone else, often themselves. This was occasionally addressed although more informally than as a matter of policy: “I personally think it’s important and I encourage my staff to make sure that any contract staff they have working for them do get regular feedback on their performance.”
As indicated in the literature on contingent work, the time involved in mobilisation and getting workers up to speed was mentioned as a challenge: “The downside would be ... the ramp up time, the knowledge and ability to operate in any given corporate environment takes time, it’s not as if you just walk in and off you go.”

Associated with this is integration of contingent workers into the organisation, which has a number of dimensions. Contingent workers may come with their own toolkit and ways of working, making them difficult to integrate, and the organisation itself may differentiate between permanent and contingent workers, thereby hampering integration.

“They come with their own toolkit and they’re harder to integrate into your organization’s way of working.”

“You can’t integrate them with everything. They are a temporary member of staff. They’re not included in certain communications that would go out to the permanent staff.”

A further aspect of integration, as raised in the literature, is the relative commitment of permanent employees and contingent workers. As one interviewee stated: “Contingent workers are committed to the project, staff are committed to the organisation.” This however was not always the case. Where contingent workers were valued by the organisation and used on a repeat basis they were often found to be “equally if not more committed than our permanent staff.....it’s easy to get them in and up to speed, and we know they’re going to give their all.” There is clear evidence of the possibility of changing the nature of the engagement with contingent workers from one that is transactional to one that is relational and inclusive (Bolton et al., 2012).

While contingent workers may be used to bring in new skills and knowledge, interviewees noted problems associated with knowledge leakage and loss of intellectual property. One organisation adopted a strategy of reducing permanent employees to 25%, but found that by doing so they lost control of their capability and intellectual property: “We didn’t have enough internal staff intelligence and ... were dependent on a third party. So we got in a right pickle.” Various mechanisms were cited to mitigate the risk of knowledge leakage including establishing processes to retain and share knowledge, and pairing permanent employees with contingent workers to transfer knowledge. The importance of building ongoing positive relationships with contractors was emphasised again in that contractors who came and went from the organisation became a source of knowledge renewal: “We’re quite OK with boomerangs. There’s positive benefits in that...and it’s good for them to go elsewhere, learn other things, and bring them back...”

As previous research indicates, training and development are seldom offered to contingent workers. One reason for this is restrictions imposed by employment laws and regulations whereby offering training to contingent workers would change their employment category from contractor to employee. Financially, this may be even less attractive to the contractor than it would be to the employing organisation. There are several other reasons however. On the one hand it is generally expected that skilled contingent workers or contractors will take responsibility for the relevance and currency of their own qualifications and experience: “That’s what we’re buying and that’s what they’re selling.” On the other, investment in training and development of contingent workers is seen to be a poor investment: “...why would you develop someone who is going to walk out the door?”

There are other approaches however that are more in keeping with a relational rather than a transactional approach to contingent workers. Those organisations that value “boomerangs” and see skilled contingent workers as potentially more committed than permanent employees may also see value in treating them the same way and offering them the same development opportunities as they do permanent employees.

“If you’re treating [contractors] as a different class of worker you don’t get the best out of them. The whole aim for us is to ensure that we have someone we can rely on for the project ... Companies that look after contractors are more likely for that contractor to want to stay and join in, or stay longer because they’re...
enjoying the company."

**Conclusion**

Reasons for use of contingent workers and the associated benefits and challenges are generally the same for project based organisations and project work as they are for most similar types of collaborative contingent knowledge work. The primary reason for use of contingent workers is to support capability to deliver in a flexible project based workplace.

For individuals who choose to be contingent rather than permanent employees because of autonomy and other benefits, and for organisations that make a strategic choice to use contingent workers to enable flexibility in an uncertain environment, there are lessons to be drawn from this research. For contingent workers there is benefit in gaining insight into the strategies, approaches and practices of project based organisations in order to position themselves and establish their “brand”.

For organisations to gain maximum advantage from use of contingent workers while mitigating the potential downsides, it is clear they should consider and treat them as part of their extended enterprise. They should offer support and development opportunities, establish relational rather than transactional relationships with their contingent workers and encourage them to feel valued. By treating contingent workers in the same way as they do permanent employees they will be able to attract and retain the best people available. Further, evidence suggests that by doing so they will positively impact the morale, efficiency and productivity of their entire workforce.
References

The Project Management Office: Issues in Deployment of PMOs in Australia

Author: Anthony Wood, Nicholas Chileshe, Mark Shelbourn

Abstract

Over the years, many institutions have established ‘Project Management Offices’ (PMOs) to provide high level advice and support for management of projects within their organisations.

Evidence suggests that PMOs in practice are not as simple to implement as published theory might suggest, that assessment of perceived value is difficult to undertake, and that assessment of PMO value seems to give rise to more negative than positive perceptions. It should be no surprise then that some organisations are reluctant to embark on the PMO ‘journey’, as the balance of perceived risk to desired rewards may fail to convince key stakeholders and executive management.

A review of case studies provided in industry journals identifies that published theory has a weak correlation with practice in Australia and that current published theory fails to adequately guide industry in the selection and strategic deployment of project management offices. The limited availability of reliable, guiding theory thus confounds aspiring organisations in Australia, who would likely benefit from identification of the factors that underpin effective deployment of Project Management Offices.

This paper reports on the findings of a survey undertaken as a part of a PhD research project. Survey participants are persons who have either managed PMOs or have managed the implementation of PMOs in Australia, or are managers with sufficient oversight to report on the efficacy of specific PMO implementations.

Topics addressed include: Roles PMOs play in Australian organisations; Catalysts that drive organisations to deploy PMOs; Factors that enable or inhibit successful deployment of PMOs; Perceptions of PMO value; Alignment of PMO theory with practice; Usefulness of the theory as an aid to decision-making; and Reflections on Lessons Learned.

Keywords

Project Management, Project Management Office, PMO
Introduction

This research is part of a broader PhD research project that aims to develop and empirically validate a theoretically-grounded, operational framework (road map) for deployment of the Project Management Office\(^2\). The overall project comprises a series of phases; this paper reports on a sub-set of the first phase, which is designed to identify and report on the factors that underpin effective selection and deployment of Project Management Offices (PMOs) in Australia, with a particular emphasis on defining the PMO concept and identifying catalysts and factors that enable or inhibit successful deployment of PMOs in Australia.

Research background

Evidence suggests that PMOs in practice are not as simple to implement as published theory might suggest, that assessment of perceived value is difficult to undertake, and that assessment of PMO value seems to give rise to more negative than positive perceptions. It should be no surprise then that some organisations are reluctant to embark on the PMO ‘journey’, as the balance of perceived risk to desired rewards may fail to convince key stakeholders and executive management.

It is not clear from available text books and journal articles as to the extent post-deployment reviews have rated the reliability or usefulness of the theory as a guide to strategic selection and deployment of PMOs. The ‘litmus test’, per se, is not whether there is sufficient theory upon which a decision could be made, but whether that theory is sufficiently reliable as a basis for decision.

The key problem is that the establishment and effective operation of PMOs in Australia is dependent on a range of variables, many of which are poorly represented in the literature, while others are represented in inconsistent ways. A preliminary review of literature gives rise to a range of variables in practice, which needed to be explored in depth in order to determine their causalities, and in turn, to inform a set of guidelines for organisations planning to establish Project Management Offices.

Research aims and outcomes

The aim of this first phase of the research, to identify the factors that underpin effective selection and deployment of PMOs in Australia, is supported by two objectives and seven secondary research questions as shown in Table 2.

This first phase is succeeded by a series of interviews and case studies utilising a range of research methods to identify and analyse the usefulness of the theory to practicing organisations and the lessons learned by experience within Australian industry. Subsequently, the research culminates in the development of a theoretical framework to serve as an important guide or ‘roadmap’ for improving the likelihood of successful deployment of PMOs, both in Australia and abroad, while maximising the working life of the PMO.

Table 2: Research objectives and research questions

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<th>Research objectives</th>
<th>Secondary research questions</th>
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\(^2\) The expression ‘PMO’ is typically taken to mean ‘Project Management Office’; however, the acronym is often used with other interpretations, thus ‘PMO’ can apply to any combination of related contexts, including program, portfolio, and enterprise variants, or is sometimes substituted by an alternative nomenclature. For the purposes of this research, we use the following definition from the Project Management Institute (PMI):

An organizational structure that standardizes the project-related governance processes and facilitates the sharing of resources, methodologies, tools, and techniques (PMBOK(R) Guide, 5th ed, 2013, p554).
1. Define the PMO concept in terms of current documentation in the literature and industry understanding or acceptance of nomenclature and component parts/functions.

1.1 What roles do PMOs play in Australian organisations?
1.2 What is the best alignment of the PMO descriptors?

2. Identify catalysts and factors that enable or inhibit successful deployment of PMOs.

2.1 What makes the establishment of a PMO compelling?
2.2 Once deployed, how well do PMOs deliver on these outcomes?
2.3 What are the catalysts that drive organisations to deploy PMOs?
2.4 How well do PMOs perform in each of these areas?
2.5 What are the factors that enable or inhibit successful deployment of PMOs?

Research Methodology

A mixed quantitative/qualitative methodology was adopted, entailing issue of a questionnaire survey to facilitate investigation as to whether there are correlations between variables such as organisation size, the intended purpose of the PMO, and the project management ‘maturity’ of the organisation (see Table 3).

The qualitative approach solicited opinions, discussions, and lessons learned in practice. Although some quantitative elements were required, e.g. to measure the scale and frequency of the various variables in effective deployment of PMOs, it is the qualitative orientation that facilitates investigation as to whether there are correlations between variables such as organisation size, the intended purpose of the PMO, and the project management ‘maturity’ of the organisation. Further, a qualitative study was needed for facilitation, interpretation and validation of the initial findings.

The target population for this research comprised adult persons who have managed the implementation of PMOs in Australia, or are managers with sufficient oversight to report on the efficacy of specific PMO implementations.

A survey comprising a standard set of questions was developed to facilitate evaluation and comparison of data. These questions were based on the research objectives, variables in effective operation of PMOs, and gaps in the literature. To the extent that it was practicable, existing survey instruments were adapted for this research activity.

Table 3: Variables in effective deployment of Project Management Offices

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<thead>
<tr>
<th>Variables in effective deployment</th>
<th>Summary of existing research</th>
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<tr>
<td><strong>Definition</strong></td>
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<tr>
<td>• Accepted nomenclature of concepts</td>
<td>Variable analysis in the literature, which is often inconsistent in the findings and application/implementation.</td>
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<tr>
<td>• The theoretical role of the PMO</td>
<td></td>
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<tr>
<td>• Perceptions of value to the organisation</td>
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<tr>
<td><strong>Types of Project Management Offices</strong></td>
<td>Extensive coverage in the literature, with</td>
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Variables in effective deployment

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<tr>
<th>Critical Success Factors</th>
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<tbody>
<tr>
<td>• Strategic (portfolio)</td>
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<tr>
<td>• Size of organisation</td>
</tr>
<tr>
<td>• Catalyst for deployment</td>
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<tr>
<td>• Project management ‘maturity’ of organisation</td>
</tr>
<tr>
<td>• Degree of support for establishment and operations</td>
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<tr>
<td>• Strength of alignment of theory with practice</td>
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<tr>
<td>• Reliance on existing theory for decision:</td>
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<tr>
<td>• whether to deploy a PMO</td>
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<tr>
<td>• as to strategic positioning in organisation</td>
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<td>• as to scope of services to be offered</td>
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</table>

Summary of existing research

| Variable consistency in recommendations. |

Limited analysis in the literature. What does exist is generally not peer reviewed and does not exhibit correlation across multiple variables. There is a scarcity of literature about the drivers of deployment of PMOs or what the theory needs to provide to support deployment decisions.

The survey questionnaire was pre-tested before formal distribution to assess for question comprehension, technical useability/difficulty, relevance to industry participants, and appropriate coverage of academic perspectives. The pre-test was issued to two selected (i.e. non-random) sub-groups of the overall target group, as follows:

• Group 1: Academic colleagues– to test whether the questionnaire accomplishes the research objectives. These colleagues were selected from within the University of South Australia's School of Natural and Built Environments (target = 5 persons).

• Group 2: Industry experts– to ensure relevance and ease of completion, and to prevent inclusion of obvious questions. These experts were selectively invited from industry interest groups of which the researcher is an active participant or convenor (target = 5 persons).

On completion of the pre-test, testers’ notes and responses were reviewed to obtain an estimate of average questionnaire completion time and to identify elements requiring adjustment. Questions that were found to not be providing useful data were discarded, and final revisions to the questionnaire were made.

An on-line questionnaire was subsequently established on a dedicated survey management web site so that participants could voluntarily enter and submit responses without identifying themselves or their organisation(s), thus ensuring confidentiality. The submission of an anonymous questionnaire was taken as an indication of the participant’s consent to participate.

Although the key attribute amongst the target population was experience and maturity of perspective in the implementation and/or management of PMOs in Australia, it was inevitable that insufficiently experienced or uninfluential persons might respond to the survey questionnaire; however these were filtered out by inclusion of information in the questionnaire instructions and by selective questions in the first section of the questionnaire.

Responses to the survey questionnaire at the time of writing were as follows:

Table 4: Summary of responses to survey questionnaire

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<tr>
<th>Method of invitation</th>
<th>Responses</th>
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<tr>
<td>Advertisements in online, professional social media groups such as the</td>
<td>6</td>
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### Discussion in the Literature

The PMO concept that we know today has been well-established for the last two decades; a two-year empirical study conducted by Dai & Wells in 2004 [1] into the establishment and use of PMOs and the environmental conditions in which they operated, reported that 113 of 234 responses from a random sample indicated having a PMO or similar entity, and that ‘the overwhelming majority of (these) PMOs were established in the mid-1990s to 2000’.

Theorists and practitioners alike have been publishing ‘how to’ guides and ‘how we did it’ case studies for almost as long as there have been PMOs. Some of these early writers went as far as to share some of the pitfalls and lessons learnt (Goodpasture [2], Jaques [3], McCall-Peat [4], and Loader [5]), or even why not to implement a PMO at all (Dinsmore [6]). Even today, there is no shortage of such material.

Despite this plethora of ‘knowledge’, the measurement of the value of project management offices appears to be more elusive. The seminal research conducted by Dai and Wells [1] identified a number of disparities in the perception and measurement of value when comparing different populations. For example, organisations that have PMOs tend to exhibit different perceptions of the value of a PMO in contributing to project performance than otherwise similar organisations that do not have PMOs.

Even today, few empirical studies discuss the specific challenges involved in the deployment of project management offices, or how organisations can overcome them. Research conducted by Singh, Keil and Kasi [7] identified anecdotal evidence that deploying a project management office can be difficult, and that organisations tended to rely on subjective indicators of project management office success rather than formal metrics.

The finding that organisations are likely to rely on subjective indicators appears to correlate with the prevalence of ‘how to’ guides in industry magazines and business bookstores. The scarcity of proven knowledge reinforces the need to identify and understand the factors that underpin effective selection, deployment and operation of PMOs in Australia, and to make that knowledge available to the broader project management industry.

While there is little doubt that theory and practice align in expression of the importance of strategic positioning of the project management office as a determinant of value, we can conclude that a strong reliance on theory for modelling and deploying a project management office is likely to lead to some disappointment. In a review of trends in take-up of theory conducted by Wood & Ma in 2008 [8], the highest frequency from a sample of 241 responses was that the theory had only proved somewhat valuable/reliable, and that more respondents found the theory barely valuable/reliable than those who found it very valuable/reliable.

Similarly, respondents from that same study reported a degree of evolution in terms of organisational position and the functional roles performed by the project management office, and that although the theory held some value/reliability at the time the project management office was deployed, evolution of position and function tended to grow beyond the theory foundation. Nevertheless, the PMOs that have evolved beyond the original intent appear to continue to rely on theory on an ongoing basis.
Despite the prevalence of PMO discussion in the literature, the value of the theory as an aid to effective practice remains debatable; moreover, the scale of variation in scope and context of PMOs across industry, reported by Hobbs and Aubry [9] et al, demonstrates that a simplistic formula or a one-size-fits-all approach is unlikely to find a foundation of support in Australia.

Survey Findings

The master survey informing this research comprised thirty-one substantive questions, nine of which address the secondary questions corresponding to the objectives of this phase of the research (refer Table 2), and are discussed in this paper as follows:

**Roles PMOs play in Australian organisations and alignment of PMO descriptors**

PMOs in Australia perform a wide range of roles, some more obscure than others. Respondents rated a list of pre-identified roles and offered additional roles as observed through their experience(s). Table 5 lists the most common roles reported in this research, in order of respondent ratings. Two lists are provided: roles almost always seen, i.e. largely universal amongst PMOs, and roles commonly seen, i.e. not quite universal.

The five core functions of the PMO (refer Table 6) are indicative of the nature of the individual PMO’s raison d’être, i.e. single project, or broader project/program/portfolio governance roles, with most commonly seen descriptors corresponding to these roles.

**Table 5: Roles performed by Project Management Offices in Australia**

<table>
<thead>
<tr>
<th>Roles almost always seen in PMOs</th>
<th>Roles commonly seen in PMOs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Development of common standards &amp; methods</td>
<td>1. General schedule and budget control for multiple projects</td>
</tr>
<tr>
<td>2. Audit and review</td>
<td>2. Coordination of projects and/or programs as integrated portfolios</td>
</tr>
<tr>
<td>3. General admin support for multiple projects</td>
<td>3. Dedicated schedule and budget control for specific, large and complex individual projects</td>
</tr>
<tr>
<td>4. Coordination of projects as integrated programs</td>
<td>4. Benchmarking and excellence management</td>
</tr>
<tr>
<td>5. Facilitation of corporate decision-making in the prioritisation and strategic alignment of projects</td>
<td>5. Internal consulting, mentoring, and training</td>
</tr>
</tbody>
</table>

**Table 6: Alignment of PMO descriptors to core functions**

<table>
<thead>
<tr>
<th>Core Function</th>
<th>Most preferred descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management of single, complex projects</td>
<td>Project Support Office (53%)</td>
</tr>
<tr>
<td>Project process management</td>
<td>Project Management Office (74%)</td>
</tr>
<tr>
<td>Program process management</td>
<td>Program Management Office (82%)</td>
</tr>
<tr>
<td>Portfolio or strategy execution</td>
<td>Portfolio Management Office (88%)</td>
</tr>
<tr>
<td>Project/ Program/Portfolio combination</td>
<td>Enterprise PMO (71%)</td>
</tr>
</tbody>
</table>

What makes the establishment of a PMO compelling, and how well PMOs deliver on these outcomes once deployed

There are many reasons why an organisation might perceive a need to implement a PMO.
Survey respondents identified eleven such motivators, the top five of which are:
1. To attain improved quality of strategic outcomes (67.6%)
2. To strengthen strategic alignment (61.8%)
3. To reduce life cycle costs (47.1%)
4. To improve project selections (44.1%)
5. To better adherence to timelines (32.4%)

Participants were asked to report on how well PMOs delivered on these outcomes once the PMO had been deployed. For the most part, the desired outcomes were successfully attained, with up to 61.8% of respondents reporting significant improvement, as seen in Table 7.

Table 7: Degree of improvement against top five motivating factors

<table>
<thead>
<tr>
<th>Motivating Factors</th>
<th>No significant improvement</th>
<th>Moderate improvement</th>
<th>Significant improvement</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved quality of strategic outcomes</td>
<td>14.7%</td>
<td>35.3%</td>
<td>50.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Strategic alignment</td>
<td>11.8%</td>
<td>23.5%</td>
<td>61.8%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Reduced life cycle costs</td>
<td>20.6%</td>
<td>35.3%</td>
<td>38.2%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Better project selections</td>
<td>20.6%</td>
<td>29.4%</td>
<td>44.1%</td>
<td>5.9%</td>
</tr>
<tr>
<td>Better adherence to timelines</td>
<td>14.7%</td>
<td>47.1%</td>
<td>38.2%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Catalysts that drive organisations to deploy PMOs how well PMOs perform in each of these areas

There are many catalysts that might drive organisations to deploy PMOs, while exhibiting varying degrees of influence upon the process and outcomes. Table 8 lists fifteen such catalysts with moderate to high levels of influence. Generally, PMOs address these issues fairly well, although some appear to perform better than others.

Table 8: Degree of improvement against top five motivating factors

<table>
<thead>
<tr>
<th>Influencing catalysts</th>
<th>Degree of influence</th>
<th>Performance Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need to develop standardised processes and methodology</td>
<td>High</td>
<td>Usually done well</td>
</tr>
<tr>
<td>Need to develop the standard of PM in the organisation</td>
<td>High</td>
<td>Usually done well</td>
</tr>
<tr>
<td>Need to align a portfolio of projects with organisational strategy</td>
<td>High</td>
<td>Usually done well</td>
</tr>
<tr>
<td>Need for centralised reporting functions</td>
<td>High</td>
<td>Usually done well</td>
</tr>
<tr>
<td>Need to establish a project quality assurance and audit mechanism</td>
<td>High</td>
<td>Usually done well</td>
</tr>
<tr>
<td>Need to provide a centralised repository of knowledge (such as lessons learned)</td>
<td>High</td>
<td>Usually done well</td>
</tr>
<tr>
<td>Need to improve project scope, schedule and budget performance</td>
<td>High</td>
<td>Usually done well</td>
</tr>
<tr>
<td>Need to lead or develop a PM competency framework</td>
<td>High</td>
<td>Usually done</td>
</tr>
</tbody>
</table>
General support for the establishment and operations of PMOs

Reporting on their experience in a series of free-text questions, respondents had the opportunity to disclose a wide variety of support functions typically offered for the establishment of PMOs (i.e. special or one-off support utilised or expended while setting up the PMO) and for ongoing operation of PMOs (i.e. ongoing or recurrent support utilised or expended while sustaining the PMO). These functions are listed in Table 9.

Table 9: Support for establishment and operations of PMOs*3

<table>
<thead>
<tr>
<th>PMO support functions</th>
<th>Establishment</th>
<th>Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confirmed executive/strategic support</td>
<td>18%</td>
<td>10%</td>
</tr>
<tr>
<td>Appointment of dedicated champion</td>
<td>4%</td>
<td>-</td>
</tr>
<tr>
<td>Appointment of dedicated PMO manager and team</td>
<td>7%</td>
<td>10%</td>
</tr>
<tr>
<td>Funds and Resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provision of all necessary funds and resources</td>
<td>25%</td>
<td>26%</td>
</tr>
<tr>
<td>Provision of essential funds and resources only</td>
<td>14%</td>
<td>26%</td>
</tr>
<tr>
<td>Limited support outside normal operating resources</td>
<td>11%</td>
<td>13%</td>
</tr>
<tr>
<td>Scarce or token support only</td>
<td>7%</td>
<td>10%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No support outside normal operating resources</td>
<td>11%</td>
<td>3%</td>
</tr>
<tr>
<td>Support offered with reluctance</td>
<td>4%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Factors that enable or inhibit successful deployment of PMOs

Even with sufficient support for the establishment and operations of the PMO, there would reasonably be additional factors that could facilitate or constrain a decision to deploy a PMO. Survey respondents rated the relative importance of a wide range of such factors, the five most influential facilitating and constraining factors are shown in Table 10 and Table 11, respectively.

Table 10: Top 5 factors influencing the decision to deploy a PMO

3 Figures indicate percentage of respondents that identified this function. Non-identification does not necessarily imply absence of any function.
<table>
<thead>
<tr>
<th>Positive influencing factors</th>
<th>Somewhat important</th>
<th>Moderately important</th>
<th>Essential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key stakeholders are identified and supportive</td>
<td>0%</td>
<td>6%</td>
<td>94%</td>
</tr>
<tr>
<td>Appropriate level of leadership support</td>
<td>3%</td>
<td>3%</td>
<td>94%</td>
</tr>
<tr>
<td>Initial resource requirements are defined, agreed, and funded</td>
<td>3%</td>
<td>10%</td>
<td>87%</td>
</tr>
<tr>
<td>The proposed PMO has a C-level champion (e.g. CEO or CIO)</td>
<td>10%</td>
<td>6%</td>
<td>84%</td>
</tr>
<tr>
<td>Clear degree of strategy alignment</td>
<td>6%</td>
<td>16%</td>
<td>77%</td>
</tr>
</tbody>
</table>

Table 11: Top 5 factors influencing the decision to not deploy a PMO

<table>
<thead>
<tr>
<th>Negative influencing factors</th>
<th>Somewhat likely</th>
<th>Moderately likely</th>
<th>Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of necessary funding</td>
<td>6%</td>
<td>10%</td>
<td>84%</td>
</tr>
<tr>
<td>Inadequate senior management acceptance</td>
<td>6%</td>
<td>13%</td>
<td>81%</td>
</tr>
<tr>
<td>Unsupportive organisational culture</td>
<td>6%</td>
<td>19%</td>
<td>74%</td>
</tr>
<tr>
<td>Increased cost to the organisation</td>
<td>13%</td>
<td>16%</td>
<td>71%</td>
</tr>
<tr>
<td>Unwilling to add bureaucracy to the existing organisational structure</td>
<td>13%</td>
<td>16%</td>
<td>71%</td>
</tr>
</tbody>
</table>

Conclusions

The research explicates a transition from concepts such as ‘What is a PMO?’, ‘What is already in place?’, ‘What is needed?’, and ‘What does industry understand about it?’ to ‘How to implement or deploy a Project Management Office’. The research steers this transition by exploring the practices in Australian industry along with an exposé of factors that cause success or failure, and in doing so, begins to map out a pathway along which aspiring organisations can hope to ‘get it right the first time’.

The key problem becomes ever-clearer: that the establishment and effective operation of PMOs in Australia is dependent on a range of variables. It is only by exploring these variables in sufficient depth that we can determine their causalities, and identify co-relationships to form the foundation for a set of guidelines for organisations planning to establish Project Management Offices.

Limitations of this research

This research is a single phase amongst several that collectively form a broader PhD research project. The objectives of the subsequent research activities are to:

1. Interpret industry perceptions of PMO value to determine whether there are any differences in the industry practitioner’s experiences of PMO deployment and value;
2. Analyse the extent the theory assists organisations to make key decisions regarding definition and deployment of PMOs; and
3. Develop and empirically validate a theoretically-grounded, operational framework (road map) for deployment of the PMO.
References

5. Loader, R 2003, 'Lessons learned from establishing project management offices in a corporate environment', *Australian Project Manager*, no. 4, pp. 13-17.
9. Hobbs, B & Aubry, M 2006, 'Identifying the structure that underlies the extreme variety found among PMOs', *PMI research conference.*
Why May Public Infrastructure Projects Over-Promise Likely Outcomes?

Authors: Hamzeh Zarei, Colin Duffield, Felix Hui

Abstract

The prevailing approach to measure project success compares an ex-post outcome with the ex-ante plan. Comparisons of project success are often questioned, and actual success is unlikely to realised if the initial plan is excessively optimistic such as exaggerated benefits, overlooked risks, and unrealistic assumptions. Published literature suggests that technical inadequacies of estimation models, psychology of human mind, economic obligation for risk, and organisational misrepresentation may be factors that can explain this planning fallacy in projects. Nevertheless, these explanations are considered lacking as they do not adequately address the complexity of infrastructure project decision process.

This paper goes beyond planning fallacy in a quest for a better explanation. A workshop of project experts was convened to test the earlier understandings relating to behaviours exhibited during the initiation of an infrastructure. Importantly it framed much of the interactive dialogues among participants around seven case study projects that were considered in the 2012 Parliamentary inquiry of the committee of the Public Accounts and Estimates Committee (PAEC) that explored the effectiveness of decision making in Victorian infrastructure delivery. It emerged that one of the key behaviours was considered to be the use of power in decision-making during project initiation.

Power manifests as the ability to influence others’ intent. In projects, its root lies in information, expertise, authority, legitimacy, and reputation. The notion of power has been recognised as a fundamental concept to explicate the behaviour of actors in a collaborative environment. This paper focuses on the delivery process of public infrastructure projects and investigates the asymmetry of power among participants in an attempt to unravel the complexity of decision authorities and delegations. In a conceptual isolation of central agencies from delivery agencies, a new concept of informal authority is devised to provide a reliable explanation of how delivery agency’s optimism may pay off in the presence of an asymmetric distribution of power. The paper concludes that power asymmetry is a critical success factor in public infrastructure projects and makes suggestions for future improvements.

Keywords: Public Infrastructure Delivery, Planning Fallacy, Optimism Bias, Power Asymmetry, Informal Authority
Introduction

Studies such as Flyvbjerg (2008) assert that historically nine out of every ten large infrastructure projects were unsuccessful. The perception of what constitutes a project failure remains a point of contention, as does the methodological approach that may be most appropriate to measure performance. We push further for a new explanation.

Major infrastructure project deliverables need to meet the expectations of numerous stakeholders in the general domains of economics, commerce, service standards and social outcomes. The term ‘failure’ should be carefully applied as it is possible for a project to be successful in many domains and missing a few others. Two major areas of performance that could influence project success are planning and project implementation.

The importance of a strong planning has already been widely acknowledged as a success factor (Hussien 2010; Jamali 2004; Trafford and Proctor 2006). Nevertheless, recent research pointed to ‘optimism’ being one of the leading causes of erroneous planning, particularly in the major complex projects (Flyvbjerg 2002, 2007, 2009; Priemus 2008). Optimism bias, however, could likely be the effect of numerous root causes. Existing theories have explained optimism bias in projects in terms of includes psychological, organisational and technical causes (Kahneman 2003). These explanations although relevant to the context of planning in projects may not fully explain the root cause of the problem.

In this article, we offer another explanation for the occurrence of over-promising behaviour in the major public projects by proposing a new theory of power asymmetry as a root cause. We adopt an abductive research method by giving a broad definition of power, contextualising it in a project environment, and then go on to develop a new theory of power asymmetry to explain the behaviour of delivery agencies in relation to the central agencies such as Treasury. A case study approach is used to test the proposed theory of power asymmetry. Seven large infrastructure Victorian projects were examined for the symptoms of optimism bias via expert judgments from very experienced project stakeholders that were captured through a dedicated workshop to review, and these were, in turn, used to fine-tune the proposed theory.

Success in Public Projects

Cost overruns and delays have been identified in the literature as the major weaknesses of large projects (Australian National Audit Office 2010; Bekker and Steyn 2009; Merrow 2011; Mott MacDonald 2002; Raisbeck, Duffield, and Xu 2010; VAGO 2012). Another challenge faced in large projects is when a project fails to deliver the expected benefits and utility the community expect (VAGO 2012). For instance, in Victoria, the community’s concerns over anticipated benefits of large public infrastructure projects led the authorities to commission an investigation and seek improvement in the delivery of such projects (PAEC 2012).

Although there is no general consensus on the meaning of project success, the prevailing definition implies a comparison of actual results with the expected and this includes a broad spectrum of outcomes that incorporate the priorities and preferences of stakeholders (Al-Tmeemy, Abdul-Rahman, and Harun 2011; Shatz 2006; Shenhar and Levy 1997; de Wit 1988). The iron triangle of project management focuses on project cost, time and quality to measure project success (Atkinson 1999). One reason that time and cost have become the ‘default’ key indicators of success is the lack of alternatives that can measure and forecast project outcomes.

Project success should include the consideration of the utility of the project for the stakeholders as well as the project management performance such as time and cost (Office of Government Commerce (OGC) 2007, 2009). The utility, also known as the value of the project product or service is the level of usefulness it offers for the money invested. The utility of a project product or service might suffer even if the management performance is acceptable e.g. Sydney Cross Tunnel (Parliament of New South Wales 2006) and the Victorian Desalination Plant (PAEC 2012). Any definition of success has to address the two areas of performance management, and the utility or value of the project product.
Although changes of scope may benefit a project by raising the value when implemented in a timely manner, changes to the scope as a response to changing constraints such as budget or political influence might also adversely hurt the project outcome.

Project success is best measured by consideration of the dimensions of performance management and utility value of the project product. A public infrastructure project should have long lasting outcomes that satisfy a need or opportunity. Table 12 gives a framework to assess the performance of the project management separate from the project product by listing the two dimensions of success criteria that include the initial expectations as a baseline for measuring success.

Project plans such as the business case are good examples of sources of project expectations that are documented. Management performance indicators, as well as project expected value, are perceived via the promises broadcasted in the planning stage.

### Realistic Expectations, A Key Success Factor

A project’s business case should detail stakeholder expectations and anticipated project benefits. The expression of these expectations tends to lock the outcomes in as if they are promises and therefore have an impact on the perception of achievement. If a project deviates from what was initially promised, the related stakeholders may consider it a failure.

Perception of success is dynamic as expectations frequently change over time (de Wit 1988). Project stakeholders influence each other constantly, forging new understandings in the process. The emphasis of project stakeholders on project success might lead them to oversell a business idea in order to keep the project alive (Flyvbjerg 2009). Ambitious projects have a better chance of gaining and retaining approval due to the competitive value they promise. However, this makes them more likely to fail as expectations have been elevated.

Business cases will always include basic assumptions upon which options, benefits, and risks are investigated and evaluated. These assumptions carry risks in that they are susceptible to mistakes and might remain hidden until after the project implementation. While the actual value of an infrastructure project is realised long after the project implementation, the expectations about a project value are shaped at the outset. A mismatch between expectations and what is delivered is where the project has shortcomings. Therefore, one fatal error in an infrastructure project is intentionally, or unintentionally, promising more than can be achieved.

In many jurisdictions, the adequacy of a business case for new public infrastructure, goes through a quality (or adequacy) assurance process, often as part of a Gateway Reviews process. This assurance process seeks to confirm that the project need has been adequately investigated and justified and, secondly that the expected outcomes and benefits are realistic (Department of Treasury and Finance 2009). When the business case is initiated by the delivery agency, the central agency in the government is in charge of approving whether or not the project should be supported for funding. The central agency has an ongoing audit role at multiple stages to reassure the project deliver as expected. If central agencies permit a flimsy business case to progress into a project, there is a high likelihood that unexpected outcomes (poor) will result.

In most governments, central agencies have less in-depth domain knowledge and are less informed on technical requirements and project risks than the delivery agency. Project implementation is therefore
normally delegated to delivery agencies. That is why the appraisal of the project depends very much on the image a project broadcasts at the very beginning i.e. within the business case.

Shortcomings in planning and scope management in the early stages of a project lifecycle may impact in the project time and cost estimation which in turn influence stakeholder expectation. With limited information, scenarios may include optimistic assumptions. Moreover, the reliability of the estimate is impacted when a worst case scenario is discounted or superficially included.

Another pitfall in a business case is exaggerated benefits. Benefits of a project could be divided into four broad categories of political, functional, commercial and economical. There is a risk that political benefits are exaggerated through political promises and premature announcements. On the other hand, the delivery agency might overemphasise the functional value in the fear of functional failure. Furthermore, commercial and econometrical benefits might set based on optimistic or unrealistic market variables e.g. discount rate or supply/demand.

Project scope creep is another issue in project planning and implementation. Changes in scope that do not add value might be due to unexpected risks or taken as a response to problems imposed on the project e.g. project complexity impose new requisites, new constraints that squeeze project boundaries or continuous changes in client’s requirements. Change in scope deviates from the initial plan and frequently does not add overall value to the project.

Finally, changes become more expensive as a project progresses. The impact of a deficient early decision may be amplified due to the scale of large projects e.g. inadequate decisions based on poor estimations given in a business case.

i. Reasons for the planning fallacy

A decision maker has a tendency to undervalue less likely outcomes against more certain ones (Certainty effect) deviating from the description of expected utility theory (Kahneman and Tversky 1977:8). When decisions are complex, our brain simplifies the decision set by altering probabilities and editing prospects that may cause anomalies of preferences (Kahneman and Tversky 1979:12). The term ‘Planning fallacy’ has been introduced as a new theory of prospect to explain this overpromising behaviour in the planning phase.

The existing explanation for planning fallacy in the form of inaccurate estimations or optimistic planning stresses the role of the principal as the main decision maker. Technical, intellectual, political and organisational causes might explain the behaviour of a project parties in producing a plan that is not reliable (Flyvbjerg 2003; Kahneman 2003).

Technical causes of planning fallacy, (also known as an ‘uninformed buyer’) generally occur due to the inadequate technical knowledge of the planner, undependable estimation models, or an insufficient understanding of the requirements. Likewise, the intellectual explanations of the issue emphasise on appropriate mindsets in a plan. Hidden or wrong assumptions may become a source of the problem in producing an erroneous plan. On the other hand, political clarification explores planner’s urge for a misleading proposal, also called ‘Strategic misrepresentation.’ Optimism becomes as a means for survival to offer an appealing business case that might raise the chance of approval. Finally, organisational cause focuses on the factors inside an organisation that might encourage or ignore the presence of erroneous plans. Lack of accountability, insufficient supervision and limited access to information might contribute to planning fallacy by reducing the consequences of a wrong proposal.

In response to the persistence of planning fallacy in projects, different strategies have been applied to improve plans and alleviate the issue of fallacy by addressing those aforementioned identified causes, refer
to Table 2. These strategies, jointly or severally, aim to improve the technical competency of the decision maker, raise decision maker’s accountability or fortify the reliability of plan by adjusting the plan.

Table 13. Strategies for managing planning fallacy (Discussed relative to Victorian practices)

<table>
<thead>
<tr>
<th>Strategies</th>
<th>How does it address planning fallacy?</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gateway reviews</td>
<td>Apply expertise of a supervisory organisation to make informed decisions.</td>
<td>Requires progressive improvements or become less effective i.e. the process might get manipulated by agencies.</td>
</tr>
<tr>
<td>Procurement strategy</td>
<td>Provision of experience and expertise from the private sector to evaluate and increase the reliability of the plan.</td>
<td>Too late to address the mismatch of expectations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conflict of interest between private and public sector.</td>
</tr>
<tr>
<td>Investment Logic Map</td>
<td>Reassure the problem and the need, uncover hidden assumptions and explores the merits of the options.</td>
<td>Despite its contributions in a robust decision making process, it can’t prevent optimism bias existing as a mindset or strategic misrepresentation.</td>
</tr>
<tr>
<td>Transparent administration</td>
<td>Increases accountability and the cost of a wrong decision. It also opens the opportunity for others to review.</td>
<td>Limited access to data due to confidentiality or intellectual property complications that might cripple communication.</td>
</tr>
<tr>
<td>Reference class forecasting</td>
<td>Adjust the estimation based on observed optimism in previous similar projects to offset the optimism.</td>
<td>Three is no guarantee that the adjusting multipliers are correct.</td>
</tr>
<tr>
<td>Central unit of competency</td>
<td>Accumulate information, experience and expertise for future delivery particularly one of a kind projects.</td>
<td>The risk of delayed decision making. Distant to the field knowledge and user requirements. Expensive to maintain without a stream of delivery.</td>
</tr>
<tr>
<td>Single-point-accountability</td>
<td>Isolate the performance of each player and measure it individually to incentivise the planner to make a better plan regardless of the implementation.</td>
<td>For large projects, cooperation is a must, and so single point accountability becomes either impossible or ineffective to apply.</td>
</tr>
</tbody>
</table>

Application of the strategies detailed in Table 13 increases the reliability of infrastructure outcomes partly by improving the planning process. Even so, the public sector still identifies the adequacy of business cases to be a major area of concern and numerous calls have been made for urgent improvement in the planning of large infrastructure projects (Infrastructure Australia 2016). The existing explanations for planning fallacy through delusion, deception, incompetence, and obscurity partly explains the phenomenon but it does not take into consideration the
wide-ranging behaviour of the various actors involved in large projects, which is essential in addressing the complexity of social systems.

In summary, the process of project delivery starts with an idea which is developed into a proposal that explores the need, options, risks and expected outcomes. In public infrastructure project delivery, this proposal a.k.a. ‘business case,’ sets the boundaries and shapes stakeholders’ expectations. Upon approval, the business case leads to the output of the project delivery usually tasked to a separate delivery agency. Investigation of any deficiency in the business case of a large project, if carried out, requires a thorough understanding of how decisions are made in a complex and interactive environment which was explored in this section. The next section provides an explanation of power asymmetry as a possible additional construct in this interactive environment.

Power As An Alternative Explanation For Over-Promise

The concept of power is originated in social studies. Power is the ability to influence others’ decisions. Power has been widely used to explain people’s intent and interaction in an environment with limited resources. According to the standard theory, the origin of power in social systems are Information, Expertise, Reward, Reference, Legitimacy and Coercion (French and Raven 1959). When adopted in projects, the power of an agency is associated with their Knowledge, Skills, Profit/Loss, Risk of Rejection, Business Control, Reputation, Authority, Ability to Innovate, Legislation, and Force.

In individuals, power may cause over-confident decisions (Fast et al. 2012). High-power individuals are inclined to forget the constraints as they allocate less cognitive resources to goal-constraining information (Lammers, Gordijn, and Otten 2008). Powerful people tend to underweight experts’ advice due to the sense of confidence (See et al. 2011; Tost, Gino, and Larrick 2012). In teamwork, unbalanced power has been recognised as an issue in partnerships (McQuaid 2000). The impact of power in an organisation is less studied, though. However, it has been argued that sense of power contributes to optimism bias significantly (Harris 1996; Inesi 2010; Klein and Helweg-Larsen 2002; Shepperd et al. 2002).

Although power has been discussed in projects mainly to study the influence of stakeholders, its prominent role has been overlooked in explaining the relation of primary constituencies in making project decisions.

Method

This paper applies abductive logic (Blaikie 1993) to analyse the insight received from stakeholders and explain the concept of planning fallacy most evident in large project business cases. In this research, 43 expert interviews were carried out concerning the planning fallacy behaviour in multiple situations of the major public projects in Victoria during the 2012 Parliamentary inquiry of PAEC. The data from these interviews was analysed and a better explanation sought as to why many projects were criticised for their lack of success. The interactive dialogues among participants were captured, and these discussions generally explored the effectiveness of decision making in Victorian infrastructure. Through abductive reasoning, the best explanation is derived in line with the previously established theories from incomplete observations. A workshop of project experts was convened to test the earlier understandings relating to behaviours exhibited during the initiation of an infrastructure, particularly the business case. The findings of the initial investigation were presented to 14 participants who validated the findings through anonymous polling. The proposed theory was discussed and polished in a facilitated brainstorming session.

Results

When asked to define project success, some 64 percent of respondents defined success as exceeding the expectations. Whilst in general agreement, other participants add more pragmatic details to emphasise the
views of stakeholders and the inclusion of political process when defining success, particularly in public projects.

The experts identified the primary detrimental aspects of the quality of business cases as: a. inaccurate planning (44%), b. exaggerated benefits (32%), c. scope creep (12%) and d. other (12%). Further, they also attributed reasons for exaggerating benefits, summarised in Fig 1.

Fig 1: Reasons why projects sometimes over promise

When asked whether the distribution of power may explain specific actors’ behaviour and incentives in a project, the majority of respondents agreed with the comment that power asymmetry affects the quality of project business cases, refer to Fig 2.

Fig 2: Effects of power asymmetry on the quality of the Business Cases

Considering outcomes achieved on specific projects, it was observed that project success is perceived as frequently negatively impacted upon by initial expectations, information gaps between central agencies and delivery agencies, a lack of understanding of user requirements and the informal power exerted by the delivery agency, refer to Fig 3.
Fig 3: Co-existance of power assymetry, information gap, inadequacy of requirements and the perception of failure

Discussion

The identification and categorisation of project outcomes being directly impacted by gaps in expectations, information and power provide a new lens by which to consider what needs to be addressed to achieve project success. An in-depth analysis of potential theorems to explain this behaviour, such as Agency theory, differing objectives or even conflict of interest between management and shareholders is required. The observations in Fig 3, infer that a consideration for principal/agent behaviour, understanding of project objectives and delegation of tasks is needed. The gap between the principal interest and the agent interest is called agency loss, and the delegation is effective when it is avoided (Bohnemeyer 1995). Band (1992) had earlier postulated that agency theory is not enough to explain the principal-agency situation when an asymmetric power exists. Band’s power approach implies that if the authority that one body has over the other is unequal, e.g. a powerful CEO, then a problem may emerge. Two approaches have been suggested to manage the agency problem and lower the agency gaps. These are (a) incentivise common interests in the agent (Niskanen 1971; Romer and Rosenthal 1978) and (b) inform the principal on the consequence of the current trend of agent’s actions (Bohnemeyer 1995). Application of these approaches will require further investigation and validation. However, it is evident that the risk remains that agencies will favour optimistic outcomes due to their purported rewards.

Conclusion

Our research supports the argument that consideration of time, cost and quality performance is insufficient to conclude whether a major public infrastructure project will be deemed successful. Detailed consideration of the actual value delivery by a project is also required.

In setting goals for project success, it has further been observed that project business cases frequently overpromise (exaggerate benefits) due to issues such as planning fallacy, asymmetry of information between central agencies and delivery agencies, shortcomings in planning and scope management and poor initial estimates of time and cost. Project business cases are often weak due to an insufficient understanding of project requirements, delays in approval processes due to the unintentional omission of key stakeholders, errant assumptions and sometimes inadequate technical knowledge, strategic misrepresentations or poor supervision. More importantly, it is proposed (and confirmed) that the distribution of either formal or informal power between project actors may in its various forms – to be blamed for optimism.

Through the use of a panel of experts, it was observed that ‘power asymmetry’ was indeed a significant contributor to the deemed success on the seven major public infrastructure projects critiqued in Victoria. Reinforcing that projects are doomed if they over-promise at the outset.
A better understanding of this power asymmetry and direct management attention to appropriately balancing redistributing power between project actors has the potential to produce better project outcomes. Concepts such as Agency theory and lowering power imbalances have been postulated as a way forward, but this will require further research to validate the concepts through deep observations of the current practice and to explain it with the cross-pollination of a behavioural theory of power and agency. Nonetheless, admitting that planning fallacies, articulated in project business cases, impact successful delivery of major public infrastructure projects is a good first step.
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National Public Projects Implementation System as a Tool for Public Policy

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Abstract

National Public Projects Implementation System (NPPIS) is a set of regulations, processes, methodologies, practices, institutions, vendors, project managers, and other elements in a given country defining, shaping or influencing the methods of project implementation by public institutions. Public projects are the main tool for public policies implementation, and the NPPIS is the key element in achieving success in public policies implementation, especially at the central government level.

This paper presents initial results of research on NPPIS performed in over 70 countries on all continents. A conceptual model of NPPIS was constructed basing on this research. Each NPPIS consists of three separated, but interrelated territories: the Execution Territory, the Governance Territory, and the Development Territory.

After a review of surveys conducted in public project managers communities across 63 countries, it was found that the five most important factors influencing public projects implementation success were 1) Alignment of public projects with a strategy 2) Establishing regulations on public procurements 3) Defining and using project / program management methodologies 4) The recognition of project management as a strategically important capability of public institutions 5) Defining public project governance processes.

1. What is Public Policy?

Public policy may be defined in several ways. It may be perceived as „a purposive course of action followed by government in dealing with some topic or matter of public concern” (Anderson, 1975, p. 3). Cochran and Malone (1995, p. 1) define it as „political decisions for implementing programs to achieve societal goals”. According to Jenkins (1978, p. 15) this is “set of interrelated decisions taken by a political actor or group of actors concerning the selection of goals and the means of achieving them within a specified situation where those decisions should, in principle, be within the power of those actors to achieve”. For Lane (2000, p. 48) this is „public resource allocation, income redistribution and public regulations” (Lane, 2000, p. 48). Kilpatrick (2000, p. 1) defines public policy as “a system of laws, regulatory measures, courses of action, and funding priorities concerning a given topic promulgated by a governmental entity or its representatives”. Still another definition was provided by Hogwood and Gun (1984, pp. 23-24): „subjectively defined by an observer as being such and is usually perceived as comprising a series of patterns of related decisions to which many circumstances and personal, group, and organizational influences have contributed”. It may also be defined as “actions of government and the intentions that determine those actions” (Cochran et al., 2009, p. 1). In reality, for instance in the United Kingdom a policy is understood as what the Government does in a given area. For example, there
exists “Major project management” policy (UK Government, 2013). The description of each policy has the form of: “What the government’s doing (...)” in a given area, being subject to a policy. This may also be defined as a relatively stable, purposive course of action by a government agency or official, followed by an actor or set of actors in dealing with a problem or matter of concern (Anderson, 2003). A component of a policy may be to just not change anything.

Even such a brief review of the definitions of public policy illuminates three components of each public policy. These are: area (or issue), intent, and actions. For instance, a policy on immigration in a given country may have the intent of admitting a qualified workforce to that country. The actions of this policy are program of establishing foreign immigration offices and their work, program of settling the immigrants in accepting country, and establishing relevant regulations.

2. What is Public Policy Implementation?

Public policies are “formed, budgeted, implemented, and evaluated” (Anderson, 2003, p. 1). According to other authors, policy life-cycle consists of rationale, objectives, appraisal, implementation and monitoring evaluation, and feedback phases (HM Treasury, 2003). According to Patton and Sawicki (1986), the policy life-cycle consists of defining the problem, determining evaluation criteria, identifying alternative policies, evaluating alternative policies, selecting the preferred policy, and implementing the preferred policy. There is no policy without its implementation.

The policy is, roughly speaking, implemented by three main components: programs, on-going processes (the decision of executing given process just as it may also be a tenet of policy), and street-level bureaucracy (the concept introduced by Lipsky, 1969). The public policies are implemented in large and complex environments of many layers of government and several different programs (Ripley, Franklin, 1982). Policies are simply implemented through programs (Rose, 1984). Programs materialize the policy intent (McConnell, 2010). Hence we may conclude that the policy success is determined by the success of programs implementing the policy. It means implementation in accordance with objectives, the achievement of planned outcomes, and creation of expected benefits. All of this must be aligned with policy criteria (McConell, 2010).

To proceed further we must explain the concepts of public projects and public programs. “A public project is a temporary endeavor, undertaken, managed, or overseen by one or more publicly funded organizations to create product of public value” (Kassel, 2010, p.3). Wirrick defines (implicitly) public sector projects as projects of public sector, i.e. of government organizations that exist to serve the public interests (Wirrick, 2009, p. 262). According to PMI Government Extension to PMBOK (PMI, 2006) a government project is a project performed by national government, regional government, or local government. A governmental program is an organization-wide effort, consisting of one or more [public] projects, to achieve a major organizational goal or objective (Barkley, 2011, p. 15).

3. National Public Projects Implementation System

Each government should have a program and project implementation engine. I call it the National Public Projects Implementation System (NPPIS). In order to build a model of NPPIS, the literature and Internet resources published by institutions and organizational units responsible for public projects were analyzed, resulting with collection of best practices from over 70 countries and autonomous states. A general NPPIS model based on these practices was defined by grouping them into coherent clusters (Gasik, 2016).

NPPIS consists of three well-defined, interrelated territories: Execution, Governance, and Development. Each territory consists of functional areas.

The Execution Territory consists of The Portfolio Management Area, Project Management Area, Actors Management Area, and Stakeholder Engagement Area. They are described below.
The territory of public projects Governance consists of one area of public Project Governance. An authorized government establishes project governance. The effect of project governance is the establishment of structures and rules that must be followed while executing public projects.

The territory of project Execution consists of four functional areas: Portfolio Management, Project Management, Actors Management, and Stakeholders Management.

The area of public projects Portfolio Management covers identification and maintenance of a set of projects (aligned with the public institution’s strategic goals) that are being executed. Projects can be initiated on the basis of a strategy operating in a specific area, or as the result of an emergency situation disrupting strategy execution, which requires intervention by public administration. Portfolio management is supported by activities of Public Projects Management Offices.

The main goal of the area of public Project Management is successful delivery of public projects. Public projects are managed by certified project managers. The deliverables are usually produced by external vendors from a predominately private sector. Public projects management is supported by public PMOs.

The area of Actors Management deals with the most important actors engaged in public project execution: vendors and project managers. This area is responsible for education, training, and certification of public project managers. It also covers qualification of private firms for execution of public projects.

The area of Stakeholder Engagement is responsible for engaging stakeholders into public projects. These stakeholders may or may not be members of communities for which public institutions work. Being members of these communities, they benefit from public projects. Other stakeholders may positively or negatively influence public projects.

The territory of Development covers solely one area of Development of NPPIS. This territory may influence the territory of Project Governance as well as the territory of Project Execution.

Figure 1: A Model of National Public Projects Implementation System (Gasik, 2016)
4. What Determines the Success of Public Projects

The question of factors influencing the public projects implementation success is very important. It gives partial answer to the question of the success of public policies implementation. A survey aiming at identifying success factors of public projects implementation systems was conducted. The set of fifteen possible factors influencing success of NPPIS was defined on the basis of literature review and opinions of five experienced public projects managers (with experience ranging from 15 to 55 years of practice in public projects management). These factors are described in table 1. Each factor was rated on a scale from 0 (no impact) to 4 (essential). The respondents could provide justification for their rating.

The survey questionnaire was published in PMI Government Community of Practice Newsletter and on PM World Journal website. 512 people responded to the survey. 47 responses were rejected, coming from people who were not involved in the implementation of public projects. Finally, 465 answers were analyzed. According to the Central Limit Theorem this is sufficient number to perform statistical analysis (Ott, Longnecker, 2010, Chapter 4, Ling et al., 2009). The average professional experience of respondents with public projects was approximately 7 years, while their average experience with projects of any kind was 8.7 years. Most responses came from the USA (186), Canada (55), and Brazil (23). 10 responses were obtained from Australia. 106 respondents were responsible for project implementation systems in their organizations, 216 were directly involved in project management, and 115 were members of project teams. 28 persons served other functions.

The preliminary results of the survey are presented below. The factors surveyed are sorted from the highest to the lowest influence.

Table 1: Factors influencing public projects implementation success

<table>
<thead>
<tr>
<th>No.</th>
<th>Factor</th>
<th>Area</th>
<th>Territory</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aligning public projects with a strategy</td>
<td>Portfolio Management</td>
<td>Execution</td>
<td>2.80</td>
<td>1.17 8</td>
</tr>
<tr>
<td>2</td>
<td>Establishing regulations on public procurement at country / state level</td>
<td>Development of NPPIS</td>
<td>Development</td>
<td>2.72</td>
<td>1.27 9</td>
</tr>
<tr>
<td>3</td>
<td>Defining and using project / program management methodologies</td>
<td>Project Management</td>
<td>Execution</td>
<td>2.72</td>
<td>1.23 8</td>
</tr>
<tr>
<td>4</td>
<td>The recognition of project management as a strategically important capability</td>
<td>Project Management</td>
<td>Execution</td>
<td>2.69</td>
<td>1.26 9</td>
</tr>
<tr>
<td>5</td>
<td>Defining public project governance</td>
<td>Project Governance</td>
<td>Governance</td>
<td>2.64</td>
<td>1.24 2</td>
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<tr>
<td>No.</td>
<td>Factor</td>
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<td>Mean</td>
<td>Std. Dev.</td>
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<tr>
<td>6.</td>
<td>The external environment of public institutions</td>
<td>Development of NPPIS</td>
<td>Development</td>
<td>2.55</td>
<td>1.30</td>
</tr>
<tr>
<td>7.</td>
<td>Establishing a system for informing stakeholders about projects</td>
<td>Stakeholders Management</td>
<td>Execution</td>
<td>2.52</td>
<td>0.97</td>
</tr>
<tr>
<td>8.</td>
<td>Involvement of external stakeholders in projects</td>
<td>Stakeholders Management</td>
<td>Execution</td>
<td>2.52</td>
<td>1.22</td>
</tr>
<tr>
<td>9.</td>
<td>Defining ways of development for public project implementation systems</td>
<td>Development of NPPIS</td>
<td>Development</td>
<td>2.49</td>
<td>1.20</td>
</tr>
<tr>
<td>10.</td>
<td>Public project portfolio management</td>
<td>Portfolio Management</td>
<td>Execution</td>
<td>2.48</td>
<td>1.33</td>
</tr>
<tr>
<td>11.</td>
<td>Evaluating and improving public institutions' project management</td>
<td>Project Management</td>
<td>Execution</td>
<td>2.47</td>
<td>1.32</td>
</tr>
<tr>
<td>12.</td>
<td>Defining rules for admitting only verified vendors in public projects management</td>
<td>Actors Management</td>
<td>Execution</td>
<td>2.43</td>
<td>1.24</td>
</tr>
<tr>
<td>13.</td>
<td>Establishment and work of Public Project Management Offices</td>
<td>Project Management</td>
<td>Execution</td>
<td>2.35</td>
<td>1.30</td>
</tr>
<tr>
<td>14.</td>
<td>Establishing special regulations on public projects at country / state level</td>
<td>Development of NPPIS</td>
<td>Development</td>
<td>2.33</td>
<td>1.32</td>
</tr>
<tr>
<td>15.</td>
<td>Defining rules</td>
<td>Actors</td>
<td>Execution</td>
<td>2.04</td>
<td>1.37</td>
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<tr>
<td>No.</td>
<td>Factor</td>
<td>Area</td>
<td>Territory</td>
<td>Mean</td>
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<tr>
<td></td>
<td>for admitting only qualified persons into public projects management</td>
<td>Management</td>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

It should be noted that the respondents considered all the potential public projects success factors to be relevant. The average value of answers to each question is higher than 2, i.e. more than half the value of the scale. However, the highest – ranking with influence between 2.80 and 2.64 – placed five factors. While discussing the impact of individual factors we provide reasons for which the respondents considered them important for the public project management.

**Aligning public projects with a strategy**
This is the most important factor in the successful implementation of public projects. Policies are implemented through strategies.

Selected comments and justifications for importance of this factor provided by survey respondents are presented below.

The people organizing systems of public project implementation must know for what reasons the public projects are implemented. It means that they have to know that the projects must support the implementation of strategies, and therefore indirectly the policies. Portfolio management causes that the arising opportunities are not wasted. Well organized public project portfolio management will focus on the objectives of public organizations, rather than on individual key performance indicators of managers of any organization. Good portfolio management contributes to a better use of resources. Bad portfolio management makes strategic contribution of public projects low, particularly with regard to the annual cycle of public budget management. Good portfolio management should allow for reuse of suspended or killed project budgets in the agencies where the project was implemented – and not decreasing agency’s budget. Organizations whose main aim is the implementation of projects must be reorganized to enable effective management of the whole project portfolio.

**Establishing regulations on public procurement at country / state level**
Procurement regulations were considered the second most important factor. Public projects are in large part based on contract performance by external suppliers.

Selected comments and justifications for importance of this factor provided by survey respondents are presented below.

These regulations are important due to corruption prevention and facilitating equal access to procurement. Procurement management allows better control of money spent. The contractors’ project management credentials may affect the quality of the contracts. Respondents frequently (32%) pointed to the many possible consequences of poor organization of public procurement processes. Many failures of public projects are caused by poor contract management. The rules and guidelines for public acquisitions are sometimes overly complicated, increasing the project cost and duration. Simplifying these rules would allow the contracting governments to provide the project results in a shorter time. Contract management processes often do not allow for flexible scheduling and agile development. Documents required by the public procurement processes are often inadequate to the requirements of individual projects. Factors that obstruct the process of public procurement include financial constraints, budgeting cycles, transparency, and rules of contracting. Favoring the cheapest suppliers badly affects the quality of supply. Public procurement centralized processes sometimes do not take into account the specifics of each
Defining and using project / program management methodologies
Defining and implementing public projects management methodologies should be required from the central level. A national policy of implementing such methodologies should be developed. Both project and program management methodologies should be implemented in public organizations.

Selected comments and justifications for importance of this factor provided by survey respondents are presented below.

Methodologies store knowledge and requirements on public projects management. It is impossible to complete a project successfully without a project management methodology. The use of methodologies affects project success by allowing proper insight into the methods of their implementation and making decisions based on knowledge of the contractors’ project performance. Methodology increases the objectivity and efficiency of project implementation. Methodology also structures the activities that otherwise would be carried out in accordance with the wishes of individual people and probably would fail. The existence of methodologies can protect projects against harmful political influence. Project management methodology should be defined in terms of contracting organizations, rather than executing projects in order to bring real value. It is important not only to have methodologies but also to implement processes consistent with them. Methodologies must be supplemented with the knowledge and experience of staff implementing them to produce appropriate results. Methodologies should be used to manage all projects of medium and large size. In small projects, subject matter experts’ knowledge may be sufficient for their implementation. The use of solid methodologies for small projects could slow down their implementation. In public organizations, the implementation of methodologies requires a change in work culture, which is more difficult than in the private sector. Public organizations should implement project management methodologies, but for this purpose they should know examples of success in implementing them in other institutions.

The recognition of project management as a strategically important capability
There are many reasons for which project management should be considered as a strategically important capability of public institutions. Project management should be considered as a core capability of all organizations that implement projects.

Selected comments and justifications for importance of this factor provided by survey respondents are presented below.

Without project management, the failure rate of projects would be much higher. The external perception of the government or public institutions changes positively if they are able to manage projects effectively. Public organizations should have a defined project management career path. Implementation of projects without creating organizational units supporting the project management often ends in failure. Project management is undervalued in sectors other than construction and IT and should be implemented in organizations of all sectors. In order to recognize project management as the strategic capability of public organizations, first their executives must recognize it as so. The highest executives of public institutions should have experience or, at least, knowledge of project management. Organizations that try to implement projects as Business As Usual inevitably fail.

Defining public project governance processes
The public projects often involve a lot of individuals (e.g. members of communities for which projects are implemented, employees of institutions for whom they are implemented, executives of the public sector, politicians, project shareholders), organizations (e.g. constituting institutions, legislators, media, hierarchy of executive agencies, public agencies other than the performing institution), and contractors.
The governance processes should introduce order to decision-making processes covering all of these entities.

Selected comments and justifications for importance of this factor provided by survey respondents are presented below.

Many project decisions must be accepted at many levels of the organizational hierarchy, therefore a well-defined structure of governance is crucial to public projects success. The projects should have clear rules for communication and authorizations. In public institutions, it is sometimes difficult to determine who is responsible for what. Proper definition of the governance process could help define the responsibility and accountability for public projects. In particular, appropriate involvement of sponsors in making the most important decisions would increase the likelihood of success of public projects. The authorizations of heads of linear units should be delegated to project structures. Sometimes decisions are made by organized ad-hoc committees, and not by a single person responsible for the project – the earlier definition of governance processes could also counteract this phenomenon.

5. Summary

The National Public Projects Implementation System is one of the essential elements of the system of public policies implementation. To increase the likelihood of successful public policies implementation, the NPPIS success factors should be influenced. The most important success factor is ensuring the alignment of a project portfolio with the strategy of the entity in which the projects are carried out. To ensure such compliance, administrative entities should establish the body and the processes responsible for the selection of appropriate projects, which should implement policies and strategies. Ensuring objectivity and transparency of the public procurement process is a positive effect of contracts through which public project are implemented. When defining regulations in this area one should pay attention to the reduction of these obstacles for public procurement. For public projects execution, it is necessary to implement project management methodologies. To implement them properly, it may be necessary to change the culture of the organization’s work. The implementation of project management may also be supported by the establishment of policies promoting project management at the central level. Implementation methodologies should be supported by showing evidences of the success of organizations using such methodologies. The recognition of this course of action as a strategic capability necessary for the development of the organization would also increase a chance of their implementation. To achieve this, executives of public organizations should demonstrate a commitment to implementing a project management approach. The success of public projects is significantly affected by the governance processes. The implementation of the governance process must include all parties involved in projects, both public and private.
Acknowledgements

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References

The Status Quo of Project Portfolio Management Practices in Australian Sectors

Authors: Nick Hadjinicolaou, Jantanee Dumrak and Sherif Mostafa

Abstract

In modern organisations, strategic alignment and benefits realisation are the most important aspects for organisational management when making decision on projects and programs. Project portfolio management (PPM) practices are being increasingly adopted to prioritise and select the best-fit projects that meet strategic objectives and lead to organisational agility and success. This research investigates PPM practices of organisations in key Australian sectors. This empirical research conducted a questionnaire survey to obtain data from 64 respondents at the portfolio management level across the key sectors including banking and finance, construction, defence, education, energy production, government, information technology and telecommunication. This research aims at understanding common strategic objectives when organisational management employs PPM practices. The improvement in project performance resulted from PPM practices is further examined using Graph Theory Approach (GTA) to demonstrate relationships between the studied variables.

1. Introduction

The concept of Project Portfolio Management (PPM) is based on theories of portfolio selection and originates from the area of finance and investment in 1952 with a seminal paper written by Harry Markowitz on Modern Portfolio Theory (MPT). The goal of MPT is to generate a portfolio to generate the highest level of return for given levels of risk. It distinguished between efficient and inefficient portfolios calculating the risk return as a whole (Markowitz, 1952).

Since Markowitz’s time, additional advancements and breakthroughs necessary for optimizing project portfolios have been achieved and that assist with project success. These advanced techniques and tools include influence diagrams (for identifying factors influencing the achievement of objectives), consequence modelling (for estimating or simulating the impact of project decisions on business performance); probability encoding (for obtaining probabilities based on judgments), Monte Carlo analysis and decision trees (for quantifying uncertainty over project outcomes); and multi-attribute utility analysis, real options
analysis, and risk tolerance (for quantifying the dollar value of projects and adjusting project value based on organizational willingness to accept risk) (Prado, 2012). This research aims at understanding common strategic objectives when organisational management employs PPM practices. It further examines the improvement in project performance resulted from PPM practices by using Graph Theory Approach (GTA) to demonstrate relationships between variables. Project improvement as a result of PPM practices is explored and presented as project performance improvement indices. The paper includes literature review in PPM in relation to project performance improvement, the PPM practices and the application of GTA. The research finding section highlights the status quo of PPM adoption amongst Australian sectors as well as the results of GTA application in this research. The paper ends with conclusions of the research results.

2. Project Portfolio Management and Project Performance

The need to align project delivery capability with corporate strategy is well recognised (Thomas, Delisle, Jugdev & Buckle, 2002) as organisations are increasingly realising that corporate strategy is delivered through projects, and selecting the right projects is key to their ability to deliver their strategic intent is required (Turner, 2009). In order to prioritise, select and manage simultaneous on-going projects with limited resources, there is a need for PPM to optimise investment by utilising a PPM governance structure to deal with constant change and focus on achievement of organisational strategy (PMI, 2013b). PPM, due to its complexity and lack of understanding, brings a great challenge for organisations to implement the required processes, procedures, tools and practices.

Managers must decide how best to use available resources, manage the level of project and portfolio risk and other considerations such as strategic alignment in the selection and governance of projects. The decision making processes, tools and capability to select and deliver the chosen projects successfully to achieve the desired benefits. Organisations need to ensure that they can do their chosen projects right—to do the right projects right (Crawford, Hobbs & Turner, 2006). When considering the lifecycle of all projects, the fundamental start for every project as defined by PMBOK and Prince2 is the business case for the decision to support or defer commencement. The basis of project portfolio management is selecting the right projects to manage stakeholder expectations, reduce risk and uncertainty (PMI, 2013b).

Researchers increasingly measure project success by examining impact on the organization rather than success at only meeting the triple constraint. Cooke-Davies (2002) differentiates between project management success, where the project is well managed to finish the desired scope within time and cost, and project success, where the project achieves its business objectives. Jugdev and Müller (2005) reviewed the project success literature over the past 40 years and found that a more holistic approach to measuring success was becoming more in evidence. Thomas et al (2008) state that measuring project success in not straightforward. Shenhar and Dvir (2007) suggest a model of success based on five dimensions, judged over different timescales. Turner (2009) also states that the reward structure in many organizations encourages the project manager to finish the project on cost and time and nothing else. Moreover, it is suggested in the current thinking that stakeholders’ satisfaction is a primary measure, especially the primary sponsor (Turner & Zolin, 2012). At the end of the projects, project success is judged by whether the scope is completed on time and on budget, and the project outputs are delivered to specification as well as whether benefits are delivered.

One can argue time, budget and scope are an important part of project success. However, they are only necessary conditions, but not sufficient conditions (Turner & Zolin, 2012; Xue et al, 2013). The importance of broader success measures for projects is now the norm. The most recent version of PMBOK (PMI, 2013a) as an example, no longer mentions the triple constraints (PMI, 2013b). It now includes customer satisfaction in addition to time, budget, and scope. Therefore, this study aligns with PMBOK and focuses on the modern concepts of the project success and its factors, as reviewed earlier, including scope, time, budget, team satisfaction, customer satisfaction, business success, preparing for the future.
3. Project Portfolio Management Practices

According to Young et al. (2011) and Neverauskas & Railaite (2013), numerous maturity models of project and portfolio management (PPM) have been developed to measure maturity levels within organisations. Starting at the lowest level of PPM maturity, organisations manage projects independently and miss a number of benefits available to them through the implementation of PPM. The higher levels of PPM maturity involve a holistic approach to managing the total workload (both projects and operational work) for improved decision making, optimising resource usage and reducing overall risks to maximise benefits.

The implementation of PPM facilitates not only the improvement of PPM practices and maturity levels but also has a flow on effect of improving project management and organisational management maturity levels. PPM practices include the quality of options and estimations in the business case, the stage gate process for improved governance, the refinement of the project-selection decision model to evaluate project proposals as described in the Portfolio, Programme and Project Management Maturity Model (P3M3) (AXELOS, 2013).

The PPM decision model also allows organisations to estimate the impact on the business of doing versus not doing individual projects as well as conducting various combinations of interdependent projects and analysis of risk across projects. Risks are addressed, including both project risk and project deferral risk. Portfolio-level risks are likewise understood, quantified, and managed as the management of resources are performed at the enterprise level to maximise benefits. These benefits include working on the right projects, improved decision making for both discretionary and non-discretionary projects, improving transparency, reducing risk and enabling organisational agility to managing the various causes of disruption.

Some of the PPM practices include having a portfolio vision and roadmap with various plans including the portfolio stakeholder, communications, risk, human resource, benefits, governance and performance management plans (PMI, 2013b). This is not only financial performance, such as future cost savings and increases in revenue, but also include non-financial impacts, such as improved customer service, organisational learning and decision making. Best-practice organisations also utilise software tools for the optimisation and management of the portfolio and gain benefits of having a single source of truth and real time reporting. Organisations that have achieved best practice have a clear understanding of their capacity, constraints, risks and the value creation process. They have mature strategic and business planning processes that can enable PPM alignment to achieve their objectives (Young et al, 2014).

4. Research Methodology

The research data was obtained from 64 respondents from diverse sectors in Australia through the use of questionnaire survey. These respondents have been involved in project portfolio management (PPM) practices. To achieve the aims of this research, the data analysis was conducted into two parts. The first part was to present the demographic information of the research respondents and the adoption of PPM practices in Australian sectors using descriptive statistical analysis. The second part of analysis was to explore relationships of project performance improvement (PPI) as a result of the PPM practices. In this part of the research, Graph Theory Approach (GTA) was employed to represent relationships between the studied variables.

The application of GTA was introduced in 1736 in the work of the Swiss mathematician Leonhard Euler on the Königsberg Bridge Problem. The application of GTA has been widely utilised in various field of science and technology to deal with problems of structural relationship and decision making (Rao, 2007). GTA contains matrices and directed graphs (digraphs).
The data collected through the survey showed that the project performance improvement as a result of PPM practices as shown in three categories in Figure 1. The improvement does not only relate to the PPM practices implementation, but also relates to each other. The evaluation of the overall relations of these interacting improvements is accountable for the adoption of the PPM practices. The quantification of these improvements was not described by graph theoretic approach (GTA). The intensity of these improvements indicates the deterring strength in the implementation of PPM practices. The intensity of the improvements depends upon their inheritance and the amount of the interaction among the different improvements. The three categories of improvements and their sub-elements are used to evaluate the intensity of the improvements by:

\[ \text{Intensity of improvement}_{PPM} = f(\text{improvement}) \]  

Figure 1: Diagraph for the project performance improvement

The three categories of project performance improvement designed for this research are illustrated in Figure 2 below. These categories include Delivery Improvement (DI), Management Improvement (MI) and Competency Improvement (CI). The DI category contains 6 indicators (DI1-DI6) which represents the performance improvement in project delivery. The MI category consists of six indicators linked to improvement in project management. The CI category contains five indicators demonstrating project performance improvement in competency.
The matrix representation of the digraph presented in Figure 1 demonstrates its one to one representation. This matrix is a $3 \times 3$ matrix as there are three different categories of PPM improvement in project performance. The matrix \( I \) is represented as:

$$I = \begin{bmatrix} I_1 & r_{12} & r_{13} \\ r_{21} & I_2 & r_{23} \\ r_{31} & r_{32} & I_3 \end{bmatrix}$$  \(2\)

Where, \( I_i \) is the value of the factor represented by node and \( r_{ij} \) is the relative importance of the \( i \)th factor over \( j \)th factor represented by edge \( r_{ij} \) (see Figure 1).

$$Per\ (I_1) = Per\ (D) = \begin{bmatrix} I_1^1 & r_{12}^1 & r_{13}^1 & r_{14}^1 & r_{15}^1 & r_{16}^1 \\ r_{21}^1 & I_2^1 & r_{23}^1 & r_{24}^1 & r_{25}^1 & r_{26}^1 \\ r_{31}^1 & r_{32}^1 & I_3^1 & r_{34}^1 & r_{35}^1 & r_{36}^1 \\ r_{41}^1 & r_{42}^1 & r_{43}^1 & I_4^1 & r_{45}^1 & r_{46}^1 \\ r_{51}^1 & r_{52}^1 & r_{53}^1 & r_{54}^1 & I_5^1 & r_{56}^1 \\ r_{61}^1 & r_{62}^1 & r_{63}^1 & r_{64}^1 & r_{65}^1 & I_6^1 \end{bmatrix}$$  \(3\)

Where, \( I_1^1, I_2^1, I_3^1, I_4^1, I_5^1, I_6^1 \) represents D1, D2, D3, D4, D5 and D6 respectively. The \( r_{ij}^1, \forall \ i, j = 1,..6 \) represents the relative importance of sub-element \( i \)th with respect to sub-element \( j \)th within the \( I_1 \) group.
\[
Per (I_2) = Per (C) = \begin{bmatrix}
I_1^2 & r_{12}^2 & r_{13}^2 & r_{14}^2 & r_{15}^2 \\
r_{21}^2 & I_2^2 & r_{23}^2 & r_{24}^2 & r_{25}^2 \\
r_{31}^2 & r_{32}^2 & I_3^2 & r_{34}^2 & r_{35}^2 \\
r_{41}^2 & r_{42}^2 & r_{43}^2 & I_4^2 & r_{45}^2 \\
r_{51}^2 & r_{52}^2 & r_{53}^2 & r_{54}^2 & I_5^2 \\
\end{bmatrix}
\]

\[
Per (I_3) = Per (M) = \begin{bmatrix}
I_1^3 & r_{12}^3 & r_{13}^3 & r_{14}^3 & r_{15}^3 & r_{16}^3 \\
r_{21}^3 & I_2^3 & r_{23}^3 & r_{24}^3 & r_{25}^3 & r_{26}^3 \\
r_{31}^3 & r_{32}^3 & I_3^3 & r_{34}^3 & r_{35}^3 & r_{36}^3 \\
r_{41}^3 & r_{42}^3 & r_{43}^3 & I_4^3 & r_{45}^3 & r_{46}^3 \\
r_{51}^3 & r_{52}^3 & r_{53}^3 & r_{54}^3 & I_5^3 & r_{56}^3 \\
r_{61}^3 & r_{62}^3 & r_{63}^3 & r_{64}^3 & r_{65}^3 & I_6^3 \\
\end{bmatrix}
\]

5. Research Findings

This research contains collected data from 64 participants working in 10 different Australian sectors. The highest number of participants was from the telecommunication sector. The ratios of participants classified according to sectors are shown in Figure 3.

![Research respondents (%)](image)

**Figure 3:** Research respondents (%) 

To achieve the first aim of this research i.e. to identify strategic objectives for the utilisation of project portfolio management (PPM) practices amongst the studied organisations, descriptive statistical analysis was employed to demonstrate the responses obtained from the participants. Fifteen strategic objectives for PPM practices were included in the survey questionnaire with an option of Others for any additional objectives besides the provided options within the questionnaire. The responses in percentage to the selected objectives are demonstrated in Table 1. According to the research data, 82.5% of the respondents reported that one objective of PPM practices was to reduce organisational risks while 75.0% of the respondents employed PPM practices to align projects with business strategy. It is noticeable that approximately half of the studied sector (6 out of 11 sectors) employed PPM practices to align projects with business strategy.
with business strategy. On the other hand, the ideas of applying PPM practices to optimise resource allocation and to identify and manage gaps in the portfolio seem to be the least prominent amongst all studied objectives (43.6% and 45.0% respectively).

**Table 1:** Responses to strategic objectives for project portfolio management practices

<table>
<thead>
<tr>
<th>Strategic objectives for project portfolio management practices</th>
<th>Response (%)</th>
<th>Sectors fully employing the objective (agreed by all respondents of each sector in this research)</th>
</tr>
</thead>
</table>
| To reduce organisational risks* | 82.5 | • Construction and Engineering  
• Consulting  
• Defence  
• Healthcare and Pharmaceutical  
• Transport and Logistics |
| To improve decision making** | 75.0 | • Construction and Engineering  
• Consulting  
• Healthcare and Pharmaceutical  
• Transport and logistics |
| To align projects with business strategy** | 75.0 | • Construction and Engineering  
• Consulting  
• Defence  
• Energy and Utilities  
• Healthcare and Pharmaceutical  
• Transport and Logistics |
| To demonstrate project value to key stakeholders*** | 70.0 | • Construction and Engineering  
• Consulting  
• Defence  
• Energy and Utilities  
• Healthcare and Pharmaceutical |
| To select the right projects | 68.3 | • Construction and Engineering  
• Defence  
• Energy and Utilities  
• Healthcare and Pharmaceutical |
| To maximise resource utilisation | 65.0 | • Construction and Engineering  
• Healthcare and pharmaceutical  
• Transport and Logistics |
| To repeat project success | 65.0 | • Construction and Engineering  
• Consulting  
• Defence  
• Energy and Utilities  
• Healthcare and Pharmaceutical |
| To increase reduce project costs | 63.2 | • Construction and Engineering  
• Consulting  
• Energy and Utilities  
• Transport and Logistics |
| To spend in the right areas | 60.0 | • Construction and Engineering  
• Defence  
• Healthcare and Pharmaceutical |
<p>| To increase profits | 57.9 | • Construction and Engineering |</p>
<table>
<thead>
<tr>
<th>Strategic objectives for project portfolio management practices</th>
<th>Response (%)</th>
<th>Sectors fully employing the objective (agreed by all respondents of each sector in this research)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To eliminate poor projects</td>
<td>55.0</td>
<td>• Construction and Engineering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Defence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Healthcare and Pharmaceutical</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Transport and Logistics</td>
</tr>
<tr>
<td>To improve time to market</td>
<td>51.3</td>
<td>• Construction and Engineering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Defence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Healthcare and Pharmaceutical</td>
</tr>
<tr>
<td>To eliminate project redundancies</td>
<td>47.0</td>
<td>• Construction and Engineering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Defence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Healthcare and Pharmaceutical</td>
</tr>
<tr>
<td>To identify and manage gaps in the portfolio</td>
<td>45.0</td>
<td>• Construction and Engineering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Defence</td>
</tr>
<tr>
<td>To optimise resource allocation</td>
<td>43.6</td>
<td>• Construction and Engineering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Healthcare and pharmaceutical</td>
</tr>
</tbody>
</table>

*1\(^{st}\), **2\(^{nd}\), ***3\(^{rd}\) with the highest percentages

To achieve the second aim of this research, the improvement in project performance as a result of PPM practices was examined using Graph Theory Approach (GTA). The inheritance and interdependencies of the three improvements categoris are presented in the permanent function matrices. The inheritance and interdependencies were determined from the questionnaire survey with the industry practitioners using two proposed scales, i.e. 1–9 for inheritance and 1–5 for interdependencies.

\[ Per (I_1) = Per (D) = \begin{bmatrix}
    I_1^1 & r_{12}^1 & r_{13}^1 & r_{14}^1 & r_{15}^1 & r_{16}^1 \\
    r_{21}^1 & I_2^1 & r_{23}^1 & r_{24}^1 & r_{25}^1 & r_{26}^1 \\
    r_{31}^1 & r_{32}^1 & I_3^1 & r_{34}^1 & r_{35}^1 & r_{36}^1 \\
    r_{41}^1 & r_{42}^1 & r_{43}^1 & I_4^1 & r_{45}^1 & r_{46}^1 \\
    r_{51}^1 & r_{52}^1 & r_{53}^1 & r_{54}^1 & I_5^1 & r_{56}^1 \\
    r_{61}^1 & r_{62}^1 & r_{63}^1 & r_{64}^1 & r_{65}^1 & I_6^1
\end{bmatrix} = \begin{bmatrix}
    6 & 2 & 1 & 1.5 & 1.5 & 0 \\
    3 & 7 & 2 & 2.5 & 2.5 & 0 \\
    4 & 3 & 7.5 & 3 & 3 & 0 \\
    3.5 & 2.5 & 2.5 & 2 & 2.5 & 0 \\
    3.5 & 2.5 & 2 & 2.5 & 7 & 2.5 \\
    5 & 5 & 5 & 5 & 2.5 & 7.1
\end{bmatrix} = 48566.4 \]

\[ Per (I_2) = Per (C) = \begin{bmatrix}
    I_2^2 & r_{22}^2 & r_{23}^2 & r_{24}^2 & r_{25}^2 \\
    r_{21}^2 & I_2^2 & r_{23}^2 & r_{24}^2 & r_{25}^2 \\
    r_{31}^2 & r_{32}^2 & I_3^2 & r_{34}^2 & r_{35}^2 \\
    r_{41}^2 & r_{42}^2 & r_{43}^2 & I_4^2 & r_{45}^2 \\
    r_{51}^2 & r_{52}^2 & r_{53}^2 & r_{54}^2 & I_5^2 \\
    r_{61}^2 & r_{62}^2 & r_{63}^2 & r_{64}^2 & r_{65}^2 & I_6^2
\end{bmatrix} = \begin{bmatrix}
    6.8 & 0 & 0 & 1 & .5 \\
    0 & 7.8 & 1 & 3 & 0 \\
    0 & 4 & 8.7 & 4 & 4 \\
    0 & 2 & 1 & 7.5 & 0 \\
    0 & 0 & 1 & 0 & 7.9
\end{bmatrix} = 20895.3 \]

\[ Per (I_3) = Per (M) = \begin{bmatrix}
    I_3^3 & r_{32}^3 & r_{33}^3 & r_{34}^3 & r_{35}^3 & r_{36}^3 \\
    r_{21}^3 & I_3^3 & r_{23}^3 & r_{24}^3 & r_{25}^3 & r_{26}^3 \\
    r_{31}^3 & r_{32}^3 & I_3^3 & r_{34}^3 & r_{35}^3 & r_{36}^3 \\
    r_{41}^3 & r_{42}^3 & r_{43}^3 & I_4^3 & r_{45}^3 & r_{46}^3 \\
    r_{51}^3 & r_{52}^3 & r_{53}^3 & r_{54}^3 & I_5^3 & r_{56}^3 \\
    r_{61}^3 & r_{62}^3 & r_{63}^3 & r_{64}^3 & r_{65}^3 & I_6^3
\end{bmatrix} = \begin{bmatrix}
    7.6 & 2.5 & .5 & 2.5 & 2 & 3.5 \\
    2.5 & 7.8 & 4.5 & 3 & 2.5 & 4.5 \\
    4.5 & .5 & 6.3 & .5 & .5 & 2 \\
    2.5 & 2 & 4.5 & 7.3 & 1.5 & 3 \\
    3 & 2.5 & 4.5 & 3.5 & 8 & 4.5 \\
    1.5 & .5 & 3 & 2 & .5 & 6.9
\end{bmatrix} = 87578.5 \]
The value of the permanent function is computed as demonstrated in the above matrices for each category of improvement and the overall improvements. The matrices of the permanent value indicate the values of improvements in project performance in overall studied sectors. Moreover, it portrays the inherited power of each improvement mathematically with the PPM implementation. A hypothetical lowest and highest values of $I_{PPM}$. These values of $I_{PPM}$ will result in the extreme values if the improvements ‘I’. The $I_{PPM}$ is maximum or minimum when the inheritance of all improvements is maximum or minimum. $I_{PPM}$ is at the lowest value when the inheritance of all improvements is at lowest level value i.e. 1 and highest value i.e. 9 (scale 1–9 for inherence). Therefore, the maximum and minimum values of each improvement category are computed as displayed in Table 2.

### Table 2: Maximum and minimum values for permanent function

<table>
<thead>
<tr>
<th>Permanent function</th>
<th>Max value</th>
<th>Min value</th>
<th>Current value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per I₁</td>
<td>88465.2</td>
<td>1791.4</td>
<td>48566.4</td>
</tr>
<tr>
<td>Per I₂</td>
<td>24631.1</td>
<td>2718.34</td>
<td>20895.3</td>
</tr>
<tr>
<td>Per I₃</td>
<td>96419.92</td>
<td>1864.46</td>
<td>87578.5</td>
</tr>
<tr>
<td>Per $I_{PPM}$</td>
<td>2.1 × 10¹⁴</td>
<td>9.07 × 10⁹</td>
<td>8.88755 × 10¹³</td>
</tr>
</tbody>
</table>

In Table 2, the maximum, minimum and current values of each improvement categories are presented. The maximum and minimum value of $I_{PPM}$ indicates the range within which improvements can diverge. The analysis of GTA also revealed that the practices of PPM benefited competency improvement in projects to the utmost degree when compared to other studied categories whereas project management improvement showed the least affected results from PPM implementation. From an industry implication perspective, the delay of PPM implementation in organisations will mean a lack of holistic approach with potential continued project failure and lower maturity levels. Incorporating GTA will allow the organisations to acknowledge their level of PPM maturity. The permanent function values (as seen Table 2) may be calculated to develop self-assessment baselines. The values will lead to establishing the target values which assist the organisations to improve the PPM implementation performance and maturity. The application of GTA in this context does not only assist the PPM implementation, but also enhances the maturity of project management practices as well as organisational agility. Project improvement categories and indicators (as shown in Figure 2) can be modified or added to meet the organisational purposes and improvement priority.

### 6. Conclusion

This research investigated the strategic objectives of organisational management in employing project portfolio management (PPM) practices in 11 Australia sectors. The results showed diverse adoption to the objectives listed. The objective receiving the highest response was to employ PPM practices to reduce organisational risks and improved decision making while the practices least reported was optimisation of resource allocation. From the collected data, it was discovered that the PPM practices could result in the improvement of project performance. To understand the relationships between the PPM practices and the project performance improvement, Graph Theory Approach (GTA) was employed to demonstrate these connections. The results of GTA led to minimum and maximum values of the improvement which can be developed further into the project performance improvement assessment.
References


Organisational Change Factors: More Than Disgruntled Employees or Poor Process

Author: Mathew Donald

Abstract

The origins of resistance research began 70 years ago where the concept of groups developed from the individual, where variances in individual responses led to a balance in forces that promote or resist change (Patalano, 2011), being akin to inertia in the sciences. In group dynamics there are elements of interdependence in the task, where change begins with an initial state followed by an eventual equilibrium (Patalano, 2011, Lewin, 1945). Rather than purely being an individual response researchers have postulated that the original studies were surrounded by concepts of systems and group activities (Dent, 1999, Burnes, 2004, Patalano, 2011). More recently resistance has been investigated from an individual perspective where feelings, frustrations and motivational decrease are possible and management is interpreted as the controller so being responsible for the deficiency, leading to a suboptimal change outcome (Patalano, 2011, Coch, 1948).

The research to date has investigated resistance factors singularly, yet more recently there has been postulation that the factors may co-exist and interrelate. It has been argued that the future research should not be conducted merely at a single level but also should include a multidimensional framework covering attitudes, continuous change and other dimensions (Bouckenooghe, 2010). Yet after this review it is contended that the concepts are diverse where there is no clear way forward for the research to advance. The topic has been credited as beginning with attitudes to change (Coch, 1948), later developed into that of readiness (Jacobson, 1957), resulting in a more recent concept that the perspective ranges from positive to negative (Lines, 2005).

This current research began with interviewing 25 senior change managers identifying many resistance to change factors that appeared to co-exist (Donald, 2014). Since that presentation the factors have featured in an online survey where interrelationships between factors now appear to exist. The existence of multiple change resistance factors co-existing may influence the way that Project Managers implement change. With leadership and management being just two of the interrelated factors discovered, an improvement in change implementation may require an overhaul to include specific strategies and separate plans to tackle resistance. The current research contributes to knowledge by finding that multiple factors influencing the organisational change processes may co-exist. Rather than factors merely affecting resistance it has been found that those factors can influence change in the positive. The factor of leadership was one of the most surprising of the factors to emerge from the research, although one element of leadership being communication has been widely researched and attributed to resistance to change. These research findings are qualified subject to future research, as the research survey received less than the desired 300 participants so affecting the statistical significance of the data. The second
research question attempting to link resistance to the quality, cost and time of the changes has not been proved, this appears to be related in the main because participants are not knowledgeable of the data even when leading or being responsible for change.

**Introduction**

This article explains how the current research conducted over the past 5.5 years has sought to determine if multiple forms of Resistance to Change (RTC) co-exist and interrelate. The research has been conducted in a mixed method approach in a Pragmatic paradigm being different to the Positivist way the topic has usually been researched. This change in research approach has allowed confirmation of interrelationships that may now affect the way that Project and Change Managers implement organisational change. Future research using the survey developed in this research may assist further understanding of the phenomenon.

**Literature Review**

As all business is inextricably linked and involved with organisational change, so avoidance of organisational change may be impossible (Shah, 2010). Change is often seen as essential for organisations and the future of human kind (Burnes, 2011a, Dunphy, 2007, Kanter, 2008, Sackmann, 2009), where organisational survival may be dependent upon change (Burnes, 2011a, Company, 2008) and competitive advantage lost if the organisation does not change (Kotter, 1996). Organisational change has been attributed to market forces as well as corporate rationalisation, operational efficiency or deregulation (Bennett, 2000).

It is claimed that the failure rate of organisational change is as high as 70% (Senturia, 2008, Burnes, 2011b) and has been quoted as being 66% in a global survey (Company, 2008). Whilst we know that most change fails there has been little research on why that is the case (Buchanan, 2005, Burnes, 2011a). It may be that change failure is due to deficiencies in the process of change (Burnes, 1989, Dent, 1999, Huczynski, 2001), or the competence of management (Boddy, 1992, Kotter, 1996, Kirkman, 1997, Caldwell, 2003, Caldwell, 2006).

Controlling and implementing change is often given to the management collective to execute (Taylor, 1988, Smith, 2010). Specific roles to manage change have evolved, yet there are still a very high percentage of change projects that fail (Todnem, 2005, Beer, 2000). RTC been considered a method for managers and employees to blame one another for failed change outcomes (Pederit, 2000, Georgalis, 2014), although managers are dependent upon how changes are communicated (Klonek, 2014, Barrett, 1995, Ford, 2009, Ford, 1995).

Original studies of Resistance to Change (RTC) were surrounded by concepts of systems and group activities, not merely an individual response (Burnes, 2004, Dent, 1999, Patalano, 2011). The concepts of Group Dynamics in RTC developed around a body of knowledge that began in the 1940’s and continues today, so named Group Dynamics. There is still confusion on the history of RTC research where the scientist stream dominated up to the 1960s, followed by a group designated as Organisational Development (OD) with alternate perspectives (Burnes, 2012). The initial Group Dynamics approach waned and lost favour in the 1960s where it was criticised as too slow in rapid organisational change (Burnes, 2012).

It may be that RTC is a key contributor to why organisational change fails (Georgalis, 2014) or that the employee is a main source of organisational change failure (Danisman, 2010). The management perspective is one where RTC is perceived as a negative change influence, where the individual or employee group’s negative response should be treated and resolved (Georgalis, 2014, Collinson, 1994, Iverson, 1996, Kotter, 1979, Waddell, 1998, King, 1995, Merron, 1993, Trader-Leigh, 2002, Weber, 2001).

By the 1970s an individual perspective had evolved into research, attempting to improve strategies over employees and reduce resistance (Burnes, 2015, Kotter, 1979), where technical optimisation is compared with human needs (Dawson, 2007). This new research attributes the individual response to be critical to the outcomes of change (Avey, 2008, Georgalis, 2014, Ford, 2008, Ford, 2010, Pieterse, 2012, Yerbury, 1982). Individual Psychology opens up RTC research to feelings, frustrations and motivational decrease, where management may still be responsible for the deficiency and suboptimal change (Coch, 1948, Patalano, 2011).

The increase of changing environments, market tension, combined with financial and technological change has resulted in more interest in RTC (Giangreco, 2005, Kotter, 1979, Kanter, 1992, King, 1995, del Val, 2003). Whilst resistance to technological change can be substantial (Bruckman, 2008), appreciation of organisational change is essential (Burnes, 2015), resulting in conflict and insecurity (Amos, 2012). The pace of change may have increased even to a speed that people may not be able to cope with (Bruckman, 2008, Toffler, 1970).

There are now calls to investigate RTC in a multidimensional way as organisational systems, behaviour and the psychology of change maybe interwoven (Deetz, 2008). Removing the management construct and replacing it with a multidimensional framework is important as the single factor approach is holding back the understanding of change (Dawson, 2007, Pettigrew, 2003, Herold, 2007).

Individual Psychology allows for diversity, where multiple organisational forms are possible based on the situation (Dawson, 2007). Employees may be ambivalent at the outset of organisational change, being detected only from observations of employee discourse (Klonek, 2014). Employees may seek to prevent or inhibit change as the effects may impact on their position, livelihood and standing (Hoag, 2002, Klein, 1970, Maslow, 1970, Watson, 1970, Zaltman, 1977, Kanter, 1995, Cox, 1997), where past change experiences may affect and interrelate with employee stress levels (Bruckman, 2008).

Multidimensional research may have a wide variety of resistance options or forms (Deetz, 2008) as that approach has previously found linkages between the employee and the characteristics (van Dam, 2008). Employee commitment may be influential on change reactions both in a positive (Iverson, 1996) and negative ways (van Dam, 2005). Multidimensional research allows change to have an impact on the individual where the impacts can be of a social, operational or psychological nature (Singh, 2010).

An early concept of Management was that it derived from a systematic approach to organising activities (Likert, 1967), where the manager was responsible for converting inputs into business outputs as well as allocating resources, including capital and employees (Bordley, 2012). The skills required of a manager are considered wide (Griffin, 2014) with difficult choices, so they often allocate resources to issues rather than opportunities (Drucker, 2006, Drucker, 1963).

Despite understanding the importance of change and being generally expected to be the leaders of change, many managers do not know how to implement change effectively (Rosenberg, 2011).

Other RTC factors have emerged from this research including the Leadership factor, where that can be defined as being those qualities that involve inspiration, co-ordination, credibility (Schultz, 2013) and influence (Skvoretz, 1996), having the potential to improve or create barriers to organisational change (Stanislavaov, 2014) by a person with status (Piazza, 2014) or social influence (Chemers, 2014).
The Politics and Power factor also emerged in this research, defined as those activities that may influence the organisation (Kanter, 1977, Mintzberg, 1984, Russell, 1938), either informally or formally (McKendall, 1993), through position, coercion, positive rewards or finally as leadership expertise and personal character of the leader (French, 1959).

This research defined the factor of Stakeholder Involvement as being employee investment that may be achieved when an organisation includes communication, training and decision-making tools (Kelleher, 2009) to influence an employee’s performance, trust (Sloan, 2013), skills and communication (Hauck, 2014) or effectiveness (Cole, 2012, Maslach, 1996).

**Methodology**

The Literature indicates that most research on RTC has been conducted in a Positivist paradigm, where many forms have been researched and found to exist. It is conceivable that with so many forms of RTC that they may co-exist and be interrelated, where there are calls by researchers to adopt a Multidimensional approach (Dent, 1999). If practitioners treat one form of RTC and ignore the others they may be approaching the topic in too simple a way.

RTC research has used a variety of methods including case studies, action research and survey (Lewin, 1945, Coch, 1948) each requiring a high degree of involvement (Baskerville, 2004, Walsham, 2006). Other methods in this topic field include grounded theory using observation and interviews (Meston, 1996), multifactor analysis from survey and interviews (Oreg, 2003, Vakola, 2004, Shah, 2010) as well as longitudinal studies (Bennett, 2000). Grounded theory has been criticised as being too culturally biased so less relevant for international research(Charmaz, 2014). This current study adopted a pragmatic approach with a mixed method of semi-structured interviews followed by a survey, analysed in a multidimensional method.

This research was required to answer research questions of:

- What interactions occur between multiple forms of resistance to change?
- What effect does resistance have on change programme time, cost and quality?

The research has been conducted in 2 phases being that of interview and later survey. The first research began with a review of the literature where the concepts formed the basis of the semi-structured interviews. The survey developed after the interviews, where the survey required participants to have worked in a large organisation with greater than 100 employees, located in Western Sydney. The survey was created online in SurveyMonkey®, distributed via LinkedIn® groups and subsequent snowballing. The survey data was analysed using SPSS® in an Exploratory Factor Analysis (EFA) and in Amos® in a Confirmatory Factor Analysis (CFA).

The survey was completed by 102 participants where only 74 completed valid surveys due to their inability to pass the 2 opening criteria questions. The survey achieved a high construct internal reliability in SPSS® as all of the factor questions after consolidation achieved a Cronbach’s Alpha of over 0.7, where 4 of the factors scored over 0.8. A discriminant test over the survey data revealed that the factors were distinct.

The pattern matrix calculation in SPSS® for the factor of Stakeholder Involvement showed that the highest scored question related to a response with feedback. A discriminant test between Management and Politics also indicated that they were distinct factors from one another. Comparing the highest score with the lowest score in the pattern matrix calculation in SPSS® for the Politics factor shows that the questions
were all significant ranging from 0.763 to 0.9 where the highest score question was that change objectives need to be correct.

The consequent EFA analysis required calculating a Kaiser-Meyer-Olkin (KMO) statistic in SPSS® to measure sampling adequacy, combined with a Bartlett’s Test of Sphericity (Aldrich, 2016).

The KMO score of 0.793 above in Table 1 is a measure of the data, where scores above 0.6 are considered worthy of the data being included for EFA (Aldrich, 2016). A further communalities calculation table in SPSS® revealed that 69.3% of the variance in Management can be explained by the other high loading factors which is an important test for determining factor analysis applicability (Aldrich, 2016).

Table 1: All Factors Comparison

<table>
<thead>
<tr>
<th>KMO and Bartlett’s Test</th>
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<tr>
<td>Kaiser-Meyer-Olkin Measure of Sampling Adequacy</td>
<td>.793</td>
</tr>
<tr>
<td>Bartlett’s Test of Sphericity</td>
<td>Approx. Chi-Square df</td>
</tr>
<tr>
<td></td>
<td>Sig.</td>
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Table 2: EFA Model

Table 2 above was created from the EFA, where the KMO score of 0.848 being above 0.8, as the Bartlett’s sphericity significance also was 0.00, the model can be considered as containing useful information (Aldrich, 2016). In the Factor Correlation Matrix provided in SPSS®, many of the factors varied from the positive to the negative so supporting the contention that RTC is not merely a negative event.

Findings & Results

The semi-structured interview participants revealed that they were not satisfied with organisational change, as 11 of the 25 participants were either unsatisfied, neutral or did not answer that question. Organisations also appear to be experiencing vast amounts of organisational change as participants reported having more than 30 organisational changes in the last 3 years.
In a word cluster analysis in Nvivo10® revealed Stakeholder Involvement, Communication and Workload were interrelated in the negative, whilst only Communication and Stakeholder Involvement were linked in the positive. Analysis of the interview data indicated that it was conceivable that a high Workload, low Stakeholder Involvement and poor Communication could combine and be related. Conversely it is possible that a project delivered in a positive manner with high levels of Communication may be less stressful on participants, hence decreasing the negative perception of Workload.

Interview participants reported that most people do not like organisational change, yet most of those participants also reported that they were personally positive to change. It is not clear why the change manager may be more open to change than the general population, although it is possible that they are more informed, possess change related qualifications and hold enhanced understanding. Interview participants often referred to their manager as not having the organisational skills to support the delivery of the change or otherwise not being supportive of the change.

Overall the references to Management appeared to be more related to organising abilities of tasks and changes rather than Leadership qualities. Management evolved into a key factor from the interviews as well as both the EFA and CFA model development in this research. The questions forming the Management factor in the survey analysis related to control, change thoughtfulness and planning. The Literature revealed that Management is a skill involving decisions (Smith, 2008), thinking (Khandelwal, 2010) and the co-ordination of inputs and outputs. Where the co-ordination includes that of efficiency and competitiveness (Singh, 2006), people (Seilby, 2014), plans (Ketter, 2014) and control (Griffin, 2014). This indicates that the manager role is important and requires a wide variety of skills.

Leadership was another factor that came strongly through the interviews based on the conversation tone and language of the factor references combined with the frequency that was a key reason for its inclusion. At the end of the interviews Leadership was defined narrowly from the literature where the factors of Politics, Power, Communication and Trust were considered separate. The survey data contrasted to this, by loading a number of the questions related to Politics and Trust into the broader Leadership factor.

A dictionary definition of Leadership states that includes influence, being an action affecting, impelling or moving (Ammer, 2016). Conversely Politics may include those activities that may influence the organisation (Kanter, 1977, Mintzberg, 1984, Russell, 1938), either informally or formally (McKendall, 1993). Based on these two definitions it is possible that the leader is responsible for influencing change through the organisation, so managing the Politics rather than merely being limited to communication and strategy.

**Discussions**

The definitions derived from the literature suggest and support that the factors of Leadership, Politics and Stakeholder Involvement may be interrelated, now confirmed by this research survey. This revelation indicates that the leadership function as it relates to the other change factors is broader and perhaps more important than was first thought (Donald, 2014). Leaders may need to be more participative in change, not merely relying on communication as they need to adopt political strategies to see change through without disruption and engage with all stakeholders.

The Stakeholder Involvement factor definition in this research included communication, training and decision-making tools (Kelleher, 2009) to influence an employee’s performance, trust (Sloan, 2013), skills and communication (Hauck, 2014) or effectiveness (Cole, 2012, Maslach, 1996). Upon reflection and comparison with the Leadership definition it is possible to understand why Stakeholder Involvement loaded with Leadership as both include elements of Trust and Communication. Stakeholder Involvement
may have been thought to be a task of management, whereas the EFA factor formation in this research indicates that Leaders require Communication and Trust to gather support for their change.

The research questions on effect have not been determined in this research. During the interviews and the survey, participants did not appear to have sufficient information or involvement on cost, time or quality to be in a position to answer effect questions. It is not clear to the reason for this deficiency, an alternate method of research may be required to expand knowledge in effect research.

Conclusions

In response to the first question of this research it has been determined that there are interrelationships between RTC factors has been found to exist, subject to the participation criteria limitations and the methodology. The factors of Leadership, Workload and Management as defined have been shown to be the most interrelated. The other 3 factors that have featured in the EFA model of Act and Monitor, Planning and Analysis, and Power are found in this research to be distinct but less interrelated factors.

It is possible that RTC is actually deficiency or strength of Management and Leadership alone, although not determined by this research. Individual Psychology, despite being a significant body of knowledge on the topic, has not featured strongly in either phase of this research. The reason for lack of reference to Individual Psychology is not determined, although it has recently been reported that Individual Psychology may be a result of Management deficiencies rather than being an RTC factor of itself (Michel, 2013). Alternately, change and project managers who have participated in this research may not perceive Individual Psychology as being as important as other factors.

The survey developed in this research has good internal reliability and discriminant reliability as well as forming a valid EFA and CFA model, potentially allowing future use and development of the survey. There is future potential for this survey to be re-used in a test-re-test process and potential to create an alternate RTC scale to that based on purely dispositional differences (Oreg, 2003). The manager of change may also find the survey of this research useful in investigating their RTC factors in their own projects or organisations. There is potential for this survey to be used in a longitudinal way in an organisation, industry or group of organisations, enabling comparison between each. The variances between organisations and industries may reveal more information and understanding of the topic. Additional RTC factors may also be able to be added to this survey in further testing.
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No business leader today can deny that every business is not only becoming more complex but also experiencing accelerating volatility (or rate of change in complexity). This complexity and volatility manifests itself as more and more unexpected events and disruptions. We propose that the key strategy process and project management methodologies articulated in the literature exist across a continuum such that more structured strategy processes (e.g. Execution Premium) and methodologies (e.g. PMBOK, PRINCE2) work better in obvious, complicated and complex / low volatility environments, while less structured processes (e.g. Simple Rules) and methodologies (e.g. AGILE, EXTREME) work better in complex but high volatility and chaotic environments. We also propose that while the most effective type of process and methodology in an environment should be in use, increasing volatility requires maintaining a small investment in the other type of process or methodology to maintain adaptation capacity should the type of complexity change. Finally, we propose that the role of alert strategic leadership is to dynamically balance the pipeline of initiatives and projects being managed through more structured and less structured processes and methodologies so as to optimise adaptation capacity. Our findings, in line with organisation science research on emergent strategy (the realisation of unintended strategic initiatives) and ambidexterity (the ability of organisations to simultaneously pursue exploration and exploitation strategic initiatives in changing environments), are aimed at improving organisation’s ability to better adapt in increasingly volatile environments.

Introduction

Although a number of strategy execution processes have been proposed over the last thirty years, most strategy execution efforts still fail (e.g. (Mankins and Steele, 2005; Kaplan and Norton, 2005). A number of scholars have proposed that this high failure rate may be due to increasing complexity and volatility (e.g. Burgelman and Grove, 2007; Davis et al, 2009; Kotter, 2011). Recently, we’ve advanced our understanding of complexity and volatility to the point of identifying different types of complexity (e.g. Snowden and Boone, 2007; Holland, 2006 and Leifer, 1989) and volatility as well as their effects. We explore the different types of complexity and the different types strategy processes and project management methodologies used to implement strategic initiatives. We then draw on the ambidexterity and strategic leadership literature to show how ambidexterity can improve strategy execution and the role role strategic leaders can play to effect ambidexterity through aligning strategy execution processes and project management methodologies to optimise execution effectiveness. Our pressing question is, how can strategic leaders adapt their organisation’s strategy execution processes and project management methodologies to thrive both today and tomorrow in increasingly complex / volatile environments?

Conceptual Background
What is Complexity?

Complexity is concerned with the underlying cause and effect behind interactions between actors, events and entities (e.g. people, teams, institutions, events etc.) and whether this cause and effect can be determined. If it can be determined then accurate predictions about the result of certain actions can be made resulting in better execution success rate. Complexity is driven by non-linear interactions that result in emergent change and unintended consequences that can impede some strategy execution processes (e.g. Hannan et al, 2004; Burgelman and Grove, 2007). Six types of complex environments have been identified to date: obvious, complicated, complex, complex adaptive, dissipative and chaotic (e.g. Burgelman and Grove, 2007; Plsek and Greenhalgh, 2001; Strogatz, 2001). In obvious environments, the relationship between cause and effect is obvious to everyone, whereas in complicated environments it is not obvious to everyone but can be discovered through analysis or expertise (Snowden, 2005). In complex environments this cause and effect relationship can only be determined but only in retrospect, making accurate prediction difficult (Snowden and Boone, 2007). In complex adaptive environments a group / groups / or network of partially connected components (agents) interact and adapt in unique ways, learning from each other and their history (Holland, 2006). In dissipative environments, cause and effect gradually changes from linear to non-linear, resulting in accelerating instability until, at the bifurcation point, the organisation self-organizes into a new dynamic order or dramatically fragments and breaks down (Leifer, 1989). Finally, in chaotic environments there is no relationship between cause and effect and thus cause and effect can’t be discovered prospectively or retrospectively (Snowden, 2005). For all environments, the difference in type of complexity is driven by differences in the nature of the underlying interactions, i.e. different non-linear dynamics (Burgelman and Grove, 2007; Calliers, 1998).

Determining Type of Complexity

Since each type of complexity has a different effect on strategy execution, it is essential to determine the type of complexity at play to manage the effect. Drawing on complexity theory, the Cynefin framework is a practitioner oriented framework for doing this. It synthesises the different types of complexity and their effects into five environments requiring different approaches to strategy (Kurtz and Snowden, 2003) and to decision making (Snowden and Boone, 2007). In doing so, it offers a continuum of obvious, complicated, complex, chaotic and disorder environments. Snowden and Boone (2007) note that obvious and complicated environments both have linear cause and effect relationships but that while this relationship is readily apparent in obvious environments, it is hidden in complicated environments. On the other hand, complex and chaotic environments both have non-linear cause and effect relationships but differ in that the cause and effect is discoverable in retrospect in the complex environment but can’t be determined at all in chaotic environments, even in retrospect (Snowden, 2005). And in disorder environments, multiple types of complexity jostle for prominence with cacophony ruling (Snowden and Boone, 2007). To determine the type of complexity, the framework calls on practitioners’ collective judgments about nature of the cause and effect they face and the ease of making accurate predictions. Volatility, in contrast to complexity, is concerned with the nature of change in type of complexity faced (e.g. speed of change, number of different types of complexity being faced).

Types of Strategy Processes

While the Cynefin framework provides a neat categorisation of types of complexity, there is no clear categorisation of strategy execution processes or list of processes. We have selected four different strategy execution processes emerging in top academic journals over the last decade; these include the 7 Factor process (Okumus, 2003), the Execution Premium process (Kaplan and Norton, 2008), the Induced / Autonomous Process (Burgelman and Grove, 2007) and the Simple Rules process (Sull and Eisenhardt, 2012). Two of the processes (Simple Rules and Induced / Autonomous) are designed to work better in complex environments, while the remaining two don’t discuss the issue of complexity. We identify the four types of strategy processes respectively in Figure 1.1, their author, the author’s addition to the literature, the corresponding process steps and the type of complexity each process was designed for. In looking at the
processes in figure 1.1, it is worth noting that neither process suggests that strategic management is linear and prescriptive, nor views formation and implementation as different and separate phases (e.g. Okumus, 2003). But rather, the scholars aim to identify key parts of the process, how these interact and the impact these have on the overall process and outcomes (Okumus, 2003). Strategy execution processes are taken to be, in general, the processes dealing with the major intended and emergent initiatives taken by general managers on behalf of owners, involving utilisation of resources to enhance the performance of firms in their external environments (Nag et al, 2007); and, in particular, the process integrating the interaction of the five processes of strategic intent, response to emergent environmental issues, the dynamics of the actions of individuals within the organisation, alignment of action with strategic intent and strategic learning (Moncrieff, 1999). In contrast to strategy execution processes, project management methodologies are more clearly articulated in the literature. We selected the following methodologies for this study: project management body of knowledge (PMBOK), projects in controlled environments (PRINCE2), critical chain project management (CCPM), agile project management (AGILE), lean project management and extreme project management (EXTREME) (e.g. Raz et al, 2003, Wysocki and McGary, 2003; Nokes, 2007; Serra and Kunc, 2015).
### Types of Strategy Execution Processes and Intended Type of Complexity

<table>
<thead>
<tr>
<th>Complexity Schoolers</th>
<th>Strategic Management Schoolers</th>
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<tbody>
<tr>
<td>Inherently Complex</td>
<td>Inherently Simple</td>
</tr>
<tr>
<td>Intensively Complex</td>
<td>Intensively Simple</td>
</tr>
<tr>
<td>Intermittently Complex</td>
<td>Intermittently Simple</td>
</tr>
<tr>
<td>Rarely Complex</td>
<td>Rarely Simple</td>
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**Figure 1.1:** Types of strategy execution processes and intended type of complexity.
Research Methods

We sought data to further explore the relationship between type of complexity, type of strategy execution processes and project management methodologies and strategy execution effectiveness. We conducted 39 interviews with senior executives, middle management and frontline managers in 13 organisations using a questionnaire comprised of semi-structured and open questions. The purpose of the interviews was to identify the type of complexity being faced by organisations, the types of strategy processes and project management methodologies in use, the perceived strategy execution effectiveness of these processes and views on how strategy execution effectiveness could be improved in the face of increasing complexity. The 13 organisations came from an initial data set of 450 organisations randomly selected from the Australian Taxation Office Australian Business Number data base (2013), after excluding irrelevant entity types such as Funds and Trusts. A senior executive, middle manager and front line manager contact was identified for each organisation and invited to participate in the study.

Responses were received from 351 individuals and 104 organisations. Organisations without at least 3 respondents were eliminated, leaving 29 potential organisations. These were ordered using a random number generator and we worked down this list until interviews were completed for 13 organisations. Drawing on Miles and Huberman’s (1994) data analysis model, the data collection, data display, coding and conclusion drawing phases were carried out simultaneously. NVivo7 was used to code and represent the data as an integrative diagram in order to tease out themes and patterns. Pattern matching was then used to contrast actual themes and patterns with the conceptual model. The findings from the case study interviews were then tested with a broader survey questionnaire of 250 organisations. The survey data was analysed using structural equation modelling to arrive at the final findings.

Findings

Types of Complexity Faced

After exploring the prospective and retrospective cause and effect and prediction difficulty cited by each participant organisation and matching these to the characteristics drawn from the Cynefin framework, we found 20% of organisations citing obvious environments, 34% citing complicated environments, 15% citing complex environments and 27% citing chaotic environments. We further found 4% of organisations citing the disorder environment. Whilst unexpected, this suggests either that at some point the characteristics of some types of complexity may seem the same or that different parts of the organisation may face different types of complexity at a particular point in time.

Types of Strategy Processes in Use

On reconciling the key steps cited in each organisation’s strategy execution process to those in the literature, we found each of the literature processes to be in use, though to different extents. For instance, many organisations used the Execution Premium process but not all organisations carried out every activity in the process. Similarly, we found all program/project management methodologies to also be in use but used to different extents in different organisations. We were most surprised thought to discover another 6 strategy execution processes in use but not discussed in the literature. The first such process identified was the “Lean Strategy Deployment” process, also known as Hoshin Kanri or “Direction Management”. This was described by participants as a “catchball” process of vertically and horizontally aligning an organisation’s functions, activities and resources with its strategic objectives through a top-down and bottom-up dialogue between managers and their teams about targets and the resources needed and available to achieve these targets. Lean as a quality improvement methodology and strategy deployment methodology is well established in both the academic literature outside of strategic management and the non-academic literature.
The second process emerging from participant responses was described as a “Talent Placement” process. Participants described this as a process of implementing strategy by finding and putting in place the right individual to lead the organisation and monitoring their performance. Where performance was promising the individual would be retained, where it wasn’t promising the individual would be replaced. But once chosen and put in place, they would be given significant autonomy. One study participant described the process as a process of sourcing and attracting the right maverick for the time - one who could deliver performance well above expectations.

The third process cited by participants was described as the “Outcomes and Incentives Communication” process. It was described as a process of communicating desired outcomes and the incentives or disincentives for achievement of these outcomes. It was cited by a single participant who gave the example of a “Wanted: Dead or Alive, Reward: $1,000,000” outcome and incentive being communicated by police via poster as an approach to executing the strategy of finding a fugitive. This process was cited by a single participant who noted that while it was not the intended or deliberate strategy execution process at the organisation, it nevertheless was the way much of the realised strategy actually came about.

The fourth process cited by a single participant was described as a “Learning on the Run” process. This process was described as one of choosing a general direction and implementing in that direction by rapidly pursuing opportunities, navigating obstacles, learning from these experiences and continuously adjusting course. This process was also found to be cited in the non - academic literature; for example Welch and Byrne (2001) proposed “In real life, strategy is actually very straightforward. You pick a general direction and you implement like hell” and Leighton (2008) proposed that “Strategy is important but it’s a compass not a roadmap.”

The fifth process cited by participants was described as a “Resource Allocation / Portfolio Management” Process. Again this was raised by a single participant who described it as a process of identifying promising policies, projects, people and facilities and providing resources (i.e. budget, authority, autonomy, management attention) and rewards (e.g. promotions, bonuses) for initiative leaders to successfully execute on these initiatives; while at the same time re-deploying those resources and rewards from areas that aren’t as promising. This process was also found to be cited in the academic and non - academic literature (e.g. Lechner,2006; Bower and Gilbert, 2007).

The sixth process cited by participants called the “Performance Monitoring and Feedback “ Process. Participants described this as a process of regularly reviewing / monitoring the performance of relevant individuals and providing feedback on their performance relative to expectations. The seventh and final process cited was Kotter’s 8 step change management process, which is also discussed in the non - academic business literature.

**Effect of complexity on Strategy Processes and Project Management Methodologies**

We found that the effect of complexity on strategy processes and project management methodologies to best be explained by the degree of structure of each process or methodology. A number of scholars have discussed the effect of structure on performance in different environments (e.g. Davis et al, 2009; Burgelman and Grove, 2007). Drawing on the Davis et al (2009) definition of structure as the degree of constraint on action, we ranked the degree of constraint on action of each process and methodology and analysed its execution effectiveness in different types of environments. We found that highly structured strategy execution processes and project management methodologies (e.g. PMBOK, PRINCE2) worked better in obvious, complicated and complex but low volatility environments; while less structured processes (e.g. Simple Rules, Talent Placement) and methodologies (e.g. AGILE, EXTREME) worked better in complex but high volatility environments and chaotic environments. Unfortunately an organisation can’t chose the right process for its environment and be comfortable. This is because a lot of the organisation longevity literature
has observed that each organisation may face different types of complexity over its lifetime and thus that being able to use both high structure and low structure processes is as beneficial as being able to use the right and left arms.

**Importance of ambidexterity**

Ambidexterity is concerned with an organization’s ability to be efficient in its management of today’s business while adapting to and coping with tomorrow’s changing demands through appropriately balancing both exploration and exploitation activities (Duncan, 1976). While there are many forms of ambidexterity, in this study we explored process based ambidexterity. That is, appropriately balancing exploration and exploitation through the use of highly structured processes to pursue exploitation activities and low structure processes to pursue exploration activities. Our data suggests that to maximise exploration and exploitation, the more effective type of processes or methodology in a particular environment should dominate but that maintaining a small investment in the other type of process to enable scaling up or down of that process with changing complexity improves strategy execution effectiveness. Interestingly, we found most organisations using different strategy processes in different parts of the organisation, which created strategic alignment challenges and challenges achieving a deliberate balance of the degree to which exploitation and exploration process are used.

**Strategic leadership’s role in effecting ambidexterity**

Strategic leaders are the people who have overall responsibility for the organisation and include the head of the organisation as well as the top management team or dominant coalition (Cyert and March, 1963 cited in Boal and Hooijberg, 2000). We propose that achieving the right balance of exploration and exploitation process usage is an essential strategic leadership role. And that one way deliberate ambidexterity can be achieved is for strategic leaders to utilise a high structure strategy process and a low structure project management methodology or a high structure project management methodology and a low structure strategy process at the top management team level. In this way they would be able to have more control of the degree of ambidexterity achieved through rebalancing the number and type of initiatives they commission and allow to continue through low structure and through high structure processes. This would enable exploitation activities to occur in either the strategy process or through the project management methodology and vice versa. And for either exploration or exploitation to be emphasised to maximise exploitation or adaptation as needed at a particular point in time. Additional strategic leadership roles to improve ambidexterity include ensuring timely redeployment of resources to minimise waste and conserve resources (e.g. if a project becomes irrelevant or needs to be shifted from a high to low structured process or methodology) and building what we refer to as “heart and mind alignment” (i.e building purpose at all levels, justifying the strategy at all levels and engaging organisation stakeholders at all levels). This would have the effect of improving the pervasiveness of strategic objectives through all strategy processes in use in different parts of the organisation. Through these three roles, strategic leaders can shape ambidexterity in the way they combine high structure and low structure strategy execution processes and project management methodologies and they can align stakeholders using different processes and methodologies through “heart and mind” alignment. In doing this they can lead their organisations to maximise their exploration and adaptation capabilities.
References