An Exploratory Study of Factors Influencing IT Project Initiation Decisions

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Master of Computer and Information Sciences

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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

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Ethics Approval

Ethics approval for this thesis was obtained from the AUT University Ethics Committee (AUTEC), reference number 11/95 dated 5th July 2011.

Preamble

It is useful to reflect how this thesis has reached to completion. As my thesis mainly focuses on the 'why' factor in project management context, it is also worthwhile to present the 'why' factor of my research motivation.

Throughout my employment in IT profession, when there were problems or opportunities in terms of technical or project management aspects, I often pondered whether these were informed in academics or repeated ad-hoc events in practitioner community. As I am at the stage of 'I don't know what I don't know', I became motivated to study postgraduate programme, which is, Master of Professional Business Studies - majoring in Information Technology. I was very interested in academic literature which informed the practitioner community and their real world practices. Then, I have decided to study Master of Computer and Information Sciences to attain in-depth understanding and proficiency in information technology context. In the meantime, I had unanswered questions around IT project management throughout my continuous employment. As I have worked for different organisations, there are times we encountered many consequences or/and gained benefits from projects. Some projects are initiated for a number of underlying reasons and the decisions were made at different circumstances which were not all listed in any of the project documents. I often pondered what actually caused/drove these project endeavours and why these associated decisions were made. This factor fascinated me of understanding these project initiatives motivations. I started searching various several publications and was unable to find one which prompted me the 'why' factor of project initiative decisions. Thus, with this curiosity and motivation, I have decided to explore this aspect in wider IT community and greater in-depth literature review by conducting this research.

Some comments made in this study are based on my work experiences at different organisations and my learning experiences that I acquired throughout my study which I consciously or unconsciously gained. I have read a number of academic publications such as books, edited books and journal articles. Even though I have not directly referenced them, the knowledge I acquired might have come from these sources. Therefore, in order to acknowledge these valuable resources, I have also included the bibliography list after my references list. At the end of this thesis, I have expressed the future research directions and

opportunities. Therefore, to draw a universal conclusion, further multidimensional research around project initiation may be required. However, I believe that the outcomes of this research project will contribute useful insights to IT community to a certain extent, and will hopefully lead to better decisions being made in the future.

Abstract

Information technology, information systems and applications have become key survival factors in modern organisations. Technology can transform and redefine organisations and the way they operate. As the power of information technology (IT) intensifies and organisations work to exploit the full capacity of IT, the role of IT management in those organisations becomes more and more important. This importance is reinforced by the increasing pervasiveness of IT along with highly competitive operating contexts. As IT initiatives are generally implemented via projects, the management of IT projects has come under increasing scrutiny. IT projects continue to fail; as a result, while research in IT project management has grown, many challenges for research and practice remain.

There have been many studies of the IT project management context; however, very few have considered project initiation decisions. The primary intent of this research is therefore to investigate IT projects particularly in terms of their initiation. As these projects originate from decisions made by management, it is important to understand the drivers of these decisions. Therefore, the objective of this research is to explore the influencing factors in IT project decisions during their initiation.

A combination of semi-structured interviews and the repertory grid data collection and analysis method was employed to investigate the motivating factors and primary drivers that influence individual IT Managers' project initiation decisions. Eighteen participants representing six medium and large organisations were interviewed. A total of forty-nine IT projects were identified by these eighteen managers. A rich data set was collected and in-depth analysis was conducted. The results showed that there are multiple underlying reasons for the decisions made at this early stage and that there are some common patterns of decision drivers among the interviewed IT Managers. For instance, most projects are still motivated by a desire to achieve efficiencies or cost savings, their potential tends to be assessed using cost benfit analysis, and packaged software solutions along with consultancy services are widely employed in solution development and delivery.

Drawing on the results as well as prior research, an 'IT Project Pre-Initiation Decision Framework' is proposed to assist IT Managers and others in their evaluation of rationales during the preliminary project initiation decision-making process. This multidimensional matrix evaluative framework is intended to assist IT Managers in ensuring the cogency of rationales with an ability to make objective appraisals. In order to justify the proposed approach as a universal evaluative framework, it is necessary to conduct in-depth and longitudinal case studies from different perspectives. Future research is also needed in identifying to what extent project initiation decision(s) might lead to successful or unsuccessful project outcomes.

Chapter 1: Introduction

1.1. Background

In this information technology-centric era, the effective application of information and communication technologies (ICT) has become crucial to the operation of many organisations, and the management of systems and technologies contributes, positively or negatively, to the lifeblood of businesses and other entities. Information technology (IT) management in both private and public sector organisations has become increasingly important due to highly competitive and time-constrained markets, the ongoing advancement of the underlying information and communication technologies, and larger-scale changes such as the globalisation of organisational activities. Therefore, the increasing pervasiveness of technologies, applications and information systems (IS) used in every aspect of operation has become the norm in contemporary organisations.

Furthermore, the competitive advantage of some organisations is heavily dependent on systems and technological sophistication, for example, online banking services. In some business models, the use of advanced technologies and software applications is at the very heart of the business which in turn contributes to the success of the host organisation. For those businesses in which technology is a backbone, or heart, of the business, poor and unreliable systems can adversely affect organisational stability. In essence, whether technologies and systems are core functions or support functions of an organisation, the benefits and costs of technological and systems developments can be substantial.

Generally, IT and IS development and adoption initiatives are implemented via projects (Cadle and Yeates, 2008); therefore, effective management of such projects plays a vital role in today's organisations. Not only are technology and software implementation projects often expensive, they also require time, budget and human resource commitment. The completion of these projects successfully, in a timely manner, within a specified budget, and meeting the users' requirements is known to be challenging. Beyond the technological

challenges, also of influence are major contextual factors. The need for and impact of technology advancement and the adoption of emerging technologies and systems may be different in organisations with different cultural and political backgrounds. Therefore, IT and IS projects are collectively difficult to exemplify and theorise. Just as technologies evolve, the people who use IT and systems directly or indirectly, and the organisational processes that constrain or are constrained by the development of these systems, must also be considered, and managed. In IT and IS project management, then (referred to from this point as ITPM or IT project management), there are many visible and invisible factors to be taken into account, representing multiple scenarios of past, present and future use of technologies, systems and processes. In light of this, not surprisingly, IT and IS projects continue to fail globally at an alarming rate. Initiatives that provide insights into ITPM therefore have the potential to contribute significantly to organisational success. The research described in this thesis is one such initiative.

1.2. Rationale for the Study

Typically, there are four main stages in IT and IS projects, namely initiation, planning and implementation, monitoring and controlling, and completion. The focus of the research conducted and reported in this thesis is on the first stage: initiation. Individual managers who initiate or propose a project are clearly influential in the decision-making process around that project. Generally, in medium- and larger-sized organisations, IT Managers (or Chief Technology/Information Officers (CTOs or CIOs)) write an associated project proposal including requests for budget approval which necessarily highlight the need to implement such a project. The proposal normally includes a statement of the problem/opportunity, their recommended method(s) of addressing the problem/opportunity, and the anticipated benefits that would accrue from the expected outcomes of implementing the proposed project. Therefore, if the origin of a project is retraced, it should be possible to identify that it was initiated and implemented for certain reasons, and each ‘go/no-go’ decision may be made based on potentially many factors.

Once a project proposal is approved and signed off, the project is progressed towards implementation. Project team members as well as the project manager are expected to work to successfully deliver the project outcomes on time, on budget and by meeting user requirements. Some projects are completed successfully while others face a complete or partial failure. In both successful and unsuccessful projects, post-implementation reviews are generally conducted to assess whether, and to what extent, a project's objectives were met, to evaluate the effectiveness of the project approach, and to generate lessons learned. These reviews are often undertaken with an emphasis on project execution and outcomes (Cadle and Yeates, 2008), and so focus on benefits, effectiveness and efficiency, and constraints and issues encountered during the project.

However, looking more broadly, a failed project may be testimony to wrong or poor decisions being taken at the initiation stage. Thus, while aspects of a project's implementation may be significantly important to that project's outcomes, the initiation stage and decisions made around it may be no less important. As stated above, every project is initiated for a reason, just as every decision made during the initiation stage is based on one or more motivating factors. If these early decisions are wrong or poor, subsequent project stages may be at risk. Therefore, the underlying reasons that influence ITPM decisions during project initiation establish a foundation for that project. A retrospective review of the pre-project initiation stage is, however, a most uncommon assessment in many IT and IS project environments in practice.

In the ITPM literature, factors influencing project success and failure have featured prominently in relevant research agendas for some time. In spite of this attention, IT and IS projects continue to fail and cost organisations millions to billions of dollars on a global scale. New Zealand is not immune to such outcomes. As McLeod, MacDonell and Doolin state, "In New Zealand, there have been a number of high profile IS failures, including the multi-million dollar abandonment of major projects in the government and health sectors" (2004, p.1). As projects have continued to fail, the research base in IT management and ITPM related to success and failure has similarly grown. By conducting surveys and case studies, the research literature reveals the findings of success and failure stories, giving insights into critical factors and the potentially causal relationships between a particular practice and project success; and proposing frameworks, disciplines and guidelines for more

effective management. The majority of this literature focuses on the post-initiation stages and many project management guidelines prominently emphasise the 'how to' aspect. In contrast, literature on project initiation is scarce, and in-depth research on initiation decision factors is close to non-existent.

In summary, in practice it appears that there is a deficit in the review of project initiation factors that influence ITPM decisions. Further explanation of this issue is presented in Chapter 2 along with the associated literature. Likewise in the research literature, there is a research gap at the project initiation stage particularly concerning the reasons underlying initiation decisions. To re-iterate, such decisions may be made based on many motivating factors - financial, strategic, economic, and others. Decisions regarding which projects to undertake, how they should be conducted, and by whom, are all ultimately important in that they will impact the organisation, potentially positively or negatively. Most importantly, then, uncovering the 'why' factor at every decision point is crucial for organisational learning. Some projects may be initiated based on decisions derived from self-belief and self-assessment of problems and opportunities, individual perceptions and experiences. In some instances, managers may make decisions subject to (unconscious) bias, consciously or unintentionally self-justifying the rationale for a project. On the other hand, other projects may be initiated after the careful conduct of a range of formal processes and assessments. The intent here is to systematically investigate the rationale and motivating factors behind decisions taken regarding IT and IS project initiatives. The aim is to explore how IT and IS managers make decisions around project initiation and what factors drive such decisions in the real world. It is contended that by recognising and understanding the underlying factors that drive IT and IS management decisions regarding project initiation it may be possible to identify various key dimensions that should be considered in all such projects.

1.3. Objectives of the Research

Drawing on the above, the intent of this research is to investigate the decision-making that occurs around IT projects, specifically in relation to their initiation. In this research, several

aspects of project decision-making are probed – for instance, why a project is to be undertaken, what is to be achieved, how the project is to be managed and who is to be involved. This study intends to explore the reasons behind and the factors influencing IT and IS management decisions relating to a range of project types e.g., software selection; systems development, customisation and implementation; outsourcing; technology selection; and the adoption of standards and frameworks; but excluding IT procurement and recruitment. Therefore, this research has the following overall objective:

'*To explore the reasons underlying IT project initiation decisions and patterns of influencing factors'.*

The following research questions are posed in order to achieve the research objective:

- What factors drive ITPM initiation decisions and in which situations do IT and IS managers initiate projects?
- Are there any common patterns or any significant differences of decision drivers across IT and IS managers?
- Can the IT project initiation decision process and its factors be modelled?

This research is conducted from an interpretivist foundation with the objective of the proposed work being pattern identification through interview analysis. It is an exploratory research endeavour, intended to discover any patterns in attitudes and opinions as well as commonly perceived problems and opportunities.

A second-level objective of the research is to contribute useful insights to the IT and IS practitioner community and to potentially enable better decisions to be made in the future. The collection of data from multiple organisations should support the discovery of patterns and inconsistencies regarding approaches used at the beginning of projects. The IT and IS project management research community should also benefit from this work – while some research has been undertaken regarding decisions made *during* projects, especially under escalation, little work has been targeted to the decisions made during project initiation.

1.4. Scope of the Research

In order to establish the boundaries of applicability for this research, it is important to specify the scope of the research and to clearly define inclusions and exclusions.

1.4.1. In Scope

This research is focused primarily on IT and IS projects undertaken in medium- and larger-sized business organisations operating within New Zealand (NZ). While the definitions of organisation size vary from country to country, the outcomes of this research may also benefit the IT community in other countries for organisations that are of sufficient size to have an internal IT function headed by an IT Manager, CIO or CTO. In this research, the term 'IT Manager' is used from this point throughout the thesis to represent all such roles. An IT Manager means a person who initiates and proposes an IT or IS project and/or a person who is responsible for implementing a project by selecting a suitable solution to a stated problem or opportunity. Therefore, the term 'IT Manager' represents a range of other related roles including IS Managers, Project Managers, Project Sponsors, System Consultants and Enterprise Architects. The term 'IT project' refers to all information systems and technology implementation projects, software development projects, IT infrastructure-related projects, systems or data integration projects and IT process-related projects.

1.4.2. Out of Scope

Small organisations are excluded from this study. In small organisations, project decisions may be made based principally on availability of limited resources. For example, when there are very limited human resources in terms of project team members, an organisation may have no choice but to rely on external consultants. Similarly, due to the small size of such organisations the technological solution selected may necessarily be chosen from a limited

range of options. Finally, small organisations may not be able to apply full due process in their decision-making, due to inadequacies in expertise. As stated above, among other aspects this study intends to investigate the 'why' factor of IT Managers' decisions. Limited variety of choices and/or availability of resources may constrain the options open to those working in small organisations. Therefore, the information sought (that is, motivating factors behind decisions) from small organisations may not return sufficient insights into understanding the underlying reasons and rationale for project initiation decisions.

In addition, as this study intends to investigate the factors that drive IT Management decisions around project initiation, consideration of project outcomes is not included in this research. That is, the association between decisions and successful or unsuccessful projects is not addressed here; such relationships may be suitable subjects for future research directions. The primary reason for not addressing such issues here is to gain the co-operation of organisations. Explicitly connecting decision-making to outcomes, especially for projects considered unsuccessful, may discourage organisations from taking part. Another reason for not including project outcomes in this initial exploratory study is that different organisations measure/define project success differently. The common success criteria of 'on time, on budget and on scope' may not be the measurement criteria used in some organisations. Moreover, success definitions may be better considered in the eyes of the various stakeholders, or may depend on the types of project rather than the decisions made around initiation. Therefore, whether projects are successful or fail in relation to initiation decisions is out of scope in this research.

IT hardware procurement projects and IT recruitment projects are not considered in the study. IT hardware procurement projects may be dependent on the type of industry or on regulatory or other requirements imposed on organisations. Similarly, IT recruitment projects are also reliant on conditions in and the immediate requirements of individual organisations. As these compulsory situational factors are unavoidable in these types of projects the factors at play may not faithfully reflect the 'why' factor – the reasons underlying individual IT Managers' decisions from a variety of options. Therefore, they are excluded from this research.

1.5. Intended Research Approach

As stated above, this research is an exploratory study within an interpretivist framework. This study utilises semi-structured interviews and the repertory grid method to capture, represent and analyse the views of IT Managers. Detailed explanations of the interview and repertory grid method are elaborated in Chapter 3. However, given the exploratory nature of the research, the use of one-on-one in-depth interviews with managers is deliberately intended to result in a smaller but richer data set than might be obtained from a survey method. Similarly, a merit of the repertory grid method is that it permits interviewees a degree of flexibility in expressing their views.

1.6. Structure of the Thesis

The structure of the thesis is as follows.

Chapter 1 briefly introduces the importance of information technology and systems in contemporary organisations and highlights the need for effective management of technology projects. In addition, the rationale for the study is initially highlighted with gaps identified both in practice and in the research literature. The boundaries of the research are then identified and the reasons for not including some related perspectives in the research are explained. Furthermore, the main objective of the research is revealed and the research questions are introduced.

Chapter 2 presents background information regarding IT projects and IT and IS project management (ITPM) via a literature review of ITPM and related research. In this chapter, relevant aspects of ITPM are explored and the prior literature is critically analysed by identifying gaps and limitations. Motivation for the research is also revealed and the association between the research questions and the review is considered.

Chapter 3 conveys the selected research methodology in this thesis. The background to the research methodology is explained in detail and related literature is reviewed. The reasons for selecting the particular methodology are stated and the application of the methodology in this research is explained.

Chapter 4 reveals the results and findings of the research. Furthermore, an analysis of results is presented using multiple graphical representations. The results, findings and analysis of the findings are then discussed. An 'IT Project Pre-Initiation Decision Framework' is then proposed in this chapter, along with a discussion of its coverage and content.

Chapter 5 concludes the entire thesis along with a statement of the limitations of the research, recommendations for practice and proposed future research directions.

Chapter 2: Background and Related Work

2.1. Introduction

This chapter presents background information regarding IT projects and IT and IS project management (ITPM), addressing prior and current literature on ITPM and software development projects from multiple perspectives. The research gaps in the literature are identified and proposed work in relation to this thesis is presented. The research questions and objectives of this study are then derived and the research motivation is described.

2.2. IT Projects and Project Management

According to the Project Management Body of Knowledge (PMBOK), "a project is a temporary endeavour undertaken to create a unique product or service. Temporary means that every project has a definite beginning and a definite end. Unique means that the product or service is different in some distinguishing way from all other products or services." (PMI, 2000, p.4). Every project therefore has a start and end time between which defined work is performed by an assigned project team towards achieving an overall objective or a specified goal, within a controlled budget. According to the Project Management Institute (PMI), a project team may range from a single person through to human resources from cross-organisational boundaries. Projects are usually set up to achieve a goal which supports, fulfils and/or aligns with overall departmental, functional or organisational strategies and objectives. Thus, projects have distinctive characteristics from day-to-day operational activities; instead, projects are essentially reinforcements of operations and overall organisation. Projects are primarily established to strengthen or improve business activities, strategies and goals, or to solve problems and issues encountered by the entity and/or its units. According to the Project Management Institute's

definition, “Project Management is the application of knowledge, skills, tools and techniques to project activities to meet project requirements. Project Management is accomplished through the use of the processes such as: initiating, planning, executing, controlling, and closing.” (PMI, 2000, p.6).

In previous decades, the utilisation of information technology (IT) was oriented to transactional support and information storage. In more recent times, technology became a support function of organisations and businesses. However, today IT sits at the heart of most organisations, many of which draw competitive advantage from the power of information technology. As Weill and Ross (2004) noted, “…the influence of IT on enterprise performance will continue to grow. Whether an enterprise is focused on efficiency, innovation, growth, customer responsiveness, or business integration, IT has become an essential ingredient for business competitiveness.” (p.viii). Organisation goals, business models and strategies are reinforced or implemented via technological capability. Beyond businesses, not-for-profit firms and government agencies also utilise information technology and rely heavily on its support. According to Heeks and Bhatnagar (1999), cited in Gauld and Goldfinch (2006, p.18), “IT can transform the business of government. The public sector becomes awash with IT-driven reform projects, which place technology at the heart of the change process.”

Given IT occupies such a central role in virtually all organisations, the management of technologies, applications and systems demands close attention in this information-centric era. The development and deployment of often complex and evolving technologies and systems are generally managed through projects. Therefore, an IT project can be defined as; a project that has a constrained timeframe, undertaken to enhance or support the technology and/or systems infrastructure and architecture of an organisation, within a specified budget, carried out by a project team, with an ultimate goal of supporting and/or aligning with the organisation objectives. IT projects may be established to support business strategy, to facilitate operational activities, to equip users and customers with technology facilities, and/or to empower the business and its processes.

These IT projects are typically managed by either an existing operational IT/IS Manager or a specialised IT project manager. Regardless of the specific arrangement, IT projects are usually managed and implemented by personnel who have knowledge of or experience in

project management (Cadle and Yeats, 2008). The nature and complexity of IT projects can vary depending on their scale and complexity, as well as the internal and external non-project factors that are relevant at different points in time (McLeod & MacDonell, 2011). In what is an ever-changing technology environment, IT managers often face the prospect of managing challenging projects.

Cadle and Yeates (2008) have summarised and compiled nine contexts for Information Systems (IS) Project Management. They are:

- Software development
- Package implementation
- System enhancement
- Consultancy and business analysis
- Systems migration
- Infrastructure implementation
- Outsourcing (and in-sourcing)
- Disaster recovery
- Smaller IS projects.

With the emergence of new technologies, and the systems they enable, sub-categories of the above project contexts have also arisen. For example, the increasing utilisation of cloud computing services and software-as-a-service (SaaS) solutions sit within the context of outsourcing projects. Subsequently, due to the nature of externally hosted solutions, organisations face a need to integrate their systems (both local and distant) in terms of data and information flow. As a result, data integration projects are potentially a required sub-category of system enhancement projects.

Accompanying the increasing complexity and diversity of technologies and systems has been a consequent increase in the range of software development and project management methods, methodologies and frameworks. Examples are PRINCE2 (PRojects IN Controlled Environments), Agile variants including SCRUM and XP (Extreme Programming), RAD (Rapid Application Development), RUP (the Rational Unified Process), DSDM (Dynamic System

Development Method), FDD (Feature-Driven Development), to complement the more established Waterfall and Spiral approaches. The availability of such a range of development and management options places greater pressure on the IT project manager in terms of decision-making during project initiation.

2.3. IT Project Outcomes

Given its exploratory intent and the need to secure organisational engagement, the primary research described in this thesis does not explicitly relate IT project initiation decisions with project outcomes. It remains important to consider this relationship in general, however, as prior literature has established that project success and failure are affected by a diverse range of managerial as well as technical factors, some of which are relevant to decisions made during project initiation.

As described above, the management of IT projects is challenging for a variety of reasons. Overcoming those challenges and delivering positive outcomes can create significant value; succumbing to the challenges can similarly lead to significantly detrimental consequences for organisations. The impact of a failed project can be immense depending on the criticality of the project's contribution to wider organisational goals, strategies and operations. However, it is widely acknowledged that IT projects can and do fail, with IT project failure rates featured (sometimes rather sensationally) in a range of scholarly and more journalistic publications. Nicho and Cusack (2007) note that IT spending in organisations has reached what they describe as an alarming rate. They may well be correct if the observation of Samizadeh, Mamaghani & Saghafi holds: that among large IT investments, at least 22% of those investments are wasted (Samizadeh, Mamaghani & Saghafi, 2011).

Wright and Capps (2010) have summarised some of the prior literature addressing IT project failures. This summary is depicted here as Table 2.1.

Reported by	Report Year	Survey Period/ Year	Surveyed organisation/Country	Failure/Success Rates
The U.S. General Accounting Office	2004	12 years	US	More than US$200 billion invested only returned a few meaningful system results
SIMPL and NZIER	2000	1980s and 1990s	-	Above 50% failure Success rate was only 55% for projects under US$750,000; With budgets over US$10 million, no projects were successful
Wilcocks	1994	1994	British public sector	20% of expenditures were wasted; a further 30% to 40% did not produce perceivable benefits
Johnson	1995	1995		Only 16% of projects were completed on time and within budget (on a survey population of 8,000 IS projects)
James	1997	-	U.S. Internal Revenue Service	Cost taxpayers $50 billion a year [mainly defined as revenue forgone]
Collins and Bicknell	1997		Public sector, the United Kingdom	£5 billion
Collins et al.	1997		The Wessex Health Authority	Information Systems Plan was cancelled after more than £43 million had already been spent
-	-	1999	The New Zealand Police	Project abandoned at a cost of more than NZ$100 million
U.S. Standish Group		2001		Success rates were as follows: 59% in the retail sector, 32% in the financial sector, 27% in manufacturing, and 18% in government; Overall, the average success rate was 26%; In all, 46% of the projects had problems, including being over budget, behind schedule, or delivered

				incomplete; 28% failed altogether or were cancelled, and cost overruns averaged nearly 200%
Rainer and Turban	2009	2002	National Health Service, the UK	£11 Billion – still considered as a failure
The Economist	2002		The British Post Office, the Department of Social Security, and the computer company ICL	Abandoned after three years and a cost of £300 million
The Economist	2002	2002	United Kingdom, air-traffic support system	Six years late and £180 million over budget
Auditor, 2002	2002		Canadian Firearms Program	Initial estimates of C$113 million to more than C$1 billion, an overrun of almost 900%
Georgiadou	2003			Five out of six corporate projects are considered unsuccessful, with one-third cancelled. Of the two-thirds that were not cancelled, price and completion times were almost twice what had originally been planned
Dalcher and Genus	2003		Public and private sectors in the United States	US$150 billion was wasted per annum
Dalcher and Genus	2003		Public and private sectors in the European Union	US$140 billion
U.S. Standish Group	2004	2004		A success rate of 29%,with 53% of the projects having problems, and a failure rate of 18%
The Royal Academy of Engineering and the British	2004			84% of public sector projects resulted in failure

Computer Society				
U.S. Standish Group	2009	2009		Only 32% of all projects succeeded, while 44% were problematic and 24% failed
Knorr and US GAO	2005 & 2006 respectively		The FBI Trilogy Project	Among the best known IS project failures
Bozman	1994		The California Motor Vehicles Driver Licensing System	Among the best known IS project failures
Montealegre & Keil	2000		The Denver airport baggage handling system	Among the best known IS project failures
Collins et al.; Corner & Hinton; Georgiadou; Heeks; Iacovou; James;	1997; 2002; 2003; 2002; 1999 & 1997 respectively			20% to 30% of all IS Development projects are perceived as overwhelming failures, while 30% to 60% are partial failures

Table 2-1 Summary of IT Project Failure literature (Wright and Capps, 2010)

An oft-quoted source of information on the state of the IT sector over the last 10-15 years is the Standish Group. According to Group's 2001 report, "Cost overruns have gone from 189% over the original cost estimates in 1994 down to 45% in the 2000 study. In 1994 required features comprised 61% of the final product. This year's [2000] research shows 67% of the required features and functions" (2001, p.1). Reference to the Standish Group's so-called CHAOS reports has been made by several studies (e.g. Brock, Hendricks, Linnell & Smith, 2003). Tesch, Kloppenborg and Frolick (2007) referred to the reports, stating that only 28% of projects were completed on time and on budget, while 18% were cancelled and 51% were completed over-budget, behind schedule and under specification. This situation is enduring: as can be seen from more recent Standish Group reports, cited by Dominguez (2009) in www.projectsmart.co.uk, the IT project success rate has not improved to any substantial or consistent degree over the two decades (see Table 2.2). Thus in spite of the many new technologies and new methods at IT managers' disposal (or even, perhaps, because of them), it would appear that ITPM remains extremely difficult. The persistent nature of this record (notwithstanding questions over the accuracy of the figures (see, for example, Sauer, Gemino and Reich (2007)) provides part of the motivation for the work conducted here, that addresses the decisions taken at the very beginning of IT projects.

	1994	1996	1998	2000	2002	2004	2006	2009
Successful	16%	27%	26%	28%	34%	29%	35%	32%
Challenged	53%	33%	46%	49%	51%	53%	46%	44%
Failed	31%	40%	28%	23%	15%	18%	19%	24%

Table 2-2 CHAOS Report Findings by 'The Standish Group'

Regardless of the varied definitions of project success used by different groups of people and the different forms of measurement, the reality is that IT projects continue to fail. Thus, there has been significant research attention directed to understanding how and why these failures occur. In particular, there is a significant body of literature focused on critical success and failure factors in IT project management, from multiple perspectives. While it is beyond the scope of this thesis to consider all of these factors in detail, a few are cited here as illustrative of the extant body of literature.

Achterkamp and Vos (2008) conducted a meta-analysis of the project management literature, assessing forty- two publications in the process. Their aim was to investigate the use of the stakeholder notion in that literature. After their analysis, they concluded that "It is therefore by no means a far-reaching stance to consider stakeholder involvement as a critical success factor in managing projects." (p. 754). Seiler, Lent, Pinkowska and Pinazza (2011) argued that project managers' motivation is imperative in any project and the influencing factors that drive project managers' motivation are central points in influencing project success. Napier, Keil and Tan (2009) revealed that project managers' skills contribute to the success of information technology projects and highlighted two particularly relevant skill categories, namely personal integrity and team development. As cited in Napier, Keil and Tan "In a survey of 42 software projects, Verner & Evanco (2005) found a significant, positive relationship between project success and the IT project managers' ability to understand customer problems, articulate a clear vision, communicate well with employees, control the project and reward the staff." (p.256). Similar findings were suggested by Salmeron and Herrero (2004) who investigated the relative importance of critical success factors (CSFs) by using the ranking approach embedded in the Analytical Hierarchy Process (AHP). They confirmed that the 'right' information needs, users' interest and executive sponsor's support are the most important critical success factors. In general these and other success factors must be considered and 'in place' from the very start of a project.

Similarly, in relation to project failures, researchers and professionals have reported various critical factors. For example, Jani (2008) pinpointed the problem of 'escalation of commitment', the flawed attempt to fix a failing project by pouring more resources into it. Jani (2008) also stressed the central role played by project managers in this regard, in that instead of recommending an alternative, some project managers have been known to continue to undertake a failing project. Verner, Sampson and Cerpa (2008) analysed the literature on project failure to arrive at the following (lengthy) summary list of project failure factors (several of which are relevant in terms of decisions made at the time of project initiation):

- organizational structure,
- unrealistic or unarticulated goals,

- software that fails to meet the real business needs,
- badly defined system requirements, user requirements and requirements specification,
- the project management process, poor project management,
- software development methodologies, sloppy development practices,
- scheduling and project budget,
- inaccurate estimates of needed resources,
- poor reporting of the project status,
- inability to handle project complexity,
- unmanaged risks,
- poor communication among customers, developers and users,
- use of immature technology,
- stakeholder politics,
- commercial pressures,
- customer satisfaction,
- product quality,
- leadership, upper management support,
- personality conflicts,
- business processes and resources,
- poor, or no tracking tools.

Typically, IT/IS projects' success or failure has been measured with the traditional benchmark of 'On time, on budget and on scope'. However, some have argued against the traditional method of evaluating and assessing project success and failure (Barclay, 2008; Rodriguez-Repiso, Setchi & Salmeron, 2007; Brock, Hendricks, Linnell & Smith, 2003; Savolainen, Ahonen & Richardson, 2012). Jugdev and Miller (2005) stated, as cited in Barclay (2008), "the triple constraint assessment method limits the view of project management to

that of providing tactical value not strategic value because it does not include the necessary links to the project's product/service" (p.332). Similar comment was made by Dilts and Pence (2005) that the standard measurement of cost and time is not related to 'perception of failure'. Procaccino and Verner (2006) also examined project managers' definitions of successful projects. Therefore, some studies have attempted to refurbish the definition of project success. For example, Fan (2010) referred to a successful IT project as having "finally achieved the expected objectives". Fan also summarised project success as follows: "In most cases, if the customer, end-users, project manager and developers feel that their own expectations are satisfied or even exceeded, this project will undoubtedly be considered to be a successful one" (p.487).

Therefore, while the definition of project success is itself under debate, the analysed factors of project success and failure have also been recognised as multidimensional constructs. Just as these critical success and failure factors are considered based on subsequent review of a project, it is also an interesting notion to analyse the *antecedent* determinants of a project. The following section describes the antecedent stage of a project: initiation.

2.4. Project Initiation

In general, there are four main project stages: initiation, planning, implementation, and completion (or closure). The project implementation stage is often subdivided into execution and controlling stages. The process linkages between each stage (according to the PMI) are as shown in Figure 2-1.

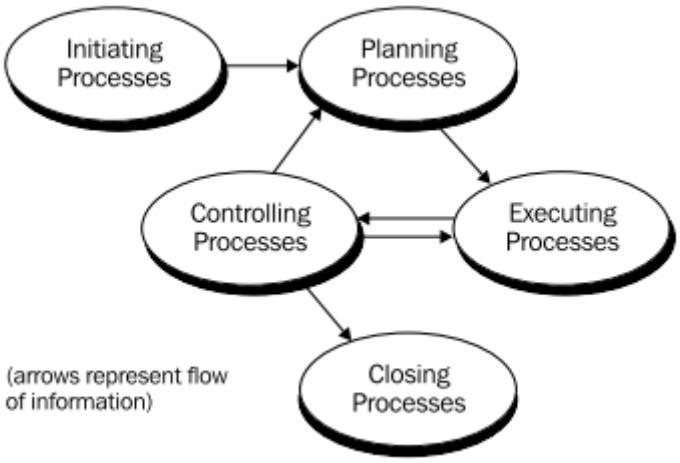


Figure 2-1 Links among project stages

(PMI, 2000, p.31)

Once a project has been initiated a subset of the other processes follows. In principle, planning takes place before a full commitment to the project is made, but already a degree of commitment and momentum has been established based on the initiation stage. Beyond that, the three remaining steps of controlling, executing and closing processes generally all occur, with multiple cycles between planning, executing and controlling activities. As noted above, in reality IT managers may continue to pursue troubled projects even though there are clear signals of problems or detrimental issues. Rather than abandoning these projects, more resources may in fact be poured into them in an effort to 'bring them back on track' and commitment may actually be escalated in these failing projects (Heng, Tan & Wei, 2003). The reasons may be personal and/or political, and can potentially be traced right back to project initiation. The fact is that projects are initiated for a reason and, more often than not, someone, an individual, is charged with driving each initiative. After all, without a 'champion' the final outcomes might never be accomplished. Therefore, initiation plays an integral role in the project life cycle in that the decisions made in this stage have an influence on the stages that follow. Accordingly, establishing a formal project initiation document is an essential project step which can usefully set out the justification for project initiation. Failure to document the project initiative reasons can lead to an unclear business case, subjectively assessed project endeavours and neglect of project root causes. The following sections describe the importance of decision-making and the motivating factors at play in IT project management, particularly during project initiation.

2.5. Decision-making in IT Projects

In contemporary business organisations each business unit has particular needs in terms of specialised information systems, and so business IT and IS projects are generally driven and implemented by the relevant business unit(s) (e.g. procurement software for the purchasing department, financial systems for the finance division and HR information systems for the Human Resources service). In light of the drive to secure user buy-in, such projects are generally business-led and are usually initiated (semi-)autonomously by these business units. Thus, the characteristics of and motivations underpinning these IT projects may differ; similarly, the decisions made for these projects may also vary.

Heng, Tan and Wei (2003) studied the de-escalation of project commitment from a cognitive perspective. Their study highlighted the decisions that trigger behaviours, and the social and psychological factors that either influence or facilitate the de-escalation of commitment. In addition, Pan (2005) researched IS project abandonment particularly in relation to stakeholders' roles in decisions. Pan pointed out that abandonment can be seen in a positive light and proposed a framework to assess the stakeholder roles and role conflicts in project abandonment decisions. Keil, Wallace, Turk, Dixon-Randall and Nulden (2000) pointed out, "…when managers do not formally assess risks they may underestimate them and unknowingly make risky decisions." (p.146). Thus, managers may make unintentionally risky decisions as well as consciously biased decisions. As Dilts and Pence (2005) revealed, "It is well known that individual decision-makers have biases; we are interested in sunk cost bias, i.e., the tendency to add resources to a failed project because of the amount of resources already consumed. Such a bias is encapsulated in the expression "In too deep to stop."" (p.379).

2.6. Preliminary Decision Making at Initiation

IT projects are often characterised as complex, requiring sensitive decisions throughout the project life cycle. To avoid later difficulties and to deliver the project successfully, the

decisions made in the initiation stage are significant. However, researchers have seldom focused on the assessment of decisions around project initiation. Guah (2008) conducted a case study of IT project development in the UK National Health Service, with a particular focus on how decisions are made in regard to IT projects. His findings supported those evident in Agrawal, Kishhore, Rao and Hendy's earlier work (2005), stating that "...human decision-making is subjected to numerous biases, many of which operate at a subconscious level." (p.540). His findings further suggest that managers may engage in self-justification and (as noted above) may commit additional resources into projects even when the projects are actually poorly managed. In such instances, it is not uncommon that managers are unwilling to admit that their earlier decisions were wrong (Guah, 2008). This has also been pointed out by others, including Whyte (1986), Staw & Ross (1987) and Ross & Staw (1993) cited in Wright and Capps (2010).

Shim et al. (2009) note "…if a decision-maker's personal motivations are examined, a different explanation for risky decisions can be found." (p.1291). In some circumstances, decision-makers may be reluctant to explain or justify the rationale for the decisions made, or project managers may simply embrace projects without assessing the influencing factors at project initiation. That is, project managers are assigned to implement projects that have been approved and signed off. Therefore, the project manager's job is to execute the project and deliver the project outcomes successfully, not to assess the drivers of preliminary project decisions. According to Nel et al. (2001), as cited in Seiler, Lent, Pinkowska and Pinazza (2001, p.61), "motivation energizes and guides behavior toward reaching a particular goal and is intentional and directional." Thus, there are motivating factors and underlying reasons that influence the project initiation decisions, a notion which has also been identifited by Shim, Chae and Lee (2009). Shim et al. referred to Keil's (1995) earlier work as follows: "…in cases of IT investment, decisions are more likely to be dependent on the decision-maker's intuition or personal motivation, because the formal decision-making process on IT investment is not well established in organizations." (p.1291). Thus, the decisions taken around project initiation may stem from a wide range of reasons and motivating factors, some of which may relate to the decision maker as much as they do to the project, the technologies and so on.

2.7. Coverage and Gaps in the Literature

Decision making as a subject of research has been actively examined in various academic disciplines (Bourgault, Drouin, Daoudi and Hamel, 2009). Likewise, IT project management has been a regular topic of research interest in recent decades as the complexity of systems development and use in organisational contexts has increased and as projects related to the development of such systems have become increasingly complicated and challenging.

Much of the IT project management literature is focused on project implementation while there has been some attention given to project planning (e.g. Jüngen and Kowalczyk, 1995; Shoval and Giladi, 1996; Muralidhar and Santhanam, 1990). The recent emergence of cloud computing, Infrastructure-as-a-Service (IaaS), Software-as-a-Service (SaaS), Datawarehouse-as-a-Service (DaaS) (and other variants) has provided additional incentive for IT project management research. Similarly, the increasing availability and adoption of open source software projects in this context have become of interest; Wang (2012), for instance, reports survival factors for free Open Source Software projects.

New frameworks and models have also been proposed to measure project performance: Samizadeh, Mamaghani and Saghafi (2011) have recently proposed a new framework for evaluating IT projects (combining aspects of IT-BSC and COBIT). Similarly, Nicho and Cusack (2007) proposed a CoBIT-GQM measurement framework, which is an integration of the CoBIT framework and Goal-Question-Metrics (GQM), to evaluate the effectiveness or performance of information systems. Other studies have considered project management from an IT governance perspective including the role of boards (Buckby, Best & Stewart, 2005) and the impact of IT and business (mis)alignment. Outsourced IT projects and associated risks have also been under particular scrutiny in the literature (Na, Simpson, Li, Singh & Kim, 2006). The popularity of IT outsourcing in late 1990s (Nakatsu and Lacovou, 2009) and their subsequent failures have spawned a number of research agendas from different perspectives. For instance, Richardson, Casey, McCaffery, Burton and Beecham (2012) researched global software engineering teams from a socio-technical perspective. As these IT outsourced development projects have failed to meet their objectives, many

scholars have also researched their risk factors (Nakatsu and Lacovou, 2009), critical failure factors and the consequences of outsourced IT projects.

From another perspective, Jiang and Klein (2000) examined the relationship and linkages between software development risks and systems success. Their findings suggest that different project risks impact on different perspectives of system development. For example, "lack of user experience and intensity of conflicts are also significantly related to satisfaction" (p.9). From the user perspective, Chen, Liu and Chen (2011) also revealed that user influence and user responsibility directly and indirectly impact on project performance, and managing user participation effectively can increase the likelihood of project success.

As far as the project management methodology perspective is concerned, many scholarly publications have compared the various project management methodologies and have critically analysed each method's suitability in the IT management context. There appears to be a degree of consensus that 'one size does not fit all'. For instance, Sarantis, Smithson, Charalabidis and Askounis (2010) identified weaknesses in conventional project management methodologies particularly for e-government projects. Some research advocates alternative methodologies and the effectiveness of adopting a particular methodology such as an agile variant (Barclay, 2008).

Other studies have instead focused their attention on the managers themselves, considering the competencies, skills and experiences required of project managers as well as team members (Verner, Overmyer & McCain, 1999; Napier, Keil & Tan, 2007; Taylor & Woelfer, 2009). Project managers' performance on projects has also been analysed by Chen and Lee (2007), who went on to propose a performance evaluation model which is a combination of leadership behaviours and managerial practices. Ali and Money (2005) confirmed that there is a strong relationship between effective utilisation of project management software and project managers' performance and project success.

However, others have argued that projects failures are more commonly associated with the inability to meet user expectations, unrealistic expectations and changing user requirements. Thus, there is an extensive body of research literature addressing aspects of user requirements and user involvement. Petter (2008), for example, reported that user involvement, leadership and trust are three important strategies in managing user

expectations. Akgün, Keskin, Byrne and Imamoglu (2007) also noted the importance of trust among project team members, the past experiences of the team members and team empowerment in software development projects. Similary, Dorairaj, Noble and Malik (2010) highlighted the importance of trust in distributed agile projects and argued that trust can be a determinant of success or failure of those projects. Iden, Tessem and Päivärinta (2011) researched problems in the interplay between development team and IT operations personnel in software development projects, using a case study of 42 Norwegian IT experts. Their findings highlighted the importance of cooperation and communication between the two parties, noting that a lack of such processes can impact on final system solutions. The importance of IT human resources management (relating particularly to staff turnover and the retention of key IT personnel) has also received substantial attention in ITPM literature, and models for assigning human resources to software development teams have also been proposed (e.g., Andŕe, Baldoquín and Acuńa, 2011).

Finally, there is some coverage in the project management literature around project managers' decision styles as well as proposed decision models. For instance, Fox and Spence (1999) researched project managers' decision making styles in terms of brain dominance. In later work, Nguyen (2005) proposed a tool called the 'decision model' which can assist management in software development projects. Similar developments can be found in an earlier study conducted by Anandalingam and Olsson (1989).

In summary, there has been considerable research attention given to IT project management as alarming failure rates show little sign of abating. In terms of factors relevant to IT project decision-making, in-depth studies and extensive research have been conducted from various perspectives, addressing risk management, vendor management, human resources management, CSFs, project management methodologies, software requirements engineering, outsourced IT projects and others. Nevertheless, research on IT project management decisions *during project initiation* is still relatively scarce; in particular, the 'why' factor of project initiation decisions has received minimal attention. Jani (2008, p.730) states: "Literature on IT project management has focused on identification and classification of project risk factors. However, the impact of these risk factors on project decision making has not been investigated."

Thus, there is a need to 'dig deeper' in order to understand the underlying drivers of project initiation. Even though some research has touched on factors relevant to IT project decisions, there remains a lack of in-depth research addressing this topic. Motivated by the rationale in Chapter 1 and informed by the summary of the literature review presented above, this research explores and investigates the underlying factors that drive or contribute to management decision-making during the initiation of IT projects. This research intends to explore the IT projects' antecedents; however, it does not intend to investigate whether the projects led to successful or unsuccessful outcomes (as this would entail a separate study in its own right). The following section describes this research endeavour and the research questions and objectives.

2.8. Research Motivation

Projects are managed with the perception that they are being undertaken to meet particular project goals. Implicit in this undertaking is an assumption that the rationale for the project has been clearly established. As described above, however, there is a gap in the literature on IT and IS project management that leads us to question this assumption. Similarly the state of practice with respect to decision-making at project initiation is largely unknown. There may be some unforeseen external circumstances contributing to failing projects such as government legislation changes or the rapid advancement of disruptive technologies. Apart from such unpredictable factors, the drivers underpinning project initiation deserve to be analysed by asking questions such as "What were the main drivers of the project establishment? Is there a robust/concrete rationale(s) for projects being initiated?" "Do primary drivers of IT management decisions provide crucial cornerstones for a solid foundation of a project?" While in practice project teams might well conduct post-implementation reviews, the post-initiation review is less common.

Accordingly, this study intends to explore the very initial steps taken concerning IT Managers' project decisions. As can be seen from Figure 2-3, there are four main project stages, namely initiation, planning, implementation and completion. Before proceeding into the project initiation and planning stages, preliminary project decisions must be taken that

then lead to the project being formally initiated. Clearly these decisions are highly influential in terms of whether or not a project takes place. This study is directed at addressing these issues through questions such as 'Which factors drove these decisions?' and 'What encouraged the project to be undertaken?' The influencing factors and associated decisions might be robust and in the organisation's interest, providing concrete rationale for moving a project forward; or they could be derived from individual self-interest and subjective self-justification.

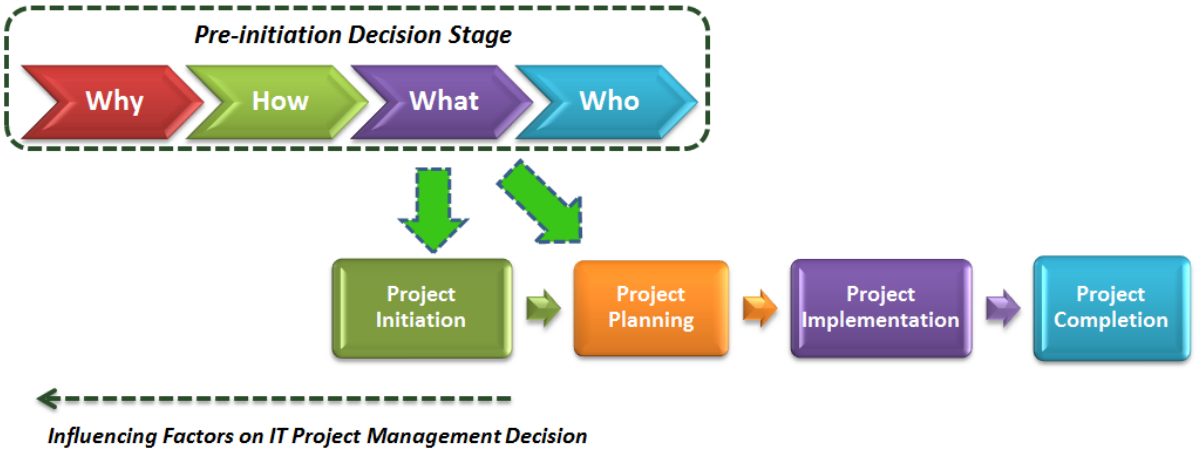


Figure 2-2 Thesis Focus: Project Pre-initiation Decision Stage

Therefore, this research empirically examines the reasons behind and factors influencing IT and IS project management decisions made at the initiation stage relating to a range of project types e.g. software selection; systems development, customisation and implementation; outsourcing; technology selection; and the adoption of standards and frameworks; but excluding IT procurement and recruitment. Thus, this research has the following overall objective: *'To explore the reasons underlying IT project initiation decisions and patterns of influencing factors'*, addressed through the following research questions:

- What factors drive ITPM initiation decisions and in which situations do IT and IS managers initiate projects?
- Are there any common patterns or any significant differences of decision drivers across IT and IS managers?
- Can the IT project initiation decision process and its factors be modelled?

2.9. Summary

In this chapter, past and recent literature in IT project management has been reviewed. To re-iterate the outcomes of this review, while there is a wealth of information systems management and IT project management research spanning the last few decades, research on IT project management decisions at the project initiation stage remains scarce. In the pursuit of understanding primary project motivations, this study intends to fill a gap in the literature on IT project management decisions made around project initiation. The next chapter describes the research methodology applied to achieve the research objective and questions posed in this chapter.

Chapter 3: Research Methodology

3.1. Introduction

In this chapter, relevant aspects of the selected research approach are described. In addition, the use of the chosen research methods in prior project management and information systems research is explored. The research design is then developed in order to address the research questions posed in previous chapters, taking into account ethical issues associated with the selected design. This chapter also sets out the reasons for and advantages of using the selected methods, the planning stages of the applied methodology, the data collection processes and the steps required to transform the data into aggregated results for subsequent analysis and interpretation.

3.2. Research Approach

This study is conducted from an interpretivist foundation with the objective of the proposed work being pattern generation through observation. It is an exploratory research endeavour, intended to identify perceived problems, opportunities and patterns.

The specific purpose of this study is to explore the reasons underlying IT project management decisions around project initiation and any patterns of influencing factors. Such decisions are likely to be made based on various circumstances and many possible factors, which might include organisational, departmental, team and individual IT managers' perspectives on how IT projects should be initiated and implemented. As mentioned in the previous chapter, every decision IT managers make will be influenced from a variety of sources. The intent here is to consider the views of multiple managers across several organisations. Therefore, in order to understand the underlying reasons and different

individual perspectives that might be relevant in a given situation, a research method that accommodates different organisational/project circumstances is required.

In order to fulfil this research endeavour, standard pre-structured methods such as the survey method and structured interviews are not suitable for this study as the characteristics of these methods reflect standardised rather than tailor-made enquiries. In addition, the survey method does not generally enable the researcher to gain an in-depth understanding of the particular phenomenon of interest, and does not enable the researcher to probe into a specific case in detail or in a particular direction. Furthermore, the 'one-pass' nature of most surveys means that the scope of responses must generally be known, and constrained, in advance. If some questions are answered based on respondents' mis-interpretation, from limited choices, then the many other factors to consider or the further explanation that would be required for clarification or understanding cannot be accommodated. In addition, there may be a degree of sensitivity on the part of managers regarding decisions made – an impersonal survey instrument may not provide sufficient reassurance that this sensitivity would be respected.

In using an interview-based method, the desire is that participants 'relax' into the dialogue, so that they feel comfortable even when discussing past decisions that, for various reasons, they now would not make or would even have made differently at the time. According to Galliers and Land (1987), as cited in Hunter and Beck (2000, p.94), "IS research methods must take account of the nature of the subject and the complexity of the real world." Moreover, this study is intended to gather a fully impartial and rich data set instead of answers to potentially leading structured questions. Thus, it was decided to use a semi-structured interview technique, through which participants could articulate their own experiences rather than simply responding to the interviewer's questions. Furthermore, as this study aims to explore and potentially identify patterns in the factors underpinning multiple IT project managers' decisions but based on their situational, preconceived opinions and antecedent experiences, the repertory grid method is also selected for use in this research. The repertory grid method is a technique that can be used to structure the process of interview data collection and/or analysis and is an extension of George Kelly's personal construct theory. Hunter and Beck (2000) noted regarding repertory grids:

> It is considered very important to realize that the emergence of the general commonality, as well as the divergent specificity, was made entirely possible through the employment of the RepGrid technique, for RepGrids support the gathering of research participants' comments in a relatively unbiased manner. It is possible then to analyze the data to indentify emerging themes and, in turn, to use the data to also define these same emerging themes (p.100).

The following section provides a brief background on the repertory grid method followed by a discussion of the application of the method in this research.

3.3. The Repertory Grid Method

3.3.1. Theoretical Background

The repertory grid (RepGrid) technique was first developed by George Kelly in the 1950s in the context of psychological research and is an extension of Kelly's personal construct theory. Kelly originally introduced and applied the RepGrid technique in counselling his clients (Hunter & Beck, 2000). Kelly's psychology of personal constructs is conceptualised by Edwards, McDonald and Young (2009) as "…constructs are personal and …may vary greatly among individuals. Fundamentally, a personal construct is an idea or concept that has been derived from specific experiences or instances of behaviour." (p.786). In Kelly's (1955) original work on personal construct theory, he reveals that "Man looks at his world through transparent patterns or tem-plets [templates] which he creates and then attempts to fit over the realities of which the world is composed." [sic] (p.9). Kelly also decribes that a person may predict an event in advance and then validate the construction as forecasted. Kelly exemplifies this with an example: a man [sic] may interpret his neighbour as unfriendly. He may then validate his interpretation by throwing stones at his neighbour's dog and when his neighbour responds with anger, he may conclude his predicted construction of his neighbour as hostile. Edwards, McDonald and Young (2009) summarised Kelly's personal construct psychology as follows: "Kelly believed that individuals act as

scientists in order to understand their social surroundings: moreover, as people react with the world (and events occur) they continuously construct, amend and reform personal theories and assumptions. In other words, they build a model based upon experience that allows them to make predictions about future behaviour or interactions" (p.786).

The RepGrid method is an interview data collection and/or analysis technique that can assist the researcher to elicit personal constructs and to understand how individuals evaluate or construe the instance of a particular topic (Edwards, McDonald & Young, 2009). When used effectively the method can reduce the potential bias of the interviewer and affords flexibility to interviewees so that they are more able to describe their own interpretation of a specific topic (Hunter and Beck, 2000).The repertory grid method has been employed not only in its original psychological context but has also become popular in a number of study areas such as consumer research, marketing, nursing, clinical practice, management research and information systems.

3.3.2. Characteristics of the Repertory Grid Method

3.3.2.1. Components of a Repertory Grid

The repertory grid comprises a set of rating scales in which an individual rates their own constructs against self-defined elements of a given topic. There are four components in the grid, namely: topic, elements, constructs and ratings (Jankowicz, 2004).The *topic* is a specific issue that falls within the researcher's (or interviewer's) domain of interest and so is 'provided' to the participants. *Elements* are the instances or objects of the particular topic and are the focus of the investigation (Edwards, McDonald & Young, 2009). *Constructs* are the perception or description of how an individual views and differentiates between the elements. *Ratings* allow participants to express their views by rating each element against each construct (Jankowicz, 2004). The length of the rating scale may vary depending on the research. Kelly's original grid used only a 2-point scale. Some may employ a 7-point or 9-point rating scale, while many apply a 5-point rating scale; at the extreme a scale may extend up to 16 points (Edwards, McDonald & Young, 2009). Figure 3-1 depicts an example

provided by Edwards, McDonald & Young (2009) that usefully illustrates the four components of a repertory grid.

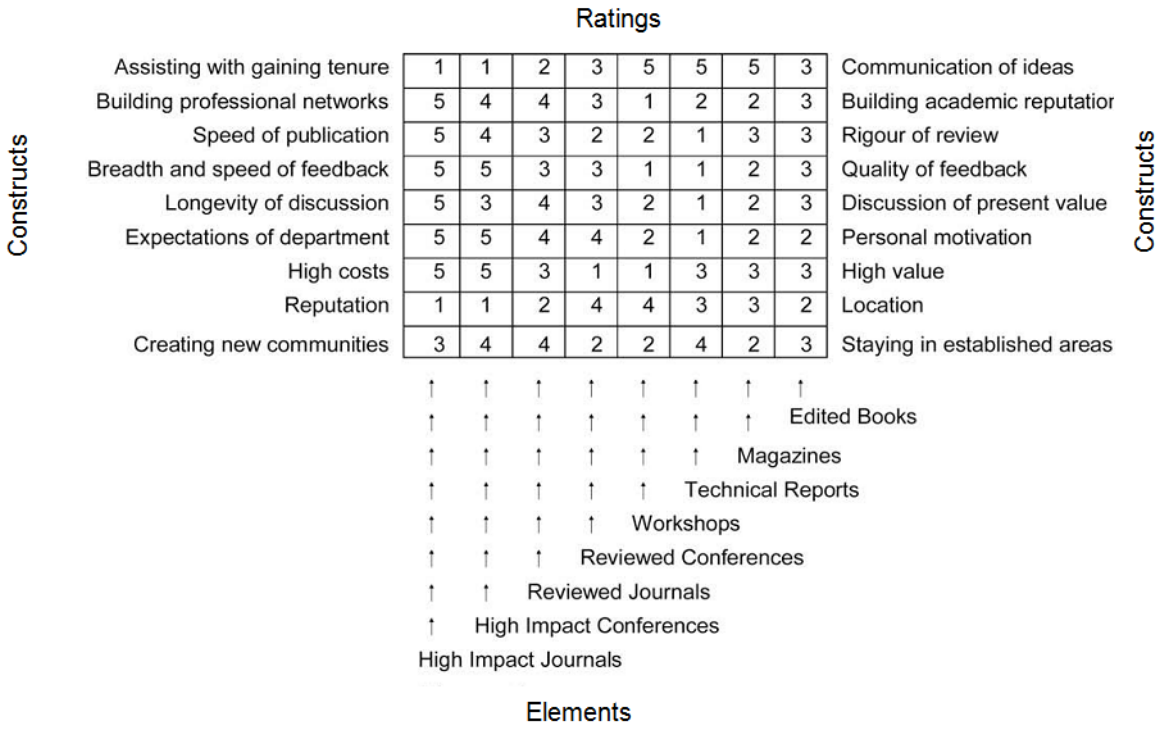


Figure 3-1 An example repertory grid – construing academic publication types

(Edwards, McDonald & Young, 2009, p.786)

In the above example, the elements (columns) represent focused objects/instances and the constructs (rows) illustrate participants' perspectives on the elements. Each rating indicates how a participant views the elements in terms of the constructs, where a rating of 1 means the left hand side of the constructs most pertains to that element, and a rating of 5 means the right pole of the constructs Is relevant to that element (Edwards, McDonald & Young, 2009). For example, in considering Figure 3-1 that captures views on different academic publication types (topic), a given academic believes the 'High Impact Journals' (element) have a significant impact on gaining tenure as opposed to communication of ideas. Therefore, a rating of 1 was assigned to support the opinion of 'Assisting with gaining tenure' (construct). This association is further illustrated in Figure 3-2.

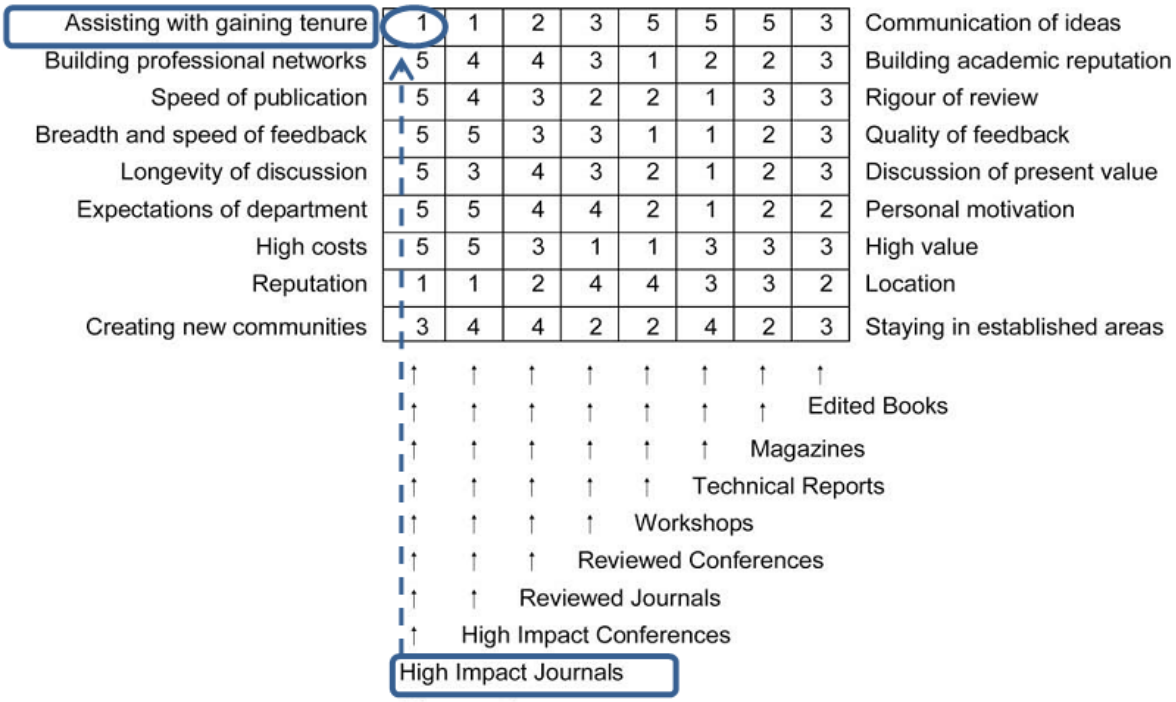


Figure 3-2 Example of element, construct and rating association (a)

(Edwards et al., 2009, p.786)

Another example is shown in Figure 3-3, in this case indicating that a given academic's opinion on 'Edited Books' (element) is that it encourages both building professional networks and academic reputation. Therefore, a rating of 3 is inserted in the relevant cell.

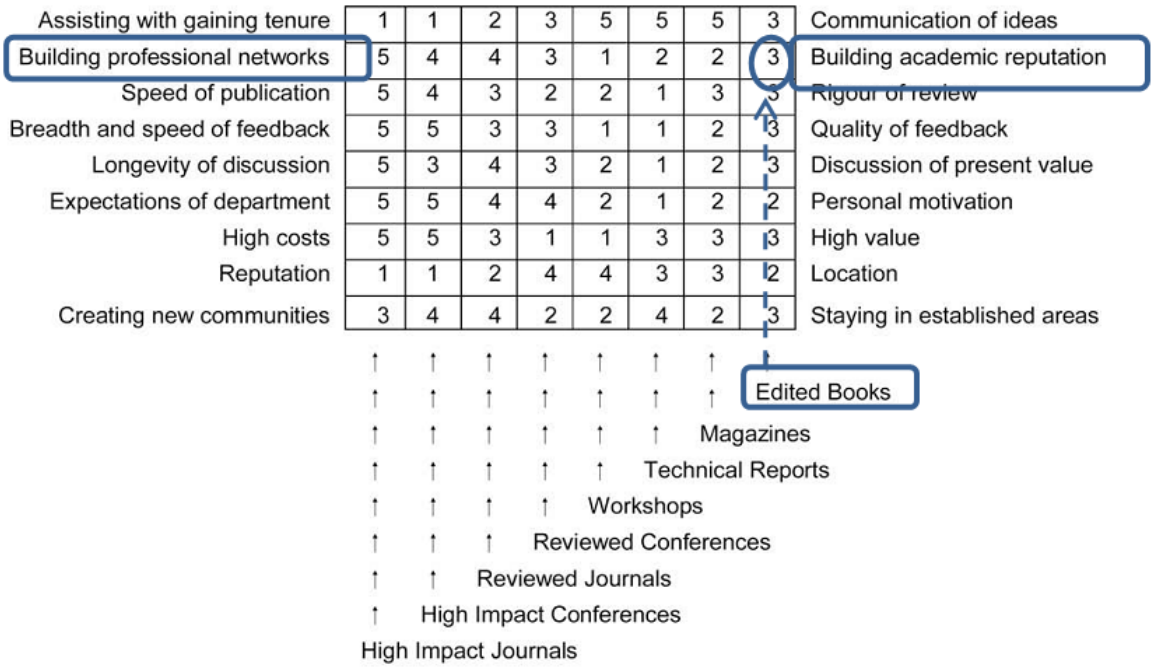


Figure 3-3 Example of element, construct and rating association (b)

(Edwards et al., 2009, p.786)

3.3.2.2. Types of Repertory Grid Use

In their survey paper on the repertory grid method, Edwards, McDonald and Young (2009) note that different types of grids have been employed by researchers in recent years. They categorised three types of repertory grid as follows:

- Full repertory grid: the participants identify both elements and constructs and then rate the constructs against the elements
- Partial repertory grid: the elements are supplied and participants identify and rate the constructs
- Fixed grid: both elements and constructs are provided and participants are asked to rate the supplied constructs against the supplied elements.

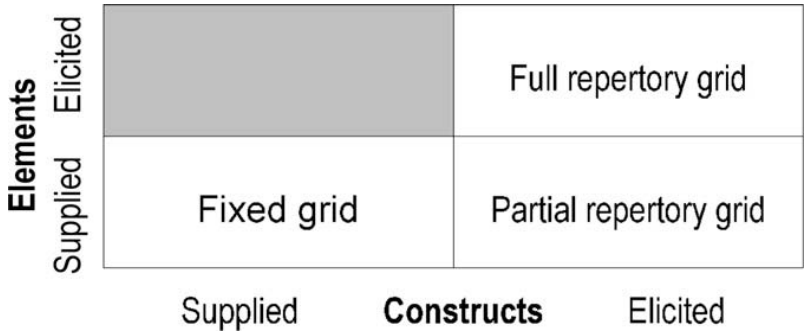


Figure 3-4 Grid types according to source of elements and constructs

(Edwards et al., 2009, p.787)

Edwards, McDonald and Young (2009) also described the strengths and recommended uses of the three types of grid in different studies. The full repertory grid provides the richest data set, and as the participants drive the inclusion of both elements and constructs this has the potential to generate the most meaningful data to the participants. However, the weakness is that the researcher may find it difficult to perform a direct comparison of each participant's grid (assuming there are multiple participants). Therefore, in some cases, the researcher's objects of interest (elements) are pre-selected and supplied to the participants, to support the provision of homogenous categories, and to limit ambiguity and the likelihood of participants being deviated from the topic (Easterby-Smith, Thorpe & Holman, 1996). Individuals can then select from the supplied elements and the researcher will only elicit the constructs. This approach is referred to as 'Partial Repertory Grid' and its use can be advantageous if the desire of the researcher is to make comparisons of participants'

ratings against known criteria (elements). In the case of 'Fixed Repertory Grid', both elements and constructs are supplied to the participants. As Edwards, McDonald and Young (2009) note, in the fixed repertory grid scenario both predefined elements and constructs must be unambiguous, relevant and meaningful to all participants. The strength of employing the fixed repertory grid approach is that it facilitates quantitative analysis when ratings are compared and evaluated; however, it does deviate from Kelly's personal construct theory (Edwards, McDonald &Young, 2009). The application of the fixed repertory grid technique assumes that the interviewer can act as an expert and knows much in advance about what is important and relevant to the topic being addressed.

3.3.2.3. Types of Elicitation and Elicitation Techniques

There are two types of elicitation, referred to as individual and group elicitation. The former is the more commonly used type of elicitation as it generates the richest data set, but some argue that the one-to-one interviews required lead to a time-consuming process. The latter approach, group elicitation, is generally more efficient but the provision of a truly accurate data set has been questioned due to the difficulty of arriving at group agreement (Edwards, McDonald & Young, 2009). Overall, if there is sufficient time and resource available then the one-to-one elicitation approach is generally preferred.

The individual elicitation technique can be further divided into triadic (triples of elements) and dyadic (pairs of elements) forms (Kelly, 1955). The triadic technique is most frequently used – the researcher chooses a random selection of three elements and the participant is asked to describe 'how' two of the elements are alike and different from the third (Marsden & Littler, 1998). In the triadic technique the participant may be asked to write down each element on a card. Among these cards, three are randomly chosen and the participants will be asked 'how' (in what way) two of them are alike and different from the third. The dyadic elicitation compares a pair of elements and the interviewee is asked 'how' these are similar or different.

3.3.2.4. Construct Collection Processes

Jankowicz (2004) explained Kelly's poles of a construct by categorising examples into two types that are either literal opposites (e.g. pleasant vs. unpleasant) or contrasts (e.g. pleasant as opposed to rude, a good teacher as opposed to an ineffective teacher, 'ensures I've understood his point' as opposed to 'doesn't check if he's made sense').

With regard to the construct elicitation process, there are two methods, namely laddering and pyramiding. According to Hinkle (1965), as cited in Marsden and Littler (1998), the "laddering method…involves asking the participant which pole of the construct they prefer and why it is so important to them…and pyramiding method involves asking the participant what defines their preferred construct pole…" (p.823).

3.4. Repertory Grid Method Use in Information Systems Research

In recent years, information systems researchers have increasingly utilised the repertory grid methods in a variety of ways. Tan and Hunter (2002) in one of the earliest prominent works referred to the employment of repertory grid techniques in several previous, but more obscure, information systems research publications. Additionally, Tan and Hunter (2002) highlighted that understanding organisational cognition was becoming more important in IS research and they contended that the ignorance of IT professionals' cognition could impact on the outcomes of IS. They suggested that the repertory grid method is highly recommended for the study of organisational and individual cognition in an IS context. Tan and Hunter (2002, p.40) noted: "This [repertory grid] technique offers the potential to significantly enhance our understanding of how users, managers, and IS professionals make sense of IT in their organisations."

The use of the repertory grid method (RepGrid) in various contexts can also be found in the following more recent studies. In a study related to the IS context, Rognerud and Hannay (2009) conducted research to identify the challenges in enterprise software integration in a major software development company through the employment of repertory grids. Software practitioners' perceptions towards problem(s) encountered in this undertaking

were elicited and analysed. With regard to the integration project, the two alternatives were: either in-house software products will be integrated with each other, or third-party products will be integrated with the existing in-house products. Different perspectives and concerns of 'how' and 'what' to integrate had emerged in the company. In this study, elements were elicited by asking participants about the most significant pain points and challenges, as well as their views on software integration methods. Then, construct elicitation was performed by applying the triadic technique. After analysing the grids and systematising the different perspectives, Rognerud and Hannay were able to identify an optimal solution to the problem. Common agreement between different groups was discovered and the challenges were categorised into three types: critical, causes and easy to handle. The researchers were also able to present the results in a company seminar specifying courses of action for the current, on-going and future integration projects. Thus, as can be concluded from Rognerud and Hannay's application of repertory grid in this particular study, the RepGrid not only assists with capturing different perceptions and opinions but it can also aid in potentially disparate or divided groups arriving at an acceptable solution.

Employment of the repertory grid method can also be seen in Siau, Tan and Sheng's (2007) empirical study that had the objective of identifying the important characteristics of software development team members. With the assistance of the RepGrid method, the outcomes of their study not only achieved their research objective but practical guidelines for human resource allocation and development training requirements for IT practitioners (particularly in development teams) could also be generated. Siau, Tan and Sheng encouraged the wider use of the repertory grid method in other information systems (IS) research. The method was also adopted by Napier, Keil and Tan (2007) in their study of IT project managers' construction of successful project management practice, as well as Hunter and Beck's (2000) research in cross-cultural information systems.

While many studies have understandably applied the RepGrid technique as a research method, Davis, Fuller, Tremblay and Berndt (2006) extended the use of the technique by employing it in a software requirements engineering context. Davis et al. conducted a case study to answer the research question "How can user-analyst communication during requirements elicitation be made more effective?" In their study, systems analysts and their

clients encountered communication challenges with respect to requirements elicitation. The repertory grid technique was therefore literally applied as a tool for requirements elicitation. The main motivation in the case study was that users could not identify and articulate their requirements (for the development of a data warehouse with on-line analytical processing functionality (OLAP)). In this case study, the use of repertory grid was considered to be of significant help in identifying user requirements by eliciting stakeholder perceptions regarding technology and their work.

In summary, the repertory grid method has been readily adopted in information systems research, particularly over the last decade. In fact, the RepGrid technique has not only been employed as a research method but was also literally utilised in one study as an information leverage tool. Based on their experiences, the researchers who employed the repertory grid method in their studies recommended its use in other IS research. This recommendation is followed in the present study. As can be seen from prior literature that applied the RepGrid technique, the researchers (e.g. Rognerud & Hannay, 2009; Davis et al., 2006; Siau et al., 2007; Tan & Hunter, 2002) were indeed able to capture individuals' perceptions, beliefs and understanding in a robust manner. As this research project also intends to collect data on individual IT Managers' decisions, the underlying reasons for these decisions, and their interpretation and understanding of the rationale for those decisions, it is contended that the RepGrid technique is an appropriate research method to employ in this study. In the next section, the reasons for and the strengths of selecting the repertory grid method in this research are explained in detail.

3.5. Research Design

3.5.1. Purpose of Employing Repertory Grid Method

The repertory grid method is adopted in this research project because it focuses on people, their understandings and how they construct the world (EnquireWithin, n.d.). The researcher's main interest lies in the drivers of IT managers' decisions at the project

initiation stage with the primary objective 'To explore the reasons underlying IT project initiation decisions and patterns of influencing factors'. As mentioned in previous chapters, individuals use cognition capabilities and personal constructs (Kelly, 1955) when making decisions. Therefore, given an emphasis on IT managers' decisions based on their interpretations, assumptions and experiences, the repertory grid method (which supports the capture of individual perceptions) is selected for use in this study.

Additionally, one of the characteristics of the repertory grid method is that it allows participants to rate the constructs against each element. Therefore, it fulfils the research requirement of drawing out and understanding the perceived primary drivers of project initiatives. For instance, if a manager describes the reasons for initiating a project as 'we have an existing inefficient system and our internal development team suggested the new system development. I have done similar types of development in my previous job. So, we just decided to initiate that project.' In this case, the main reason for initiating the project is not explicit. If the response is analysed, there are three different constructs: the organisation's recognition of inefficiencies in its existing system; the development team's innovative technology enthusiasm; and the manager's previous experience with similar system development. The listener may therefore interpret the above example in various ways. Kelly (1956) pointed this out as follows: "It is sufficient to make clear that the contrast aspects of an expressed personal construct must not be overlooked in interpretation, and to point out that there is a great variety of possible interpretations that a listener may place upon..." what is said (p.117). The application of the rating scale in a repertory grid assists with understanding the primary influencing factors as perceived by the individuals involved. It is indeed the combination of construct, element and rating that make this a valuable technique in studies of this nature.

3.5.2. The Use of a Customised Repertory Grid Method

A tailor-made repertory grid method is employed in this research in order to balance the strengths of the RepGrid method with the time required in data collection. In this study, an alternative means of collecting the data one-on-one from multiple managers in a suitable

timeframe was designed and implemented. This was done in consideration of participants' availability and to minimise the potentially lengthy data collection process while maintaining the intention of obtaining a rich and in-depth data set that genuinely reflected participants' project initiation experiences and perceptions.

3.5.2.1. Characteristics of a Customised Repertory Grid Method

The individual elicitation technique using the partial repertory grid is applied in this exploratory study. The characteristics of the customised repertory grid method used in this research can be seen in the process flow diagram shown in Figure 3-5.

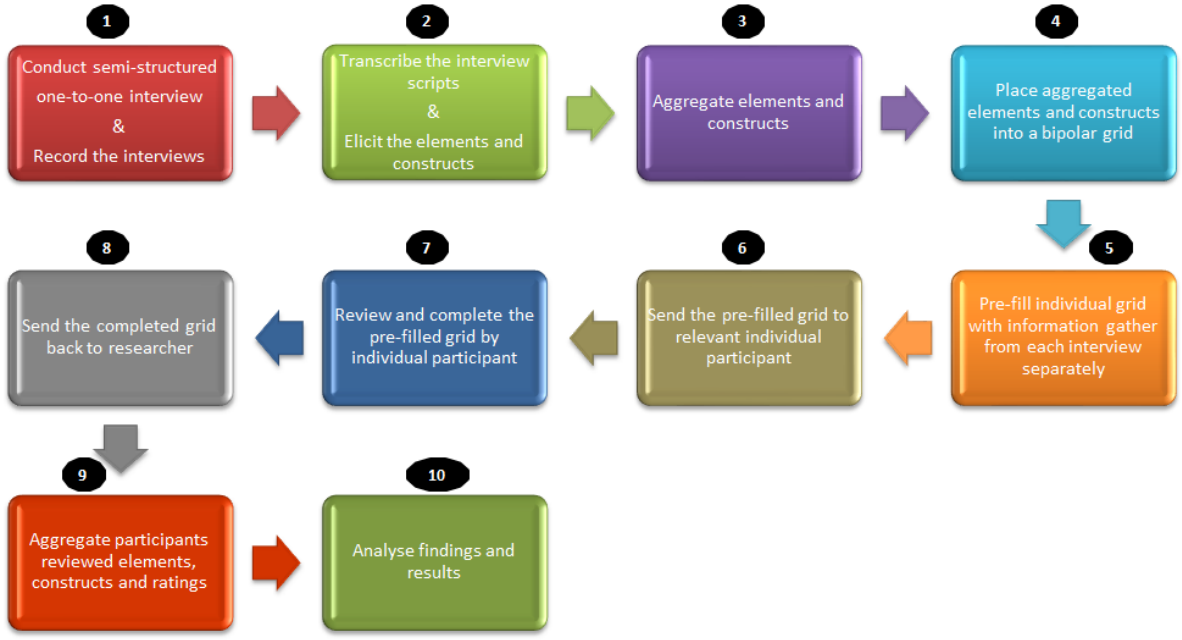


Figure 3-5 The process flow of the customised Repertory Grid Method use in this study

Firstly, participants were interviewed individually using the semi-structured interview technique. The interviewer did not ask any leading questions; however, the interviewer made sure the factors that the interviewees reported were related to the topic and were within the subject matter of the research (Rognerud & Hannay, 2009). The introductory questions that the interviewer asked participants are listed in Appendix F. During the interview, the researcher (the interviewer) only acted as a facilitator and participants

(interviewees) defined their own elements and constructs (Alexander, Loggerenberg, Lotriet & Phahlamohlaka, 2008). The participants listed the topic (i.e. one to five project names) that they had been involved in and wanted to describe for the interview. Then, the content covered within the topic was also chosen by the interviewees. No interruptions were permitted unless the conversation moved in a different direction and away from the research focus on IT project management decisions during project initiation. The entire conversation was audio recorded with the participants' consent. The conversations were then transcribed and elements and constructs from each interview were elicited by the researcher. All elements and constructs were aggregated and constructs were placed into a bipolar grid. One side of the poles of a construct represents elicited constructs while the other side of the poles reflects contrast opposites. The grid containing aggregated elements and constructs was then sent to each participant. In the aggregated grid, the intermediate outputs gathered from each interview (e.g. participant information, project names, factors considered) were pre-filled and sent to the relevant participant in order to obtain confirmation and reassurance of the information that the participants provided at interview. Furthermore, participants were also able to rate the constructs they considered relevant and applicable to the projects that they had identified. A more detailed explanation of the interview and data collection process is described in the data collection process section.

3.5.3. Justification and Advantages of the Applied Research Methodology

As described above, many IS studies have applied variants of the repertory grid method in different ways and the relevance of employing the method in IS research can be seen from a few literature extracts from the previous section. As Tan and Hunter (2002) elaborated, "The RepGrid technique, for IS, entails a set of procedures for uncovering the personal constructs individuals use to structure and interpret events in relation to the development, implementation, use and management of IT in organizations" (p.40). With the objective of exploring individual managers' underlying reasons around decision making, the employment of the repertory grid method in this study was considered to be most suitable.

There are several advantages of applying the customised RepGrid method. The semi-structured interview technique allows interviewees to express the influencing factors on their IT project management decisions without hindrance and maximises the flexibility of participants' interpretation of the given topic. It is also apparent that the potentially time-consuming process of individual grid construction is reduced by provision of an aggregated grid that represented the entire data set. Most importantly, aggregating the elements and constructs in a single grid produced a combined rich data set representing multiple viewpoints. By providing participants with the aggregated grid, participants were able to consider factors that had not been identified during the interview but that might still have been relevant. In other words, one participant's viewpoint may assist in supporting others, enabling or encouraging participants to identify factors that underpinned their decisions. Therefore, it is believed that the divergence of individual viewpoints could be captured in this way in order to provide insights into the understanding of IT managers' assumptions, interpretations, knowledge, expectations and perceptions regarding decisions made in one or more of their projects.

3.6. Ethical Considerations

The participants in this research project were involved purely on a voluntary basis and the outcomes were intended to benefit all professionals and academics in the IT sector. In this study every effort was made to maintain and protect the participants' confidentiality, anonymity and privacy of information. In essence, the names of the participants and their organisations have been treated as highly sensitive and confidential information. Their identities have never been revealed in any way beyond the researcher and supervisor. The design of the interview was semi-structured and relied on participant-led discussion. The researcher did not ask the participants leading questions beyond introducing the topic, objectives, research methodology and direction of the research. Therefore, the participants and researcher treated one another with courtesy and respect, and there was no power imbalance between the participants and researcher.

As noted, the focus of the research project is to investigate decision making during project initiation. Project implementation and closure stages are irrelevant to this study. In addition, whether projects are successful, partially successful or outright failures is out of scope in this study. This was clearly stated to participants in the information sheet that the participants received prior to the interviews (Appendix B), and the researcher also reiterated the scope at the beginning of the interview. Therefore, subject matter pertaining to performance, achievement or success/failure was completely off-topic in the interviews, and participants only needed to describe the drivers of project initiation. Thus, the interviews were designed to ensure that participants did not experience any type of embarrassment, discomfort or incapacity.

All participant organisations were provided with confidentiality contracts signed by the researcher (see Appendix C). If an organisation had its own confidentiality contract this was also signed by the researcher and filed with the research data. Participants were also requested to sign their consent (Appendix D) indicating that they agreed to participate but that they had the right to revoke their consent and could entirely withdraw from the study at any point in time. In addition, participants were given the contact details of the University's ethics committee and research supervisor if they wanted to raise any issues or concerns or had any queries regarding this research.

Data were aggregated in the analysis and the signed consent forms were kept in a locked cupboard in a secure office at AUT. All data were held by the researcher and were only made available for viewing by the researcher and supervisor. Demographic data and the transcripts from individuals were coded so that the identities of the participants were not stored with the data they provided. Once initial contact was established, no information linking the individuals' identities with their responses was stored. Every effort has been made to ensure confidentiality at all times, with data and documents accessed only by the researcher and supervisor. Furthermore, only the researcher and supervisor have knowledge of the names of the organisations and people involved, and in reporting the research, substitute names have been used and organisation names have never been identified.

The relevant ethics application was submitted to the Auckland University of Technology Ethics Committee (AUTEC) and received ethics approval (Reference number: AUTEC 11/95, Appendix A) from AUTEC. Every attempt has been made to strictly follow AUT's ethics rules, guidelines and procedures.

3.7. Data Collection Process

The data collection process consists of three main components, namely, preliminary preparation processes, interview process and post interview process.

3.7.1. Preliminary Preparation Processes

A number of preliminary processes were carried out prior to the actual interviews. First, the confidentiality agreement form (Appendix C) and consent form (Appendix D) were prepared in accordance with AUT formats and guidelines. Second, the participant information sheet (Appendix B) was created in which a comprehensive list of questions and answers were posed. Some of the questions in the information sheet are: 'What will happen in this research?' 'What are the discomforts and risks?' 'How will my privacy be protected?' and 'What are the costs of participating in this research?' Third, semi-structured interview questions were prepared and pilot interview participants were recruited. Three IT Managers volunteered to participate in pilot interviews and provide feedback to the researcher. The prepared interview questions were tested in pilot interviews prior to the actual interviews. Based on participants' responses in the pilot interviews, the questions were then refined and prepared for actual interviews (Appendix F). Fourth, the relevant ethics application form was completed and approval was obtained from AUTEC. Then, the recruitment selection criteria were established as follows:

- Types of participants sought are Information Technology (IT)/Information Systems (IS) Managers, ICT Directors (CIOs), and IT Project Managers, Coordinators and Sponsors.

- Participants must be (or must have been) directly or indirectly involved in decision making in the early stages of IT Project Management.
- Approximately 40 to 50 participants should be invited with an assumption that approximately 30% of invitations would be accepted.
- Email addresses of potential participants were obtained from previous and existing work colleagues and associates. Potential participants received an invitation email message (Appendix E). If they accepted the invitation, the researcher replied with a 'Thank you' message together with a request for available dates, times and preferred meeting place. The venue was chosen at the participants' convenience.

Detailed demographic information regarding participant recruitment, types of organisations involved and participants' roles are described in next chapter, Findings and Discussions.

3.7.2. Interview Process

After introductions, all the forms listed in the previous section were provided to the participant at the beginning of the interview. Then, permission to audio-record the entire conversation was sought, while also advising that the recording process was non-obligatory. The interviewer then introduced the research topic and explained the research objectives and the employment of the repertory grid method. After providing this high-level information, the ethics considerations were covered and the participant was given detailed information regarding the data collection and interview process. The participant was also given an opportunity to indicate whether they wanted to receive the research report upon its completion. During the interview, the researcher strictly adhered to ethics guidelines prescribed by AUTEC and maintained the ethics considerations described in the previous section. The researcher also informed the participant that a one-hour alarm was set up to make sure the interview did not go beyond the agreed timeframe. After the interview, a 'Thank you' message was sent and the participant was advised that a second interview would not take place; however, email communication would be used afterward as needed.

3.7.3. Post Interview Process

To begin with, a document for each participant's interview notes was created. The researcher then listened to the recordings, transcribed them and transformed them into bullet point notes. The notes were then structured into factors relevant to the research focus, and were categorised into four groups namely 'why', 'how', 'what' and 'who'. That is, why was the project initiated, how was the project (to be) moved forward, what was the selected technical solution for the project, who was (to be) involved in the project. Three of these classifications were then subdivided into granular components: 'how-why', 'what-why' and 'who-why'. This represented the researcher's intent to capture every decision the participants had made *along with the underlying reasons*. For example, adopting a SaaS solution (what) is supported by a reason(s) (what-why) that encouraged the decision maker. The researcher then developed a draft grid based on the classifications and elicited factors. Next, all elements and constructs for each participant were allocated to relevant classifications in the grid. Later, all elements and constructs were aggregated and were placed into the final repertory grid. The contrast constructs were also allocated into the poles. Finally, the aggregated elements and constructs collected from multiple stakeholders were placed into a domicile repertory grid. An example of aggregated elements and constructs is shown in Figure 3-6.

The aggregated repertory grid was then customised and pre-filled for each individual participant. The individually customised grids were then sent back to each participant (Appendix G) for confirmation, to ensure that the conversation had been interpreted correctly and transformed into elements and constructs with integrity. Participants were also asked to rate the influencing factors during the decision making stage. The returned repertory grids with ratings were then re-aggregated and consolidated in each category. An example of a consolidated grid is shown in Figure 3-7.

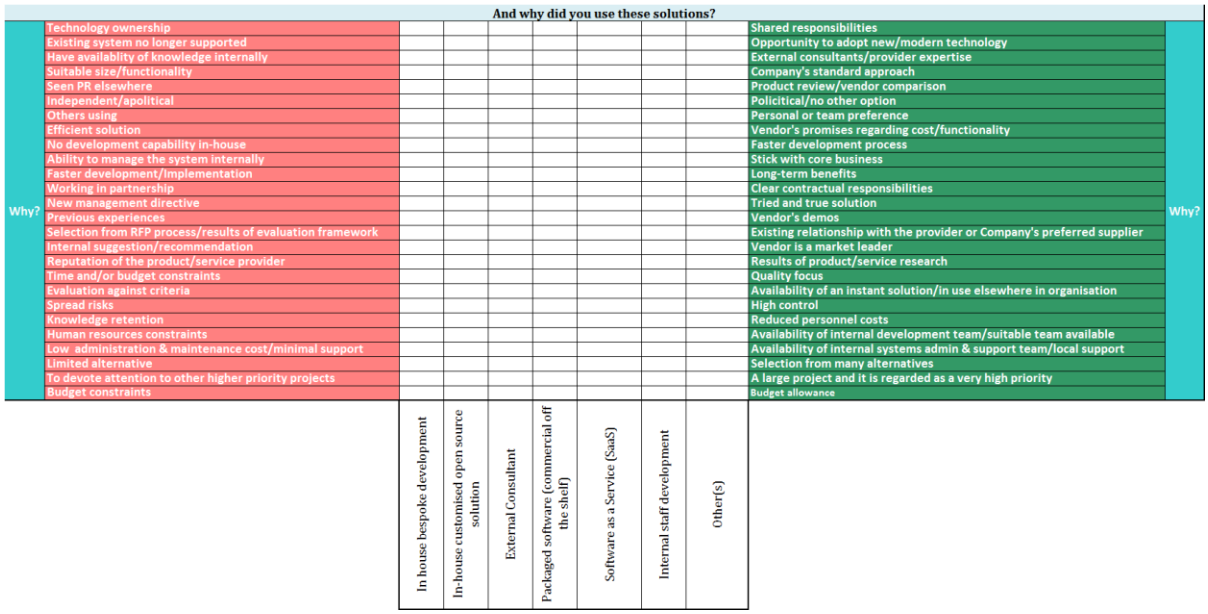


Figure 3-6 An example of consolidated elements and constructs

Why did you use these solutions?				
In house bespoke development				
	1s/2s	3s	5s/4s	
Technology ownership	1	0	1	Shared responsibilities
Existing system no longer supported	1	0	2	Opportunity to adopt new/modern technology
Have availablity of knowledge internally	4	0	0	External consultants/provider expertise
Suitable size/functionality	1	0	2	Company's standard approach
Seen PR elsewhere	1	1	0	Product review/vendor comparison
Independent/apolitical	0	0	1	Policitical/no other option
Others using	1	0	0	Personal or team preference
Efficient solution	1	0	0	Vendor's promises regarding cost/functionality
No development capability in-house	0	0	1	Faster development process
Ability to manage the system internally	1	0	1	Stick with core business
Faster development/Implementation	0	0	2	Long-term benefits
Working in partnership	1	0	0	Clear contractual responsibilities
New management directive	0	1	0	Tried and true solution
Previous experiences	2	0	0	Vendor's demos
Selection from RFP process/results of evaluation framework	0	0	1	Existing relationship with the provider or Company's preferred supplier
Internal suggestion/recommendation	4	0	0	Vendor is a market leader
Reputation of the product/service provider	1	0	0	Results of product/service research
Time and/or budget constraints	0	0	1	Quality focus
Evaluation against criteria	1	0	3	Availability of an instant solution/in use elsewhere in organisation
Spread risks	0	0	2	High control
Knowledge retention	2	0	0	Reduced personnel costs
Human resources constraints	0	0	2	Availability of internal development team/suitable team available
Low administration & maintenance cost/minimal support	0	0	1	Availability of internal systems admin & support team/local support
Limited alternative	1	1	0	Selection from many alternatives
To devote attention to other higher priority projects	0	0	1	A large project and it is regarded as a very high priority
Budget constraints	0	0	2	Budget allowance

Figure 3-7 An example of consolidated results

The consolidated results were then analysed qualitatively and using frequencies of occurrence. The detailed findings are presented and discussed in the 'Findings and Discussions' chapter in detail.

3.8. Summary

To summarise, in this chapter the adopted research method (comprising interviews supported by the repertory grid method) has been described and the reasons for selecting the method have also been explained. To re-iterate, the repertory grid technique is selected in this research to enable us to elicit and then understand how individuals (in this case IT Managers) made decisions regarding project initiation and their perspectives towards the circumstances they experienced in doing so. A brief theoretical background of the repertory grid method has been presented and the employment of the method in prior research has also been explored. A specific customisation of the research method has been described and the advantages of applying the customised method have been discussed along with the ethical considerations relevant to this research. Finally, a detailed description of the data collection process from the initial planning stage to the preparation for data analysis process has been reported.

Chapter 4: Findings and Discussions

4.1. Introduction

In this chapter the results of the research are presented, with detailed analyses of the collected repertory grids. The results are analysed at a granular level and are examined in depth for each element and construct. The findings are then scrutinized and delineated in different categories, namely, 'Why', 'How', 'What' and 'Who'.

In the 'Why' section, the analysis and discussion are focused on the reasons, problems or opportunities that encouraged or led to the participants' specified projects. The 'How', 'What' and 'Who' sections are then addressed, comprising sections called 'How-Why', 'What-Why' and 'Who-Why' respectively, to provide further elaboration of underlying reasons and influencing factors. The 'How' section addresses the types of approach that participants intended to use or did use in moving to a solution, and in the 'How-Why' section, the reasons for adopting the particular approaches are described. Similarly, the 'What' section refers to participants' selection of particular technological solutions. The underlying reasons for their selection can be found in the 'What-Why' section. Likewise, team members (roles) who were (to be) assigned to the projects are presented in the 'Who' section, and the reasons for selecting the particular personnel are explored in the 'Who-Why' section. Each section consists of three components – a graphical representation of the summary grids, analysed findings, and discussions.

The following section first describes summary demographic background based on preliminary information obtained in the data collection process and this is followed by an overview of the analysis techniques used in the repertory grid method. The findings and discussions are then arranged in the four main sections: Why, How, What and Who. In each section, the results are first presented. Analysed findings are then reported followed by the discussion section.

4.2. Demographics

For this research a total of 45 invitations were sent to IT professionals from 10 medium and large sized organisations in New Zealand. These IT professionals included project sponsors, project managers, enterprise architects, solution architects, business systems managers and CIO/ICT directors. It was expected that approximately 30% of the invitees would accept the request to take part, leading to a likely sample size of 15 participants. According to Dunn et al. (1986) and Ginsberg (1989), as cited in Tan and Hunter (2002), "A sample size of 15 to 25 within a population will frequently generate sufficient constructs to approximate the universe of meaning regarding a given domain of discourse." (p.50).

A total of 21 participants from six medium and large organisations accepted the invitations. The organisations were two commercial banks, two not-for-profit organisations and two courier/delivery services companies. Such a range of organisational profiles could provide insights into the different nature of projects. Out of the 21 participants, three were unable to identify relevant projects due to their short-term tenure at the current company at that time. Therefore, a total of 18 respondents participated in the research project. The 18 participants, representing 6 medium and large organisations, consisted of one project sponsor, three ICT directors (CIOs), two solution and enterprise architects, one analyst, and eleven IT managers including business systems managers and project managers. Therefore, the preliminary assumption of an interview acceptance rate of around 30% proved to be approximately correct. All participants were interviewed individually at the participant's choice of place, date and time. The 18 interviewees identified a total of 49 IT/IS projects in which the participants either held leadership roles or were party to the decision-making of the project teams.

4.3. Analysis Techniques

Repertory grids may be analysed quantitatively, by applying cluster analysis and similar methods, or qualitatively through the use of content analysis (Jankowicz, 2004). The primary

objective irrespective of the specific technique is to investigate the relationship between elements and constructs.

Cluster analysis enables the researcher to identify the extent to which elements and constructs are in common with each other or different from each other, by identifying the highest and lowest percentage (scores) similarity. It returns the correlation and similarity percentage scores between each element and each construct. The shape of the element and construct dendrogram (i.e. a tree diagram or a tree representation) is examined in the cluster analysis technique; similarities and differences are identified and interpreted using the angle of the dendrogram. That is, the smaller the angle, the higher percentage the similarity. Statistical software packages such as SPSS and Minitab may be used to obtain the correlations, and ANOVA, regression and other multivariate analysis methods can be utilised to further model the relationships between elements and constructs (Jankowicz, 2004).

With regard to content analysis, there are different types of methods. For instance, Song and Gale (2007) considered a tripartiate approach (drawing on earlier work of Stewart et al., 1987), Rokeach's human value approach, and a grounded theory approach. In this research, keypoint coding has been used to identify elements and constructs and then manual frequency count analysis is applied (Moynihan, 1996). Elements, constructs and ratings for individual projects are examined and analysed in greater depth in order to enable comparisons across the sample of managers. The reasons for applying the simple frequency count analysis are: to preserve/maintain the participants' conclusive response, to present the respondents' original ratings, to promote the transparency of individual perspectives and to provide visibility of the interrelationships between constructs and elements. Therefore, careful consideration has been taken when aggregating the ratings in this way; it is intended not to sacrifice the respondents' provenance. Thus, instead of transforming the raw data into a final result by exhaustively interrogating the responses using different analysis techniques and judgements based on statistical and mathematical representations, individual ratings are instead investigated via in-depth analysis and interpretation on a case-by-case basis followed by a cross-sample commentary. The following section describes the findings and detailed analyses for each repertory grid category.

4.4. Presentation of Results

This chapter represents the core of the contribution emanating from the research, which probed several aspects of project decision-making at initiation – who was (to be) involved, how was the project (to be) undertaken, what was the approach (to be) applied, and why was the project (being) undertaken. To present multiple perspectives on such factors, the interview results from IT managers, project managers and sponsors from several organisations are categorised, summarised and analysed. As described in the Demographics section at the beginning of this chapter, different types of respondents actively participated in the interview process. In order to facilitate concise descriptions, the term 'IT Manager' is used to represent the entire population of participants.

The participants' responses are regarded as being reflective of their views at the time project decisions were being made. An assumption is also made that IT Managers' descriptions of the underlying reasons and influencing factors around project initiation convey their *bona fide* interpretation of events. It does not necessarily mean that respondents' opinions at the time of project initiation reflect their current perspectives or mental models. Therefore, an unintentional commentary might emerge in the reminiscences of a past decision-making process, based on participants' experiences in the interim. However, in order to capture the most accurate picture as possible, participants were asked to consider their most recent projects and were reminded to try to provide a 'snapshot' of reasons and influencing factors that were relevant at the time of project initiation. In addition, and as described in the Methodology chapter section 3.5.3, a two-step process was used in data collection. After the interview process the participants were supplied with the aggregated grid, so respondents were given another opportunity to recollect (and potentially revise) their narration. Therefore, it is believed that the collected data reflect the participants' actual intended responses regarding their identified projects.

Results are presented with an emphasis on the decision-making aspects; approaches, methodologies and frameworks are not explained in detail, based on an assumption that readers are familiar with the terminologies and processes commonly referred to in IT projects (e.g., use cases, prototypes, SaaS, bespoke development, requests for proposal).

Table 4-1 summarises each section and sets out how the analyses of results are presented.

Section	Analysis		Description
4.4.1	**Why**	Why	Reasons, problems or opportunities that encouraged or led to the project being undertaken
4.4.2	**How**	How	The approaches used in going from the idea, problem or opportunity to the solution
4.4.3		How-Why	Reasons for using a specific approach
4.4.4	**What**	What	Selected technological solutions
4.4.5		What-Why	Reasons for selecting a particular solution
4.4.6	**Who**	Who	Selection of project team members
4.4.7		Who-Why	Reasons for selecting the personnel

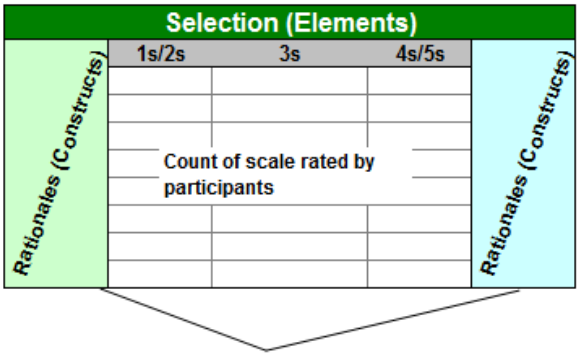
Table 4-1 Description of result presentation structure

To reiterate, each section is subdivided into two sub-sections, namely, findings and discussions. In the findings sub-section the results are reported. Specific findings are then elaborated on with narration in the discussions sub-section. In the 'Why', 'How', 'What' and 'Who' sections, simple summarised percentages are presented. For instance, 45% of the projects were initiated with one of the primary reasons being to obtain cost savings.

In the 'How-Why', 'What-Why' and 'Who-Why' sections, a summarised grid is presented for each element. In other words, the selected rationale (element) is illustrated with its summarised rating scale. To re-iterate the rating process, participants were asked to rate the reasons (constructs) on a scale of 1 to 5 in relation to each selected element. If the construct at the left-hand side of the grid most accurately represented their reason for

selecting an element, a rating of 1 would be given. In a similar way, a rating of 5 would be inserted if the right hand grid construct most defined their rationale. A rating scale value of 3 would indicate that both rationales were equally applicable.

For instance, an IT Manager might select a packaged solution (element) for a particular project due to their perception of both faster development and long term benefits, which are on the left and right poles of the grid, respectively; a rating of 3 would be appropriate in the relevant cell. When the grids are aggregated, if there are 5 projects with the same rating scale value of 3 in that cell, the total count of 5 will be displayed in the aggregated grid at the relevant cell. As illustrated in Figure 4-1, each element is considered in a separate aggregated repertory grid with its associated series of rationales (constructs) listed in left hand and right hand poles. The number of times participants rated each scale value against an individual construct are summarised and placed in the corresponding cell. Further elaboration of the content of the grids and how the individual repertory grids are consolidated are explained in detail using actual ratings in sub-section 4.4.3.1.



Rating Scale	Description
1s/2s	The rationale from ***left*** hand column match with the rationale for a particular project
4s/5s	The rationale from ***right*** hand column match with the rationale for a particular project
3s	The rationale from ***both left and right*** hand column match with the rationale for a particular project

Figure 4-1 Description of summarised repertory grid results

4.4.1. Why

The 'Why' question was asked first to obtain preliminary rationale in the early stages of project initiation, that is, pre-initiation factors. Therefore, the 'why' factors relate to the pre-

initiation stage of a project, and indicate the main motivating factors and justification of projects being initiated.

4.4.1.1. Findings

A total of 36 underlying reasons were identified by the 18 participants during the interview process. When the aggregated grid was distributed to the respondents, the rationales were consolidated to 34 as shown in Table 4-2.

What were the problems or opportunities that encouraged or led to the project being undertaken?	Grand Total	Percentage for a reason
Inefficient system/process	23	47%
Cost savings	22	45%
Process improvement/change	21	43%
Management/company expectations	19	39%
Unsupported legacy system	17	35%
New business/Techlogy opportunity	17	35%
Reduce manual process	16	33%
BAU improvement	14	29%
Fragmented systems	13	27%
Cope with growth	12	24%
Benefit realisation	12	24%
Integrated processing/reporting challenges	11	22%
Customer focus	11	22%
Other organisations are applying the particular technology successfully	10	20%
Better management control	10	20%
Lack of standard process	9	18%
Business case	7	14%
IT Infrastructure changes	7	14%
Data integrity issues	6	12%
All digital	6	12%
Existing techlogy issues	6	12%
To increase market share	6	12%
Reduce support needs	5	10%
Compliance to internal/regulatory requirements	4	8%
Competitor pressure	4	8%
Concurrent upgrade/customisation	4	8%
Company's strategic plan changes	4	8%
Staff reduction	3	6%
Develop in-house capability	3	6%
Customer complaint	3	6%
Public relations opportunity	3	6%
Departmental or team invation	2	4%
Executive management's expectations	2	4%
Organisational change	2	4%
Political reasons	0	0%
To convince top management	0	0%
Other(s) (please sepcify in the cell alongside)	0	0%

Table 4-2 Summary of 'Why' results

As can be seen, among those 34 rationales, 'Inefficient System/Process', 'Cost Savings' and 'Process Improvement/Change' are the top three motivators for project initiations. In total, 47% of the projects were initiated due to inefficient systems or processes. The second top trigger for projects being initiated was 'Cost Savings', at 45%. The third most common motivating factor for project establishment was 'For process improvement or change'. Of note in the other responses is the finding that only 14% of projects were being undertaken in response to a business case.

During the interview process, the primary drivers of two projects were identified as being due to political reasons. However, when the participants were provided with the aggregated repertory grids, the 'Political reasons' rationale was not selected. Similarly, one of the interviewees initially identified that a project had been initiated to convince top management of the potential of a particular solution; however, this reason was not included when the repertory grid was returned by that interviewee. In this respect, it seems that there are a few discrepancies between the interview conversation outcomes and the repertory grid returns. It may be that participants did not see these reasons as *primary* drivers of project initiation when they contemplated the past events (although participants were encouraged to select all drivers/factors that applied). On the other hand, it may be that participants expressed unhesitatingly or felt more comfortable during the initial face-to-face conversation rather than when asked to more formally record their views by way of completing the grid. Note that efforts were made to avoid such limitations – the participants were advised that the grids were only being utilised to ensure all the analysed data were genuine reflections of participants' views rather than the researcher's (incorrect) interpretation of past events and situations. Apart from a small number of such discrepancies, the vast majority of interview results and repertory grid returns matched. What is more, a richer data set was obtained as participants had an opportunity to reflect on their project reasons/rationales while also considering others' responses.

4.4.1.2. Discussions

The rationales for projects being undertaken are many and varied. Some may construct a business case according to an organisation's predefined process and executives may approve it as long as the business case shows 'fitness-for-purpose'. However, the more in-depth analysis of potential consequences, latent contingencies and residual risks of projects being implemented may be deficient in many organisations. Of course, it is difficult to anticipate future problems especially in the context of rapid technology innovation. However, at the very least, thorough consideration of pre-project assessments should be

made in terms of how a new project would be integrated with or fit into existing systems, structures, processes and other initiatives.

In most cases, project managers (PM) are appointed only after the associated business case has been approved (Sauer et al., 2007). Due to the nature of project assignments to project managers, the PM's role is to successfully deliver the project as per the business case, regardless of the validity of the underlying reasons. What is more, PMs may be asked or required to continue with failing projects (Jani, 2008). Some projects may not be suitable in a particular organisation environment/culture at a specified point in time. For example, due to a consequent significant culture shift, extensive change management procedures may need to be implemented as a pre-project assignment before the actual IT project is initiated. Some may argue that one of the critical factors for IT project failure is user resistance. However, if business cases were to include a distinction between business risks, technology risks and project risks with in-depth analysis, the PMs may be better able to project plan with more accurate project estimation and execute projects with better change management control. This does not necessarily mean that an in-depth analysis and justification at the pre-initiation stage will lead to project success; to a certain extent, however, it would support the delivery of a successful project. Business cases can enable informed decisions to be made on proposed resource consumption in terms of effort and budget along with risk assessment, cost benefit analysis and alternative solution analysis.

As mentioned in the above 'Findings' sub-section, participants typically identified at least two influencing factors per project. Among those, only 7 projects (14% of the total projects) were initiated based on a business case. This seems to be in conflict with perceived best practice. As Cadle and Yeates (2008) argued, "No project should be undertaken without first establishing a business case for it – without, in other words, showing that it is justified. The business case defines what is to be done, why, and what are the timescales and costs involved" (p.31). Also, during the interview process, one of the participants argued strongly that any IT project must be initiated with a business case and a new technology/system should not be introduced without a complete and comprehensive business case.

4.4.2. How

After the participants provided the preliminary reasons for initiating their nominated projects, the 'How' question of '*What approaches did you use in going from the idea, problem or opportunity to the solution? How did you move towards a solution?*' was put to them. The intent was to investigate the methods or approaches participants elected to use to implement their ideas; in other words, their chosen approach(es) for moving their ideas to reality.

4.4.2.1. Findings

A total of 19 approaches were identified by the 18 participants during the interview process. When the summarised grid was distributed and the participants returned the reviewed grids, the approaches or methods were selected as shown in Table 4-3.

What approaches did you use in going from the idea, problem or opportunity to the solution? (How did you move towards a solution?)	Grand Total	Percentage for a reason
Cost benefit analysis	28	57%
Requirements gathering/specification and analysis	26	53%
Project Management methodology	21	43%
Internal organisations discussions	21	43%
Vendor's demos	19	39%
Market research	16	33%
Request for Proposal (RFP) process	14	29%
Company's predefined process	7	14%
Evaluation framework	6	12%
Prototype	6	12%
Models (e.g. use cases)	6	12%
Narrative specification	5	10%
Request for Information (RFI) process	4	8%
Site visits	3	6%
No Project Management methodology applied	3	6%
Other(s)	3	6%
No specific approach applied	1	2%
Request for Tender (RFT) process	0	0%

Table 4-3 Summary of 'How' results

As the table illustrates, IT Managers have primarily undertaken cost benefit analysis and requirements gathering/specification and analysis to move their projects forward. In contrast, site visits appear to be used relatively rarely as does the RFI process.

4.4.2.2. Discussions

When organisations intend to undertake IT projects, there are usually a series of processes or a number of different approaches/methods that will be carried out. However, depending on the culture of those organisations and business units and the experiences and expertise of individual IT Managers, the types of approaches/methods used can be varied. As can be seen from the above results, it appears that a requirements gathering, specification and analysis process was conducted in relation to half of the projects considered. This result was unexpected given the research literature. Without systematically identifying, gathering, specifying and analysing the requirements (Aurum and Wohlin, 2005), understanding of various stakeholder needs and customers/users expectations may not be able to be established. A lack of requirements understanding and incomplete or changing requirements are frequently noted as among the critical factors in project failure (Hansen, Berente & Lyytinen, 2009). One of the participants noted, "without capturing the requirements first, our requirements could end up what software providers can offer and what they demonstrate. So, we decided not to go out to the market and not to submit RFP until we've got a complete set of requirements."

Another interesting result is the participants' limited use of 'market research', employed in only a third of the projects. On referring back to the individual grids, it appears that IT Managers either researched the market or conducted 'Request for Information and Proposal' (RFI & RFP) processes. Some did not conduct any of these activities. During the interview process one IT Manager expressed the advantages they gained during the decision making process on the basis of site visits. However, as noted briefly above, the 'site visits' activity does not seem to be a common practice among the participants.

It should be noted here that there were a few participants who were from the same organisation and they unanimously indicated that their project processes were driven from their company's pre-defined standard approaches. For this reason, their approaches and methods were derived purely from their organisation, and were not based on an individual IT Manager's project management style.

4.4.3. How-Why

In this section, the reasons for selecting the particular approaches, processes and methods used were probed. During the interview, participants were requested to provide the rationales behind their chosen approach. Each individual participant's answers were placed in a bipolar grid and the pre-filled grid was sent back to the relevant participants through email communication. The participants then reviewed, edited and rated the pre-filled grid and sent the finalised grid back to the researcher. All the participants' returned grids are consolidated in the single grid that is considered in the following section.

4.4.3.1. Findings

In the consolidated grid, each element that participants identified is placed at the top and the contrast constructs are placed at the left and right hand side of the grid. The ratings are then counted and the total frequency count of ratings is placed inside the grid. For instance, the following explanation conveys the elaboration of Figure 4-2. (Specific issues of note or selected for discussion on each grid are indicated using circles or rectangles.)

- **Element** = 'Vendor's demos'

  (i.e., the 'How' factor; the chosen approach);
- **Construct** = 'Faster development/implementation process' & 'Quality focus'

  (i.e., the 'How-Why' factor; the reasons for selecting the 'Vendor's demos' approach);
- **Rating** = 1s/2s, 3s, 5s/4s; rating of 1s and 2s = the participant's reason for selecting the particular approach matches the left hand pole construct; rating of 5s and 4s = the participant's reason for selecting the particular approach is defined by the right hand pole construct; rating of 3s = both left hand and right hand constructs are equally applicable. For example, if a participant believed that the reason for using 'Vendor's Demos' was that it resulted in faster development or implementation, they will select a rating of 1 or 2 depending on the intensity. However, if their reason

for selecting the 'Vendor's Demos' approach is due to a quality focus, a rating of 4 or 5 will be given depending on the strength of significance. If their reason for selecting such an approach was a mix of both a faster development process and quality focus, a rating of 3 will be selected. In the figure, the total count of 2 under 1s/2s indicates that two IT Managers used the 'Vendor's Demos' approach with the perception that it led to a 'Faster development/implementation process'. However, three IT Managers employed the 'Vendor's Demos' approach due to its 'Quality focus' (under 5s/4s). The count of 1 for rating 3s indicates that one IT Manager believed 'Vendor's Demos' can result in a faster development process and is also quality focused.

Vendor's Demos				
	1s/2s	3s	5s/4s	
Faster development/implementation process	2	1	3	Quality focus
Clear responsibilities for all parties	0	1	7	Easy to use
Uncertainty of the solution/method	4	3	1	Availability of an instant solution
Time and/or budget constraints	2	1	1	Specified in process
Problem focused	1	0	6	Solution focused
Minimal risks	1	3	0	Governance procedures
Useful for communication	2	4	2	Useful for implementation
Small/low-impact project	0	1	5	Large/ high profile project
Easy to apply	0	3	2	Can be verified
Company's standard approach	3	2	1	Personal or team preference
The most common/acceptable practice in IT industry	4	2	2	A tailor-made process based on the project
Human resources constraints	0	3	2	Availability of internal staff/external consultant
Regulatory compliance	0	1	5	Freedom to choose

Figure 4-2 Analysis of 'How-Why' results; 'Vendor's Demos' element

The above findings suggest that some IT Managers regarded the vendor's demonstration as supporting a faster development/implementation process while others considered it to support a quality focus. Notably, all IT Managers who used this approach supported it as being easy to use. It appears that some IT Managers utilised a vendor's demonstration when they were uncertain of the solution or method whereas others might have reviewed and appraised vendor's demos for reassurance purposes. As can be seen, the total count of 5 under the 5s/4s column for 'Large/high profile project' suggests that the vendor's demos approach was used principally when the projects were considered as large and/or high profile. Additionally, IT Managers not only regarded the vendor's demos approach as the most common and acceptable practice in the IT industry but they also believed that it enabled them to select from many alternatives.

Requirement Gatherings				
	1s/2s	3s	5s/4s	
Faster development/implementation process	1	0	6	Quality focus
Clear responsibilities for all parties	5	2	1	Easy to use
Uncertainty of the solution/method	2	1	0	Availability of an instant solution
Time and/or budget constraints	2	0	1	Specified in process
Problem focused	2	1	5	Solution focused
Minimal risks	0	3	1	Governance procedures
Useful for communication	2	2	3	Useful for implementation
Small/low-impact project	0	0	5	Large/ high profile project
Easy to apply	0	1	3	Can be verified
Company's standard approach	2	3	2	Personal or team preference
The most common/acceptable practice in IT industry	2	1	2	A tailor-made process based on the project
Human resources constraints	1	1	3	Availability of internal staff/external consultant
Regulatory compliance	0	1	4	Freedom to choose

Figure 4-3 Analysis of 'How-Why' results; 'Requirement Gathering' element

As can be seen in Figure 4-3, the requirement gathering technique is perceived as a quality and solution focused approach and the IT Managers that used it regarded it highly in terms of determining clear responsibilities for all parties. Interestingly, this approach was only seen as useful if applied in large/high profile projects. The reason may be that IT Managers believed that the requirements gathering approach is not easy to apply or use and is reliant on having the right people available.

No PM Method				
	1s/2s	3s	5s/4s	
Faster development/implementation process	1	0	0	Quality focus
Clear responsibilities for all parties	1	0	0	Easy to use
Uncertainty of the solution/method	2	0	0	Availability of an instant solution
Time and/or budget constraints	1	0	0	Specified in process
Problem focused	1	0	0	Solution focused
Minimal risks	0	1	0	Governance procedures
Useful for communication	0	1	0	Useful for implementation
Small/low-impact project	2	0	0	Large/ high profile project
Easy to apply	1	0	0	Can be verified
Company's standard approach	0	0	1	Personal or team preference
The most common/acceptable practice in IT industry	0	0	1	A tailor-made process based on the project
Human resources constraints	1	0	0	Availability of internal staff/external consultant
Regulatory compliance	0	0	1	Freedom to choose

Figure 4-4 Analysis of 'How-Why' results; 'No PM Method' element

As can be seen in Figure 4-4, the non-use of a project management methodology is not a common occurrence. Not surprisingly, the results suggest that this approach should only be used on projects that are small and low impact.

Internal Organisation Discussion				
	1s/2s	3s	5s/4s	
Faster development/implementation process	1	2	2	Quality focus
Clear responsibilities for all parties	3	2	0	Easy to use
Uncertainty of the solution/method	3	3	0	Availability of an instant solution
Time and/or budget constraints	2	0	0	Specified in process
Problem focused	0	2	2	Solution focused
Minimal risks	0	3	0	Governance procedures
Useful for communication	3	2	1	Useful for implementation
Small/low-impact project	0	1	3	Large/ high profile project
Easy to apply	2	1	1	Can be verified
Company's standard approach	1	2	1	Personal or team preference
The most common/acceptable practice in IT industry	1	1	1	A tailor-made process based on the project
Human resources constraints	0	1	4	Availability of internal staff/external consultant
Regulatory compliance	0	0	3	Freedom to choose

Figure 4-5 Analysis of 'How-Why' results; 'Internal Organisation Discussion' element

The results depicted in Figure 4-5 suggest that availability of internal human resources supported organisational discussion and brainstorming. The grid again informed that such an activity was typically carried out for large and high profile projects.

Market Research				
	1s/2s	3s	5s/4s	
Faster development/implementation process	0	1	3	Quality focus
Clear responsibilities for all parties	1	1	1	Easy to use
Uncertainty of the solution/method	1	2	2	Availability of an instant solution
Time and/or budget constraints	3	0	0	Specified in process
Problem focused	0	0	5	Solution focused
Minimal risks	1	1	1	Governance procedures
Useful for communication	1	2	1	Useful for implementation
Small/low-impact project	0	0	6	Large/ high profile project
Easy to apply	2	2	1	Can be verified
Company's standard approach	1	2	1	Personal or team preference
The most common/acceptable practice in IT industry	2	2	0	A tailor-made process based on the project
Human resources constraints	0	3	0	Availability of internal staff/external consultant
Regulatory compliance	0	0	4	Freedom to choose

Figure 4-6 Analysis of 'How-Why' results; 'Market Research' element

According to Figure 4-6, the large/high-profile projects again led to IT Managers conducting market research. IT Managers further considered this approach to be solution and quality focused and enabled them to choose from different alternatives.

Cost Benefit Analysis				
	1s/2s	3s	5s/4s	
Faster development/implementation process	0	1	2	Quality focus
Clear responsibilities for all parties	2	1	0	Easy to use
Uncertainty of the solution/method	1	1	0	Availability of an instant solution
Time and/or budget constraints	3	1	2	Specified in process
Problem focused	0	0	3	Solution focused
Minimal risks	1	1	3	Governance procedures
Useful for communication	1	2	0	Useful for implementation
Small/low-impact project	0	1	3	Large/ high profile project
Easy to apply	0	1	3	Can be verified
Company's standard approach	2	1	2	Personal or team preference
The most common/acceptable practice in IT industry	3	2	0	A tailor-made process based on the project
Human resources constraints	0	2	2	Availability of internal staff/external consultant
Regulatory compliance	1	0	3	Freedom to choose

Figure 4-7 Analysis of 'How-Why' results; 'Cost Benefit Analysis' element

There is an even distribution of ratings in Figure 4-7 in regard to the use of cost benefit analysis. This suggests that cost benefit analysis might be one of the more commonly employed activities to move projects forward from the initiation stage. However, it seems that the process was carried out mainly for large/high profile projects and perhaps to adhere to governance procedures.

Project Management Methodology				
	1s/2s	3s	5s/4s	
Faster development/implementation process	0	3	3	Quality focus
Clear responsibilities for all parties	4	2	0	Easy to use
Uncertainty of the solution/method	1	3	0	Availability of an instant solution
Time and/or budget constraints	4	1	0	Specified in process
Problem focused	0	2	4	Solution focused
Minimal risks	0	4	1	Governance procedures
Useful for communication	0	4	2	Useful for implementation
Small/low-impact project	0	0	5	Large/ high profile project
Easy to apply	1	1	4	Can be verified
Company's standard approach	1	3	3	Personal or team preference
The most common/acceptable practice in IT industry	4	1	0	A tailor-made process based on the project
Human resources constraints	0	1	3	Availability of internal staff/external consultant
Regulatory compliance	0	0	4	Freedom to choose

Figure 4-8 Analysis of 'How-Why' results; 'Project Management Methodology' element

As the results in Figure 4-8 indicate, large and/or high profile projects again encouraged IT Managers to utilise a project management methodology. Despite the fact that IT Managers did not consider the application of a project management methodology as an easy process, they all regarded the process as useful, accountable, responsible, verifiable and of value.

Request for Proposal (RFP) Process				
	1s/2s	3s	5s/4s	
Faster development/implementation process	0	1	3	Quality focus
Clear responsibilities for all parties	4	2	0	Easy to use
Uncertainty of the solution/method	2	2	0	Availability of an instant solution
Time and/or budget constraints	3	0	1	Specified in process
Problem focused	2	0	3	Solution focused
Minimal risks	0	3	2	Governance procedures
Useful for communication	1	4	0	Useful for implementation
Small/low-impact project	0	0	5	Large/ high profile project
Easy to apply	0	2	3	Can be verified
Company's standard approach	2	3	1	Personal or team preference
The most common/acceptable practice in IT industry	2	2	0	A tailor-made process based on the project
Human resources constraints	1	2	0	Availability of internal staff/external consultant
Regulatory compliance	1	1	3	Freedom to choose

Figure 4-9 Analysis of 'How-Why' results; 'Request for Proposal (RFP) Process' element

Similar to previous grids, IT Managers carried out a request for proposal (RFP) process when projects were large or/and high profile. RFPs were seen as useful for both communication and for implementation, and helped in the delineation of responsibilities (as shown in Figure 4-9).

Company's Predefined Process				
	1s/2s	3s	5s/4s	
Faster development/implementation process	1	0	1	Quality focus
Clear responsibilities for all parties	1	1	0	Easy to use
Uncertainty of the solution/method	1	1	0	Availability of an instant solution
Time and/or budget constraints	2	0	0	Specified in process
Problem focused	1	0	1	Solution focused
Minimal risks	1	1	0	Governance procedures
Useful for communication	1	1	0	Useful for implementation
Small/low-impact project	1	0	1	Large/ high profile project
Easy to apply	1	1	0	Can be verified
Company's standard approach	2	0	1	Personal or team preference
The most common/acceptable practice in IT industry	0	1	1	A tailor-made process based on the project
Human resources constraints	1	1	0	Availability of internal staff/external consultant
Regulatory compliance	0	0	2	Freedom to choose

Figure 4-10 Analysis of 'How-Why' results; 'Company's Predefined Process' element

It appears (Figure 4-10) that there were not many projects that required IT Managers to follow the organisation's pre-defined process (or might indicate that such pre-defined processes simply did not exist).

Prototype				
	1s/2s	3s	5s/4s	
Faster development/implementation process	2	2	1	Quality focus
Clear responsibilities for all parties	1	0	3	Easy to use
Uncertainty of the solution/method	3	1	1	Availability of an instant solution
Time and/or budget constraints	1	0	3	Specified in process
Problem focused	1	1	3	Solution focused
Minimal risks	4	2	0	Governance procedures
Useful for communication	1	3	1	Useful for implementation
Small/low-impact project	0	2	2	Large/ high profile project
Easy to apply	2	0	3	Can be verified
Company's standard approach	0	1	3	Personal or team preference
The most common/acceptable practice in IT industry	1	2	2	A tailor-made process based on the project
Human resources constraints	0	1	2	Availability of internal staff/external consultant
Regulatory compliance	0	0	3	Freedom to choose

Figure 4-11 Analysis of 'How-Why' results; 'Prototype' element

The results shown in Figure 4-11 suggest that there are different perceptions among IT Managers regarding the reasons for using prototypes. However, one aspect that did generate agreement is the role of prototypes in minimising risks.

Site Visits				
	1s/2s	3s	5s/4s	
Faster development/implementation process	1	1	1	Quality focus
Clear responsibilities for all parties	0	0	1	Easy to use
Uncertainty of the solution/method	1	1	0	Availability of an instant solution
Time and/or budget constraints	1	0	0	Specified in process
Problem focused	0	0	2	Solution focused
Minimal risks	0	1	0	Governance procedures
Useful for communication	0	1	0	Useful for implementation
Small/low-impact project	0	0	2	Large/ high profile project
Easy to apply	0	1	1	Can be verified
Company's standard approach	0	1	0	Personal or team preference
The most common/acceptable practice in IT industry	1	1	0	A tailor-made process based on the project
Human resources constraints	0	1	0	Availability of internal staff/external consultant
Regulatory compliance	0	0	1	Freedom to choose

Figure 4-12 Analysis of 'How-Why' results; 'Site Visits' element

Based on the collected data presented in Figure 4-12, in spite of some support the site visit was not a commonly used method to advance a project from the initiation stage.

Evaluative Framework				
	1s/2s	3s	5s/4s	
Faster development/implementation process	0	0	1	Quality focus
Clear responsibilities for all parties	1	0	0	Easy to use
Uncertainty of the solution/method	0	0	0	Availability of an instant solution
Time and/or budget constraints	0	0	0	Specified in process
Problem focused	0	2	0	Solution focused
Minimal risks	1	1	0	Governance procedures
Useful for communication	2	1	0	Useful for implementation
Small/low-impact project	0	0	1	Large/ high profile project
Easy to apply	1	0	1	Can be verified
Company's standard approach	0	1	1	Personal or team preference
The most common/acceptable practice in IT industry	1	0	0	A tailor-made process based on the project
Human resources constraints	0	0	0	Availability of internal staff/external consultant
Regulatory compliance	0	0	1	Freedom to choose

Figure 4-13 Analysis of 'How-Why' results; 'Evaluative Framework' element

Narrative Specs				
	1s/2s	3s	5s/4s	
Faster development/implementation process	0	1	1	Quality focus
Clear responsibilities for all parties	0	1	0	Easy to use
Uncertainty of the solution/method	0	2	0	Availability of an instant solution
Time and/or budget constraints	1	0	0	Specified in process
Problem focused	0	1	1	Solution focused
Minimal risks	0	2	0	Governance procedures
Useful for communication	0	2	0	Useful for implementation
Small/low-impact project	0	0	2	Large/ high profile project
Easy to apply	0	0	2	Can be verified
Company's standard approach	0	2	0	Personal or team preference
The most common/acceptable practice in IT industry	1	1	0	A tailor-made process based on the project
Human resources constraints	0	1	0	Availability of internal staff/external consultant
Regulatory compliance	0	0	1	Freedom to choose

Figure 4-14 Analysis of 'How-Why' results; 'Narrative Specs' element

Models				
	1s/2s	3s	5s/4s	
Faster development/implementation process	0	1	2	Quality focus
Clear responsibilities for all parties	0	1	1	Easy to use
Uncertainty of the solution/method	1	2	0	Availability of an instant solution
Time and/or budget constraints	1	0	1	Specified in process
Problem focused	0	0	2	Solution focused
Minimal risks	0	1	1	Governance procedures
Useful for communication	1	3	0	Useful for implementation
Small/low-impact project	0	0	3	Large/ high profile project
Easy to apply	0	1	2	Can be verified
Company's standard approach	0	2	1	Personal or team preference
The most common/acceptable practice in IT industry	2	1	0	A tailor-made process based on the project
Human resources constraints	0	1	1	Availability of internal staff/external consultant
Regulatory compliance	1	0	1	Freedom to choose

Figure 4-15 Analysis of 'How-Why' results; 'Models' element

Request for Information (RFI) Process				
	1s/2s	3s	5s/4s	
Faster development/implementation process	0	0	2	Quality focus
Clear responsibilities for all parties	1	0	0	Easy to use
Uncertainty of the solution/method	1	1	0	Availability of an instant solution
Time and/or budget constraints	0	0	1	Specified in process
Problem focused	0	0	1	Solution focused
Minimal risks	0	1	1	Governance procedures
Useful for communication	1	1	0	Useful for implementation
Small/low-impact project	0	0	2	Large/ high profile project
Easy to apply	0	1	1	Can be verified
Company's standard approach	1	1	0	Personal or team preference
The most common/acceptable practice in IT industry	1	1	0	A tailor-made process based on the project
Human resources constraints	0	1	0	Availability of internal staff/external consultant
Regulatory compliance	0	1	0	Freedom to choose

Figure 4-16 Analysis of 'How-Why' results; 'RFI Process' element

As can be seen in Figures 4-13 to 4-16, the construct ratings for the evaluative framework and narrative specs approaches are widely spread and there are no common reasons for performing these activities, on the rare occasions that they were used. Likewise, Models and an RFI process were used for a range of reasons. However, one main theme in applying these approaches was, again, their particular utility in large and/or high profile projects.

Others				
	1s/2s	3s	5s/4s	
Faster development/implementation process	1	1	0	Quality focus
Clear responsibilities for all parties	0	0	2	Easy to use
Uncertainty of the solution/method	1	1	0	Availability of an instant solution
Time and/or budget constraints	0	1	1	Specified in process
Problem focused	1	0	1	Solution focused
Minimal risks	1	1	0	Governance procedures
Useful for communication	1	0	1	Useful for implementation
Small/low-impact project	1	0	1	Large/ high profile project
Easy to apply	1	1	0	Can be verified
Company's standard approach	1	0	2	Personal or team preference
The most common/acceptable practice in IT industry	1	0	1	A tailor-made process based on the project
Human resources constraints	0	1	1	Availability of internal staff/external consultant
Regulatory compliance	0	0	2	Freedom to choose

Figure 4-17 Analysis of 'How-Why' results; 'Others' element

'Other' approaches were specified as 'no specified approach applied' and 'User stories'. As the ratings are spread across the grid (Figure 4-17) and the sample size is at a minimum, the rationales behind their selection cannot be drawn upon with any particular remarks.

4.4.3.2. Discussions

In summarising the above findings and results, it appears that organisations/IT Managers tended to use the more commonly recommended approaches (i.e. recommended by the practitioner and research communities) principally in large and/or high profile projects. For example, requirements gathering/analysis, a project management methodology, vendor's demos, market research and RFP processes received general support. The findings further suggest that organisations and their IT Managers are generally aware of the requirements of such processes/activities and the benefits of adopting these approaches and methods. However, the results suggest that smaller projects are treated with less formal processes. On the other hand, some IT Managers/organisations do not apply these common approaches at all, in any of their projects.

4.4.4. What

Next, the participants were asked to describe the selected technological solutions (to be) adopted in their identified projects. The reasons for selecting the particular solutions were also sought.

4.4.4.1. Findings

The technological solutions shown in Table 4-4 were identified by the 18 participants during the interview process, representing a total of 49 projects.

What technological solutions did you choose?	Grand Total	Percentage for a reason
Packaged software (commercial off the shelf)	20	41%
External Consultant	18	37%
Software as a Service (SaaS)	9	18%
In house bespoke development	6	12%
Other(s)	5	10%
Internal staff development	3	6%
In-house customised open source solution	1	2%

Table 4-4 Summary of 'What' results

As can be seen, packaged software was most commonly adopted by the IT Managers followed relatively closely by the use of external consultancy services. Software as a Service (SaaS) also has some traction as a technological solution. In-house solutions were relatively less favoured by this particular sample of IT Managers.

4.4.4.2. Discussions

There are a variety of technological solutions that organisations can select, and it appears that packaged and externally provided solutions presently dominate, but "As people engrossed in coping with the complexity of such projects, they may overlook alternative uses of resources." (Heng, Tan & Wei, 2003, p.100). The individual IT Managers selected the particular solutions, or nominated a specific technological selection as their preferred method, with underlying reasons. Thus, it is important to delve deeper, to find out the 'why' factor of their selections - the following section describes the participants' rationales behind their chosen technological solutions.

4.4.5. What-Why

In this section, participants' rationale for selecting (or at least using) particular technological solutions is presented.

4.4.5.1. Findings

As per the 'How-Why' analysis (i.e., sub-section 4.4.3.1), each element (the selected technological solution) is placed in a separate individual grid. The constructs (rationales for selecting the particular solution) for each element are allocated at the left and right hand sides of the bipolar scale. The consolidated ratings against constructs for each element are placed in the grid.

In house bespoke development				
	1s/2s	3s	5s/4s	
Technology ownership	1	0	1	Shared responsibilities
Existing system no longer supported	1	0	2	Opportunity to adopt new/modern technology
Have availablity of knowledge internally	4	0	0	External consultants/provider expertise
Suitable size/functionality	1	0	2	Company's standard approach
Seen PR elsewhere	1	1	0	Product review/vendor comparison
Independent/apolitical	0	0	1	Policitical/no other option
Others using	1	0	0	Personal or team preference
Efficient solution	1	0	0	Vendor's promises regarding cost/functionality
No development capability in-house	0	0	1	Faster development process
Ability to manage the system internally	1	0	1	Stick with core business
Faster development/Implementation	0	0	2	Long-term benefits
Working in partnership	1	0	0	Clear contractual responsibilities
New management directive	0	1	0	Tried and true solution
Previous experiences	2	0	0	Vendor's demos
Selection from RFP process/results of evaluation framework	0	0	1	Existing relationship with the provider or Company's preferred supplier
Internal suggestion/recommendation	4	0	0	Vendor is a market leader
Reputation of the product/service provider	1	0	0	Results of product/service research
Time and/or budget constraints	0	0	1	Quality focus
Evaluation against criteria	1	0	3	Availability of an instant solution/in use elsewhere in organisation
Spread risks	0	0	2	High control
Knowledge retention	2	0	0	Reduced personnel costs
Human resources constraints	0	0	2	Availability of internal development team/suitable team available
Low administration & maintenance cost/minimal support	0	0	1	Availability of internal systems admin & support team/local support
Limited alternative	1	1	0	Selection from many alternatives
To devote attention to other higher priority projects	0	0	1	A large project and it is regarded as a very high priority
Budget constraints	0	0	2	Budget allowance

Figure 4-18 Analysis of 'What-Why' results; 'In house bespoke development' element

As can be seen in Figure 4-18, 'Have availability of knowledge internally' was rated 4 times in relation to in-house bespoke development, an understandable acknowledgement that availability of internal staff knowledge and skill sets is relevant to IT Managers' decisions to adopt this approach. This rationale is reinforced by the ratings of 'Previous experiences' and 'Availability of internal development team/suitable team available'. It appears that where in-house development has been used elsewhere in a participant's organisation and/or is an internal suggestion/recommendation these factors encourage the adoption of in-house solution development. In addition, it seems that IT Managers regarded in-house development not only as a high control solution which was likely to benefit the organisation long-term but also that it supported knowledge retention in the organisation. The grid also suggests that sufficient budget allowance promoted development in house.

External Consultant				
	1s/2s	3s	5s/4s	
Technology ownership	0	0	3	Shared responsibilities
Existing system no longer supported	0	0	3	Opportunity to adopt new/modern technology
Have availablity of knowledge internally	0	0	5	External Consultants/provider expertise
Suitable size/functionality	0	1	1	Company's standard approach
Seen PR elsewhere	0	1	1	Product review/vendor comparison
Independent/apolitical	3	0	1	Policitical/no other option
Others using	2	0	1	Personal or team preference
Efficient solution	2	2	1	Vendor's promises regarding cost/functionality
No development capability in-house	1	1	2	Faster development process
Ability to manage the system internally	0	0	2	Stick with core business
Faster development/Implementation	2	0	1	Long-term benefits
Working in partnership	2	1	2	Clear contractual responsibilities
New management directive	0	1	1	Tried and true solution
Previous experiences	1	1	0	Vendor's demos
Selection from RFP process/results of evaluation framework	2	0	3	Existing relationship with the provider or Company's preferred supplier
Internal suggestion/recommendation	1	0	2	Vendor is a market leader
Reputation of the product/service provider	1	1	0	Results of product/service research
Time and/or budget constraints	0	1	2	Quality focus
Evaluation against criteria	0	2	1	Availability of an instant solution/in use elsewhere in organisation
Spread risks	0	2	0	High control
Knowledge retention	0	2	0	Reduced personnel costs
Human resources constraints	0	1	1	Availability of internal development team/suitable team available
Low administration & maintenance cost/minimal support	1	1	0	Availability of internal systems admin & support team/local support
Limited alternative	2	0	0	Selection from many alternatives
To devote attention to other higher priority projects	0	0	2	A large project and it is regarded as a very high priority
Budget constraints	0	1	1	Budget allowance

Figure 4-19 Analysis of 'What-Why' results; 'External Consultant' element

As depicted in Figure 4-19, external consultancy services were considered as leading to shared responsibilities. Additionally, IT Managers selected external consultancy services as they believed that such services offered expert knowledge and skills. Another interesting point regarding IT Managers' selection of the consultancy service approach relates to the 'Independent/apolitical' construct – they appeared to consider the external services as something of an independent advisory provider. On the other hand, as can be seen in the figure, one of the participants indicated that selecting an external consultant was due to political reasons. During the interview, this particular participant also mentioned that the organisation's pre-defined standard process was to work with a preferred provider due to an existing relationship and contractual agreement with the specific consultancy services company. The participant also added that the team had no option but to follow the organisation's standard approach.

Packaged Software				
	1s/2s	3s	5s/4s	
Technology ownership	0	0	3	Shared responsibilities
Existing system no longer supported	1	0	4	Opportunity to adopt new/modern technology
Have availablity of knowledge internally	1	0	3	External Consultants/provider expertise
Suitable size/functionality	4	1	1	Company's standard approach
Seen PR elsewhere	1	0	3	Product review/vendor comparison
Independent/apolitical	1	1	1	Policitical/no other option
Others using	2	2	1	Personal or team preference
Efficient solution	2	0	2	Vendor's promises regarding cost/functionality
No development capability in-house	3	0	1	Faster development process
Ability to manage the system internally	0	1	2	Stick with core business
Faster development/Implementation	2	2	1	Long-term benefits
Working in partnership	1	2	0	Clear contractual responsibilities
New management directive	1	0	3	Tried and true solution
Previous experiences	2	0	0	Vendor's demos
Selection from RFP process/results of evaluation framework	2	0	2	Existing relationship with the provider or Company's preferred supplier
Internal suggestion/recommendation	0	0	3	Vendor is a market leader
Reputation of the product/service provider	2	2	0	Results of product/service research
Time and/or budget constraints	2	2	0	Quality focus
Evaluation against criteria	2	1	3	Availability of an instant solution/in use elsewhere in organisation
Spread risks	0	2	0	High control
Knowledge retention	0	1	1	Reduced personnel costs
Human resources constraints	1	1	0	Availability of internal development team/suitable team available
Low administration & maintenance cost/minimal support	1	0	1	Availability of internal systems admin & support team/local support
Limited alternative	1	2	0	Selection from many alternatives
To devote attention to other higher priority projects	0	1	2	A large project and it is regarded as a very high priority
Budget constraints	1	2	1	Budget allowance

Figure 4-20 Analysis of 'What-Why' results; 'Packaged Software' element

According to the results shown in Figure 4-20, the packaged software (commercial off the shelf) solution was selected as IT Managers believed that it provided suitable size/functionality. It also appears that when specialised packaged software was instantly available in the market and the vendor is a well-known provider, and when there was no development capability in-house, IT Managers tended to adopt packaged software.

Software as a Service (SaaS)				
	1s/2s	3s	5s/4s	
Technology ownership	0	0	1	Shared responsibilities
Existing system no longer supported	1	0	0	Opportunity to adopt new/modern technology
Have availablity of knowledge internally	0	1	0	External Consultants/provider expertise
Suitable size/functionality	1	0	0	Company's standard approach
Seen PR elsewhere	0	0	2	Product review/vendor comparison
Independent/apolitical	1	0	0	Policitical/no other option
Others using	2	0	0	Personal or team preference
Efficient solution	1	0	1	Vendor's promises regarding cost/functionality
No development capability in-house	1	0	1	Faster development process
Ability to manage the system internally	1	0	0	Stick with core business
Faster development/Implementation	2	0	0	Long-term benefits
Working in partnership	0	1	0	Clear contractual responsibilities
New management directive	1	0	0	Tried and true solution
Previous experiences	0	0	1	Vendor's demos
Selection from RFP process/results of evaluation framework	1	0	1	Existing relationship with the provider or Company's preferred supplier
Internal suggestion/recommendation	0	0	1	Vendor is a market leader
Reputation of the product/service provider	1	1	0	Results of product/service research
Time and/or budget constraints	1	1	0	Quality focus
Evaluation against criteria	2	0	0	Availability of an instant solution/in use elsewhere in organisation
Spread risks	0	1	0	High control
Knowledge retention	0	1	0	Reduced personnel costs
Human resources constraints	0	0	1	Availability of internal development team/suitable team available
Low administration & maintenance cost/minimal support	1	1	0	Availability of internal systems admin & support team/local support
Limited alternative	0	0	1	Selection from many alternatives
To devote attention to other higher priority projects	0	0	1	A large project and it is regarded as a very high priority
Budget constraints	1	0	1	Budget allowance

Figure 4-21 Analysis of 'What-Why' results; 'Software as a Service (SaaS)' element

Based on the spread ratings across the grid in Figure 4-21, it seems that a SaaS solution was adopted for many different reasons. However, during the interview process, three of the participants commented strongly on their decision to adopt a SaaS solution, e.g., '*we don't need to own a system; we just need a system that would help our business. That's why we went for this solution'*. Nevertheless, the reason of 'Stick with core business' was not rated in the grid by all three participants. Once again, it seems that participants openly expressed their opinions in the face-to-face conversation, but when asked to complete the less informal 'written' response (i.e., the grid), it may be that they felt less comfortable expressing their individual perceptions and opinions.

Internal staff development				
	1s/2s	3s	5s/4s	
Technology ownership	2	0	0	Shared responsibilities
Existing system no longer supported	0	0	1	Opportunity to adopt new/modern technology
Have availablity of knowledge internally	0	0	1	External Consultants/provider expertise
Suitable size/functionality	1	0	1	Company's standard approach
Seen PR elsewhere	0	1	0	Product review/vendor comparison
Independent/apolitical	0	1	0	Policitical/no other option
Others using	0	1	0	Personal or team preference
Efficient solution	0	1	0	Vendor's promises regarding cost/functionality
No development capability in-house	1	0	1	Faster development process
Ability to manage the system internally	1	0	0	Stick with core business
Faster development/Implementation	0	0	1	Long-term benefits
Working in partnership	2	0	0	Clear contractual responsibilities
New management directive	0	0	1	Tried and true solution
Previous experiences	0	1	0	Vendor's demos
Selection from RFP process/results of evaluation framework	0	1	0	Existing relationship with the provider or Company's preferred supplier
Internal suggestion/recommendation	0	1	0	Vendor is a market leader
Reputation of the product/service provider	0	1	0	Results of product/service research
Time and/or budget constraints	0	1	0	Quality focus
Evaluation against criteria	0	1	1	Availability of an instant solution/in use elsewhere in organisation
Spread risks	0	0	1	High control
Knowledge retention	0	0	1	Reduced personnel costs
Human resources constraints	0	0	2	Availability of internal development team/suitable team available
Low administration & maintenance cost/minimal support	0	0	2	Availability of internal systems admin & support team/local support
Limited alternative	0	1	0	Selection from many alternatives
To devote attention to other higher priority projects	0	0	1	A large project and it is regarded as a very high priority
Budget constraints	0	1	0	Budget allowance

Figure 4-22 Analysis of 'What-Why' results; 'Internal Staff Development' element

Figure 4-22 indicates that an internal staff development programme was utilised with a view to technology ownership and working closely with the development team in the organisation. The availability of internal resources in terms of human and technical resources also encouraged IT Managers to adopt a staff development approach.

Others				
	1s/2s	3s	5s/4s	
Technology ownership	1	0	0	Shared responsibilities
Existing system no longer supported	0	0	2	Opportunity to adopt new/modern technology
Have availablity of knowledge internally	0	0	1	External Consultants/provider expertise
Suitable size/functionality	1	0	0	Company's standard approach
Seen PR elsewhere	0	0	1	Product review/vendor comparison
Independent/apolitical	1	0	0	Policitical/no other option
Others using	1	0	0	Personal or team preference
Efficient solution	1	0	0	Vendor's promises regarding cost/functionality
No development capability in-house	1	0	1	Faster development process
Ability to manage the system internally	0	1	0	Stick with core business
Faster development/Implementation	0	0	1	Long-term benefits
Working in partnership	0	1	0	Clear contractual responsibilities
New management directive	0	1	0	Tried and true solution
Previous experiences	0	0	1	Vendor's demos
Selection from RFP process/results of evaluation framework	0	0	3	Existing relationship with the provider or Company's preferred supplier
Internal suggestion/recommendation	0	0	1	Vendor is a market leader
Reputation of the product/service provider	1	0	0	Results of product/service research
Time and/or budget constraints	1	0	1	Quality focus
Evaluation against criteria	0	0	1	Availability of an instant solution/in use elsewhere in organisation
Spread risks	0	0	1	High control
Knowledge retention	1	0	0	Reduced personnel costs
Human resources constraints	0	0	1	Availability of internal development team/suitable team available
Low administration & maintenance cost/minimal support	0	0	2	Availability of internal systems admin & support team/local support
Limited alternative	1	0	0	Selection from many alternatives
To devote attention to other higher priority projects	0	0	1	A large project and it is regarded as a very high priority
Budget constraints	1	0	1	Budget allowance

Figure 4-23 Analysis of 'What-Why' results; 'Others' element

The respondents specified 'Others' as 'Customised off the shelf Software', I'n-house customised open source solution' and 'Integrated Solution'. As can be seen in Figure 4-23, the distribution of ratings is spread across the grid and there are no obvious and common reasons for selecting these particular solutions.

4.4.5.2. Discussions

The above findings indicate the general perception of IT Managers that external consultancy services can indeed provide additional or specialised expertise that may be beneficial when there is no similar in-house capability. However, some also acknowledge that internal staff development or in-house bespoke development offers advantages of knowledge retention and clear technology ownership. From the interview conversations, these participants seemed to be heavily reliant on external consultancy services but this could have been a strategic choice or less intentional. One IT Manager mentioned that by utilising external consultancy services, ongoing knowledge is maintained and is accessible rather than relying on retaining internal staff. However, another participant described that after a period of outsourced IT their organisation had decided to recruit IT staff internally and establish an internal staff development plan. The participant's comment was "it's cheaper and we can better manage the knowledge". A few other participants indicated that they had no option

of selecting other alternatives due to their organisations' decision to outsource the entire IT service; instead, they had to adhere to the organisations' policies and pre-defined procedures of utilising external consultant resources from the outsourcing company.

Some participants favoured SaaS solutions due to perceived savings on IT administration costs. One of the IT Managers commented strongly: "we don't need to own a system; we only need to own a payroll, that's why we decided to go with hosted solution." It appears that the growing popularity of SaaS solutions in recent years has taken the place of other options. However, as pointed out by Eckerson (2009), "SaaS vendors take on greater risk than traditional software vendors because their financial model accumulates revenues on a subscription basis rather than upfront." Thus, the stability, sustainability and business model of a SaaS company are important factors to consider when selecting a SaaS solution. In consumer organisations, information may be required to flow across departments. Thus, another factor to consider is the ability to integrate data or/and systems via the hosted solutions.

4.4.6. Who

Finally, the participants were asked about the (likely) composition of their project teams for their identified projects.

4.4.6.1. Findings

As can be seen from Table 4-5, external consultants were involved in around two-thirds of the projects considered. Stakeholders were included in 61% of the projects and a slightly lower proportion (59%) were assigned to project managers. Business analysts were involved in just over half of the projects, whereas top management featured in less than a quarter of the projects nominated.

Who was assigned to work on the project (excluding yourself)?	Grand Total	Percentage for a reason
Consultants from consulting/software provider company	33	67.35%
Stakeholders	30	61.22%
Project manager(s)	29	59.18%
Business analyst(s)	26	53.06%
Support/Application support person	18	36.73%
Designer/architect(s)	16	32.65%
Developer(s)	13	26.53%
Systems analyst(s)	11	22.45%
Top management	11	22.45%
Contractor(s)	9	18.37%
Customer representatives	9	18.37%
Other(s)	4	8.16%

Table 4-5 Summary of 'Who' results

4.4.6.2. Discussions

The findings on 'Who' further reflect these IT Managers' reliance on external consultants. Perhaps as a consequence, designers/architects and systems analysts were involved in less than a third of the nominated projects. When looking at the extent of the involvement of these various parties in projects, one thing to note is that this percentage excludes the participants themselves. As described in the Demographics section, eleven IT Managers (including PMs) and three CIOs participated in the interviews. When the participants completed the grid they were asked not to include themselves in the headcounts. Since they were required to provide their perceptions regarding project team members and the rationale behind human resources selection, it was decided that it would not be appropriate to include their opinion of their own roles.

4.4.7. Who-Why

In this section, the rationale for selecting the project team members is presented.

4.4.7.1. Findings

As described in other '-Why' sections, participants were asked to rate the constructs against each element. The total counts of ratings are summarised in the body of each grid.

Systems analyst(s)				
	1s/2s	3s	5s/4s	
Focus on solution	5	0	0	Focus on need
Lateral thinker	4	0	1	Follow direction
Creative thinker	1	0	3	Procedural specialist
Exisiting system knowledge	6	0	0	Training/professional development
Main users	2	0	0	Influential person(s)
Communicator	2	0	0	Decision maker
Ability to troubleshoot problems	4	0	0	Ability to follow instructions
Previous working experiences in similar projects	3	0	0	Availablity for this project
High achiever	1	0	1	Reliable contributor
High priority project	1	0	0	To devote attention to other higher priority projects
Choice of personnel	1	0	1	Fixed team
Budget constraints	0	1	0	Budget allowance

Figure 4-24 Analysis of 'Who-Why' results; 'System Analysts' element

As can be seen in Figure 4-24, involvement of Systems Analysts is predicated on a perception that they are solution focused lateral thinkers who have domain knowledge and an ability to troubleshoot problems as well as experience in similar projects.

Business analyst(s)				
	1s/2s	3s	5s/4s	
Focus on solution	4	1	5	Focus on need
Lateral thinker	5	2	1	Follow direction
Creative thinker	4	2	1	Procedural specialist
Exisiting system knowledge	3	2	2	Training/professional development
Main users	0	1	2	Influential person(s)
Communicator	3	1	1	Decision maker
Ability to troubleshoot problems	5	1	0	Ability to follow instructions
Previous working experiences in similar projects	3	0	3	Availablity for this project
High achiever	1	2	0	Reliable contributor
High priority project	4	0	0	To devote attention to other higher priority projects
Choice of personnel	2	0	1	Fixed team
Budget constraints	0	2	0	Budget allowance

Figure 4-25 Analysis of 'Who-Why' results; 'Business Analysts' element

From the grid shown in Figure 4-25, the most interesting interpretation is that some IT Managers regarded Business Analysts (BA) as solution-oriented while others viewed BAs as being focused on requirements. BAs were also included in high-priority project teams as they were considered to be creative and lateral thinkers. BAs were seen not only seen as being solution finders but also problem solvers.

Consultants from consulting/software provider company				
	1s/2s	3s	5s/4s	
Focus on solution	5	2	1	Focus on need
Lateral thinker	1	2	0	Follow direction
Creative thinker	1	1	1	Procedural specialist
Exisiting system knowledge	6	1	0	Training/professional development
Main users	0	0	2	Influential person(s)
Communicator	2	0	1	Decision maker
Ability to troubleshoot problems	5	1	1	Ability to follow instructions
Previous working experiences in similar projects	5	0	1	Availablity for this project
High achiever	1	1	0	Reliable contributor
High priority project	3	0	0	To devote attention to other higher priority projects
Choice of personnel	0	2	1	Fixed team
Budget constraints	0	1	1	Budget allowance

Figure 4-26 Analysis of 'Who-Why' results; 'Consultants from external company' element

Not unexpectedly, the consultants from consulting or software provider companies were selected for inclusion due to IT Managers' perception that they were experts who were experienced in the proposed projects/systems (Figure 4-26).

Stakeholders				
	1s/2s	3s	5s/4s	
Focus on solution	2	0	4	Focus on need
Lateral thinker	2	1	1	Follow direction
Creative thinker	1	0	1	Procedural specialist
Exisiting system knowledge	2	0	1	Training/professional development
Main users	0	2	3	Influential person(s)
Communicator	1	1	4	Decision maker
Ability to troubleshoot problems	1	1	0	Ability to follow instructions
Previous working experiences in similar projects	0	2	2	Availablity for this project
High achiever	1	1	1	Reliable contributor
High priority project	4	0	0	To devote attention to other higher priority projects
Choice of personnel	0	2	0	Fixed team
Budget constraints	0	2	0	Budget allowance

Figure 4-27 Analysis of 'Who-Why' results; 'Stakeholders' element

Stakeholder involvement in the projects (Figure 4-27) occurred due to IT Managers' belief that they were decision makers who had a focus on requirements, and therefore, they were included in high priority projects.

Support/Application support person				
	1s/2s	3s	5s/4s	
Focus on solution	2	1	2	Focus on need
Lateral thinker	1	0	3	Follow direction
Creative thinker	0	1	3	Procedural specialist
Exisiting system knowledge	4	1	0	Training/professional development
Main users	3	1	0	Influential person(s)
Communicator	3	1	0	Decision maker
Ability to troubleshoot problems	4	1	1	Ability to follow instructions
Previous working experiences in similar projects	4	1	0	Availablity for this project
High achiever	0	3	1	Reliable contributor
High priority project	3	0	0	To devote attention to other higher priority projects
Choice of personnel	1	1	0	Fixed team
Budget constraints	0	2	0	Budget allowance

Figure 4-28 Analysis of 'Who-Why' results; 'Support/Application Support Person' element

Designer/architect(s)				
	1s/2s	3s	5s/4s	
Focus on solution	4	1	1	Focus on need
Lateral thinker	3	1	0	Follow direction
Creative thinker	3	0	2	Procedural specialist
Exisiting system knowledge	3	3	0	Training/professional development
Main users	0	1	2	Influential person(s)
Communicator	1	1	1	Decision maker
Ability to troubleshoot problems	2	1	0	Ability to follow instructions
Previous working experiences in similar projects	1	1	1	Availablity for this project
High achiever	0	1	2	Reliable contributor
High priority project	2	1	0	To devote attention to other higher priority projects
Choice of personnel	0	2	0	Fixed team
Budget constraints	0	2	0	Budget allowance

Figure 4-29 Analysis of 'Who-Why' results; 'Designer/Architect' element

As can be seen in the two grids concerned with the involvement of support personnel (Figure 4-28) and designers/architects (Figure 4-29), IT Managers' perspectives on their inclusion varied. Support personnel were particularly acknowledged for their troubleshooting capabilities and their relevant knowledge, whereas the solution focus of designers/architects was seen as a more important driver for their involvement. Abilities to think creatively and to learn while working were also relevant factors.

Developer(s)				
	1s/2s	3s	5s/4s	
Focus on solution	3	0	1	Focus on need
Lateral thinker	1	2	1	Follow direction
Creative thinker	1	1	0	Procedural specialist
Exisiting system knowledge	4	0	0	Training/professional development
Main users	0	2	0	Influential person(s)
Communicator	1	1	0	Decision maker
Ability to troubleshoot problems	2	0	0	Ability to follow instructions
Previous working experiences in similar projects	4	0	0	Availablity for this project
High achiever	1	1	0	Reliable contributor
High priority project	2	0	0	To devote attention to other higher priority projects
Choice of personnel	1	0	1	Fixed team
Budget constraints	1	1	1	Budget allowance

Figure 4-30 Analysis of 'Who-Why' results; 'Developers' element

According to Figure 4-30, developers' involvement in the nominated projects seemed to be due to their being knowledgeable personnel who had previous development experience in similar projects. However, interestingly, they were not necessarily included in projects due to their being reliable contributors.

Project manager(s)				
	1s/2s	3s	5s/4s	
Focus on solution	2	2	2	Focus on need
Lateral thinker	4	0	1	Follow direction
Creative thinker	0	0	5	Procedural specialist
Exisiting system knowledge	2	0	2	Training/professional development
Main users	0	1	1	Influential person(s)
Communicator	3	3	0	Decision maker
Ability to troubleshoot problems	2	2	0	Ability to follow instructions
Previous working experiences in similar projects	7	0	0	Availablity for this project
High achiever	3	0	0	Reliable contributor
High priority project	6	0	0	To devote attention to other higher priority projects
Choice of personnel	2	0	0	Fixed team
Budget constraints	0	1	1	Budget allowance

Figure 4-31 Analysis of 'Who-Why' results; 'Project Managers' element

As far as project managers' involvement in projects is concerned, experienced project managers appeared to be considered as particularly important or useful. Additionally, experienced project managers were assigned to high priority projects and were seen as procedural specialists rather than creative thinkers (Figure 4-31).

Customer representatives				
	1s/2s	3s	5s/4s	
Focus on solution	0	0	2	Focus on need
Lateral thinker	1	0	0	Follow direction
Creative thinker	1	0	1	Procedural specialist
Exisiting system knowledge	1	0	1	Training/professional development
Main users	4	0	2	Influential person(s)
Communicator	2	1	0	Decision maker
Ability to troubleshoot problems	0	1	0	Ability to follow instructions
Previous working experiences in similar projects	1	0	2	Availablity for this project
High achiever	0	0	1	Reliable contributor
High priority project	3	0	0	To devote attention to other higher priority projects
Choice of personnel	0	0	1	Fixed team
Budget constraints	1	0	0	Budget allowance

Figure 4-32 Analysis of 'Who-Why' results; 'Customer Representatives' element

As can be seen in Figure 4-32, IT Managers' opinions regarding the involvement of customers representatives in the projects varied apart from a commonly held view that they should be involved due to their intended role as main systems users.

Top management				
	1s/2s	3s	5s/4s	
Focus on solution	0	0	2	Focus on need
Lateral thinker	0	1	0	Follow direction
Creative thinker	0	1	0	Procedural specialist
Exisiting system knowledge	0	0	1	Training/professional development
Main users	0	0	3	Influential person(s)
Communicator	0	2	3	Decision maker
Ability to troubleshoot problems	1	0	0	Ability to follow instructions
Previous working experiences in similar projects	0	1	1	Availablity for this project
High achiever	0	1	0	Reliable contributor
High priority project	3	0	0	To devote attention to other higher priority projects
Choice of personnel	0	1	0	Fixed team
Budget constraints	0	1	0	Budget allowance

Figure 4-33 Analysis of 'Who-Why' results; 'Top Management' element

While the overall results indicated that top management were not involved in a high proportion of the projects considered, the results shown in Figure 4-33 indicate, as expected, that they were more likely to be involved in high priority projects, due to their being perceived as influential decision makers and, to a lesser extent, communicators.

Contractor(s)				
	1s/2s	3s	5s/4s	
Focus on solution	1	0	1	Focus on need
Lateral thinker	0	3	0	Follow direction
Creative thinker	0	3	0	Procedural specialist
Exisiting system knowledge	2	0	0	Training/professional development
Main users	0	0	1	Influential person(s)
Communicator	2	0	1	Decision maker
Ability to troubleshoot problems	1	2	0	Ability to follow instructions
Previous working experiences in similar projects	1	1	2	Availablity for this project
High achiever	3	0	1	Reliable contributor
High priority project	2	0	0	To devote attention to other higher priority projects
Choice of personnel	1	1	0	Fixed team
Budget constraints	0	1	0	Budget allowance

Figure 4-34 Analysis of 'Who-Why' results; 'Contractors' element

Others				
	1s/2s	3s	5s/4s	
Focus on solution	1	0	1	Focus on need
Lateral thinker	0	1	0	Follow direction
Creative thinker	0	0	1	Procedural specialist
Exisiting system knowledge	1	0	0	Training/professional development
Main users	0	0	1	Influential person(s)
Communicator	0	1	0	Decision maker
Ability to troubleshoot problems	1	0	0	Ability to follow instructions
Previous working experiences in similar projects	0	0	1	Availablity for this project
High achiever	0	1	0	Reliable contributor
High priority project	0	1	0	To devote attention to other higher priority projects
Choice of personnel	0	0	1	Fixed team
Budget constraints	0	1	0	Budget allowance

Figure 4-35 Analysis of 'Who-Why' results; 'Others' element

Finally, contractors (Figure 4-34) and other personnel (i.e., 'DBAs', 'Commercial and Legal staff', Figure 4-35) were involved in some of the projects identified by participants. Based on the spread ratings across the grids, it appears that there are a variety of reasons for getting those personnel involved in IT projects.

4.4.7.2. Discussions

According to the findings presented in the summarised 'Who' and 'Who-Why' grids, it appears that IT Managers regarded both business and systems analysts as solution and/or problem solvers. In addition, they were involved in projects due to their prior experience and knowledge in proposed system domains. The principal responsibilities of business analysts are typically said to be requirements gathering, requirements analysis, requirements prioritisation and preparation of requirements documents for the rest of the

development team. Therefore, the assumption is made that the IT Managers interviewed see business analysts in this light. In fact, this assumption is supported by the IT Managers' ratings regarding BAs' 'focus on need'. Likewise, Designer/Architects (i.e., Enterprise Architects or Solution Designer/Architects) were seen as solution providers and reliable contributors, although architects were not assigned to many of the projects nominated for review in this study.

It does appear that the organisations in the sample tend to utilise external consultancy services extensively, for trouble shooting, customisation and systems improvement solutions. As consultants from Software Provider Companies were considered as subject matter experts having relevant domain knowledge, there is an implication that the organisations' internal IT personnel may have comparatively limited knowledge in relation to particular software/systems. The other possibility is that organisations might intend to have a knowledge transition period once the new systems or new features in the existing system are stable.

As expected, top management were regarded as influential decision makers, but were only involved in some of the projects considered here. The most obvious common factor in the 'Who-Why' summary results is that top management – and other personnel, for that matter – tended to be involved in large and/or high profile projects, but beyond that involvement was handled much more on a case-by-case basis.

4.5. Discussion Summary

As stated in the 'Introduction' chapter of this thesis, this research is intended to explore the reasons behind and the factors influencing IT management decisions relating to a range of project types. IT projects could be initiated for a variety of reasons, and the aim was to seek the views of IT Managers as to how they made decisions based on key drivers. Once a project is approved and 'on the agenda', the attention on the underlying reasons for project initiation is often latent. Similarly, the influencing factors related to the selected technological solution, the chosen methodology and project team assignment are less

apparent once projects are being implemented under an approved project plan. Therefore, this thesis had the following research objective:

> *To explore the reasons underlying IT project initiation decisions and patterns of influencing factors*

Thus, this research set out to answer the questions of:

- What factors drive ITPM initiation decisions and in which situations do IT and IS managers initiate projects?
- Are there any common patterns or any significant differences of decision drivers across IT and IS managers?
- Can the IT project initiation decision process and its factors be modelled?

In this chapter, the results and findings have been presented with detailed analyses of the managers' repertory grids. Based on those findings, to a certain extent, some commonality in IT Managers' decision drivers could be found, addressing the research question '*Are there any common patterns or any significant differences of decision drivers across IT and IS managers?*' The findings also revealed that there are, of course, many underlying reasons and influencing factors behind project decisions at the pre-initiation stage.

The decisions have been structured into categories and it has been shown that there are a number of reasons behind each decision step regarding how a solution might be built (at the methodology selection step), what solution approach might be used (the technological solution selection step) and who might be involved (the project team formation step). These drivers can collectively be considered as reasons underpinning IT project management initiation decisions but they are, in fact, also indicative of individuals' perceptions, of the motivating factors or influencing rationales that drive their decision making process. Therefore, these findings answer the research questions '*What factors drive ITPM decisions and in which situations do IT and IS managers initiate projects?*'

This thesis is primarily aimed at the project pre-initiation stage and its decision patterns. In graphical representation, as Figure 4-36 illustrates, the rationale behind IT project management decisions in relation to project initiation has been the major focus of this study. To this end, one-to-one interviews were conducted with 18 IT personnel and in-depth

information regarding project initiation decisions was collected and analysed. Therefore, the overall research findings achieve the thesis objective: '*To explore the reasons underlying IT project initiation decisions and patterns of influencing factors'.*

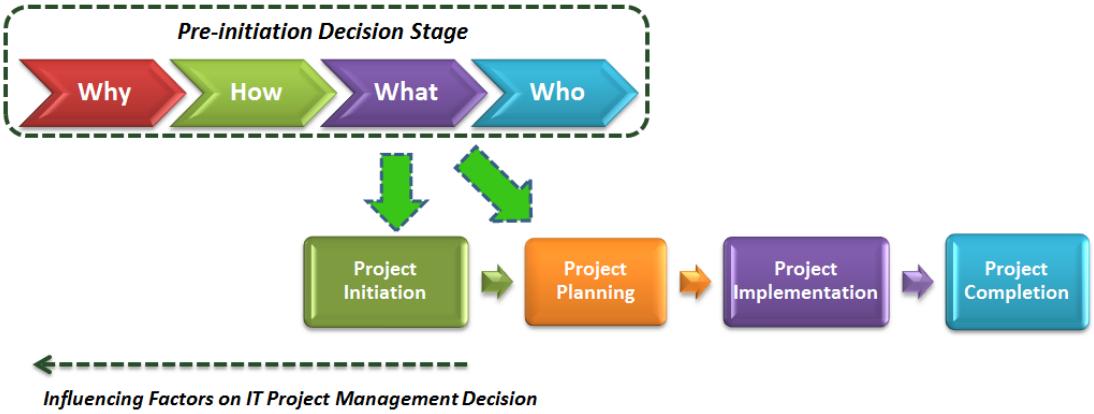


Figure 4-36 Thesis Focus: Project Pre-initiation Decision Stage

4.5.1. Evaluation of Rationales

There are no inherently good or bad rationales in regard to project decision-making; however, verifiable and auditable rationales, owned by individuals, may better support the justification of project decisions. To a certain extent, better-informed decisions made in the early stages of projects should contribute towards more favourable project outcomes. This permits decisions to be 'tested', by objectively evaluating the underlying drivers. However, the question then becomes 'how to evaluate or justify the decisions in an impartial way'. Ideally, both decisions and their assessment should be based on pre-defined evaluation criteria. Accordingly, a rationale assessment framework may be required (or might at least be useful) to objectively validate project decisions. A matrix evaluation framework that can guide IT managers, as to whether their rationales are well-grounded or sufficient to proceed with subsequent project stages, may lend useful support to the justification and validation of factors influencing IT project initiation decisions. Thus, this study now proposes an 'IT Project Pre-Initiation Decision Framework' in support of validating the motivating factors impacting on IT project initiation decisions. The proposed framework is generated based on the research findings, especially those drawn from the decision patterns identified, along with the researcher's explicit knowledge gleaned from the research and practice literature and tacit knowledge from experience and practice in industry.

4.6. IT Project Pre-initiation Decision Framework

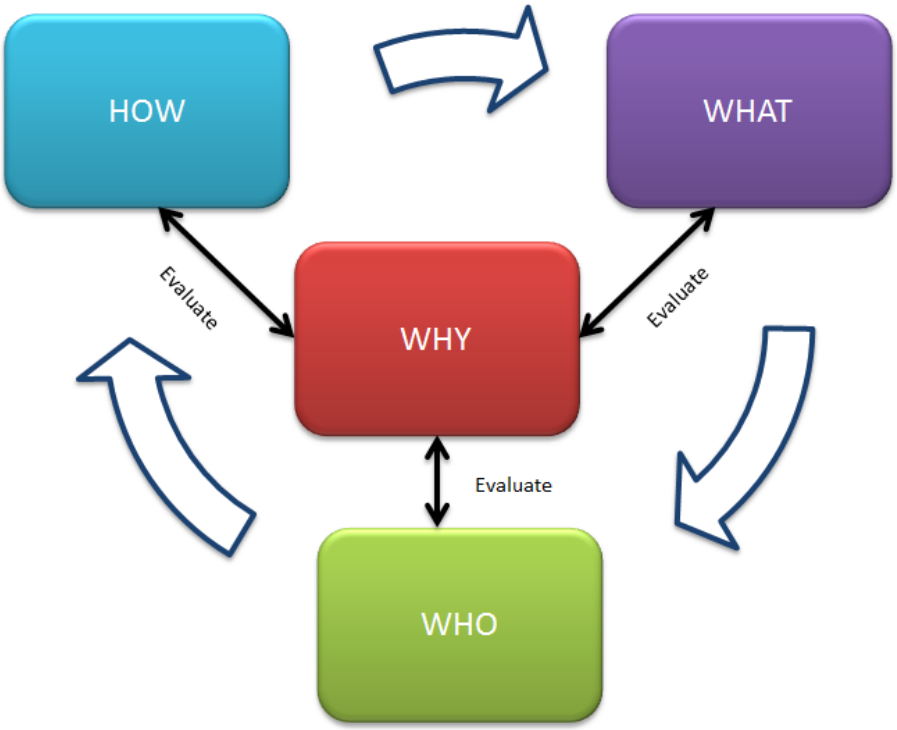


Figure 4-37 Continuous Evaluation Framework for IT project initiation decisions

As described previously, every decision made by an IT Manager is based on certain reasons. Thus, when a decision point occurs, evaluation of the underlying rationales should immediately follow and decisions should be challenged through systematic assessment of those rationales. By continuously evaluating the rationales, patterns of behaviour in the justification of projects can be established in organisations. Indeed, in this way the decisions made in organisations can become more meaningful, justifiable and auditable. Given the historically poor record of IT in project delivery, taking a more active and evaluative approach to project decision-making would seem worthy of consideration. In cases where political or personal reasons underpin project decisions, managers may be reluctant to have this information captured – but these are the very decisions, and projects, that are likely to warrant close scrutiny. The following sections describe the detailed evaluation models of the 'Why', 'How', 'What' and 'Who' rationales.

4.6.1.1. The 'Why' Pre-initiation Evaluation Model

While there are often primary and secondary drivers behind a project proposal, the key aspects of a project such as its risks, likely issues and organisational pressures, as well as its potential for cost savings, process improvement and organisational opportunities, should be evaluated. Regardless of its size, the systematic evaluation of each proposed project is of importance to the business as project outcomes can directly or indirectly impact or benefit the organisation. Thus, this study proposes an assessment model that enables project proposers, sponsors and approvers to challenge the validity of the underlying rationales. Figure 4-38 illustrates the proposed 'Why' pre-initiation evaluation model.

As is evident in the figure, from left to right and bottom to top the degree of each rationale is identified as increasing in scale, with either positive or negative implications. For example, in regard to the assessment of 'pressure' (represented by silver triangles), the scale increases from 'Low pressure' on the left and moves to the right to 'High pressure'. Examples of 'pressure' may be competitor pressure, customer pressure, stakeholder pressure, technology pressure and market pressure. With regard to 'savings' assessment (shown as orange triangles), the top triangle represents the likelihood of a high degree of savings whereas the bottom orange triangle reflects low cost savings. With this proposed model, six types of construct namely risks, issues, pressure, savings, improvement and opportunities can be rated against proposed project rationales. In doing so, the rationales are made more explicit, justifiable and transparent. This exercise should aid project proposers, sponsors and approvers in assessing a proposed project's level of importance. It could also inform decision makers regarding project prioritisation when multiple projects are proposed.

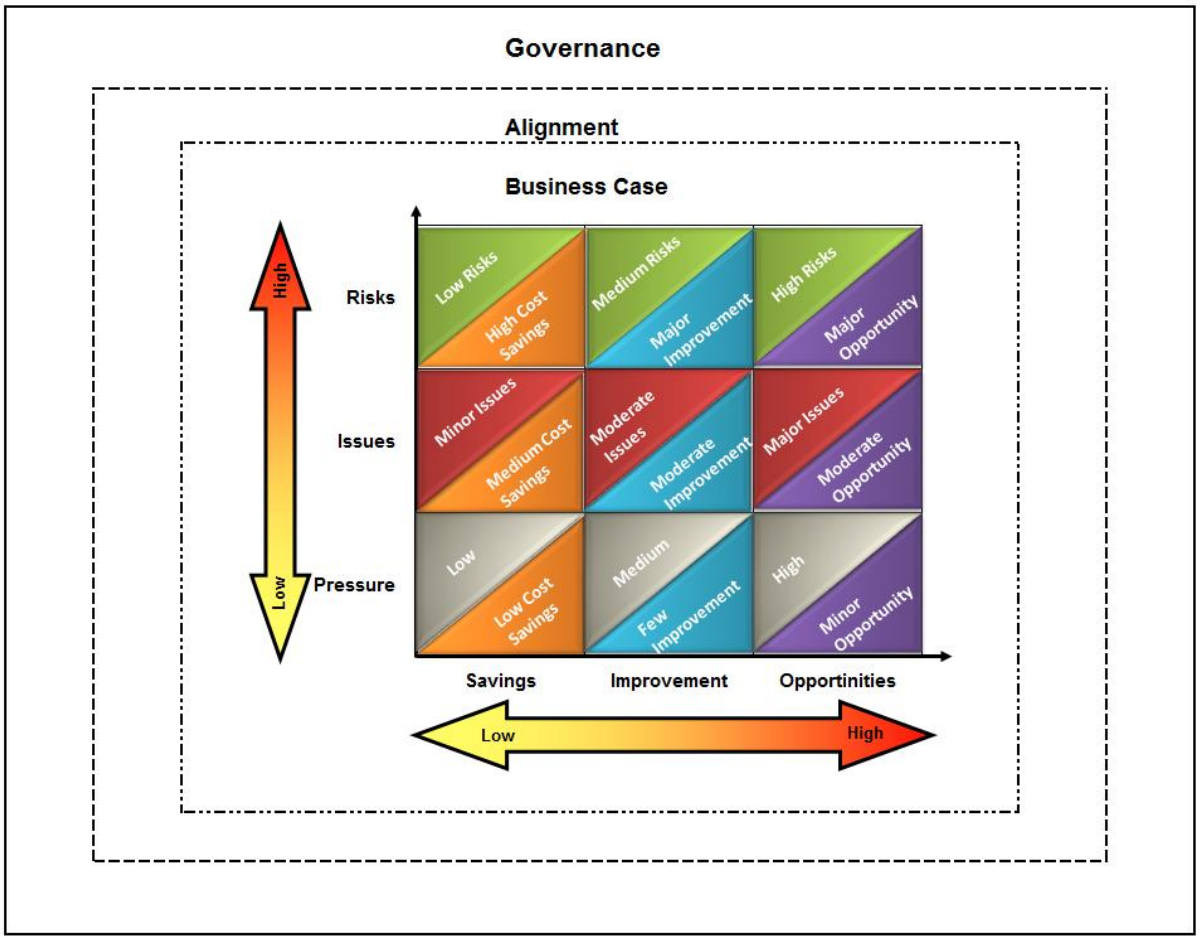


Figure 4-38 The 'Why' Pre-initiation Evaluation Model

Note also the contextualisation embedded in the proposed model, whereby the collections of assessment triangles are surrounded by the boundaries of business case, alignment and governance. In other words, the rationales cannot be assessed in isolation; instead, the overall assessment needs to be informed by these overarching principles.

4.6.1.2. The 'How' Pre-initiation Evaluation Model

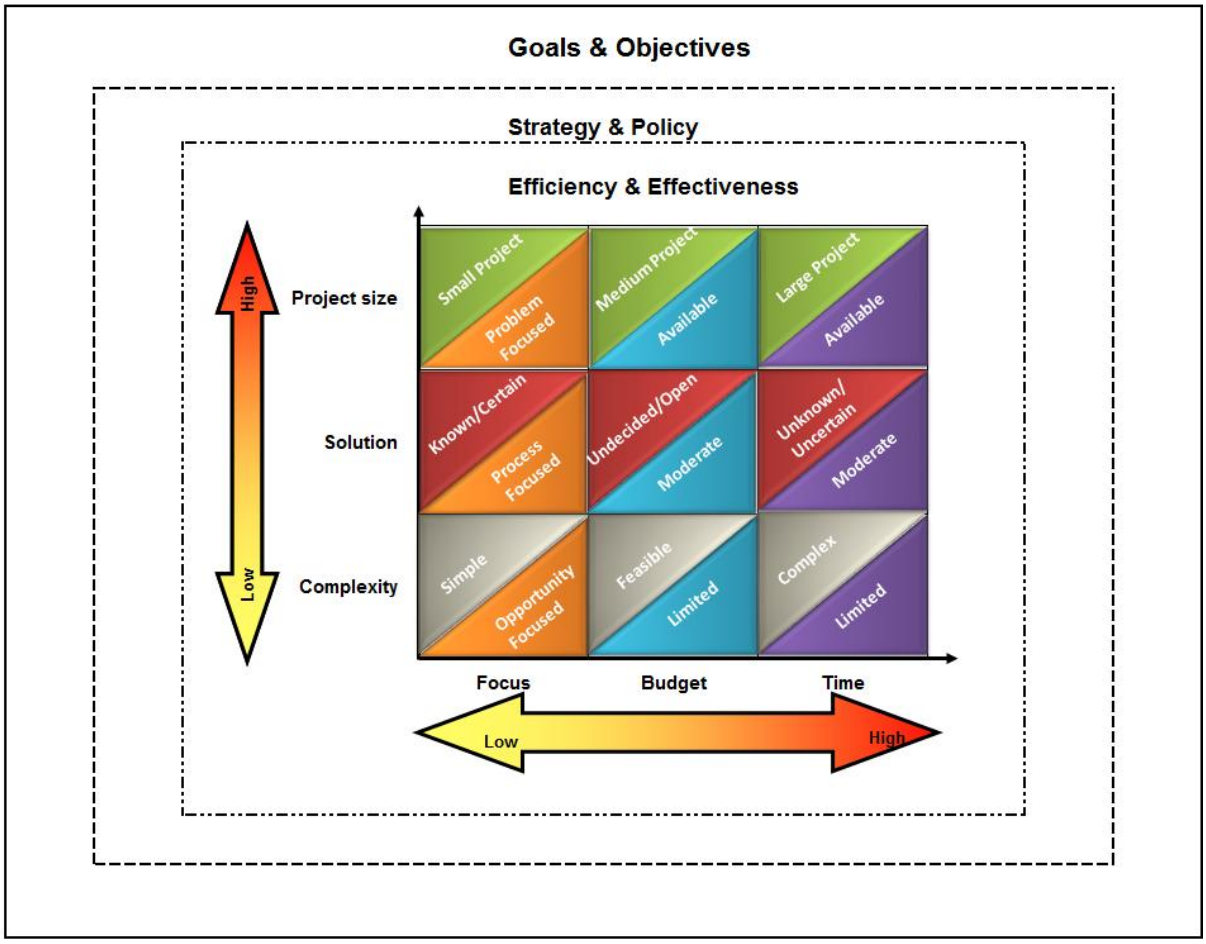


Figure 4-39 The 'How' Pre-initiation Evaluation Model

To re-iterate the meaning of the 'How' factor, this refers to how IT managers move projects forward from an idea to reality. As became evident from the interview and repertory grid analyses, there are many methods, processes, techniques and approaches that IT Managers can utilise to achieve a project goal/solution to a problem. In choosing a particular method, process or similar, the 'How-Why' factors need to be evaluated. The question could be asked "why this particular method, not others?" Thus, robust evaluation of the rationales should help to ensure that the most suitable methods are selected. These 'How-Why' rationales are surrounded by considerations of efficiency and effectiveness; strategy and policy; and goals and objectives. To exemplify, one may be inclined to select a particular development approach due to the availability of sufficient budget and time; however, alignment with the organisation's IT strategy and policy may limit the options available.

4.6.1.3. The 'What' Pre-initiation Evaluation Model

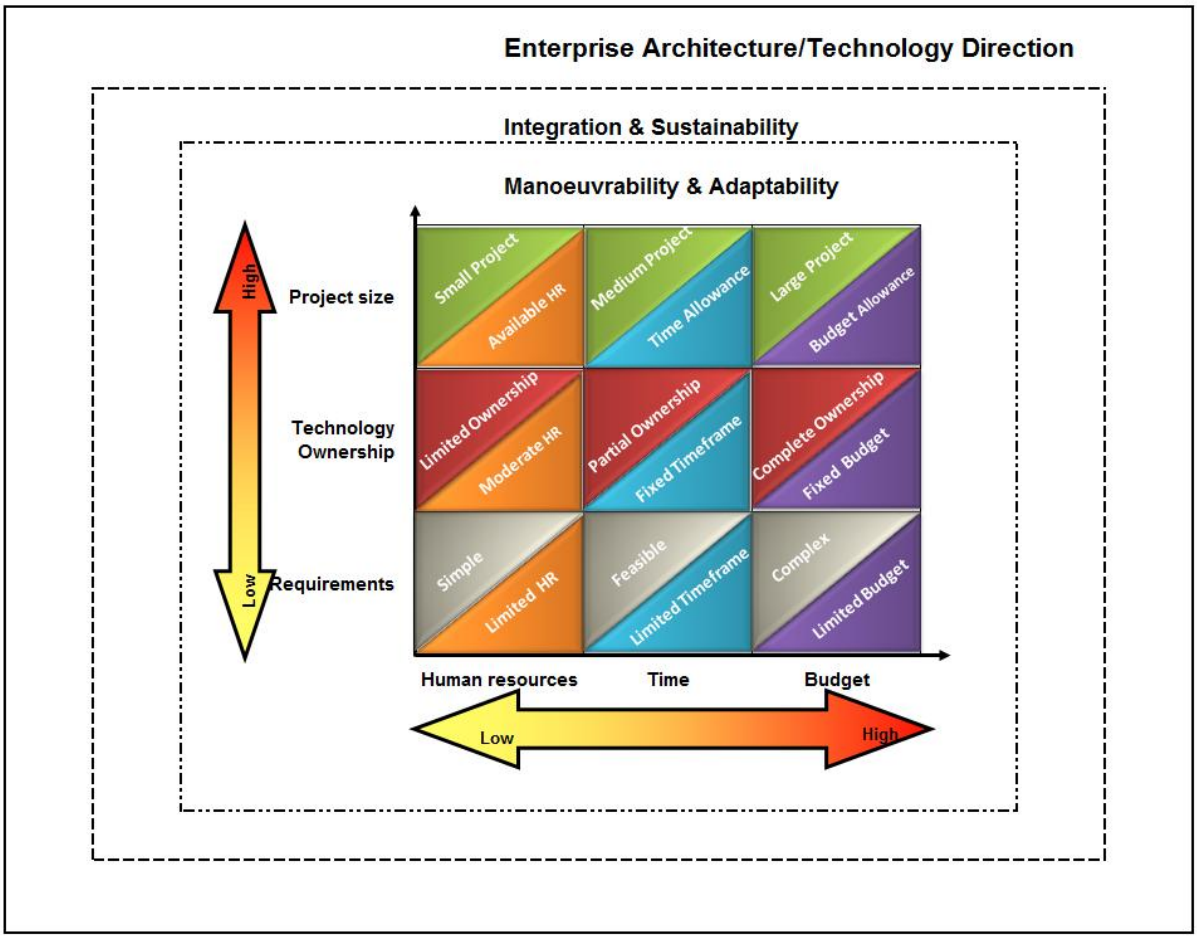


Figure 4-40 The 'What' Pre-initiation Evaluation Model

The 'What' factor (i.e., technological solution selection) of a project is also a crucial component of project initiation decisions. As an IT project often demands a technology investment as well as the development of an intangible asset, a thorough evaluation of the underlying rationales is needed. Figure 4-40 represents the matrix evaluation model through which IT Managers can assess the 'What' dimension of their projects. As a result it should be possible to make a more informed decision regarding the most suitable technology solution.

The selected solution still needs to be considered in light of higher-level issues, as shown in the figure. For instance, an IT Manager may be inclined to select a SaaS solution with the reasons of having feasible requirements, desiring limited ownership, for a small project to be built in a limited timeframe (and so on). However, if the selected SaaS solution cannot be integrated with existing systems and other proposed to-be systems then that solution

cannot be regarded as acceptable. In addition, if a selected solution does not have the ability to 'manoeuvre', to adapt to technology/process changes and/or if it does not align with the enterprise's IT architecture and future technology direction, then it is unlikely to be suitable.

Depending on the selection of a particular technological solution the methods or approaches to be used to implement the project may also vary. Therefore, the 'How' and the 'What' factors are inter-related (and indeed have some constructs in common), and these two dimensions may be evaluated as part of a single assessment activity.

4.6.1.4. The 'Who' Pre-initiation Evaluation Model

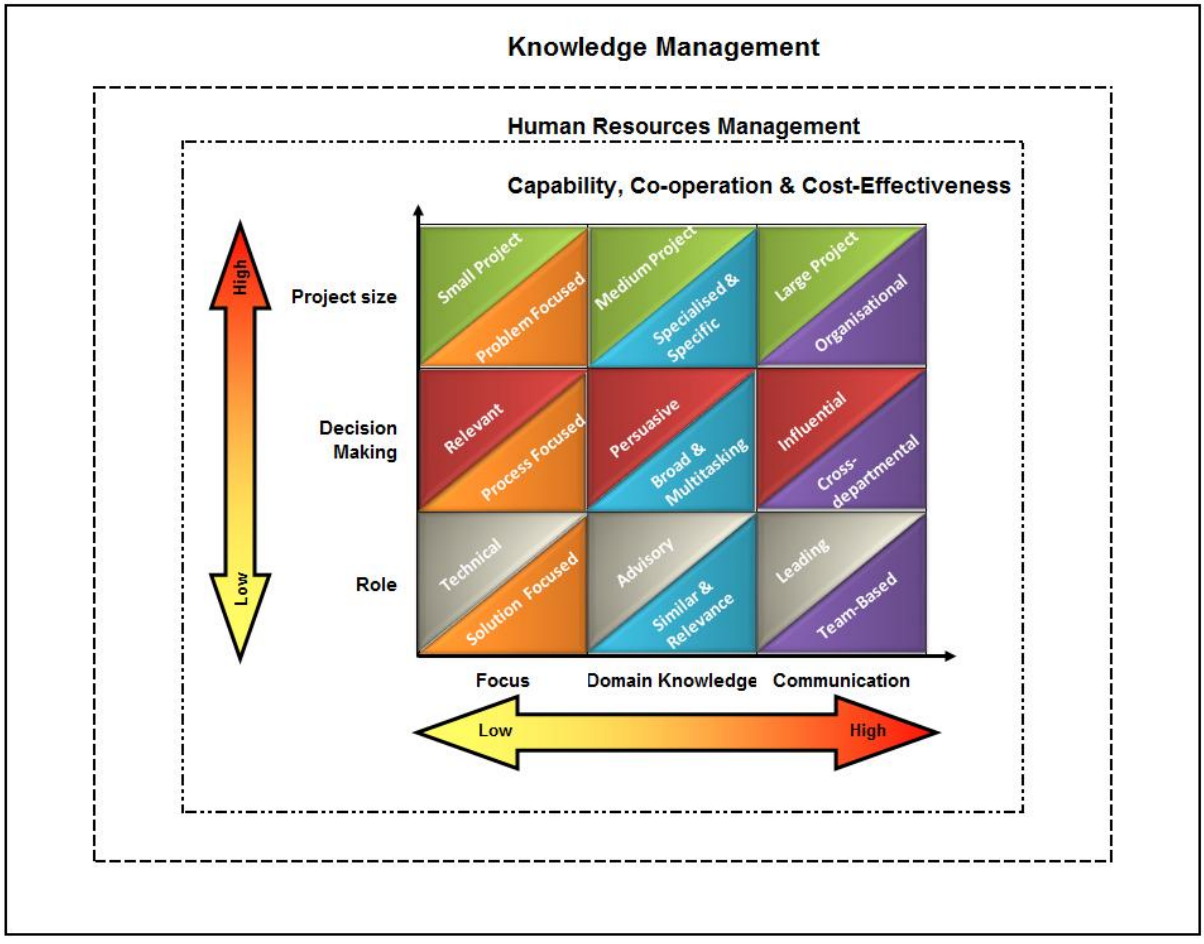


Figure 4-41 The 'Who' Pre-initiation Evaluation Model

The project team selection – the 'Who' factor – is another key component of project initiation decisions. Getting the right people in the team is not an easy task, and of course

this may be constrained by availability; however, decisions around team composition can be facilitated by identifying the rationales for inclusion and suitable personnel criteria. Once again, the rationales need to be considered within an overall framework of capability, co-operation and cost-effectiveness; human resources management; and knowledge management. In terms of human resources, the roles and responsibilities required and expected of personnel need to be pre-defined and widely understood. Furthermore, personnel selection needs to be considered not only from a human resources perspective, but the knowledge management aspect also needs to be taken into account. For instance, in this study, a few participants commented on the need (or desire) for knowledge retention; however, there were two contradictory positions in regard to whether this knowledge was best retained in internal or external resources. Regardless of the perception that knowledge can be better retained by recruiting external consultants or employing internal staff, if an appropriate knowledge management framework (i.e. how to manage and retain the knowledge) is not in place, the perceptions cannot be tested or validated.

4.6.1.5. Summary of the IT Project Pre-Initiation Decision Framework

Due to the nature of evolving technologies and other organisational factors that either follow or drive this evolution – including changes in culture, business processes and consequent resistance to change, especially in relation to new and advanced technology adoption projects – the ability to support, *and make transparent,* rational cognitive processes around project decisions is important at each stage. Processes that organisations use to evaluate project proposals and decisions may be subject to adverse influence if organisations do not work to maximise objectivity. Heng, Tan and Wei (2003) referred to Moynihan's (2002) earlier work saying, "…they carry out their work within organizational structures that have reward and sanction systems, where superiors and peers are agents of evaluation." (p.100). Thus, a thorough objective evaluation is essential to assess whether a project is genuinely required and will provide the requisite benefits or has been proposed for less compelling reasons. Such reasons may include personal motivation and interests,

political and economic influences, organisation pressures, individual perceptions and personal characteristics, technological enthusiasms and subjective appraisals.

In an ever-changing technology landscape some may be overly enthusiastic regarding technology. As Gauld and Goldfinch (2006) noted, “Many who enter the IT industries are, in common parlance, ‘geeks’, they are ‘enthusiasts’ for computers and technology, excited by the possibilities new technologies offer and by the challenging intellectual puzzles that developing new technology brings.” (p.18). Evaluating the rationales comprehensively and systematically within an overarching organisational context should help to constrain such innovative enthusiasm, over-ambitious developments and personal crusades. Keil, Wallace, Turk, Dixon-Randall and Nulden wrote in 2000 that risk assessment instruments/devices may be required in support of managers’ decision-making processes to minimise project failure. The industry record of success and failure in the intervening twelve years suggests that perhaps these devices have not been used, have not been effective, or are yet to be developed. Certainly the review of research literature conducted in this study did not identify examples of such instruments or devices – the outcomes of the present work may be a contribution in this direction.

Even though some decisions may be driven by consciously questionable reasons, some may be genuinely unintentional. For instance, there may be unconscious biases that are dormant or largely unnoticeable. If there were unconscious biases at play in decision-making, they would be revealed by a systematic and comprehensive evaluation process.

The framework proposed here may be useful for project sponsors, project approvers and business managers who do not have domain knowledge to guide them. By conducting objective appraisals, appropriate decision governance can be established. It is asserted here that the proposed ‘Why’, ‘How’, ‘What’ and ‘Who’ pre-initiation decision models together form a matrix evaluation framework that could provide transparency for project decisions and their motivating factors. By conducting such an evaluation, organisations could arrive at more justifiable, auditable, evidence-based and sustainable decisions while avoiding power imbalanced decisions affected by unconscious biases, self-assessment and self-justification.

4.6.1.6. Pre-Evaluation Process Flow

In relation to the proposed framework one might ask 'How high is high, how complex is complex and how large is large?' Similarly one may question 'In which situations, what circumstances, should a particular method or technology be selected – what is the formula?' However, the preconceived judgement of universal theory cannot be formulated in this case, as organisations vary greatly on multiple dimensions; technology also continues to evolve; and businesses and their business models are diverse; thus, a great many factors need to be taken into account. It would therefore be inappropriate to attempt to prescriptively constrain the principles and define the levels of 'high', 'small', 'complex' and so on. Customised evaluation criteria will be required based on the specific external and internal characteristics of a given organisation.

A further question may be posed: 'Where does the proposed IT project pre-initiation decision framework fit in an organisation's overall IT framework?' As can be seen from the process flow diagram shown in Figure 4-42, organisations can establish a process governance framework to be able to evaluate project decisions and their rationales in the most effective way. First, organisations are required to define the quantifiable thresholds of cost savings, budget, timeframe and so on – the parameters of the framework that are appropriate to their specific circumstances (e.g. <$50,000 = low budget, from $50,000 to $200,000 = medium, and from $200,000 to $1,000,000 = high budget). Second, organisations need to identify appropriate assessment scales for the more intangible metrics (e.g. a scale of 0 to 100 for risk scores, impact and benefit ratings, and quality acceptance levels). Evaluation can then be carried out systematically and comprehensively.

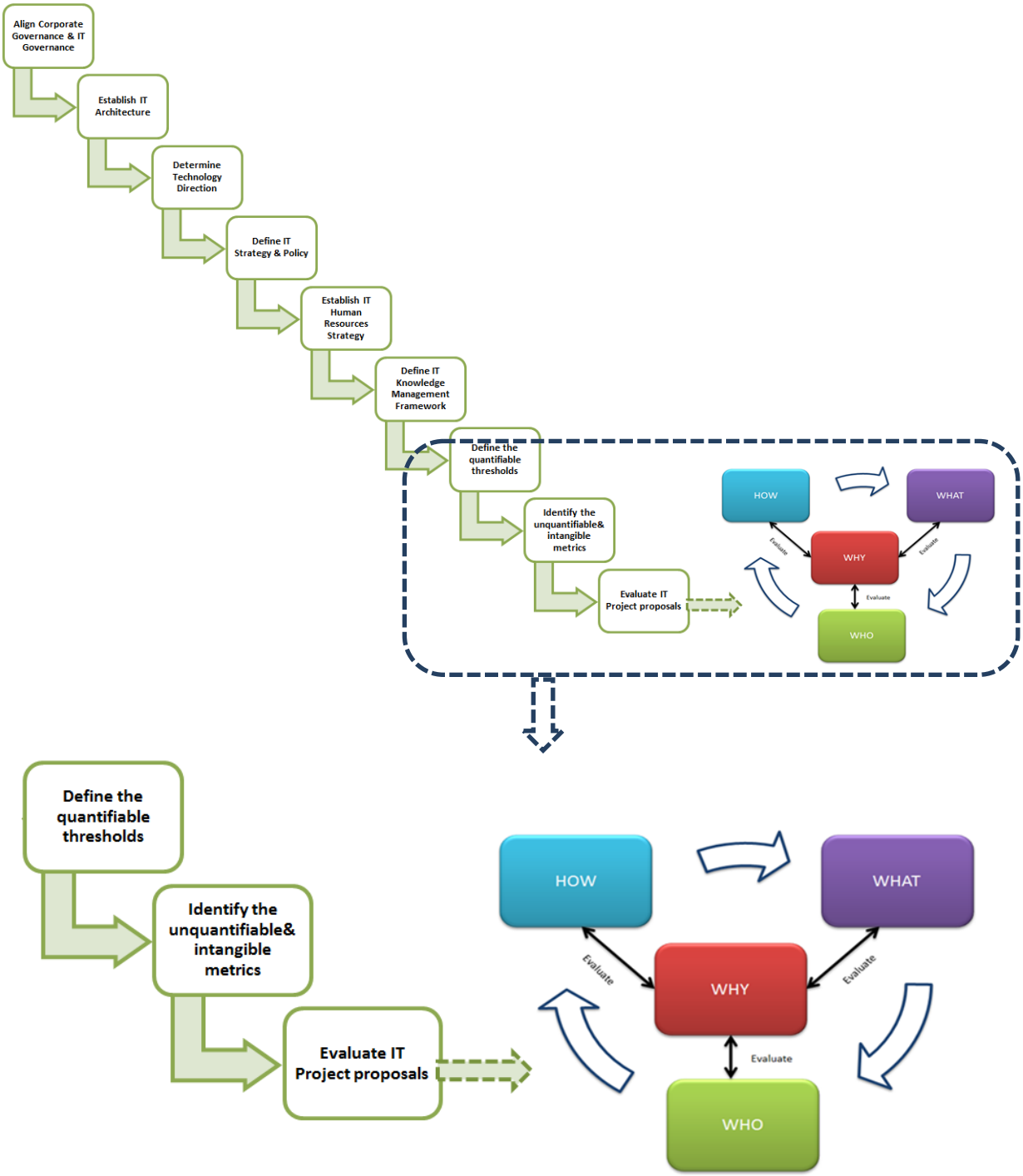


Figure 4-42 The Pre-Evaluation Process flow in an overall Organisational IT framework

4.7. Summary

In this chapter the results of the research have been presented through findings and discussions. The results are shown in detail and then specific aspects have been considered in relation to expectations drawn from prior literature and common industry practice. As many prior studies have focused on the outcomes of project implementation (i.e. post-project review/study), and not on the factors that influenced the decision making process at the initiation stage, a measurable initiation review process is missing from both literature and practice. Thus, this research proposes an 'IT Project Pre-initiation Decision Framework' that may better support the justification of rationales underlying project initiation decisions. Future in-depth research is required to assess the validity of the proposed framework, and to refine it as needed. In the next chapter, opportunities to undertake further research on project initiation are presented in detail. The following chapter also considers the limitations of the study along with the key conclusions drawn from the research.

Chapter 5: Conclusions

5.1. Introduction

This research set out to explore the reasons behind and the factors influencing IT and IS management decisions taken in the very early stages of projects. IT project management topics have been subject to enduring research and industry scrutiny due to consistently disappointing rates of failure over a period of many years. Various works in the IS and IT literature have addressed different aspects of IT projects and, among these, a significant number of studies have investigated post-project reviews and/or project implementation issues, looking to identify factors that might have led to particular project outcomes.

In contrast, research focused on project initiation is limited. As IT projects are initiated for one or more reasons, the driving factors underlying the initiation of projects also deserve research attention, particularly as some of the key complications encountered in projects may arise due to decisions made in these very early project stages. Therefore, this research was conducted to explore the reasons underlying project initiation decisions. To re-iterate, this thesis is an exploratory study of IT Management decisions on project initiation; the study has not considered the relationship between such decisions and project outcomes.

This chapter is organised as follows. The next section provides an overall synopsis of the research which includes sub-sections summarising the research overview and objectives, the applied methodology and the main conclusions of the research. The entire thesis is brought to a close with an acknowledgement of the limitations of the research, recommendations for practice and, finally, implications for future research.

5.2. Summary and Conclusions

The primary objective of this study was to understand the rationales behind IT Managers' decisions at the time of project initiation. Chapter 1 depicted the importance of IT projects in organisations and their association with decision makers and their decisions. The rationale for conducting this research – the prevalence of project failure and the limited attention given to the project initiation stage – were highlighted, the research objectives and research questions are were posed, and the scope of the thesis was established. In Chapter 2, prior literature on decision-making in IT project management was reviewed and gaps in the literature were identified. Next, Chapter 3 presented the selected research methodology and outlined the data collection process. The combination of interviews and analysis using the repertory grid method was justified as appropriate to the objectives of this study, and in reference to use in prior studies in IS/IT. Chapter 4 comprised the results and findings of the planned exploratory research. The results on each finding were reported, interpreted and discussed. Subsequently, the answers to the research questions posed in this research were considered. Drawing on the results obtained from the empirical analysis, along with the established literature and the researcher's industry experience, an 'IT Project Pre-Initiation Decision Framework' was proposed. Finally, in Chapter 5, this chapter, the research is concluded with a summary of findings along with the presentation of acknowledged limitations and future research opportunities.

5.2.1. Overview and Aims of the Study

This primary objective of this research was 'To explore the reasons underlying IT project initiation decisions and patterns of influencing factors.' To achieve this objective, a sample of IT Managers was recruited via email and the reasons underlying their decision making during the pre-initiation stage were sought through an in-depth interview and data confirmation process.

The data analysis was structured around the questions of 'Why', 'How', 'What' and 'Who' relevant to project initiation, revealing factors underpinning the rationale for the IT Managers' decisions. To elaborate, the questions to participants were based on the following themes:

1. 'Why' – the reasons, problems or opportunities that encouraged or led to the project being undertaken

2. 'How' – the approach used in going from the idea, problem or opportunity to the solution

3. 'What' – selected technological solutions

4. 'Who' – selection of project team members.

The prevailing focus of this research is the 'Why' factor; therefore, every response participants made was followed by the 'Why' question. The primary intent of the study was to explore *the reasons* behind IT management decisions at the project initiation stage. The research questions addressed in this thesis were:

- What factors drive ITPM initiation decisions and in which situations do IT and IS managers initiate projects?
- Are there any common patterns or any significant differences of decision drivers across IT and IS managers?
- Can the IT project initiation decision process and its factors be modelled?

5.2.2. Methodology

The Repertory Grid (RepGrid) method was employed as the primary analysis instrument in this research. The RepGrid was first introduced by George Kelly in the 1950s in the context of psychology research. The RepGrid method was selected because it focuses on individual interpretations and understandings of a phenomenon. The main objective of this research was to explore each individual IT Manager's reasons for the specific decisions they made based on their interpretation of events at the time of project initiation. The RepGrid method

serves to fulfil this research objective. Furthermore, RepGrid has been increasingly and successfully used in information systems research (Tan & Hunter, 2002). In this thesis, a customised RepGrid method was applied to leverage the strengths of RepGrid while minimising the length of the data collection process. The procedures of the customised RepGrid method are as follows:

1. Conduct a semi-structured face-to-face interview with each IT Manager
2. Transcribe and code each interview to identify elements and constructs
3. Aggregate all participants' elements and constructs to obtain a rich data set
4. Distribute the aggregated results, including grids pre-filled with each participant's nominated projects, to all participants for verification and/or refinement
5. Summarise the returned grids for each element
6. Analyse the results, including a comparison of the interview and grid data.

In this research, the employment of a tailor-made RepGrid method provided useful insights into the understanding of IT Managers' interpretations and perceptions around project initiation decisions. The key findings determined through the analysis of the grid and interview data are revisited in the following section.

5.2.3. Main Findings

There are a number of key findings emanating from this research for each main category of 'Why', 'How', 'What' and 'Who' factors.

With regard to the 'Why' factor, inefficient systems or processes was reported as the most influential factor encouraging IT Managers to initiate a project. This was followed by the drive for cost savings, the second most highly rated rationale that influenced projects being undertaken. In many respects these two reasons represent established bases for innovation – the desire to become more efficient or less expensive in operation have long motivated organisational change. In relation to the 'How' factor, cost benefit analysis was the most favoured approach used in order to advance a project towards implementation. The sample

of IT Managers interviewed here rated requirements gathering and analysis as the second-top approach. Project management methodologies and internal (within-organisation) discussions were also employed relatively often. The IT Managers appeared to utilise specific approaches for large and/or high profile projects. In terms of the selection of particular technological solutions – the 'What' factor – packaged software was a commonly chosen option, followed by solutions provided via consultancy services. Other technological solutions selected (albeit less frequently) by the IT Managers included SaaS solutions, in-house bespoke development, internal staff development and customised open source software solutions. Due to the varying nature of these quite different solutions, the rationale for their selection was also diverse. With respect to team member selection, the majority of the IT Managers interviewed seemed to see value in the contributions of consultants to their project teams from external companies or from the software provider company. The involvement of stakeholders – customers and users – in the project team was also preferred. The contributions of Project Managers and Business Analysts were also seen as adding value, prompting their involvement in many project teams.

Therefore, as per the findings from the analysis, the results answered the research questions posed in this thesis. Moreover, the results achieved the research objective of exploring the factors influencing IT project initiation decisions.

As the IT Managers' decisions were made based on a multitude of factors, and some of these factors were less rational than others, it was asserted that the evaluation of such decisions and rationales should be made more comprehensive and transparent. In addition, other critical contextual factors such as alignment with the organisation and adherence to governance policies and procedures should play a pivotal role in IT project management decisions. Therefore, a matrix evaluative framework referred to as the 'IT Project Pre-Initiation Decision Framework' has been developed and proposed. The proposed evaluation framework provides a foundation for consideration of project initiation decisions.

5.3. Limitations of the Research

5.3.1. Research Approach

This research was focused primarily on IT Managers' decisions in the project initiation stage. As a first exploratory study it presents a range of factors thought to influence project decisions, based on interview results and repertory grid summaries rather than via in depth analysis of one or more individual case studies. In an effort to generalise the rationales and identify common patterns of motivating factors a number of IT Managers from several organisations were interviewed. Due to time constraints, in-depth case study analysis for each project could not be conducted. Substantial in-depth interviews were not able to be undertaken, an approach that may have better informed the root causes of each decision. In addition, a limited number of participants were interviewed. The wider population of IT Managers may present different decision patterns and rationales. Thus, there are limits on the extent to which the outcomes described here can be generalised beyond the sample. A larger sample size across multiple organisations would better reflect any generalised patterns that might exist and may be able to support more definitive conclusions.

5.3.2. Research Findings

The data collected from interviews and via the repertory grids were regarded as being reflective of the true factors/primary drivers of specific decisions at the time those decisions were being made. During later project stages, possibly over a long period of time, the IT Managers' opinions and perceptions on approaches, technologies and personnel might have changed. As a result, participants' comments on and descriptions of past events might include some traces of their current perception and viewpoints rather than their viewpoints at decision time. Therefore, there are limitations on capturing the absolute precision of rationales, due to intentional or unconscious biases.

Similarly, it is not possible to assess the 'truth' of the participants' identified reasons – the study is reliant on perceptions and recollections. For instance, one of the primary reasons for project initiation might be reported as an 'inefficient system'; however, if there were any undisclosed variables such as organisational politics, the presence or absence of project competition, or a desire to promote team or individual innovativeness and enthusiasm, the data would not be representative of these primary motivating factors. In short, it is not possible to make a judgement as to whether the participants' identified rationales were purely primary or substituted secondary drivers. The results are also reflective of the views of a sample of practitioners working in a limited number of medium-large sized New Zealand organisations. Moreover, the nature of the organisations themselves may have had an impact on the attitudes and practices of those working in them – factors that we were unable to take account of in any direct way. That said, all efforts were made to place the participants at ease, to ensure that they understood the confidentiality of their information, and to explicitly not link decisions to outcomes, in the hope that participants would be more inclined to speak truthfully.

The research outcomes suggested the possibility of some general patterns of decisions based on the sample of participants; however, it would be inappropriate to claim any sort of universal truth regarding IT projects, particularly as the projects themselves were chosen by the managers. With regard to the proposed 'IT Project Pre-Initiation Decision Framework', this is based collectively on the research outcomes, the underlying literature and the explicit and tacit knowledge of the researcher. Therefore, extensive examination and hypothesis testing of the proposed framework is required to assess its validity.

5.3.3. Research Methodology and Analysis

With regard to the research methodology applied in this thesis, the employment of a customised repertory grid method offered several advantages in this specific study. To a certain extent, the tailor-made technique facilitated participant involvement in this study and consequently added value to the research outcomes. However, the flexibility,

appropriateness and relevance of the customised RepGrid method in another study should be further investigated.

5.4. Recommendations for Practice

The relatively poor record of IT project success over a long period of time suggests that IT Managers need to be highly cautious in making project decisions. As new technologies continue to emerge so new project opportunities will arise. Therefore, close attention is required to evaluate the motivating factors underpinning project initiation decisions. Such decisions, given their potential consequences, need to be justifiable, transparent and auditable. While it may be true that technology/systems development is in many respects an intangible/unquantifiable intellectual property of an organisation, it is equally true that a successful project can deliver tremendous organisational benefits and/or cost savings, at a potentially substantial cost. Therefore, this intangibility should not be used to excuse an organisation from systematically and comprehensively addressing the rationale for their IT projects. In particular, those projects that have the potential to deliver the most value are also often those that are the most challenging, and therefore the most costly. The evaluation framework proposed here, implemented as part of an organisation's overall IT framework, could contribute to a suitable project governance process. In addition, the rationales for project initiation decisions not only deserve a thorough evaluation at that time, but should also be revisited as part of the monitoring process at the post-project stage – whether the rationales proved to be valid should also be reviewed.

5.5. Implications for Future Research

The potential for further research as a consequence of this study could follow several directions. In-depth case study analyses of individual projects in multiple organisations are likely to contribute greater understanding of project-specific motivating factors and decision patterns. The underlying reasons and decision patterns across different project categories

(such as system implementation or software development projects, infrastructure-related projects, system/process improvement projects, integration projects and Business Intelligence projects) may also be another research direction.

With regard to the employment of the customised research methodology in this research, a study on the effectiveness and advantages/disadvantages of a tailor-made RepGrid method in other studies could be conducted. Another research opportunity might be the differentiation between IT Managers' individual perceptions vs. Event-based decisions. For instance, an IT Manager might have made a decision based on unpredicted situations or according to organisation culture/standard procedures/limited resources. Providing that, those decisions might not reflect individual the IT Manager's perceptions or intended solution. Therefore, comparisons between event-based ratings and individual IT Managers' perception/personal construct based ratings could also be explored.

Furthermore, the association between influencing factors/rationales and project outcomes (i.e., successful or unsuccessful projects), which was deliberately excluded from this research, presents another research avenue. In addition, any trends of association between specific rationales and project outcomes could also be developed. Such work may provide the IT community with more meaningful insights and patterns of project decisions which lead to successful or failed projects. However, careful consideration should be given while researching such patterns, as (i) pre-initiation decisions taken at the earliest stage of a project may not necessarily be the main contributors to a project success or failure; and (ii) the connection of decisions/rationales to outcomes may create reluctance in participants to truthfully report their experiences. Therefore, research partnerships between trusted parties will need to be established. This should then enable the longitudinal study of these issues across the entire life of a project, that is, considering each decision stage from project inception to project closure. Such an approach may provide fuller insights into the underlying reasons and patterns of decision behaviour, and their relationship to the project development life cycle and its overall outcomes.

Finally, as noted above, the proposed 'IT Project Pre-Initiation Decision Framework' needs to be tested, refined and verified through hypothesis testing and cross-organisational study.

References

Achterkamp, M. C., & Vos, J. F. (2008). Investigating the use of the stakeholder notion in project management literature, a meta-analysis. *International Journal of Project Management, 26*, 749-757. doi:10.1016/j.ijproman.2007.10.001

Akgün, A. E., Keskin, H., Byrne, J., & Imamoglu, S. Z. (2007). Antecedents and consequences of team potency in software development projects. *Information & Management, 44*, 646-656.

Alexander, P., Loggerenberg, J. V., Lotriet, H., & Phahlamohlaka, J. (2010). The use of the Repertory Grid for collaboration and reflection in a research context. *Group Decision and Negotiation, 19*(5), 479-504. doi:10.1007/s10726-008-9132-z

Ali, A. S., & Money, W. H. (2005). A study of project management system acceptance. *Proceedings of the 38th Hawaii International Conference on System Sciences* (pp. 1-11). Hawaii: IEEE.

Anandalingam, G., & Olsson, C. E. (1989). A multi-stage multi-attribute decision model for project selection. *European Journal of Operational Research, 43*, 271-283.

André, M., Baldoquín, M. G., & Acuña, s. T. (2011). Formal model for assigning human resources to teams in software projects. *Information and Software Technology, 53*, 259-275.

Aurum, A., & Wohlin, C. (2005). Engineering and management software requirements. New York: Springer.

Bakker, K. d., Boonstra, A., & Wortmann, H. (2010). Does risk management contribute to IT project success? A meta-analysis of empirical evidence. *International Journal of Project Management, 28*, 493-503.

Barclay, C. (2008, July). Towards an integrated measurement of IS Project Performance: The project performance Scorecard. *Information Systems Frontiers , 10*(3), 331-345. doi:10.1007/s10796-008-9083-6

Bourgault, M., Daoudi, J., Drouin, N., & Hamel, E. (2009). *Understanding Decision Making within Distributed Project Teams.* Pennsylvania: Project Management Institute, Inc.

Brock, S., Hendricks, D., Linnell, S., & Smith, D. (2003). A balanced approach to IT project management. *Proceedings of the 2003 annual research conference of the South African institute of computer scientists and information technologists on Enablement through technology* (pp. 2-10). South African Institute for Computer Scientists and Information Technologists.

Buckby, S., Best, P., & Stewart, J. (2005). The Role of Boards in Reviewing Information Technology Governance (ITG) as Part of Organizationa Control Environment Assessments. In B. Cusack (Ed.), *IT Audit - A Strategic Foundation for Corporate Governance "Extracting Business Value from IT Investment"* (pp. 1-14). Auckland: Auckland University of Technology.

Cadle, J., & Yeates, D. (2008). *Project Management for Information Systems* (Fifth ed.). London: Pearson Education Limited.

Chen, C. C., Liu, J. Y.-C., & Chen, H.-G. (2011). Discriminative effect of user influence and user responsibility on information system development processes and project management. *Information and Software Technology, 53*, 149-158.

Chen, S. H., & Lee, H. T. (2007). Performance evulation model for project managers using managerial practices. *International Journal of Project Management, 25*, 543-551.

Davis, C. J., Tremblay, M. C., Fuller, R. M., & Berndt, D. J. (2006). Communication Challenges in Requirements Elicitation and the Use of the Repertory Grid Technique. *Journal of Computer Information Systems*, 78-86.

Dilts, D. M., & Pence, K. R. (2006). Impact of role in the decision to fail: An exploratory study of terminated projects. *Journal of Operations Management, 24*, 378-396.

Dominguez, J. (2009, July 1). *The curious case of the CHAOS report 2009*. Retrieved from http://www.projectsmart.co.uk/the-curious-case-of-the-chaos-report-2009.html

Dorairaj, S., Noble, J., & Malik, P. (n.d.). Understanding the Importance of Trust in Distributed Agile Projects: A Practical Perspective.

Easterby-Smith, M., Thorpe, R., & Holman, D. (1996). Using repertory grids in management. *Journal of European Industrial*, 3-30.

Eckerson, W. (2009). *Implementing BI in the Cloud*. Retrieved April 20, 2010, from http://tdwi.org/Blogs/WayneEckerson/2009/06/Implementing-BI-in-the-Cloud.aspx?p=1

Edwards, H. M., McDonald, S., & Young, S. M. (2009). The repertory grid technique: Its place in empirical software engineering research. *Information and Software Technology, 51*(4), 785-798. Retrieved from http://www.enquirewithin.co.nz/theoryof.htm

Enquire within. (n.d.). *personal construct theory summarised*. Retrieved November 2010, from http://www.enquirewithin.co.nz/theoryof.htm.

Fan, D. (2010). Analysis of Critical Success Factors in IT Project Management. *2010 2nd International Conference on Industrial and Information Systems*, (pp. 487-490).

Fox, T. L., & Spence, J. W. (1999). An examination of the decision styles of project managers: Evidence of significant diversity. *Information & Management, 36*, 313-320.

Gauld, R., & Goldfinch, S. (2006). Dangerous Enthusiasms: E-government, Computer Failure and Information System Development. *Dunedin: Otago University Press*.

Godse, M., & Mulik, S. (2009). An Approach for Selecting Software-as-a-Service (SaaS) Product. *CLOUD '09. IEEE International Conference on Cloud Computing* (pp. 155-158). IEEE. doi:10.1109/CLOUD.2009.74

Guah, M. W. (2008). IT project escalation: A case analysis within the UK NHS. *International Journal of Information Management, 28*(6), 536-540.

Hansen, S., Berente, N., & Lyytinen, K. (2009). Requirements in the 21st Century: Current practice and emerging trends in. (K. Lyytinen, J. Loucopoulos, J. Mylopoulos, & B. Robinson, Eds.) pp. 44-87.

Heng, C.-S., Tan, B. C., & Wei, K.-K. (2003). De-escalation of commitment in software projects: Who matters? What matters? *Information & Management, 41*, 99-110.

Hunter, M. G., & Beck, J. E. (2000, March). Using repertory grids to conduct cross-cultural information systems research. *Information Systems Research, 11*(1), 93-101. doi:10.1287/isre.11.1.93.11786

Iden, J., Tessem, B., & Päivärinta, T. (2011). Problems in the interplay of development and IT operations in system development projects: A Delphi study of Norwegian IT experts. *Information and Software Technology, 53*, 394-406.

Jani, A. (2008). An experimental investigation of factors influencing perceived control over a failing IT project. *International Journal of Project Management, 26*, 726-732.

Jankowicz, D. (2004). *The easy guide to repertory grids.* Chichester, West Sussex, England: Wiley.

Jiang, J., & Klein, G. (2003). Software development risks to project effectiveness. *The Journal of Systems and Software, 52*, 3-10.

Jüngen, F. J., & Kowalczyk, W. (1995). An intelligent interactive project management system. *European Journal of Operational Research, 84*, 60-81.

Keil, M., Wallace, L., Turk, D., Dixon-Randall, G., & Nulden, U. (2000). An investigation of risk perception and risk propensity on the decision to continue a software development project. *The Journal of Systems and Software*, 145-157.

Kelly, G. A. (1955). *The psychology of personal constructs: A theory of personality* . New York: W.W.

Marsden, D., & Littler, D. (2000). Repertory grid technique An interpretive research technique. *European Journal of Marketing, 34*(7), 816-834.

McLeod, L., & MacDonell, S. G. (2011). Factors that Affect Software Systems Development Project Outcomes: A Survey of Research. *ACM Computing Surveys* 43(4), pp.24-56.

McLeod, L., MacDonell, S., & Doolin, B. (2004). An Empirical Investigation into IS Development Practice in New Zealand. *Proceedings of the 15th Australasian Conference on Information Systems (ACIS 2004). Hobart, Australia.* Retrieved from http://aisel.aisnet.org/acis2004/20

Moynihan, T. (1996). An inventory of personal constructs for information systems project risk researchers. *Journal of Information Technology*(11), 359-371.

Muralidhar, K., & Santhanam, R. (1990). Using the analytic hierarchy process for infomation system project selection. *Information & Management, 18*, 87-95.

Na, K.-S., Simpson, J. T., Li, X., Singh, T., & Kim, K.-Y. (2007). Software development risk and project performance measurement: Evidence in Korea. *The Journal of Systems and Software, 80*, 596-605.

Nakatsu, R. T., & Iacovou, C. L. (2009). A comparative study of important risk factors involved in offshore and domestic outsourcing of software development projects: A two-panel Delphi study. *Information & Management, 46*, 57-68.

Napier, N. P., Keil, M., & Tan, F. B. (2009). IT project mangers' construction of successful project management practice: a repertory grid investigation. *Info Systems, 19*(3), 255-282. doi:10.1111/j.1365-2575.2007.00264.x

Nguyen, T. N. (2006). A decision model for managing software development projects. *Information & Management, 43*, 63-75.

Nicho, M., & Cusack, B. (2007). A Metrics Generation Model for Measuring the Control Objectives of Information Systems Audit. *Proceedings of the 40th Hawaii International Conference on System Sciences* (pp. 1-11). Hawaii: IEEE.

Pan, G. S. (2005). Information systems project abandonment: a stakeholder analysis. *International Journal of Information Management, 25*, 173-184.

Patanakul, P., & Milosevic, D. (2006). Assigning new product projects to multiple-project managers: What market leaders do. *Journal of High Technology Management Research , 17*, 53-69.

Petter, S. (2008). Managing user expectations on software projects: Lessons from the trenches. *International Journal of Project Management, 26*, 700-712.

Procaccino, J. D., & Verner, J. M. (2006). Software project managers and project success: An exploratory study. *The Journal of Systems and Software, 79*, 1541-1551.

Project Management Institute. (2000). *A guide to the project management body of knowledge (PMBOK Guide).* Newtown Square, Pennsylvania USA.

Richardson, I., Casey, V., McCaffery, F., Burton, J., & Beecham, S. (2012). A process framework for global software engineering teams. *Information and Software Technology*, 1-17.

Rodriguez-Repiso, L., Setchi, R., & Salmeron, J. L. (2007). Modelling IT Projects success:Emerging methodologies reviewed. *Technovation*, 582-594.

Rognerud, H. J., & Hannay, J. E. (2009). Challenges in Enterprise Software Integration: An Industrial Study Using Repertory Grids. *Third Symposium on Empirical Software Engineering and Management*.

Salmeron, J. L., & Herrero, I. (2005). An AHP-based methodology to rank critical success factors of executive information systems. *Computer Standards & Interfaces, 28*, 1-12.

Samizadeh, R., Mamaghani, N. D., & Saghafi, F. (2011). A New Framework for Evaluating IT Projects. In Y. Wu (Ed.), *Computing and Intelligent Systems* (Vol. 233, pp. 22-29). Germany: Springer Berlin Heidelberg.

Sarantis, D., Smithson, S., Charalabidis, Y., & Askounnis, D. (2010). A critical assessment of project management methods with respect to electronic Government implementation challenges. *Sys Pract Action Res, 23*, 301-321.

Sauer, C., Gemino, A., & Reich, B. H. (2007, November). The impact of size and volatility on IT project performance. *Communications of the ACM, 50*(11), 79-84.

Seiler, S., Lent, B., Pinkowska, M., & Pinazza, M. (2012). An integrated model of factors influencing project managers' motivation - Findings from a Swiss survey. *International Journal of Project Management, 30*, 60-72.

Shim, S., Chae, M., & Lee, B. (2009). Empirical analysis of risk-taking behavior in IT platform migration decisions. *Computers in Human Behaviour, 25*, 1290-1305.

Shoval, P., & Giladi, R. (1996). Determination of an implementation order for IS projects. *Information & Management, 31*, 67-74.

Siau, K., Tan, X., & Sheng, H. (2010). Important characteristics of software development team members: An empirical investigation using Repertory Grid. *Info Systems, 20*(6), 563-580. doi:10.1111/j.1365-2575.2007.00254.x

Song, S.-R., & Gale, A. (2008). Investigating project managers' work values by repertory grids interviews. *Journal of Management Development, 27*(6), 541-553.

Subramaniam, C., Sen, R., & Nelson, M. L. (2009). Determinants of open source software project success: A longitudinal study. *Decision Support Systems, 46*(2), 576-585. doi:10.1016/j.dss.2008.10.005

Tan, F. B., & Hunter, M. G. (2002, Mar). The Repertory Grid Technique: A Method for the Study of Cognition in Information Systems. *MISRC Quarterly, 26*(1), 39-57. Retrieved from http://www.jstor.org/stable/4132340

Tesch, D., Kloppenborg, T. J., & Frolick, M. N. (2007). IT project risk factors: The project management professional perspective. *Journal of Computer Information Systems*, 61-69.

The Standish Group International, Inc. (2001). Extreme Chaos. *CHAOS*, 1-12.

Verner, J. M., Overmyer, S. P., & McCain, K. W. (1999). In the 25 years since The Mythical Man-Month what have we learned about project management? *Information and Software Technology, 41*, 1021-1026.

Verner, J., Sampson, J., & Cerpa, N. (2008, June). What factors lead to software project failure? *NICTA* (pp. 71-80). Sydney, NSW: IEEE.

Wang, J. (2012). Survival factors for Free Open Source Software projects: A multi-stage perspective. *European Management Journal, 30*, 352-371.

Weill, P., & Ross, J. W. (2004). *IT Governance: How top performers manage IT decision rights for superior results.* Boston: Harvard Business School Press.

Wright, K. M., & Capps III, C. J. (2010, March). Information systems development project performance in the 21st Century. *ACM SIGSOFT Software Engineering Notes, 35*(2), 1-10. doi:10.1145/1734103.1734121

Bibliography

Adam, F., & O'Doherty, P. (2000). Lessons from enterprisse resource planning implementations in Ireland - towards smaller and shorter ERP projects. Journal of Information Technology, 15, 305-316.

Alexander, P., Loggerenberg, J. V., Lotriet, H., & Phahlamohlaka, J. (2010). The use of the Repertory Grid for collaboration and reflection in a research context. Group Decision and Negotiation, 19(5), 479-504. doi:10.1007/s10726-008-9132-z

Atkinson, R. (1999). Project management: cost, time and quality, two best guesses and a phenomenon, its time to accept other success criteria. International Journal of Project Management, 17(6), 337-342.

Belassi, W., Kondra, A. Z., & Tukel, O. I. (2007, December). New product development projects: The effects of organizational culture. Project Management Journal, 12-24.

Bjarnason, E., Wnuk, K., & Regnell, B. (2012). Are you biting off more than you can chew? A case study on causes and effects of overscoping in large-scale software engineering. Information and Software Technology, 54, 1107-1124.

Brand, K., & Boonen, H. (2007). IT Governance based on COBIT 4.0 - A Management Guide. Netherlands: Van Haren Publishing.

Cale Jr, E. G., & Eriksen, S. E. (1994). Factors affecting the implementation outcome of a mainframe software package: A longitudinal study. Information & Management , 26, 165-175.

Chen, C. C., Law, C. C., & Yang, S. C. (2009). Managing ERP implementation failure: A project management perspective. IEEE Transactions on Engineering Management, 56(1), 157-170.

Chiu, N.-H. (2011). Combining techniques for software quality classification: An integrated decision network approach. Expert Systems with Applications, 38, 4618-4625.

Curtis, G., & Cobham, D. (2005). Business Information Systems Analysis, Design and Practice (Fifth ed.). Pearson Education Limited.

Davis, C., Schiller, M., & Wheeler, K. (2007). IT Auditing: Using controls to protect information assets. New York: McGraw-Hill.

Drury, M., Conboy, K., & Power, K. (2012). Obstacles to decision making in Agile software development teams. The Journal of Systems and Software, 1239-1254.

Dweiri, F. T., & Kablan, M. M. (2006). Using fuzzy decision making for the evaluation of the project management internal efficiency. Decision Support Systems, 42, 712-726.

Fang, C., & Marle, F. (2012). A simulation-based risk network model for decision support in project risk management. Decision Support Systems, 52, 635-644.

Finlay, P. N., & Forghani, M. (1998). A classification of success factors for decision support systems. Journal of Strategic Information Systems, 7, 53-70.

Gelbard, R., & Carmeli, A. (2009). The interactive effect of team dynamics and organizational support on ICT project success. International Journal of Project Management, 27, 464-470.

Ghasemzadeh, F., & Archer, N. P. (2000). Project portfolio selection through decision support. Decision Support Systems, 29, 73-88.

Gichoya, D. (2005). Factors affecting the successful implementation of ICT projects in Government. The Electronic Journal of e-Government, 3(4), 175-184.

Hawley, M. (2010, November 1). The Repertory Grid: Eliciting User Experience Comparisons in the Customer's Voice. Retrieved from http://www.madpow.net/CMSPages/GetFile.aspx?guid=2cae7745-fad4-46c1-a09c-ae5da924a7ad

He, X., & Mittal, V. (2007). The effect of decision risk and project stage on escalation of commitment. Organizational Behavior and Human Decision Processes, 103, 225-237.

Hidding, G. J., & Nicholas, J. (2009). Reducing I.T project management failures: A research proposal. Proceedings of the 42nd Hawaii International Conference on System Sciences (pp. 1-10). IEEE.

Humphrey, S. E., Moon, H., Conlon, D. E., & Hofmann, D. A. (2004). Decision-making and behavior fluidity: How focus on completion and emphasis on safety changes over the course of projects. Organizational Behavior and Human Decision Processes, 93, 14-27.

Iacovou, C. L., & Dexter, A. S. (2005, April). Surviving IT project cancellations. Communications of the ACM, 48(4), 83-86.

Jukic, B., & Jukic, N. (2010). Information system planning and decision making framework: A case study. Information Systems Management(27), 61-71. doi:10.1080/10580530903455221

Kapsali, M. (2011). Systems thinking in innovation project management: A match that works. International Journal of Project Management, 29, 396-407.

Lang, R. D. (n.d.). Project leadership: Key elements and critical success factors for IT project managers. Journal of Healthcare Information Management, 21(1), 2-4.

Lui, K. M., & Chan, K. C. (2008, February). Rescuing troubled software projects by team transformation: A case study with an ERP project. IEEE Transactions on Engineering Management, 55(1), 171-184.

Maaninen-Olsson, E., & Mahring, M. (2009). Balancing Boundaries: Everyday Boundary Work in Information Technology Project Management. Proceedings of the 42nd Hawaii International Conference on System Sciences, (pp. 1-10).

Marques, G., Gourc, D., & Lauras, M. (2010). Multi-criteria performance analysis for decision making in project management. International Journal of Project Management, 29, 1057-1069.

McLeod, L., & MacDonell, S. G. (2004). Factors that Affect Software Systems Development Project Outcomes: A Survey of Research. Australian (ACIS) 2004 Proceedings.

Mohanty, R. P. (1992, February). Project selection by a multiple-criteria decision-making method: an example from a developing country. International Journal of Project Management, 10(1), 31-38.

Morgenshtern, O., Raz, T., & Dvir, D. (2007). Factors affecting duration and effort estimation errors in software development projects. Information and Software Technology, 49, 827-837.

Motwani, J., Subramanian, R., & Gopalakrishna, P. (2005). Critical factors for successful ERP implementation: Exploratory findings from four case studies. Computers in Industry, 56, 529-544.

Nicolò, E. (1993, November). Metaproject analysis: multiagent virtual project networks for strategic decisions in preplanning. International Journal of Project Management, 11(4), 215-226.

Nunamaker, J. F., Chen, M., & Purdin, T. D. (1990-91). Systems development in Information Systems research. Journal of Management Information Systems, 7(3), 89-106.

Otero, L. D., Centeno, G., Ruiz-Torres, A. J., & Otero, C. E. (2009). A systematic approach for resource allocation in software projects. Computers & Industrial Engineering, 1333-1339.

Papke-Shields, K. E., Catherine, B., & Quan, J. (2010). Do project managers practice what they preach, and does it matter to project success? International Journal of Project Management, 28, 650-662.

Patanakul, P., & Omar, S. S. (2010). Why Mega IS/IT Projects Fail: Major Problems and What We Learned from Them. School of Technology Management.

Remus, U., & Wiener, M. (2010). A multi-method, holistic strategy for researching critical success factors in IT projects. Info Systems J, 20, 25-52.

Ridgway, K. (1992, August). Analysis of decision centres and information flow in project management. International Journal of Project Management, 10(3), 145-152.

Shapira, A., Laufer, A., & Shenhar, A. J. (1994). Anatomy of decision making in project planning teams. International Journal of Project Management, 12(3), 172-182.

Shin, B. (2002). A case of data warehousing project management. Information & Management, 39, 581-592.

Sohn, S. Y., & Moon, T. H. (2004). Decision tree based on data development analysis for effective technology commercialization. Expert Systems with Applications, 26, 279-284.

Sovalainen, P., Ahonen, J. J., & Richardson, I. (2012). Software development project success and failure from the supplier's perspective: A systematic literature review. International Journal of Project Management, 458-469.

Stamelos, I. (2010). Software project management anti-patterns. The Journal of Systems and Software, 52-59.

Tavana, M., Khalili-Damghani, K., & Abtahi, A.-R. (2012). A hybrid fuzzy group decision support framework for advanced-technology prioritization at NASA. Expert Systems with Applications, 12.

Taylor, H. (2005). Congruence between risk management theory and practice in Hong-Kong vendor-driven IT projects. International Journal of Project Management, 23, 437-444.

Taylor, H., & Woelfer, J. P. (2009). Critical skills for IT project management and how they are learned. SIGMIS-CPR, 103-112.

The Standish Group International, Inc. (1995). THe Chaos Report. CHAOS, 1-9.

The Standish Group International, Inc. (1999). A recipe for success. CHAOS, 1-11.

The Standish Group International, Inc. (2008). Trends in IT Value Report. Trends Report, 1-12.

Thomas, G., & Fernández, W. (2008). Success in IT projects: A matter of definition? International Journal of Project Management, 26, 733-742.

White, A. S. (2006). External disturbance control for software project management. International Journal of Project Management, 24, 127-135.

Appendix A – Ethics Committee Approval Form

MEMORANDUM

Auckland University of Technology Ethics Committee (AUTEC)

To: Stephen G MacDonell

From: **Charles Grinter** Ethics Coordinator

Date: 5 July 2011

Subject: Ethics Application Number 11/95 **An exploratory study of factors influencing IT project management decisions.**

Dear Stephen G

Thank you for providing written evidence as requested. I am pleased to advise that it satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC) at their meeting on 9 May 2011 and I have approved your ethics application. This delegated approval is made in accordance with section 5.3.2.3 of AUTEC's *Applying for Ethics Approval: Guidelines and Procedures* and is subject to endorsement at AUTEC's meeting on 25 July 2011.

Your ethics application is approved for a period of three years until 5 July 2014.

I advise that as part of the ethics approval process, you are required to submit the following to AUTEC:

- A brief annual progress report using form EA2, which is available online through http://www.aut.ac.nz/research/research-ethics/ethics. When necessary this form may also be used to request an extension of the approval at least one month prior to its expiry on 5 July 2014;
- A brief report on the status of the project using form EA3, which is available online through http://www.aut.ac.nz/research/research-ethics/ethics. This report is to be

submitted either when the approval expires on 5 July 2014 or on completion of the project, whichever comes sooner;

It is a condition of approval that AUTEC is notified of any adverse events or if the research does not commence. AUTEC approval needs to be sought for any alteration to the research, including any alteration of or addition to any documents that are provided to participants. You are reminded that, as applicant, you are responsible for ensuring that research undertaken under this approval occurs within the parameters outlined in the approved application.

Please note that AUTEC grants ethical approval only. If you require management approval from an institution or organisation for your research, then you will need to make the arrangements necessary to obtain this.

When communicating with us about this application, I ask that you use the application number and study title to enable us to provide you with prompt service. Should you have any further enquiries regarding this matter, you are welcome to contact me by email at ethics@aut.ac.nz or by telephone on 921 9999 at extension 8860.

On behalf of AUTEC, I wish you success with your research and look forward to reading about it in your reports.

Yours sincerely

Charles Grinter

On behalf of Dr Rosemary Godbold and Madeline Banda **Executive Secretary**

Auckland University of Technology Ethics Committee

Cc: Htike Htike Wut Yi htike.wutyi@gmail.com

Appendix B – Participant Information Sheet

The following document was provided to participants to ensure participants understand the purpose of the research, interview process and their privacy and confidential information is being protected.

Participant Information Sheet

Date Information Sheet Produced:

22 March 2011

Project Title

An Exploratory Study of Factors Influencing IT Project Initiation Decisions

An Invitation

Please accept this invitation to participate in my research project.

My name is Htike Wut Yi. I am currently working at xxxxxx, xxxxxx and am studying for a Master of Computer and Information Sciences (MCIS) at AUT. For my final year study, I am doing a Thesis on IT Project Management, looking specifically at how IT project decisions are made during the project initiation. For my research project, I need to interview a number of IT/Information Systems Managers and project sponsors. I would greatly appreciate it if you could spare me about an hour for such an interview. The participation of professionals and experts is critical for this research. I believe that the outcomes of my research project will contribute useful insights to our IT community to a certain extent, and will hopefully lead to better decisions being made in the future. In particular, I hope that these insights will be most useful to those directly taking part in the research. Your support and participation would make a big difference to the quality of the research.

The following questions and answers are intended to address the most common questions you may have about this research project. If you have additional questions please feel free to contact me. My contact details can be found at the end of this document.

What is the purpose of this research?

The intention of this research project is to investigate the decision-making that occurs around IT projects, particularly in relation to their initiation. The purpose of this research is to explore the factors that influence IT management decisions at this particularly crucial point in time. This research is the core of my Master's degree thesis. A report will be made available to you if you select the option to receive it on the Consent Form. Some papers may be published in academic journals, using the results of this research.

How was I identified and why am I being invited to participate in this research?

Your email address was obtained from my previous colleagues from your organisation where I used to work at. I have chosen you to participate in the research because I believe that you might have

involved in decision making process during the IT project initiation. The participation in this study is entirely voluntary; therefore, if you do not wish to participate, please disregard this invitation.

What will happen in this research?

There are two phases to this research. In the first phase, IT/IS Managers and IT project managers and sponsors from several organisations will be asked about how project initiation decisions are made and what factors influenced those decisions. After the first phase, I will identify the factors/rationale and generate grids to represent them. In the second phase, you will be shown the grid and may be asked to confirm and to rate the factors that I extracted from our interviews, to indicate their strength of agreement regarding the importance and relevance of the reasons. This is to ensure that I have correctly categorise your discussion and to reassure that I have interpreted your comments that you intended.

The interview will take place on a one-to-one basis with me. The interview will be audio-recorded. That recording will then be transcribed into text so that I can analyse what was said rather than relying on my memory, notes or interpretations of what was said. The interview will be held in a private room in your usual place of work or else at a neutral location of your choice.

What are the discomforts and risks?

The focus of the research project is to investigate the decision making during project initiation. The project implementation and closure stages are irrelevant to this study. In addition, whether projects are successful or partially successful or failure is out of scope in this study. Therefore, performances, achievement or failure subject matters will be completely off-topic in the interview and you will only need to describe the drivers of the project initiation. Thus, there should not have any discomfort or risks associated with participating in this research project.

How will these discomforts and risks be alleviated?

I will also repeat the scope of the study prior to the interview to ensure that you do not need to provide any information that may create any discomforts or risks.

What are the benefits?

I believe that the outcomes of my research project will contribute useful insights to our IT community to a certain extent, and will hopefully lead to better decisions being made in the future. In particular, I hope that these insights will be most useful to those directly taking part in the research.

How will my privacy be protected?

This research is looking at what factors influence IT management decisions in general. It is not necessary for anyone to know exactly which organisations make what kind of decisions. Anything that is said that might be able to identify any participant or organisation will be kept confidential. The interview tape and the transcript will be given a code number. You and your organisation details will be stored separately from the tape and transcript and there will be no way to link the two. This information will be stored at Auckland University of Technology, in the School of Computing and Mathematical Sciences for six years and then they will be destroyed.

You will be asked to discuss how and why IT related decisions are made within your organisation. In my research, the name of your organisation and your name will not be identified and I will ensure confidentiality and anonymity at all times. At the beginning of the interview, I will provide you a confidentiality agreement for you to consider as well as evidence of AUT ethics committee approval. All information that is provided remains anonymous and confidential. Only myself and my research supervisor will listen to the recording or view the transcript of what was said.

What are the costs of participating in this research?

The interviews are expected to take approximately one hour.

What opportunity do I have to consider this invitation?

The response to this invitation is expected to receive within two weeks. However, your availability of date and time for actual interview is only expected within six weeks of this invitation.

How do I agree to participate in this research?

In order to participate in this research you need to sign the individual Consent Form. At the beginning of the interview, I will provide you the consent form which is an official AUT form.

Will I receive feedback on the results of this research?

Yes, if you would like a report on the results of this research, please tick the appropriate box on the Consent Form that I will provide you at the beginning of the interview.

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor,

Dr Stephen G. MacDonell
Professor of Software Engineering and Director of SERL
School of Computing and Mathematical Sciences
Auckland University of Technology
Private Bag 92006
Auckland 1142
New Zealand

Phone +64 9 921 9073
Email stephen.macdonell@aut.ac.nz
Lab homepage http://serl.aut.ac.nz

Concerns regarding the conduct of the research should be notified to the Executive Secretary, AUTEC, Madeline Banda, madeline.banda@aut.ac.nz , 921 9999 ext 8044.

Whom do I contact for further information about this research?

Researcher Contact Details:

My contact detail is as below:

Htike Wut Yi,
Master of Computer and Information Sciences Programme,
School of Computing and Mathematical Sciences
Auckland University of Technology
Private Bag 92006
Auckland 1142
New Zealand

Email htike.wutyi@gmail.com

Project Supervisor Contact Details:

Dr Stephen G. MacDonell
Professor of Software Engineering and Director of SERL
School of Computing and Mathematical Sciences
Auckland University of Technology
Private Bag 92006
Auckland 1142
New Zealand

Phone +64 9 921 9073
Email stephen.macdonell@aut.ac.nz
Lab homepage http://serl.aut.ac.nz

Appendix C – Confidentiality Agreement

The following agreement document was provided to participants at the beginning of the interviews.

CONFIDENTIALITY AGREEMENT

Between: _____ of New Zealand
And: AUT University of Auckland, New Zealand

Jointly referred to as the Parties.

Project Title: An Exploratory Study of Factors Influencing IT Project Initiation Decisions

The Parties agree that **confidential information** received by their agents during the course of a discussion of, or work on, this project will not be disclosed to third parties.

'**Confidential information**' means any and all information relating to inventions, patents, trademarks, copyrights, improvements, know-how, specifications, drawings, data, ideas and/or any other written material referring to the same and which is owned by or pertains to one party and is disclosed to, or accessed by, the other party ('**Receiving Party'**) but excludes information which is clearly and demonstrably:

1. publicly known, or which becomes publicly known after the date of this agreement, other than through a failure by the Receiving Party to comply with any obligation imposed under this agreement, or through a failure by any person to whom it is disclosed in accordance with this agreement;
2. already known at the time of receipt by the Receiving Party;
3. properly received by the Receiving Party from a third party on a non-confidential basis;
4. agreed by both parties in writing to be excluded from this Confidentiality Agreement; or
5. required to be disclosed by law.

It is agreed and undertaken that the Parties:

- will hold in confidence all confidential information (as defined above), and
- will not disclose the confidential information, or permit it to be disclosed by their staff to an external party, and
- agree that disclosures to other project participants will occur only with the written permission of the other party, and
- will not use, or permit the use of, the confidential information for any purpose other than for joint operations without first obtaining written permission to do so from the other party, and
- will upon request of the other party return all confidential information (together with all copies) in its possession or control or in the possession or control of any of its officers, employees, agents or advisors, and
- may choose to mark information as confidential where necessary.

The Parties will maintain registers of those that work on this project and ensure that all are aware of and comply with the Confidentiality Agreement covering the project.

The conditions relating to confidentiality and confidential information will expire on: 2016

Authorised Signatories:

(Signature)	(Signature)
(Name) _____	(Name) Htike Wut Yi_____
(Title) _____	(Title) MCIS Student _____
(Party 1)_____	(Party 2) AUT University
(Date) _____	(Date) _____

Appendix D – Consent Form

The following document was provided to participants before the interviews.

Consent Form

Project title: ***An Exploratory Study of Factors Influencing IT Project Initiation Decisions***

Project Supervisor: ***Professor Stephen MacDonell***

Researcher: *Htike Wut Yi*

- ○ I have had an opportunity to ask questions and to have them answered.
- ○ I understand that notes will be taken during the interviews and that they will also be audio-taped and transcribed.
- ○ I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
- ○ If I withdraw, I understand that all relevant information including tapes and transcripts, or parts thereof, will be destroyed.
- ○ I agree to take part in this research.
- ○ I wish to receive a copy of the report from the research (please tick one): Yes○ No○

Participant's signature: .....

Participant's name: .....

Participant's Contact Details (if appropriate):

……..

……..

Date: dd/mm/yyyy

Approved by the Auckland University of Technology Ethics Committee on dd/mm/yyyy ***AUTEC Reference number*** .....

Appendix E – Preliminary Interview Invitation

The following email invitation was sent to potential participants to take part in the research.

It was sent to 45 IT Managers via email communication.

Dear IT Manager,

My name is Htike Wut Yi. I am currently working at xxxxx, xxxxx and am studying for a Master of Computer and Information Sciences (MCIS) at AUT. For my final year study, I am doing a Thesis on IT Project Management, looking specifically at how IT project decisions are made during the project initiation. For my research project, I need to interview a number of IT/Information Systems Managers and project sponsors. I would greatly appreciate it if you could spare me about an hour for such an interview. The participation of professionals and experts is critical for this research. I believe that the outcomes of my research project will contribute useful insights to our IT community to a certain extent, and will hopefully lead to better decisions being made in the future. In particular, I hope that these insights will be most useful to those directly taking part in the research. Your support and participation would make a big difference to the quality of the research.

In my research, the name of your organisation and your name will not be identified and I will ensure confidentiality and anonymity at all times. I will provide you a confidentiality agreement for you to consider as well as evidence of AUT ethics committee approval.

Should you need any further information, my research project supervisor's contact detail is as below:

Dr. Stephen MacDonell
Professor of Software Engineering and
Director of Software Engineering Research Laboratory

School of Computing and Mathematical Sciences
AUT University
Phone +64 9 921 9073
Fax +64 3 454 6903
Email smacdone@aut.ac.nz

Thank you very much in advance.

Kind regards,
Htike
Mobile: 021 109 8796

Appendix F – Interview Plan

The following plan along with semi-structured questions was developed to ensure participants were explained with the focus of the study, research method and research objective. The pre-developed semi-structured interview questions ensured participants to ask certain relevant questions.

An Exploratory Study of Factors Influencing IT Project Initiation Decisions

Interview Plan

A brief description of the research project

The following table provides an outline of the researcher's introduction to the interview.

Topic:	Decision-making during project initiation
Focus:	Identifying rationale for decisions and considering the factors that literature suggest are important in leading to successful IT projects
Method:	The main research method is the semi-structured interview, that may be supplemented by the Repertory Grid technique for factor ranking
Goal:	To use initial round of interviews to identify/confirm factors and to identify/confirm rationale. The second round of process is to provide the participants with the Repertory Grid and the participants will be asked to rate the factors identified in the grid.
Factors from the literature:	For example, Critical Success Factors for IT project success and failures

Semi-structured interview questions

The following section describes the semi-structured questions that the researcher may ask the participants to initiate the interview process. The green font represents example answers that the participants may give.

1. Could you please tell me the name of the recent or prominent projects you have been involved in, including a current project if any?

   Project X

   Project Y

   Project Z

2. Could you tell me why project X was undertaken? Were there any problems or opportunities that encouraged or led to that project being conducted? At what point did you go from the idea to actually planning a project, and how did you reach that decision?

   Project X - Reason XA

   Reason XB

   Reason XC

Why – examples: business case, technology innovation opportunity, competitive pressures, organisational change, regulatory/legal requirements, management expectation

3. What approaches did you use in going from the idea, problem or opportunity to the solution, and why did you use them?

Project X:

How – examples: narrative specification, prototype, models (e.g. use cases)

How-Why – examples: easy to use, company's process, useful for communication etc.

4. What technological solutions did you choose and why did you use these solutions?

Project X:

What – examples: in-house bespoke development, outsourced bespoke development, package solution, SaaS

What-Why – examples: Long term benefits, faster development etc.

5. Who was assigned to work on the project (excluding yourself) and why were they involved?

Project X:

Who – examples: designers/architects, developers, project managers, client reps, top management, consultants, contractors

Who-Why – examples: problem solver, solution focused etc.

The above questions 1 to 5 will be repeated for Project Y & Project Z that participants identified.

Appendix G – Interview Transcripts

The following document was prepared for each participant to record the audio-recorded transcripts. Each participant's audio-recorded tape was transcribed and categorised into four main categories of 'Why', 'How', 'What', and 'Who' for individual project that participant identified.

Research Title

An Exploratory Study of Factors Influencing IT Project Initiation Decisions

Study Programme

Master of Computer and Information Sciences

Researcher

Htike Htike Wut Yi
School of Computing and Mathematical Sciences
AUT University
Phone: +64 21 109 8796, +64 9 845 3058
Email: htike.wutyi@gmail.com

Research Supervisor

Dr. Stephen MacDonell
Professor of Software Engineering and
Director of Software Engineering Research Laboratory

School of Computing and Mathematical Sciences
AUT University
Phone +64 9 921 9073
Fax +64 3 454 6903
Email: smacdone@aut.ac.nz

Disclaimer

Research Participation Information

Interview Date	
Interview Time	
Interview Type	
Participant ID	
Total projects that the participant identified	

The project name

1.

Project Type

A brief background about the project

Why - Problem(s) or Opportunity(s) to implement the project

‘How’ - What approaches did you use in going from the idea, problem or opportunity to the solution

‘How – Why’ - why did you use these approaches?

‘What’ - What technological solutions did you choose

‘What – Why’ - why did you use these solution?

‘Who’ - Who was assigned to work on the project (excluding yourself)?

‘Who – Why’ - why were they involved?

The project name

2.

Project Type

A brief background about the project

Why - Problem(s) or Opportunity(s) to implement the project

‘How’ - What approaches did you use in going from the idea, problem or opportunity to the solution

‘How – Why’ - why did you use these approaches?

‘What’ - What technological solutions did you choose

‘What – Why’ - why did you use these solution?

‘Who’ - Who was assigned to work on the project (excluding yourself)?

‘Who – Why’ - why were they involved?

The project name

3.

Project Type

A brief background about the project

Why - Problem(s) or Opportunity(s) to implement the project

‘How’ - What approaches did you use in going from the idea, problem or opportunity to the solution

‘How – Why’ - why did you use these approaches?

‘What’ - What technological solutions did you choose

‘What – Why’ - why did you use these solution?

‘Who’ - Who was assigned to work on the project (excluding yourself)?

‘Who – Why’ - why were they involved?

Appendix H – Confirmation of Results to Participants

The following email along with an attached spreadsheet was sent to each participant in order to confirm the elicited results and to provide an opportunity for them to review/edit their responses.

Dear IT Manager,

Thank you very much for participating in my research on IT project decision-making. The information that you provided to me was extremely useful. I am confident that the outcomes of the research will be informative and of benefit to you and my other participants. The report will be made available to you when the entire research project is complete. To date I have transcribed the interviews and transformed our conversation into four grids of factors, addressing Why, How, What and Who questions related to your projects. This is an essential part of the research method employed in my thesis.

In order to make sure I do not misinterpret our conversation and have elicited the factors correctly, I would be grateful if you could review the attached spreadsheet. I have pre-filled some of the factors from your projects so that you can complete the review as easily as possible. It should only take 10-20 minutes. Please also feel free to add, edit or delete what you see, as the interview outcomes and these interpreted results are designed to be participant-driven. When looking at the spreadsheet, if you can think of other factors that were not identified through the interview, please feel free to add them. Instructions on how to complete the review are described in the first Cover Sheet. Or if you prefer, we can fill the form in together over the phone. If you have any questions, please do not hesitate to contact me on 021 109 8796 anytime or via email. Again, thank you very much for your time.

Kind regards,
Htike

Appendix I – Aggregated Grids

The following spreadsheet containing 5 worksheets was sent to participants. The first worksheet describes the instructions on how to complete the form. The second, third, fourth and fifth worksheets include the aggregated elements and constructs for 'Why', 'How', 'What' and 'Who' factors respectively.

Managing IT Projects: How to fill in this form

During the interview, you identified and talked about 3 projects.

Project 1:

Project 2:

Project 3:

There are 4 worksheets per project to fill. They are all pre-populated with picklists so do not require free text entry. Therefore, it should not take longer than 10-20 minutes to complete the whole review. The following instructions describe how to choose from each list.

Why	**What were the problems or opportunities that encouraged or led to the project being undertaken?**
	Select the relevant project number from the picklist (in column B) for any reasons that apply to the project named at the top of the worksheet.
How	**What approaches did you use in going from the idea, problem or opportunity to the solution? (How did you move towards a solution?)**
	Select 'Yes' from the picklist for any approaches that apply to the project named at the top of the worksheet.
	And why did you use these approaches?
	A rating of 1 would indicate that the phrase in the left-hand column most accurately describes the reason for choosing the approach shown below; a rating of 5 would indicate that the phrase in the right-hand column most accurately describes the reason for choosing the approach shown below.
What	**What technological solutions did you choose?**
	Select 'Yes' from the picklist for any solutions that apply to the project named at the top of the worksheet.
	And why did you use these solutions?
	A rating of 1 would indicate that the phrase in the left-hand column most accurately describes the reason for choosing the solution shown below; a rating of 5 would indicate that the phrase in the right-hand column most accurately describes the reason for choosing the solution shown below.
Who	**Who was assigned to work on the project?**
	Select 'Yes' from the picklist for any roles that apply to the project named at the top of the worksheet.
	And why were they involved?
	A rating of 1 would indicate that the phrase in the left-hand column most accurately describes the reason for involving the role shown below; a rating of 5 would indicate that the phrase in the right-hand column most accurately describes the reason for involving the role shown below.

	Project 1 (P1)
	Project 2 (P2)
	Project 3 (P3)
What were the problems or opportunities that encouraged or led to the project being undertaken?	
Other organisations are applying the particular technology successfully	
Fragmented systems	
Integrated processing/reporting challenges	
Reduce manual process	
Staff reduction	
Compliance to internal/regulatory requirements	
Lack of standard process	
Data integrity issues	
Competitor pressure	
Inefficient system/process	
Cope with growth	
All digital	
Unsupported legacy system	
Cost savings	
New business/Technology opportunity	
Develop in-house capability	
Management/company expectations	
Customer focus	
Customer complaint	
Better management control	
Reduce support needs	
BAU improvement	
Concurrent upgrade/customisation	
Business case	
Departmental or team innovation	
Benefit realisation	
Political reasons	
Process improvement/change	
Existing technology issues	
Executive management's expectations	
IT Infrastructure changes	
Public relations opportunity	
To convince top management	
To increase market share	
Organisational change	
Company's strategic plan changes	
Other(s) (please sepcify in the cell alongside)	

			: P1
			: P2
			: P3
What approaches did you use in going from the idea, problem or opportunity to the solution? (How did you move towards a solution?)	**P1**	**P2**	**P3**
Vendor's demos			
Site visits			
Market research			
Cost benefit analysis			
Requirements gathering/specification and analysis			
Project Management methodology			
No Project Management methodology applied			
No specific approach applied			
Request for Proposal (RFP) process			
Request for Information (RFI) process			
Request for Tender (RFT) process			
Internal organisations discussions			
Company's predefined process			
Evaluation framework			
Narrative specification			
Prototype			
Models (e.g. use cases)			
Other(s)			

		And why did you use these approaches?																		
Why?	Faster development/implementation process																		Quality focus	**Why?**
	Clear responsibilities for all parties																		Easy to use	
	Uncertainty of the solution/method																		Availability of an instant solution	
	Time and/or budget constraints																		Specified in process	
	Problem focused																		Solution focused	
	Minimal risks																		Governance procedures	
	Useful for communication																		Useful for implementation	
	Small/low-impact project																		Large/ high profile project	
	Easy to apply																		Can be verified	
	Company's standard approach																		Personal or team preference	
	The most common/acceptable practice in IT industry																		A tailor-made process based on the project	
	Human resources constraints																		Availability of internal staff/external consultant	
	Regulatory compliance																		Freedom to choose	

	: P1
	: P2
	: P3

Who was assigned to work on the project (excluding yourself)?	P1	P2	P3
Designer/architect(s)			
Developer(s)			
Systems analyst(s)			
Project manager(s)			
Business analyst(s)			
Customer representatives			
Stakeholders			
Top management			
Support/Application support person			
Consultants from consulting/software provider			
Contractor(s)			
Other(s)			

And why were they involved?															
Why?	Focus on solution													Focus on need	Why?
	Lateral thinker													Follow direction	
	Creative thinker													Procedural specialist	
	Exisiting system knowledge													Training/professional development	
	Main users													Influential person(s)	
	Communicator													Decision maker	
	Ability to troubleshoot problems													Ability to follow instructions	
	Previous working experiences in similar projects													Availablity for this project	
	High achiever													Reliable contributor	
	High priority project													To devote attention to other higher priority projects	
	Choice of personnel													Fixed team	
	Budget constraints													Budget allowance	

			: P1
			: P2
			: P3
What technological solutions did you choose?	**P1**	**P2**	**P3**
In house bespoke development			
In-house customised open source solution			
External Consultant			
Packaged software (commercial off the shelf)			
Software as a Service (SaaS)			
Internal staff development			
Other(s)			

And why did you use these solutions?										
Why?	Technology ownership								Shared responsibilities	Why?
	Existing system no longer supported								Opportunity to adopt new/modern technology	
	Have availablity of knowledge internally								External consultants/provider expertise	
	Suitable size/functionality								Company's standard approach	
	Seen PR elsewhere								Product review/vendor comparison	
	Independent/apolitical								Policitical/no other option	
	Others using								Personal or team preference	
	Efficient solution								Vendor's promises regarding cost/functionality	
	No development capability in-house								Faster development process	
	Ability to manage the system internally								Stick with core business	
	Faster development/Implementation								Long-term benefits	
	Working in partnership								Clear contractual responsibilities	
	New management directive								Tried and true solution	
	Previous experiences								Vendor's demos	
	Selection from RFP process/results of evaluation framework								Existing relationship with the provider or Company's preferred supplier	
	Internal suggestion/recommendation								Vendor is a market leader	
	Reputation of the product/service provider								Results of product/service research	
	Time and/or budget constraints								Quality focus	
	Evaluation against criteria								Availability of an instant solution/in use elsewhere in organisation	
	Spread risks								High control	
	Knowledge retention								Reduced personnel costs	
	Human resources constraints								Availability of internal development team/suitable team available	
	Low administration & maintenance cost/minimal support								Availability of internal systems admin & support team/local support	
	Limited alternative								Selection from many alternatives	
	To devote attention to other higher priority projects								A large project and it is regarded as a very high priority	
	Budget constraints								Budget allowance	