# IDENTIFICATION AND MANAGEMENT OF PITFALLS DURING THE IMPLEMENTATION OF PROJECT PORTFOLIO MANAGEMENT IN THE SOUTH AFRICAN RESERVE BANK

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## ABSTRACT

The purpose of this study is to establish a structured approach to identifying and addressing the most damaging pitfalls or negative risks that may potentially hinder the successful implementation of a strategic initiative in an organisation. By using a combination of checklists acquired from literature, post-project reviews and interviews conducted with experts and project stakeholders, one may identify those pitfalls that may realise during the implementation of project portfolio management in the South African Reserve Bank (the Bank). The assessment of these pitfalls provides a prioritised pitfall list. Response plans to address the high-level pitfalls give the project team the required information to avoid, mitigate, transfer or accept the pitfalls. Monitoring and control processes can be used to appropriately track and address the pitfalls if and when they occur.

The approach used in the study can be applied to projects in organisations, similar to the Bank, planning to implement a strategic initiative that will have an impact on the larger organisation.

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# CHAPTER 1

# INTRODUCTION AND BACKGROUND

## 1.1    Introduction

Project management (PM) has become an integral discipline of the modern organisation and is propagated as a strategic tool for many information and communication technology (ICT)-driven organisations.

In his foreword to the Project Management Institute's (PMI's) *The Standard for Portfolio Management*, Iain Frazer states that PM was long understood as a discipline to manage single projects (PMI 2006, p. ix). Single-project PM has since evolved into multiple-project programs and portfolios.

Attempting to leverage optimal value from projects, many organisations have implemented a formal project portfolio management (PPM) discipline. PPM is described as multiple programs and projects that provide a synergy that cannot be acquired by managing the same projects separately (Levine 2005; PMI 2006; Maizlish & Handler 2005).

Implementing a PPM discipline requires a clear understanding of the business and its capabilities, competencies and culture and the requirements of the organisation. Negative factors that are easily overlooked or have not been identified at a certain stage can influence the success of the implementation process. These are referred to as "pitfalls". The organisation must avoid or manage these pitfalls correctly to increase the likelihood of implementation success.

Organisations have different requirements and capabilities that will eventually determine the role of PPM. The function, integration level and comprehensiveness of PPM differ according to the level of project and

portfolio management maturity and the role of the information technology (IT) department in the organisation (Fitzgerald & Mieritz 2007). These factors, in turn, will have an influence on the implementation path to be followed to achieve the strategic objectives.

The maturity level of a discipline or an organisation in general refers to an organisation's readiness to function and provide value at a specific level of comprehensiveness and uniformity (Eve 2007).

Fitzgerald and Mieritz (2007) propose a PPM maturity model comprising of six layers ranging from a level where PPM processes are being conducted on an ad hoc basis to one where the management is optimised in the organisation. PPM acting as a link or bridge between functional areas can be matured toward a fully integrated discipline across all functional areas of the organisational portfolio (Maizlish & Handler 2005; Fitzgerald & Mieritz 2007; Eve 2007).

The ability of the organisation to effectively execute projects (such as implementing PPM) depends on the IT department's understanding of the strategies of the organisation (D'Amico 2005), as well as the maturity of the PM discipline in the organisation (Levine 2005, p.183; PMI 2006, p. 19; Maizlish & Handler 2005, p. 81; Eve 2007).

## 1.2    Research problem

Organisations set strategic objectives to ensure that business strategies are met. Project management can be used as a tool to achieve these objectives through the execution of strategy-supporting projects.

Project management methodologies, processes and functionality in organisations, and more specifically in the ICT environment, differ from one organisation to another. The PMI published *A Guide to the Project*

*Management Body of Knowledge* (*PMBOK Guide*) to promote PM standards (PMI 2004). The PMI describes portfolio management as multiple projects working together to achieve strategic objectives.

Implementing a PPM discipline in the organisation requires that a multitude of other ICT disciplines will change and adapt to the new PPM (Levine 2005; Maizlish & Handler 2005; PMI 2006), for example

- Technology deployed by and available to the organisation
- Finances and financial control in the organisation
- Organisational culture, structure, capabilities and competencies
- Socio-economic influences such as morale, cognitive knowledge, internal reporting structures and willingness to change
- Operational processes currently in use in the organisation

Projects may be subject to higher risks because risks increase proportionally to the benefits derived from the project (Levine 2005, p. 37; D'Amico 2005). The organisation may expect to be challenged in many ways when adopting a new system or discipline such as PPM. Technological challenges may include requirements for higher levels of networking traffic to handle collaboration and sharing; additional storage space for centralised information sharing; and standardisation of processes, methods and usage of information and tasks (Light & Gerrard 2007).

The organisation may have to enter into new agreements with one or more consultants, contractors, software vendors, training organisations and hardware vendors (Zhou, Vasconcelos & Nunes 2008, p. 172).

Factors such as project prioritisation that will compete at a strategic level for resources may lead to the abandoning of current projects in the organisation, which will inevitably have an influence on the staff and activities of the organisation (D'Amico 2005). Organisational changes such as staff members reporting to portfolio managers as well as functional managers may be required to implement an efficient PPM.

If one takes the above arguments into account, the implementation of a PPM discipline will clearly have far-reaching consequences in the organisation. To successfully implement the PPM discipline, the organisation needs to identify the comprehensiveness of the implementation process and the route it should follow. Stumbling blocks will have to be overcome and pitfalls will have to be identified before they become unmanageable conditions or incidents that can lead to a failed PPM implementation.

It will be useful to consider certain organisational aspects when one identifies pitfalls during the implementation of a PPM discipline. This can be done explicitly or implicitly through the prior knowledge and experience of staff involved in PM in the organisation. Areas of concern include the following:

- The current level of PM and ICT maturity in the organisation (Eve 2007)
- The strategic objectives that the organisation wishes to achieve by implementing PPM (Freedman 2003)
- The capability of the organisation to implement PPM (Levine 2005, p. 183; Maizlish & Handler 2005, pp. 175–179)
- The resources available to implement PPM (Blichfeldt & Eskerod 2007)
- The culture of the organisation (Eve 2007)
- The current ICT organisational structure , which includes the ownership of the implementation process (Eve 2007)
- The decision to build or buy a PPM system and/or methodology (Bealer 2003)
- The process followed to implement PPM (Rajegopal, McGuin & Waller 2007)

Project teams often do not take the management of pitfalls seriously and perform risk management on a level not suitable for most projects. This may result in severely underestimating the probability and impact of pitfalls occurring in a project, posing a major threat of project failure (Cervone 2006, p. 256).

Perkins (cited in Elkington & Smallman 2000) argues that risk management may not apply to the same degree in all areas of the organisation. Projects may be subject to pitfalls resulting in time and financial overruns, dissatisfied staff, misalignment of organisational structure, technical problems and a less-than-optimal system to manage the ICT project portfolio without the project team even being aware of these pitfalls.

The success of implementing a strategic initiative furthermore depends on the quality of the plan to cope with future demands, the resources available, the competency and capability of the organisation and the participation of staff at all levels of the organisation (Littler et al. 2000). It is easy to fall into a trap or pitfall by assuming certain factors or conditions.

Organisations require that a PPM should be established optimally in terms of user satisfaction and technological and financial benefits and within the shortest time, at the lowest cost and with the least effort possible. Describing a systematic approach to identify and deal with the most prominent pitfalls will assist organisations in implementing a PPM discipline that will address their business requirements optimally within the shortest reasonable time period.

In summary, organisations in general, and the SARB specifically, do not focus on the identification and management of pitfalls that can cause a strategic project to fail. This is mainly due to the lack of guidance from dedicated and knowledgeable staff and the defined approach required to focus on issues such as human, environmental, political and technology ones before the project has commenced.

Following a structured approach to identify pitfalls that may be present in a project environment, addressing the identified pitfalls appropriately and establishing an appropriate monitoring and control mechanism to continually address eminent pitfalls, the project team is allowed to focus on managing the project successfully instead of utilising a crisis management approach to attain some of the major project objectives.

## 1.3    *Objective of this study*

This study aims to identify the most important pitfalls present during the implementation of a PPM discipline in the South African Reserve Bank (SARB or "the Bank") specifically and in organisations, such as other central banks and financial organisations, generally. These identified pitfalls can then be analysed, and possible actions to avoid, transfer or mitigate them are discussed. By providing guidance to the project team, one will greatly enhance the possibility of successfully implementing this strategic initiative.

### 1.3.1    Research questions

During the research to determine which pitfalls may arise during a strategic project, the study will be aided by answers to critical questions. The acquired answers will enable one to identify and assess the pitfalls present during the project and will finally provide guidance to respond to these pitfalls.

The following questions have been identified as critical for the study:

- **Primary Question 1 (PQ1):**
  *Which pitfalls are present during the implementation of a PPM discipline in the SARB?*
    - **Secondary Question 1 (SQ1):**
      *How do you identify the pitfalls during the project?*

- **Primary Question 2 (PQ2):**
  *Of the pitfalls identified above, which present the highest risk?*
    - **Secondary Question 2 (SQ2):**
      *How do you assess the pitfalls identified above?*

- **Primary Question 3 (PQ3):**
  *How should these high-priority pitfalls be addressed?*

Once the secondary questions have been answered, research participants can be included in the study. Suitable information can be provided to solicit relevant data that can be used to complete the study.

## *1.4    Research methodology*

This research is based on literature focusing on the techniques of identification, avoidance and mitigation of pitfalls in projects similar in nature to the implementation of a PPM discipline in an organisation such as the SARB. Case studies of strategic initiative implementations specifically and of other ICT projects in general are used to assist in the identification of pitfalls in this project.

Project managers, team members, managers and general staff members in the ICT environment and in other areas of the SARB are interviewed and suitable questionnaires are created to acquire the opinions of stakeholders in the PPM project.

Stakeholders' expectations, provided information, prior experience, management decisions and implementation outcomes are analysed and the findings are discussed. The results of the research are analysed and formalised to serve as guidance for similar implementations within the SARB and comparable organisations.

The following research methods are therefore applied to the study:
- Literature survey
- Case study: SARB
- Interviews

The research results obtained during the literature study will be applied to a practical implementation of a PPM discipline in the Bank. This is due to take place during the 2008/2009 financial year.

### 1.4.1   Research process

The research process to identify and assess pitfalls and to devise responses to address the pitfalls was based on the best-fit models discussed in Chapter 4.

The population used in this study was limited to staff of the SARB. Research focused on stakeholders in current or past ICT projects. The reason for this decision was that inputs from external project stakeholders are provided to the project through literature reviews and case studies. Zhou, Vasconcelos and Nunes (2008, p. 168) propose that information acquired from the literature may serve in the creation of checklists that can be used in the pitfall management process.

By limiting the population environment to the staff members of the SARB, the author is allowed to focus on matters closely related to the specific project in the Bank. This approach does not imply that the results of this study cannot be used in other organisations provided that the uniqueness of and projects within the others are dealt with similarly (Smith & Merritt 2002).

Information to identify possible pitfalls present in an organisational initiative can be obtained by using historic information and information acquired from case studies and by discussing pitfalls in a project with experts in PM, including PPM and program management (Zhou, Vasconcelos & Nunes 2008).

Research interviews, questionnaires and observation can be particularly suited to qualitative research (Hannabuss 1996). The main advantage of research interviews is that normally hidden information can be acquired from interviewees. This hidden information includes personal perceptions and understanding of ideas or concepts.

Given the geographical closeness of the staff members in the organisation, instruments like group sessions that include Delphi sessions, personal interviews and small work sessions may be particularly suitable to this study (Thomsett 2004; PMI 2004).

## 1.5    Outline of the study

The study comprises six chapters that are supported by research material, tables and figures.

Chapter 1 is an introductory section explaining the background and objective of the study, the research questions and the research approach.

Chapter 2 explains the disciplines of PM and PPM. It also expands on the literature available on this discipline, focusing on theories related to the effecting of strategic initiatives in an organisation in general and the implementation of a PPM discipline specifically.

Chapter 3 focuses on the environment of the SARB, the current situation in the Bank, the business requirements for a PPM discipline in organisations similar in nature to the Bank and for the Bank itself. Finally, it discusses the anticipated strategic role of PPM in the SARB.

Chapter 4 carefully considers pitfalls and the identification and evaluation thereof and response thereto. It discusses models available to identify and respond to pitfalls in a project. A suitable model is selected and reasons are given for the choice.

Chapter 5 describes the research process that was followed. This chapter discusses the results of the research and analyses the results, the conclusions and the lessons derived from the study. A list of possible pitfalls

that may affect the implementation of PPM is compiled, discussed and made available to the project team.

Chapter 6 comprises the final conclusion of the paper and provides recommendations and suggestions for future research.

# CHAPTER 2

# LITERATURE REVIEW

## 2.1    Introduction

Implementing PPM in an organisation, or growing the maturity level of PPM, should not merely be a process left to project managers (Maizlish & Handler 2005; Levine 2005, pp. 81–84; Eve 2007). PPM is a strategic initiative that links PM with operational activities; it is therefore not an extension of PM as the latter focuses on the individual contributions of projects within the organisational environment. The strategic initiative must have the support of executive management and the buy-in of all stakeholders (Levine 2005, p. 81). Mark Forman (cited in Levine 2005, p. 236) proposes that a change management process must be in place before one embarks on the implementation process.

The maturation of the PPM discipline requires that the organisation embark on a transformation process in which PPM is envisaged as a core function of the organisation (Eve 2007).

## 2.2    Information technology portfolio

The IT portfolio consists of the IT investments of the organisation and comprises a pool of projects, programs and other project-related objects (PMI 2006, p. 5). These should be managed to achieve the business objectives of the organisation.

A balanced portfolio comprises a mixture of short-, medium- and long-term projects that are feasible and attainable through the available resources of the organisation. PPM is a process whereby projects are continuously and iteratively evaluated and prioritised for balance, strategic fit and best return on investment (Martinsuo & Lehtonen 2007; Levine 2005; D'Amico 2005).

Balancing is done in terms of risks, capability, funding, available resources and time to delivery (D'Amico 2005; Maizlish & Handler 2005; Blichfeldt & Eskerod 2007). This dynamic process ensures that only those projects that best serve the objectives of the organisation continue to be executed (D'Amico 2005; Martinsuo & Lehtonen 2007; PMI 2006, p. 33; Maizlish & Handler 2005). Evaluation and prioritisation include projects that are currently in their execution phase.

PPM at a basic level serves as a link between the components of the IT portfolio, ensuring that projects receive the required resources from the operational areas. These operational areas have no knowledge of how the resources will be used and whether they could be applied more effectively in another project (Levine 2005, p. 90). When PPM is matured to serve as an integrator between portfolio management and corporate governance initiatives, it allows the organisation an encompassing view of all activities in the IT portfolio (Warner 2006). This level of PPM maturity allows balanced and unbiased focus on projects, ensuring that IT funds are correctly spent, operational activities are measured and managed and strategic objectives are achieved optimally through the creation of synergy between projects.

## 2.3    Use of project management to implement PPM

The realisation of the IT investment passes through phases in which projects are at first managed individually and later as part of a portfolio, but still separately from the other operational activities. This process will continue until PPM becomes an integrator of all IT activities (Levine 2005, pp. 90–92). The process will not evolve naturally and may take a long time to mature. Implementing a PPM is therefore best done through a fully fledged project where PM principles are applied and monitoring and controls are in place to verify that objectives are achieved (Levine 2005, pp. 81–84; Maizlish & Handler 2005).

## 2.4    Management of pitfalls

Freedman (2003) refers to areas to be addressed and managed correctly to keep the portfolio management implementation from failing as "pitfalls", and *Merriam-Webster's Dictionary* (2008) defines *pitfall* as a "hidden or not easily recognised danger or difficulty". Pitfalls therefore have a negative connotation and may cause harm to the project.

Risks can be either negative or positive. Maizlish and Handler (2005, p. 181) define a risk as the "potential deviation from expected results". The PMI (2004, p. 238) defines a risk as some unexpected or unplanned condition or incident that may either adversely (negative risk) or otherwise favourably (positive risk) influence the outcomes of a project.

Positive risks are referred to as opportunities that may be used in favour of the organisation to improve the possibility of project success (Ahmed, Kayis & Amornsawadwatana 2007). Project teams should exploit the opportunities to the benefit of the organisation.

For the sake of clarity, all negative risks are referred to as "pitfalls" in this paper. "Risks" are used loosely in the literature in reference to "pitfalls". In this case, this paper will use the term "pitfalls".

After identifying a negative risk or pitfall, the project team may either prevent the condition or event from occurring or manage its effect to render the most positive or least negative result.

The PMI describes the project risk management process (PMI 2004) as
- Risk management planning—This is the process that will be followed to manage the risk portfolio in a project; it includes the organisation's attitude toward and tolerance of risks and the amount of effort it is willing to put into managing them.
- Risk identification—Risks must be identified in order to be evaluated, analysed and addressed.

- Risk analysis—Risk analysis prioritises the identified risks according to a prioritisation framework. The possible impact of a risk on a project objective is entered into a scenario network to show the team what would happen to the project once a risk realises. Risk analysis is first done qualitatively and then quantitatively, if required.
  - Qualitative risk analysis is the prioritisation of risks in terms of their probability and impact on the project and project objectives.
  - Quantitative risk analysis renders metrics for identified risks. This process implies that risks and their effect on the project will provide figures that can be related to the objectives of the project, such as Rand value for project costs and time for delivery.
- Risk response planning—This step renders the options that the project team will have if a risk event should occur. The project team should make use of the opportunities that exist within the project and avoid or minimize the negative effects of the pitfalls in the project.
- Risk monitoring and control—This process is the continual one of identifying, tracking and mitigating risks throughout the project life cycle.

## 2.4.1   Classification of pitfalls

One can avoid many potential pitfalls in a project by putting appropriate controls into place. Pitfalls related to new or complex technologies may, for example, be avoided by proper training (Cervone 2006) and well-documented procedures. Residual pitfalls remain present when all the controls have been put in place (Maizlish & Handler 2005, pp. 182–183).

Light and Gerrard (2007) divide pitfalls into six categories: technology, schedule, complexity, operational, business and organisational. Many other models of categorising pitfalls exist. Some of these models will be discussed in more detail in Chapter 4 of this study.

Pitfall classification may also be based on the pitfall source, or the area that hosts the pitfall, the hazard causing the pitfall and the area most influenced by the pitfall (Tchankova 2002).

### 2.4.2 Identification of pitfalls

Certain categories of pitfalls may proliferate or decline throughout the life cycle of a project. This fact implies that pitfall identification is iterative and may require the project team to revisit areas that were previously deemed to be free of pitfalls (PMI 2004, p. 246).

One approach to identify the pitfalls that the project may encounter starts with the identification of the sources of pitfalls, or the areas in which the pitfalls reside (Tchankova 2002). This is followed by identifying areas that will be exposed to or influenced by the pitfall.

Tchankova's (2002) approach to risk identification in general can be applied to project pitfall identification in particular. Pitfalls mainly originate from the social, operational and cognitive environments. This will be described in more detail in Chapter 4.

Other pitfalls may emanate from legal, economic or political issues that are mainly caused by external factors (Tchankova 2002) and from the physical environment that may have a major influence on projects that are technologically intensive.

Hazards that may trigger the pitfalls include poor project management, untrained staff, incomplete documentation, ambiguous instructions, higher prices and the use of tools not designed to perform the task at hand (Cooper 1995; Zhou, Vasconcelos & Nunes 2008).

Perils resulting from the pitfall may be injuries, dissatisfied customers, application bugs and missed deadlines (Tchankova 2002).

The areas exposed to pitfalls are the physical resources, such as ICT equipment in the organisation and the deliverables acquired from the execution of projects, the humans who may suffer because of the pitfall event and its financial impact on the organisation (Tchankova 2002).

By using a risk breakdown structure (RBS) (PMI 2004, p. 244; Iranmanesh, Jalili & Pirmoradi 2007; Hillson, Grimaldi & Rafele 2006), the project team will find the identification of sources and hazards of potential pitfalls relatively easy. An adapted RBS is shown in Figure 2.1:
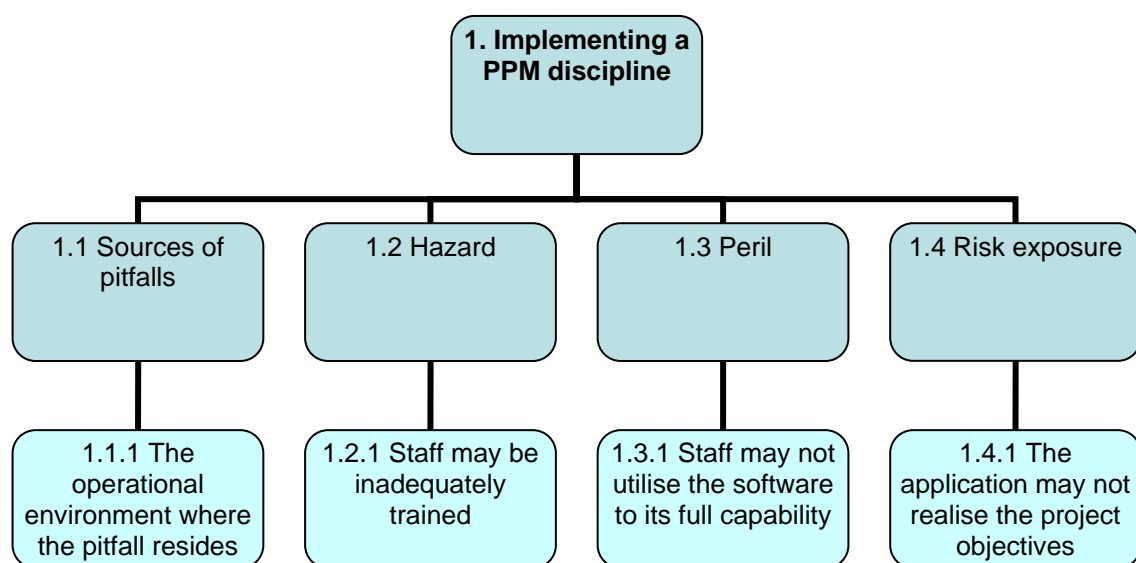


**Figure 2.1. Risk breakdown structure adapted from the *PMBOK Guide* (PMI 2004)**

The outputs of the pitfall identification process are documented in a risk register (PMI 2004, p. 249) that also contains a RBS, a list of possible responses to the pitfall that have been identified and one of possible hazards or triggers of events leading to pitfalls realising.

Once pitfalls are identified, they must be analysed and prioritised. These steps will instruct the project team to a certain degree how to manage the pitfalls. The level of analysis depends on the requirements of the project team and the resources available to respond to the identified pitfalls (PMI 2004).

### 2.4.3  Analysis of pitfalls

Pitfalls are first analysed qualitatively (PMI 2004). A prioritisation process is then required to allocate the resources available to the highest-rated pitfalls. Pitfall assessment may be based on various determinants, such as the main focus of the project; constraints such as time, cost or quality; the probability of the pitfall occurring; and the mission criticality of the area that may be influenced by the pitfall (Cervone 2006; Cox 2008). This statement implies, for example, that a pitfall potentially resulting in an incident in the technical environment may have higher priority than one potentially resulting in an incident that may delay the project due to a lack of resources.

Once pitfalls have been prioritised, the impact or peril can be described in terms of measurable units that relate to a specific project objective. This is done with the use of quantitative analysis (PMI 2004). Quantitative analysis expresses the losses incurred by the project due to the occurrence of negative risks in terms of monetary or time value units or any other project objective.

### 2.4.4  Avoidance of and response to pitfalls

A correlation exists between the successful identification and management of pitfalls on the one hand and project success on the other (Maizlish & Handler 2005, p. 181). Although unknown pitfalls cannot be managed pro-actively, the organisation can adapt pitfall categories acquired from previous projects to guide the team to address specific types of pitfalls (PMI 2004, p. 243).

Using a risk register, the project team can monitor the probability factor of pitfalls throughout the project life cycle and increase its focus on certain pitfalls if their probability of occurrence or their impact on the project increases during the project life cycle (PMI 2004, p. 267).

The PMI suggests three ways to deal with high-level pitfalls: avoid these pitfalls altogether, transfer the pitfall to a third party or alleviate the pitfall by

devising appropriate mitigation plans (PMI 2004, pp. 261–262). The project team should decide beforehand which action should be followed if any of the identified pitfalls threatens to occur. For example, a contract should be drawn up to transfer certain pitfalls before the incidents or events occur, such as taking out insurance against fire, an industrial strike or theft of equipment.

Contingency plans should be part of the project plan (PMI 2004, p. 264). They may include a time buffer in the case of technical or logistical difficulties or additional funds in the case of inadequate current resources; in addition, project components could be procured if the project team providing these components should experience difficulties.

### 2.4.5   Monitoring and control

Monitoring the PM environment refers to the perpetual process of identifying new pitfalls, re-assessing previously identified pitfalls and checking for events that may trigger a pitfall (PMI 2004, pp. 264–266). Monitoring and controlling continually evaluate

- Whether the conditions for the occurrence of pitfall events have changed
- Whether all assumptions made during the creation of the risk register still hold
- Whether the organisational attitude toward risks has remained constant
- Whether plans to address pitfalls are in place and valid
- Whether old risks are monitored and new ones are documented

The risk register will act as the basis for the monitoring and controlling of pitfalls and opportunities.

## 2.5   *Implementation of project portfolio management*

The manner in which PPM is implemented and utilised will determine its success in the organisation (Levine 2005, p. 183). The IT environment needs to understand the business objectives to be achieved when it implements

PPM. One should understand and consider issues such as the timing of the new strategic implementations and the organisation's key focus areas and attitude toward risk taking before starting the implementation process (D'Amico 2005; PMI 2004, p. 242). Members of the PPM team should represent all areas and disciplines of the organisation.

D'Amico (2005) suggests a model for implementing and maintaining a PPM, which starts by creating an inventory of the existing projects in the organisation. This is followed by evaluating these projects in terms of the strategic goals of the organisation and then prioritising all projects according to a prioritising framework. The prioritisation process will balance the projects in terms of risks, resources and time frames. High-priority projects are selected and the others are cancelled. These steps should provide the organisation with the best mix of projects using available resources, without bringing emotions into play. The final step requires the re-evaluation of all projects on a regular basis, ensuring that the organisation dynamically adapts to the strategies that are in effect at the time.

Implementing the PPM discipline in the Bank requires that the timing should be such that organisational culture, maturity and needs allow for positive contributions from the stakeholders (D'Amico 2005; Levine 2005; PMI 2006). Stakeholders should be willing to participate and executives should buy into the initiative.

Strategic projects may require special focus on people issues (Marr & Parry 2004). This condition may require people to change their beliefs and attitudes; they may have to be retrained or may be expected to relinquish part of their power bases in favour of becoming knowledge providers. People issues may form the most intricate part of the implementation of the new strategy; however, once identified, pitfalls in those areas can be managed to ensure that the project is completed successfully.

A structured approach to addressing pitfalls will assist the project team to maintain focus on the implementation process of PPM as originally planned,

with the advantage of completing the project within the scope of costs, time, quality and user expectations.

## *2.6 Conclusion*

Pitfalls during organisational change are in abundance (Chaudron 2003). Ignorance, assumptions, politics and conceit can influence the outcomes of processes or the success of implementing a new strategy. Vulnerable areas should be identified, scrutinised and managed to render the desired outcome. A change management process that can afford time, patience, attention and support to staff being faced with the challenge of changing old habits and beliefs must be put into effect. Although pitfalls relating to people are the most important (Thomsett 2004) and almost invariably the most difficult to deal with, organisational, technical and financial issues should not be neglected.

# CHAPTER 3

# PROJECT PORTFOLIO MANAGEMENT IN THE SOUTH AFRICAN RESERVE BANK

## 3.1    Introduction

The SARB is a key financial institution in the Republic of South Africa, and according to its mission statement its primary role is "the achievement and maintenance of price stability" in the South African economy (SARB 2005). In support of its mission, the Information Technology [1](IT) department provides ICT services to the Bank (SARB 2007). The IT department provides these services to the business areas in the Bank through projects.

The Bank envisages the implementation of a PPM office within the 2008/2009 financial year (SARB 2008a; SARB 2008e). Growing the PM maturity from the level of managing single projects to one of managing multiple projects in an integrated portfolio project environment will enable the IT department to provide services to the Bank at a more effective level and at a lower cost (Levine 2005; PMI 2006; Maizlish & Handler 2005).

The implementation of a project such as the PPM discipline is unfortunately not simple and free of pitfalls. Linking organisational strategies to operational enablers is riddled with pitfalls, and a project such as implementing a PPM relies heavily on human involvement and good communication (Freedman 2003; Doherty & King 1998; Cervone 2006, p. 260). Role players include project managers in the Bank, the stakeholders of these projects, the operational staff dealing with project teams and the management of the organisation, and the users of the ICT initiatives provided to the business areas.

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[1] The IT department is known as the Business Systems and Technology (BST) department in the Bank.

Conflict of interest and interaction among project teams on technical, socio-economic, functional and financial levels can negatively influence the successful activities of a central strategic discipline. Implementing initiatives are also influenced by political, technical, socio-economic, functional and other factors (Strauss 2006). The implementation phase of the strategic discipline will determine how effectively the discipline can function (Levine 2005, p. 183).

The project team is faced with the major challenge of identifying the pitfalls that may occur before and during the process of implementing PPM in the Bank. This issue can be addressed if the study can provide clear guidelines about dealing successfully with these pitfalls.

## 3.2   *Project Support Office*

Project management in the SARB is supported by the Project Support Office (PSO) in the IT department. The PSO was implemented during 2003 following a formal PM maturity assessment. This assessment was done according to the Organisational Project Management Maturity Model (OPM3) (PMI 2007a) to establish the level of implementation and the role of the PSO appropriate to the PM maturity level of the Bank. The Bank acquired the services of the X-Pert Group (2008) to assist with the maturity evaluation and the implementation of the PSO in the Bank. The maturity assessment rated the IT department 24 per cent compliant, with the department applying 109 of the 586 best practices prescribed in OPM3 (Hayman 2004).

The PSO is staffed by two administrators and a portfolio manager; the latter was recently appointed in this new post to establish and head the PPM discipline. The current mission of the PSO is to "enable a consistent approach to managing and governing projects" in the IT department, and its vision is to create a mature PM discipline within the section (SARB 2008e, p. 3). The recent appointment of a portfolio manager will add momentum to the department's drive to become more involved in the prioritisation and selection

of projects, providing training, mentoring and administrative services to project teams.

The PSO focuses mainly on ICT projects, but it will render assistance to project teams from other departments. In addition, the PSO gives project managers guidance about the administrative process to be followed, taking the project through the life cycle of initialisation, planning, execution and close-out in relation to the updating of documentation and reporting.

The PSO is not prescriptive regarding the project methodology to be used although main guidelines must be followed. These guidelines pertain to the governance and controls put in place to measure and report on project progress, risks and issues.

The decision about the project methodology to be used lies with the project managers of the individual projects; however, software development projects abide by the Rational Unified Process (RUP) (SARB 2008d).

An important function of the PSO is to mature the level of PM in the Bank (SARB 2008e). This is partially achieved by an established project management forum (PM Forum), a voluntary network of project managers in the Bank. The forum discusses ideas related to PM, and external guest speakers are invited to give project-related lectures. Furthermore, new project processes, standards, policies and procedures that have been implemented or that are under consideration are discussed and critiqued and proposals for acceptable changes are forwarded to the department's management team for consideration.

The PM Forum is currently undergoing fundamental changes, moving toward a community of practice that will act as a formal body with consultative power based on the expert knowledge of the project managers in the Bank. In future the PM Forum will be known as the Project Management Community of Practice.

## 3.3    Project management in the Bank

The IT department provides services to both the line and the supporting departments of the Bank. Many of these services are provided through the execution of projects. Requests for projects may flow from a strategic plan that has to be carried out (SARB 2007).

The life cycle of a project originates from the requesting party that has identified requirements for ICT services in the form of either software or hardware systems or new processes or changes to existing ones in the Bank. The requesting party may be a business area of one of the line departments of the Bank, a business section of any of the supporting departments, users from within the IT department or an entity from elsewhere in the Bank.

### 3.3.1    Project prioritisation and initiation

Once a business need has been identified, one or more subject matter experts (SMEs) decide whether to address it as a service request or as a project. A service request refers to a small or routine task that may or may not require the procurement and/or implementation of ICT hardware, software, services or process changes. A project will follow a formalised prioritisation process that comprises a set of gates and filters ensuring that all projects that are conducted support the strategic objectives of the department and the Bank; that the proposed system corresponds to the provided architecture guidelines; and that the Bank, and more specifically the IT department, has the capabilities to conduct the project. Furthermore, the IT department should be able to support the system after delivery to the business areas. Finally, the project will be evaluated in terms of, among others, legal requirements and expected return on investment.

Projects are rated "must do", "can do" or "nice to have" and are compared to others in the portfolio. A project is assigned according to priority to the most appropriate division within the IT department. Its status is now registered as "considered" and it enters the initiation phase of the project life cycle flow

chart, as depicted in Figure 3.1, Project Life Cycle (SARB 2008d). The process of acquiring the appropriate budget approval will now commence.

Once budget approval has been granted, the status of the project will change to "planned". Project progress and achievements will be measured from this point on (SARB 2008d).

The planning phase starts with a concept meeting during which the project manager and technical and functional SMEs, representatives of the user departments and managers from the IT department negotiate the scope, project mandate, timelines and other project-related issues. During this meeting, risks are discussed for the first time. The full project team will also be identified on this occasion, except for incidental appointments to the team, if and when they are required and available.

A project charter is developed from the concept meeting, stating the user expectations and assumptions, the identified opportunities and pitfalls, the mandate of the project, the project manager and a broad scope, which will be refined later.

A risk register is created during the concept meeting and is kept up to date during project progress. It must be noted that the responsibility of managing risks lies with the project manager. New risks are added to the risk register throughout the life cycle of the project, but no formal risk management meetings are held subsequent to the initial concept meeting.

**Project Management Life Cycle**
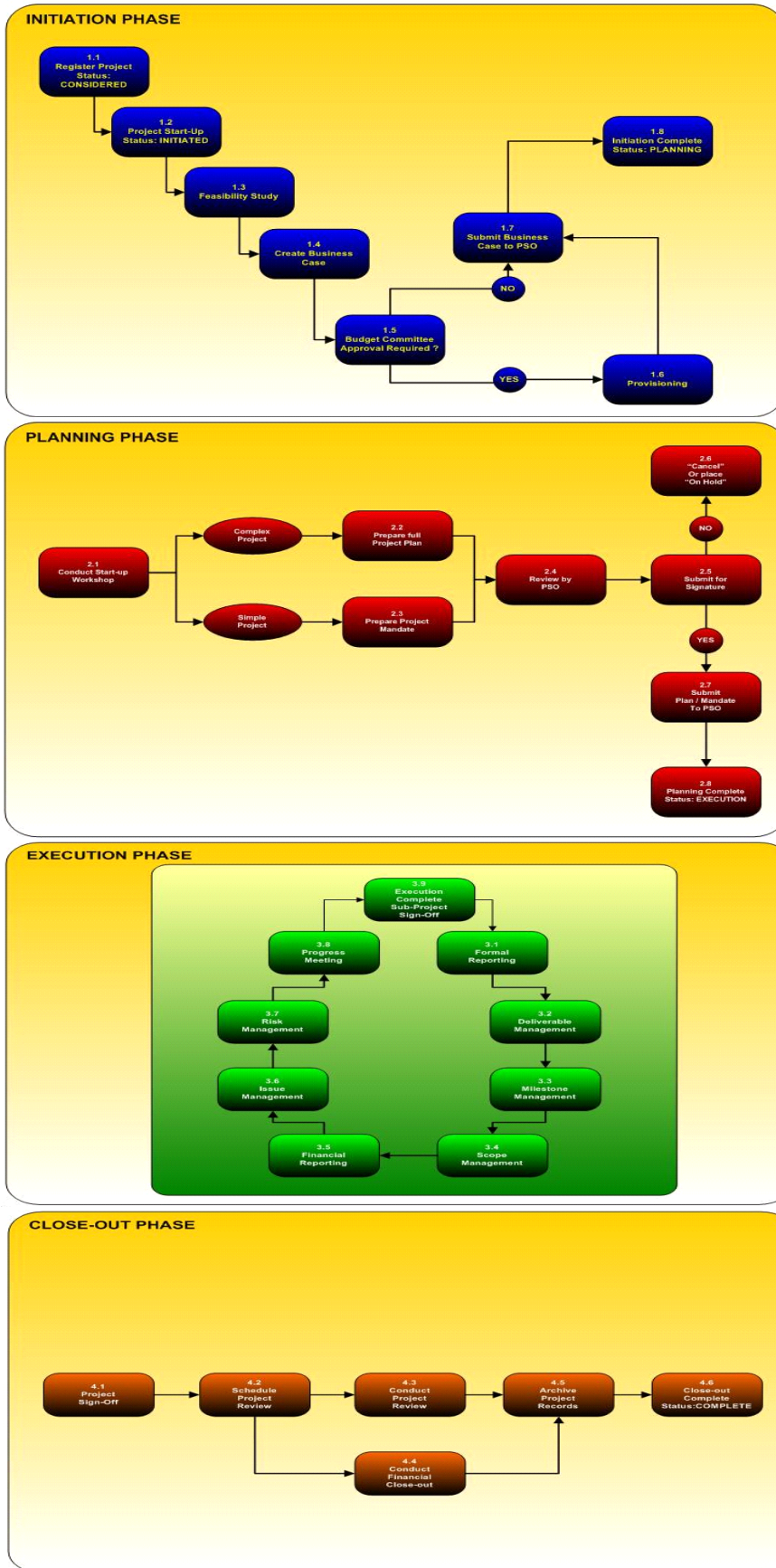


Figure 3.1. Project life cycle (SARB 2008d)

### 3.3.2  Project execution

Resources are assigned to projects on the basis of priority and availability. Historically, PM was not formally part of the IT department's functions, resulting in an overwhelming shortage of dedicated project managers in the department. Most projects are run by staff members who are also involved in the functional activities of the IT department, with projects receiving a lower priority than functional responsibilities.

Project schedules are flexible and inevitably provide for project managers and team members being unavailable during periods of high operational activity, such as financial month- and year-ends. Slow procurement processes and a lack of urgency on the part of departments not directly involved in these projects may result in tasks running overtime and must be considered during project scheduling.

Project estimated completion dates are frequently scheduled to fall within the financial and budget year. In this way the project team has as the longest possible time to complete the project without having to re-apply for funds during the next financial year. This practice results in low turnover of projects and may lead to failure to meet clients' expectations.

Project milestones are registered to ensure that project activities remain according to the project plans. A formal change control process is in place to alter the baseline plans to accommodate scope-, resource- or time-related changes.

### 3.3.3  Measurement of project success

The IT department has an agreement with the executive management of the Bank to achieve 85 per cent of registered project milestones (SARB 2008b). This figure is high and unrealistic (D'Amico 2005; Zhou, Vasconcelos & Nunes 2008) and results in time contingencies being built into the project plans, which may otherwise not have been required. The relationship between

project managers and users may be such that the team may compromise on the quality of the deliverables to ensure that the milestone is achieved. Members of the PM Forum have discussed this situation with the management and the department is in the process of changing the agreement with the executive management to alter the measurement of project success to be more realistic and relevant. No final decision has yet been made on the method of measuring and reporting.

## 3.4 Project resources

### 3.4.1 Human resources and roles

Project managers are selected from staff from the IT department. Staff members need no formal PM training or qualifications before they can be appointed as project managers, neither do they need to meet any criteria or requirements. High-risk projects are assigned to senior technical staff whereas junior staff members will be coached to fulfil other project roles. When these members are deemed ready, they may be assigned bigger responsibilities.

Project managers with a success history may be over-extended to manage multiple projects whereas less successful project managers are assigned to low-priority projects. This practice leads to an imbalance in the application of resources, which in turn poses the risk of low productivity and morale.

The acquisition of external services, such as contractors or consultants, is allowed as a last resort and needs to follow the Bank's procurement process. A statement of work that governs the tasks of the external service provider contractually requires that adequate skills transfer take place during the project.

Project roles remain a challenge for project teams. Ownership, sponsorship and the role of the champion are not always assigned to provide the most

effective returns to the project. These roles are influenced by the functional role of the person in the Bank.

### 3.4.2 Project funding

Financial resources are budgeted for after the project has passed through a series of gates and filters during the prioritisation process. Once funding has been approved, the project will be registered with the PSO and will be initialised.

The procurement of goods, services and resources is governed by the Bank's procurement policy and process.

### 3.4.3 Technical resources

Technical resources such as personal computers, software and file servers will be provided on a temporary basis for development during the project. Long-term projects or projects requiring a large number of ICT components are expected to procure the resources from the project budget, following the Bank's procurement process.

## 3.5 Organisational structure

The SARB has a tall hierarchical structure, comprising many layers of management between project teams and decision-makers.

The organisational structure of the IT department is based on functional activities, which complicates cross-silo project development within the department as well as in the Bank in general.

The loyalties of staff members reside firstly with their functional activities and then with project activities. Performance measurement is focused on

functional activities. This may pose a serious threat to a functional PPM discipline as staff members have little or no prior experience of matrix management and cross-functional operations.

### 3.5.1 Project structures

Projects are headed by the project manager who functionally represents the area responsible for delivery of the project. This duty is justified through this person's skills and competencies in the area that is dominant in the project. This choice is not always the best, since the project manager needs to play the role of the SME in the project as well, requiring involvement in the physical activities in the project. This may obscure judgement, inhibit lateral thinking and lead to conflict of interest and can negatively influence teamwork within the project. This practice poses an overall risk to the project (Brenner 2008).

Project team members are assigned from various functional areas within the IT department as well as the rest of the Bank. Business analysts, who may or may not have experience of the business requiring the services of the IT department, are engaged in the project. This engagement is based on their availability at the time of project initiation.

The resource needs of functional areas have priority, inevitably influencing the availability of team members and having adverse effects on projects.

## 3.6    Strategic focus of implementing PPM in the Bank

The management of the IT department has identified that the implementation of a PPM discipline in the Bank can assist the IT department to improve support for the rendering of services to the Bank. The mission of the department and the Bank will therefore be supported as services will be provided more effectively (SARB 2008e).

A project manager professional (PMP) (PMI 2007b) was recently appointed as portfolio manager to give impetus to the implementation of PPM in the Bank. The mandate of the PMP is to establish a portfolio management office (PMO) that will govern the management of portfolios, programs and projects in the IT department in the beginning (SARB 2008e). If successful, it may be implemented Bank-wide at a later stage.

The PSO has stated its vision as the maturation of the PM discipline to the level of PPM in the foreseeable future (SARB 2008a; SARB 2008e). The objectives of the project in implementing a PPM discipline in the Bank should fit the culture, maturity and requirements of the Bank and require a contribution from all project managers, project officials, members of the management of the IT department and clients of the IT department, who represent the stakeholders from the business areas of the Bank.

## 3.7    Conclusion

The IT department of the SARB provides ICT facilities and services to the business areas of the Bank through projects. With the implementation of a PSO in the SARB in 2003, the Bank embarked on a process to mature the PM discipline in the Bank. The Bank has identified the requirements to further increase the maturity of the PM discipline into a PPM discipline to assist the IT department to enhance the effectiveness and throughput of projects in the department.

Current practices of selecting project teams, PM procedures, measurements and outputs are not optimised and can improve in most areas. This will improve the turnaround times and throughput of projects in the department. Areas where the IT department may need to position itself are project structures, maturity levels, capabilities and alignment. This action will take the IT department a long way toward readiness to implement a PPM discipline in the department.

The implementation of a strategic discipline such as PPM requires support from all levels of the organisation, careful planning, a dedicated project team and good governance, including a thorough risk identification and management process.

The following chapter discusses methods and tools to identify and deal with pitfalls that may negatively impact the implementation of PPM in the Bank.

# CHAPTER 4

# PITFALL MANAGEMENT PROCESS

## *4.1    Introduction*

This chapter focuses on pitfalls, the categorisation of pitfalls, checklists acquired from literature and those compiled from post-project review documents derived from projects conducted in the Bank. Pitfall filtering, assessment, prioritisation and response are discussed next and the chapter concludes with a discussion of pitfall control and monitoring strategies.

The implementation of a strategic initiative such as a PPM discipline poses unique challenges to the project team. Challenges related to the organisational structures and culture, the technological infrastructure, the internal political climate and the project processes that are in place and that are undertaken during the time of implementation will change from time to time and from one project phase to the next (Zhou, Vasconcelos & Nunes 2008).

Organisations with poor track records for managing risks normally fail to deliver the expected benefits (Zhou, Vasconcelos & Nunes 2008, p. 166; Elkington & Smallman 2002, p. 55). Moreover, Martinsuo and Lehtonen (2007) argue that a link exists between portfolio performance and organisational performance. The value of the IT department therefore depends highly on the performance success with which the IT department manages to run its project portfolio. Approaching pitfall management in a structured way will simplify the process of identifying, analysing, monitoring and managing those pitfalls (PMI 2004) that can negatively influence the successful implementation of PPM in the Bank.

Various methods can be used to simplify and render the identification of pitfalls more effective (PMI 2004; Palomo, Insua & Ruggeri 2007). Stakeholders' thought processes in identifying pitfalls can be stimulated by

various means. These include using pitfall lists, having discussions with experienced project managers, drawing upon one's own experience, using risk breakdown lists and analysing post-project reviews.

Categorising pitfalls can assist the project team to identify sets of generic pitfalls to create generic plans dealing with the category of pitfalls. Pitfalls that are undetected in the beginning of the process can be categorised once they become visible during the project. They should then be addressable in the same way as the other pitfalls with similar causes (Hanford 2008). This paper provides guidelines to the project team to address current and newly detected pitfalls.

## 4.2    *Common terminology*

The interpretation of *pitfalls* differs from one person to another. A pitfall or risk may be viewed by one person as the cause of an event, while another may see it as the consequence of an event (Fenton & Neil 2006a). Rob Thomsett (2004) argues that the key to successful project risk management is the establishment of a common terminology.

### 4.2.1   Anatomy of a pitfall

Tchankova (2002) explains that pitfalls comprise four elements: the source of the pitfall; the hazard that triggers the incident; the peril that is the result of the incident; and the pitfall exposure, referring to the area that is influenced by the incident.

Figure 4.1 depicts Tchankova's (2002) view of a pitfall's composition. The realisation of the pitfall caused by the source does not take place instantaneously but follows a sequence of conditions or events (Tchankova 2002). The progress in pitfall sequence will have an important effect on the options that are available to the project team to respond to the pitfall.
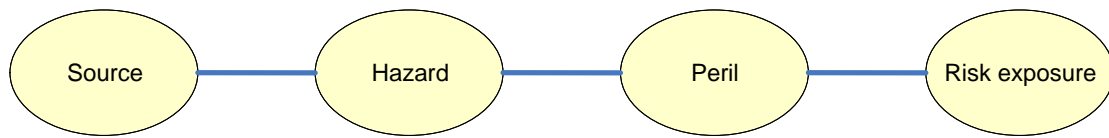
**Figure 4.1. Components of a pitfall (Tchankova 2002)**

Using Tchankova's (2002) model of breaking pitfalls down into components or phases gives a structured way to identify them.

The source depicted in the first bubble in Figure 4.1 represents the area where the incident may originate; the hazard would be the action that causes the incident to take place or the condition that favours the pitfall to realise; the peril is the result of the incident; and the risk exposure is the area that will suffer most because of the incident. It must be noted that if the source of the pitfall is not present, no pitfall can realise. Likewise, the hazard leads to the peril, which results in the risk exposure.

This breakdown can be explained by means of an example whereby understaffing of developers in a project results in a project being delivered late. The pitfall can be broken down as follows (based on Tchankova 2002):

- The structure of the organisation may allow only for functional reporting lines (source: organisational structures).
- Consequently, developers are tied down to provide support on legacy systems without affording time to project development (hazard: people under-committing to the project or being over-utilised in other areas).
- Critical deadlines are missed (peril: deadlines are not met).
- Accordingly, the business area is unable to use the new system when required because it was not completed at the promised delivery date (risk exposure: the business areas in the organisation that will suffer most).

Pitfall identification could be done fairly comprehensively by investigating the areas where the pitfalls can originate (source) and the hazards that may trigger an incident or condition. Likewise, the perils that the project may

experience because of the identified hazards and the areas that may be influenced by the result of the incident or condition can also assist to identify pitfalls.

## 4.3    Pitfall identification

The PMI (2004) proposes various tools and techniques to assist in pitfall identification. These include documentation reviews, information gathering techniques, checklists, assumption analyses and diagramming techniques.

Techniques to identify pitfalls may be in the form of theoretical exercises or interactive activities. The former refers to techniques such as checklists; influence diagrams; cause-and-effect diagrams; flow diagrams; fault–and-event trees; root cause identification; and strengths, weaknesses, opportunities and threats (SWOT) analysis (PMI 2004, pp. 247–248; Ahmed, Kayis & Amornsawadwatana 2007). These techniques can also be entertained interactively with inputs from and discussions between the project team and other stakeholders. Information-gathering techniques based primarily on teamwork refer to brainstorming, the Delphi technique and interviews (PMI 2004).

Documentation reviews focus on current and prior project documentation. Checklists are compiled from historic information and adapted to suit the current project. Checklists may also be based on available literature, personal knowledge and general observation (PMI 2004; Hanford 2008; Ahmed, Kayis & Amornsawadwatana 2007). The output of this study will be augmented by a checklist.

Tchankova (2002) argues that that investigating the following areas may help to identify possible pitfalls in a project:

- Social environment—Pitfalls in this environment can reside within people's values, reaction to change, social structures and behaviour, and areas concerning the people interfacing between the organisation

and the technical systems (Tchankova 2002). Thomsett (2004, p. 14) argues that this area must be seen as the most important area concerning pitfalls in managing projects.

- Pitfalls in the operational environment—The operational environment includes the processes, procedures, policies, technology and resources used in the organisation, and the general operational activities in the business. Operational pitfalls can be further classified as technological, procedural and organisational. Organisational pitfalls include recruitment, governance, financial issues and operational and strategic readiness in areas such as competency management.

- Cognitive environment—The cognitive environment as a pitfall source includes the human capability and knowledge of workers in the organisation. The perception of risk management and the way to deal with unknown circumstances are included.

Tchankova (2002, p. 291) proposes that the project team should ask how organisational resources are affected by incidents or conditions that were not planned for, and what the impact of the pitfalls is on the objectives of the organisation.

As this study focuses on identifying pitfalls prior to the project being undertaken, historic project information and gathered facts about the organisation will be useful to identify possible pitfalls for the project. These aids include PM and governance maturity benchmarks (PMI 2004). Documentation for the current project that may only become available once the project has been initialised may therefore not be available for this study. The project team will have to augment the list provided by the study with pitfalls based on new documentation and available information.

By analysing the organisational and external environment, the study should reveal which areas may present the most prominent pitfalls. The project team

should also be able to determine the domino effect a pitfall present in one area has on others in the environments mentioned above.

Although pitfall identification is an iterative process and the project team should be continuously scanning the environment and devising ways to manage new pitfalls (PMI 2004; Tchankova 2002), the initial pitfalls documented in the risk register will remain valid and will be the basis of the pitfall management process for the project.

## 4.3.1   Pitfall categorisation

The categorisation of pitfalls is a structured way for the project team to gain more clarity about the sources and causes of pitfalls present in the project (PMI 2004; Hanford 2008). The various attributes of the pitfalls in a project enable the categorisation of these pitfalls in a manner most suited to the organisation, the project process and objectives, or other focus areas the project team deems most suitable (Morgan et al. 2000).

Pitfalls may be grouped together, sharing a singular but identical attribute (*monothetic*), or grouped together on the basis of several attributes that are similar but not identical in any one property of the pitfalls (*polythetic*) (Morgan et al. 2000). The choice between the two options depends on the objectives of the project and the project team.

Different models of grouping or categorising pitfalls are presented in literature. Some of these models are discussed below.

### 4.3.1.1  Pitfall categorisation models

- Morgan et al. (2000) categorise pitfalls as human activities, initiators, exposure, effects and perception and valuation.

- Light and Gerrard (2007) identify six generic categories for pitfalls: technology, schedule, complexity, operational, business and organisational pitfalls.

- According to Elkington and Smallman (2002), pitfall categorisation should be customised for the specific project that is being conducted. The authors propose that a categorisation structure comprises pitfalls identified in different stages of a project. These project stages are comparable to certain of the PM stages used in the Bank's processes. They are the briefing or pre-planning stage; the initiation stage; and the project's ongoing stages of planning, execution and closeout. A final category may comprise general pitfalls. Within the project stages, Elkington and Smallman's (2002) model is subcategorised into business, procurement, management and technical pitfalls.

- A simple pitfall categorisation model provided by Thomsett (2004) comprises pitfalls related to the business, the project, the production system, benefits realisation and personal environments.

- Zhou, Vasconcelos and Nunes (2008) categorise pitfalls in terms of pre-project pitfalls, customer pitfalls, PM pitfalls, technological pitfalls and pitfalls related to the development methodology used by the project team, with some subcategories relevant to each main category.

- Tchankova (2002) focuses on the softer issues of PM. The author argues that most pitfalls in this environment relate to people issues. The categories included in this model are operational environment, legal issues, economic matters and the cognitive environment.

- The PMI (2004) includes nine areas of knowledge in the *PMBOK Guide*. By building a pitfall categorisation model based on these areas of knowledge, one can include most aspects of PM where pitfalls may occur. The nine areas of knowledge are project integration, scope, time, cost, quality, HR, communications, risk and procurement management.

**4.3.1.2 Categorisation of pitfalls in the Bank environment**

Some of the models described above may contain elements that will fit the requirements of the Bank. Selection of the best-fit model will be based on the approach the Bank will follow to conduct projects and internal processes that influence the resources of projects, the culture and capabilities of the Bank and the project team and the general understanding and acceptance of the project team in regard to PM processes and procedures (Hanford 2008).

The models described by Morgan (2000), Tchankova (2002) and Thomsett (2004) do not provide a good fit as some of the pitfall categories described by Morgan and Tchankova are subjective in nature and are not identifiable with current practices in the Bank. The categories proposed by Thomsett require that benefit realisation be measured while the Bank assesses progress in terms of achieved milestones. Other factors in the Bank, such as the lack of chargeback models and the fact that projects are not approved purely on the basis of return on investment or other cost benefits models, may require a different model for categorising pitfalls. Using any of these models may pose a pitfall in itself.

Models that may fit the Bank include those of Light and Gerrard (2007); Elkington and Smallman (2002); and Zhou, Vasconcelos and Nunes (2008).

Zhou, Vasconcelos and Nunes' (2008) pre-project pitfalls focus on requirement specification and scoping, project planning and the organisation itself. This is a useful categorisation that will fit in well with the PM processes used in the Bank (SARB 2008d).

The Bank's focus is not to develop and sell services to external parties but rather to engage in joint development ventures. ICT systems are mostly procured or built for in-house purposes. On the basis of the above, the category of customer pitfalls (Zhou, Vasconcelos & Nunes 2008) may suit the Bank better if it is replaced with one that refers to stakeholder pitfalls. Stakeholders refer to customers; project team members; the project manager,

owner and sponsor; and others who are influenced by the project and its outcome (PMI 2004). Risks of technology, project methodology and management fit in well with the processes of the Bank and can be adapted to fit into a pitfall categorisation model for the Bank.

Basing a model on the nine knowledge areas of the *PMBOK Guide* (PMI 2004) will present a familiar breakdown of pitfalls to the project team. As the Bank has been following the PMI's PM approach for a few years, project teams understand and support the concepts described in the *PMBOK Guide*. By applying these areas to the different phases of PM, one can create a suitable model. Subcategories included in the nine knowledge areas have been adapted from the *PMBOK Guide* to simplify the model. A tenth area relating to technology and project complexity may be added to address pitfalls in specifically utilising technology and developing complex systems.

### 4.3.1.3 Fitting categorisation model

Rob Thomsett (2004, p. 3) argues that project managers are mistakenly attempting to use a single model for all pitfalls in multiple environments. Project teams must distinguish between pitfalls present in specific projects and companies (Blichfeldt 2007; Hanford 2008).

On the basis of the available models and the argument above, a fitting model can be founded on the nine knowledge areas of the PMI. It can be augmented with elements acquired from the models described above (PMI 2004; Light & Gerrard 2007; Zhou, Vasconcelos & Nunes 2008; Elkington & Smallman 2002). The main advantages for the Bank are the familiarity the project managers have with the PMI approach and the coverage provided by this method.

A suitable categorisation model for grouping pitfalls in the organisation can therefore be depicted as follows:

A. **Project integration management** addresses integration among stakeholders involved in the different knowledge areas of PM as well as overarching issues that may have a negative effect on the project.
- Project vision
- Organisational issues
- Project planning
- Project processes
- Change control
- Project closeout

B. **Scope management** addresses processes that ensure that the scope covers the requirements necessary to produce the expected end result.
- User requirements
- Scope planning
- Scope management including change control
- Work breakdown structure

C. **Time management** pertains to the processes required to ensure that the project is completed within the time constraints.
- Sequence of activities
- Scheduling of activities

D. **Cost management** relates to processes required for the project to be completed within cost constraints.
- Budgeting
- Cost control

E. **Quality management** ensures that procedural standards during the project have been followed and that the quality of the outputs of the project is adequate.
- Quality planning
- Quality assurance
- Quality control

F. **Human resources management i**ncludes the identification, acquisition and management of HR that will be taken up in the project team.
- HR planning
- HR availability
- Compilation of the project team
- Management of the project team
- Roles and responsibilities
- Expectation management including change management
- Stakeholder commitment
- PM competence

G. **Communications management** denotes the processes of acquiring, distributing, utilising and storing information that is accurate and timely.
- Communications planning
- Information distribution
- Measuring and reporting
- Documentation

H. **Risk management** entails the planning, identification, analysis and management of pitfalls during the project life cycle.
- Pitfall planning
- Pitfall identification
- Pitfall analysis
- Pitfall response
- Pitfall controls

I. **Procurement management** entails the processes involved in the acquisition of products and services for the project.
- Procurement planning
- Contracts

J. **Technology management** refers to areas that have to deal with the complexity and the technology development and technical issues of the project, including the approach used to develop systems.

- Complexity
- Technologies
- Technical requirements

The identification of pitfalls by the project team can be improved by providing access to information relating to pitfalls or to pitfall checklists that are based on problems experienced during previous ICT projects and on information acquired from literature (PMI 2004; Zhou, Vasconcelos & Nunes 2008; Elkington & Smallman 2002).

## 4.3.2   Pitfall checklists

Using the categorisation model above, one can build a RBS (PMI 2004, p. 248; Iranmanesh, Jalili & Pirmoradi 2007; Hillson, Grimaldi & Rafele 2006). By comparing and combining the information acquired from the RBS with a pitfall checklist that was created from literature reviews and completed projects conducted in the Bank (Zhou, Vasconcelos & Nunes 2008, p. 168; SARB 2008c), the project team can create its own list of pitfalls that may be encountered during the project.

Simply aggregating lists of pitfalls from literature reviews and post project reviews will give the researcher a list of possible pitfalls that is too long, that will contain references to pitfalls that have little connection to the project at hand or that is outdated (Zhou, Vasconcelos & Nunes 2008). The review needs to focus on projects that resemble the PPM project in the Bank and more specifically projects that were hampered by pitfalls. The acquired list will then have to be narrowed down to fit the profile of the Bank. This action will provide the project team with the "lessons learned" from other organisations' project failures (Zhou, Vasconcelos & Nunes 2008).

Zhou, Vasconcelos and Nunes (2008) argue that by augmenting critical literature review with an additional literature survey on case studies of projects documented by other authors, trusted and accurate results can be acquired.

By analysing post-project reviews of 22 projects that were conducted in the Bank from 2003 to 2008, a checklist of actual pitfalls and challenges experienced by project managers in the Bank can be compiled (SARB 2008c). The information acquired from this research can be sorted according to the categories used in the model above.

Combining the two checklists referred to above and having research participants identify the pitfalls most likely to be present in the project of implementing PPM in the Bank will answer SQ1 as posed in paragraph 1.3.1: *"How do you identify the pitfalls during the project?"*

The combined checklist that was provided to stakeholders for evaluation is included in the study as Appendix 1.

## 4.4    *Managing identified pitfalls*

The management of pitfalls starts with planning how to deal with pitfalls once they become known (PMI 2004). This steps deals with the attitude of the organisation toward pitfalls: whether to behave cautiously or aggressively or to merely address them as they arise (PMI 2004, p. 240).

A concerted effort should be made to identify the most prominent pitfalls that may adversely affect the project. One should have a clear, subjective understanding of pitfalls and the consequences thereof for the organisation. Using a group process to evaluate pitfalls may address this problem (Thomsett 2004).

The view of pitfalls as a series of incidents implies that pitfalls can have more than one outcome depending on the intervention of the project team on the pitfall (Fenton & Neill 2006b; PMI 2004). Risk response planning is the

creation of avoidance and mitigation plans to work around the condition or incident, or to minimise its negative affect on the project. The peril can also be moved to become the property of a second party, or the project team can accept and live with the consequences of the condition or incident once it occurs.

The pitfalls recognised during the initial phase of pitfall identification will serve as a basis for the rest of the project. As environments and conditions change, the project team should monitor those identified pitfalls and adapt mitigation plans for effectiveness throughout the life cycle of the project. In addition, a process should be put into place to identify new pitfalls that may hamper the project (Cooper 1995; Cervone 2006).

## 4.4.1  Assessing pitfalls

Thomsett (2004) argues that the acts of identifying and evaluating pitfalls are often based on subjective measures, for example pitfalls based on the complexity of the project. Assessment of the magnitude of the pitfalls depends highly on the experience of project team members. Different opinions among team members about pitfalls must be handled in a consistent manner; for example, the complexity of producing a product should be linked to the product itself, and not to the team that should produce the product (Thomsett 2004). Software developers, for instance, have devised means to measure the complexity of a software system by awarding a value to the number of links to existing or future systems or the size of the project (Barki, Rivard & Talbot 2001; Thomsett 2004).

Most models described in literature to evaluate the magnitude of a pitfall comprise the factoring of two or more variables, relating mostly to the likelihood of a pitfall occurring and the impact of the pitfall on the project (Cox 2008). The presentation of models differs from one organisation to another. Depending on the organisation's risk tolerance and approach, the response to pitfalls may differ from one organisation, project or decision-maker to the next (Cox 2008; Thomsett 2004, p. 3).

Fenton and Neil (2006a) propose that evaluating a pitfall is simplified by visualising the scenario if a pitfall should occur. A causal or risk map, can assist the team to view the pitfall as a series of events that can damage the project. An example of a causal map is depicted in Figure 4.2:
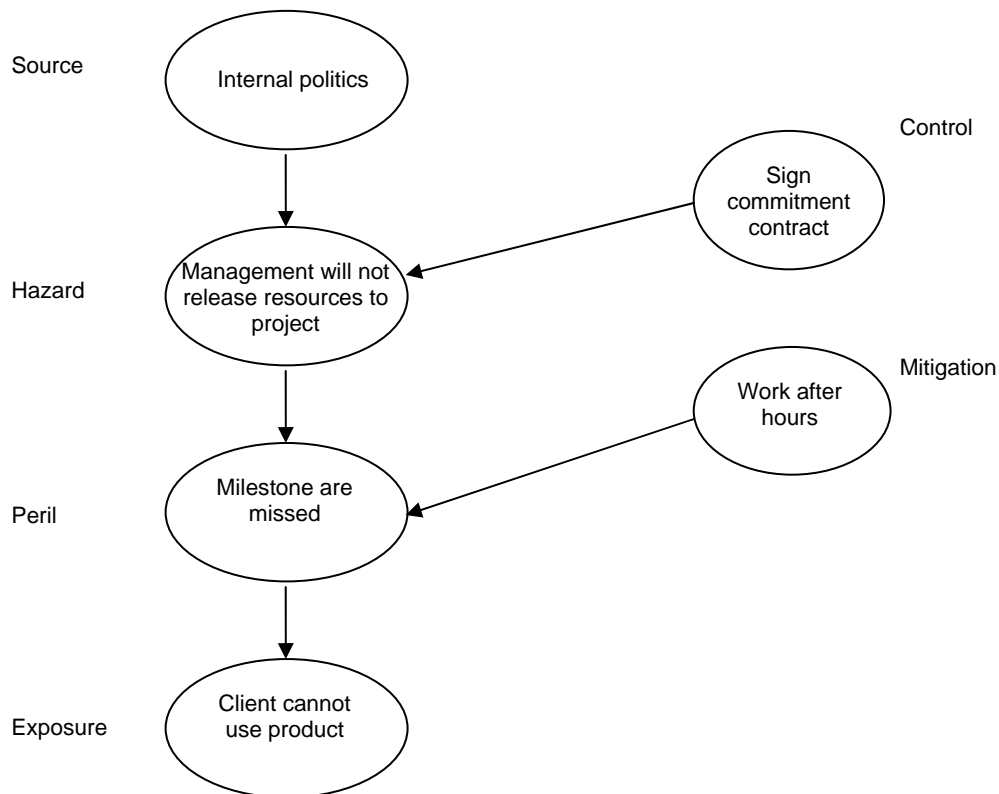


**Figure 4.2. Causal map (based on Fenton & Neil 2006a)**

Different people will perceive pitfalls in various ways. What some may deem the hazard of a pitfall, others may see as a peril. In the example depicted in Figure 4.2, certain team member may regard the source or cause of the pitfall to be the wrong organisational culture, the hazard as lack of management buy-in, and the peril as management not committing resources to the project. This difference in perspective should be viewed in a positive way since it can result in a comprehensive view of, and exercise in, identifying and addressing the risks in a project (Fenton & Neil 2006b).

For example, after assessing the pitfall, the project team may decide what the possibility is of management's not buying into the project. Next, the team needs to decide what impact not buying into the project may have on the

project. In the case depicted above, unless the milestone is on the critical path, missing a milestone may not necessarily be very serious. Missing several milestones may cause the project to fail. If management signs a contract committing to make resources available, the probability of understaffing is decreased. Although the impact of understaffing remains the same for the project, the magnitude of the pitfall's severity is lower than before.

Mitigating the pitfall by working overtime to attain deadlines does not completely solve the problem since this action may result in cost overruns. In this case, the probability of the hazard occurring remains constant, but the impact of the pitfall is lessened.

The process used above will assist the project team to envisage the change on the probability and impact of a pitfall occurring. The magnitude of a pitfall can be determined by factoring the probability of the pitfall occurring with the impact when it does occur (PMI 2004).

By assigning values to the impact and probability variables and mapping these values onto a matrix, the project team will have a visual representation of the magnitude of the pitfalls in a project. The pitfalls can be compared to identify those that require more resources or that demand immediate attention. The pitfalls in the upper right area of the matrix in Table 4.1 are of a higher severity than those at the bottom left.

A general model used in literature to assess the magnitude of a pitfall is depicted below (PMI 2004):

| | | Probability | | | | |
|---|---|---|---|---|---|---|
| | | Very low (VL) | Low (L) | Medium (M) | High (H) | Very high (VH) |
| **Impact** | **Very high (VH)** | | | | | |
| | **High (H)** | | | | | |
| | **Medium (M)** | | | | | |
| | **Low (L)** | | | | | |
| | **Very low (VL)** | | | | | |

**Table 4.1. Pitfall assessment matrix using a descriptive scale (based on Cox 2008; PMI 2004)**

Probability and impact variables can be expressed in terms of L (low), M (medium) and H (high) and on different numerical scales, such as from 1 to 10 or in terms of a percentage. Descriptors such as "negligible", "significant", "severe" and "catastrophic" for the impact and "highly improbable", "highly probable" and "certain" for the probability may also be used (Van Wyk, Bowen & Akintoye 2008; Cox 2008). In addition, variable descriptors such as "frequency", "threat", "vulnerability" and "consequence" may be used to determine the magnitude of the pitfall (Cox 2008).

In the matrix above, green cells are deemed to be of low-level and the project team may decide to accept the probability or impact of the pitfall occurring. The effort and cost involved to avoid or mitigate the pitfall may be higher than those of the peril (Van Wyk, Bowen & Akintoye 2008). The colouring of the cells is referred to as RAG (red, amber and green) indicators.

Pitfalls reflected in orange cells may be seen as medium-level ones with no cause for immediate alarm. They must be monitored and action should be taken if the possibility of their occurring increases. Pitfalls in red cells are deemed high-level and the project team must address these pitfalls as soon as they have been identified (PMI 2004; Cox 2008).

The depiction above is a qualitative view of the magnitude of severity of the pitfalls as the decision to place them in a specific cell is based on the subjective view, knowledge or experience of the team. The scale of the variables can be changed into some numerical value, but it will not change the qualitative nature of the matrix since the subjectivity cannot be removed in this way.

Cox (2008) places two constraints on the design of pitfall matrices to ensure assessment integrity. The author argues that the design of the matrix is important to avoid inconsistencies during assessment. First, by ensuring that no green (low-level pitfall) cell shares any contact point with a red (high-level pitfall) cell, a pitfall cannot be escalated from green to red by a minute

increase in probability and impact. The risk must traverse through a yellow (medium-level pitfall) cell to be upgraded from green to red, or vice versa.

Second, in a matrix where the cell containing the "low-low" value is located at the bottom left, no cell in the left-hand column or bottom row may be coloured red. This will ensure that no red cell (high-level pitfall) has a lower quantitative value than a green one (low-level pitfall). Failure to keep the two constraints in mind may result in incorrect prioritisation of pitfalls and render planning unusable or even counterproductive (Cox 2008).

A model using a numerical scale and adapted to reflect the arguments of Cox (2008) is depicted in Table 4.2:

| | | Probability | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| Impact | 5 | 5 | 10 | 15 | 20 | 25 |
| | 4 | 4 | 8 | 12 | 16 | 20 |
| | 3 | 3 | 6 | 9 | 12 | 15 |
| | 2 | 2 | 4 | 6 | 8 | 10 |
| | 1 | 1 | 2 | 3 | 4 | 5 |

**Table 4.2. Pitfall assessment matrix using numerical scales (based on Cox 2008; PMI 2004)**

By considering a pitfall assessment matrix as depicting the relative magnitudes of pitfalls in the project, the team can put an effort into devising plans to avoid the pitfall from realising (Fenton & Neil 2006b; Ahmed, Kayis & Amornsawadwatana 2007, p. 28). The organisation's tolerance of pitfalls will determine when a pitfall is deemed acceptable and when the organisation is willing to incur costs to mitigate or avoid pitfalls (PMI 2004, p. 240). Fenton and Neil (2006a) depict the probability of a pitfall with a value of 5 occurring as unavoidable; it may seem futile to devise plans to avoid the pitfall. The only options available to the team are therefore to accept the pitfall, mitigate the consequences, or transfer the pitfall consequence partly or fully to another party.

Developing an assessment matrix for pitfalls in an organisation can be done in a generic way, while the results of the matrix will depend on a multitude of factors, some of which may only be present in the unique project or

organisation or at the specific time (Thomsett 2004). External factors may influence the probability or impact of a pitfall. An example is the experience of the project team (Thomsett 2004, p. 8). A project team with more experience should anticipate less trouble with more complex development.

The project team may decide to retain the pitfall matrix at this level and respond to the pitfalls depicted at a certain level in the matrix, or they may decide to analyse the pitfalls quantitatively (PMI 2004, p. 254). This decision will require that the losses envisaged to be incurred by the project be expressed in terms of monetary or time values. For example, the peril of the clients not being able to use the product in time may cost the organisation up to R40 000 per week owing to losses in revenue to be generated by the project's outcome.

Quantitative analysis may not be most suitable for the project at this early stage. Early project projections are highly inaccurate but will improve in accuracy as the project progresses (PMI 2004). Quantitative analysis requires a highly objective view of all the objectives and deliverables of the project. Work breakdown structures will assist the project team to acquire more accurate estimates enabling the team to assess pitfalls quantitatively (PMI 2004; Iranmanesh, Jalili & Pirmoradi 2007).

### 4.4.1.1 Assessing pitfalls for the project portfolio implementation project in the Bank

Having identified the most prominent pitfalls that may be present during the project, project stakeholders must take the current culture, project timing, PM maturity, organisational capabilities, structure, processes and other internal and external factors such as vendor relationships and capabilities into account when assessing the magnitude of pitfalls. These factors should also be considered when pitfall controls and mitigation plans are being devised (Thomsett 2004).

Factors that will influence the assessment of pitfalls include the context of the pitfalls, and the roles, attitude and experience of stakeholders (Fenton & Neil 2006b). Experienced project team members will draw on knowledge gained from previous projects to evaluate pitfalls because they know, for instance, that the project will run out of resources during the holiday season (Thomsett 2004). The owner of the project will focus on higher-level pitfalls related to overall costs, the developer may focus on module interfacing while the functional manager may focus on the scope and the time duration of the project as she or he is interested in knowing when project resources will be released and made available for functional activities.

Light and Gerrard (2007) argue that the project team has to consider certain factors when determining the probability of a pitfall occurring. These factors refer to the authority awarded to the project team, the experience of the project team and the team's expectation of problems in a specific area.

The impact will be influenced by the overall cost of the project, its strategic value and its impact on critical business processes (Light & Gerrard 2007).

Assessing the pitfalls will indicate which pitfalls are commonly rated high and need to be addressed. The assessment will render a list of pitfalls that can be filtered to exclude those that are of insignificant value. Pitfall assessment is a recurring process and pitfalls removed from the list should not be discarded as they may play a role in the future of the project.

The matrix model using the probability and impact factors of pitfalls described in Tables 1 and 2 is suitable for use in the Bank. The use of RAG indicators provides a quick and simple identification of risk level to the project team and has value during reporting and feedback sessions. This answers SQ2 posed in paragraph 1.3.1: *"How do you assess the pitfalls identified above?"*

### 4.4.2   Prioritising pitfalls

Trying to address all the pitfalls on the list may prove to be counterproductive (Cervone 2006). The pitfalls assessment process was aided by a pitfall assessment matrix where pitfalls are placed in the high, medium or low categories. This assessment will also serve as a high-level pitfall prioritisation process.

The first stage of assessment is done qualitatively as team members award a subjective value to both probability and impact (Cox 2008). Two pitfalls may end up with the same magnitude or cell in the matrix. The project team may then decide to imply a discrimination factor (Cervone 2006) to break the deadlock.

Differentiation can also be made by quantitatively analysing the pitfalls (PMI 2004). This process analyses the predicted losses to the project in terms of money, benefits or time if a pitfall should occur. Quantitative analysis falls outside the scope of this study as more accurate project information is required for this purpose.

A list with the top 20 per cent of identified pitfalls will be provided to project stakeholders for perusal and assessment and will enable them to devise response plans to address the pitfalls.

### 4.4.3   Responding to pitfalls

Based on prioritisation, pitfalls will be addressed in a specific sequence. Once a possible pitfall is selected to be addressed, the decision of dealing with the pitfall may result in the project plan being altered or controls being put into place to prevent the incident from occurring altogether, mitigation processes being initiated to minimise the effect of the incident or condition, or processes being introduced to distribute the loss caused by the pitfall occurring.

In responding to pitfalls, the project team can deploy various strategies. The PMI argues that pitfalls can be avoided, transferred or mitigated (PMI 2004). The project team may also decide to accept the pitfall if it should occur. This is normally done when the probability or impact of the pitfall is very low (Alexander & Marshall 2006).

The decision how to address the pitfall depends inter alia on the phase of the project, the current activities, and the conditions of the environment, the phase of the pitfall and the attitude of the organisation toward pitfall management (PMI 2004, p. 240). The project team will have to decide which actions to take to avoid the pitfalls from occurring or to minimise the effects of them realising (PMI 2004).

The project team's options to address the pitfall diminish through the sequential realisation of the pitfall phases. This can be explained by means of Tchankova's (2002) model for pitfall identification. As soon as the pitfall has been identified, the team can avoid the pitfall through their actions or plans to mitigate or transfer the consequence of any hazards. Once the hazard has realised, the team can no longer avoid the pitfall from occurring. The normal sequence of events is depicted in Figure 4.3:
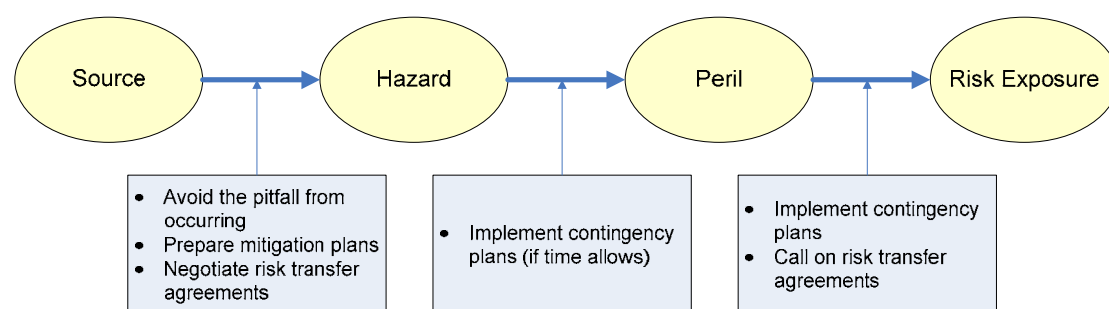


**Figure 4.3. Acting upon pitfall components and events (based on Tchankova 2002)**

### 4.4.3.1 Pitfall avoidance

The PMI (2004) argues that pitfalls that have been identified early in the project can be avoided through good PM practices such as clear user requirements, adequate information, effective communication and adequate

experience in conducting the project. This is the preferred way of dealing with pitfalls, implying that the project team has duly considered the pitfall and has devised alternative plans to the original base plan to bypass or avoid the pitfall in total. One should, however, note that these changes in plan may not be without additional costs to the project. Thomsett (2004, p. 11) argues that the cost is lower and the effectiveness is higher when one deals with pitfalls before commencing with the project rather than doing so after the project is underway.

### 4.4.3.2  Accepting pitfalls

Accepting low-severity pitfalls may be the most popular method of dealing with them (Alexander & Marshall 2006). Low-severity pitfalls represent pitfalls that the project team may deem trivial; the cost of dealing with them may be higher than that incurred due to their arising. The probability of many pitfalls may be so remotely low that the team may not even conceive them occurring. The team may also decide that these pitfalls are inherent to the business and not worth focusing on (Alexander & Marshall 2006). However, it is important not to completely discard these low-severity pitfalls as circumstances or incidents may occur that can increase the probability or impact of the pitfall (PMI 2004, p. 266).

### 4.4.3.3  Pitfall mitigation

The pitfall assessment matrix depicted in Table 4.2 may be extended to indicate to the project team how effective the mitigation plans used to minimise the effects of the pitfall are (PMI 2004, p. 252). In Table 4.3, the values of the magnitude or severity of the pitfall, M(1), are indicated as follows: 0 to 7 designates low, 8 to 15 medium, and above 15 high. By introducing some way of interception, the severity level or magnitude of a pitfall can be changed from a high-risk one that may be catastrophic to the project to one that is acceptable to the project team (Alexander & Marshall 2006).

| Pitfall | I(1) | P(1) | M(1) | Mitigation (Scenario 1) | I(2) | P(2) | M(2) |
|---|---|---|---|---|---|---|---|
| Management does not release resources to the project | 4 | 4 | 16 | 1. Market the project internally; plus | 4 | 3 | 12 |
| | | | | 2. Improve communication | 4 | 2 | 8 |

**Table 4.3. Scenario 1: Lowering the magnitude of a pitfall (based on PMI 2004)**

The column heading I(1) refers to the original assessed impact of the pitfall; P(1) to the original assessed probability of the its occurring; and M(1) to the magnitude of the pitfall. The symbols I(2), P(2) and M(2) refer to the impact, probability and magnitude after the mitigation plans have been executed.

In this example, the pitfall or risk was identified as management's failure to release resources to the project. This pitfall may cause the project team to miss one or more milestones.

The probability of a lack of resources on a 5-point scale is 4, and its impact on the project may be 4. Using the formula

Pitfall magnitude = Probability x Impact,

the project team can project the magnitude of the pitfall in the project as 16, which is considered high.

If the project team markets the project effectively in the organisation, the probability of management not committing resources is expected to be reduced to 3. This will result in a pitfall magnitude of 12, which implies medium-level pitfall. Adding a second mitigation activity, by for instance improving communication between the management and the project team, the probability can be brought down another 1 point, resulting in a probability factor of 2, which will result in a medium-level pitfall of magnitude 8.

An alternative approach may be followed (Scenario 2): Having the management sign a commitment contract will force them to commit resources to the project. The probability of their not committing resources has now diminished to 1 while the magnitude of the pitfall remains at 4, which may be acceptable to the project team.

Scenario 2 is depicted in Table 4.4:

| Pitfall | I(1) | P(1) | M(1) | Mitigation (Scenario 2) | I(2) | P(2) | M(2) |
|---|---|---|---|---|---|---|---|
| Management does not release resources to the project | 4 | 4 | 16 | 1. Sign commitment contract with management | 4 | 1 | 4 |

**Table 4.4. Scenario 2: An alternative plan to lower the magnitude of a pitfall (based on PMI 2004)**

Other mitigation plans, such as staff willing to work overtime or budgeting for contractors to make deadlines, may lessen the impact of the original pitfall.

Mitigation plans that are typically deployed in projects include procuring redundant ICT equipment to serve as failover and taking extended warranties on procured and deployed ICT products (PMI 2004).

### 4.4.3.4 Pitfall transferral

The project team may decide to share or transfer the pitfall to another party. This strategy will not remove the pitfall, but it may soften its impact on the project. Financial risks may be dealt with by taking insurance against the pitfall occurring. Examples of protecting the project against the impact of a risk may be a project team's taking forward cover of exchange rates (Jacobson 2006) to hedge the project against price increases due to the weakening of the local currency against foreign pricing, or taking insurance against fire or theft. An example of protecting the project against the probability of a pitfall occurring may be outsourcing the design of the infrastructure in the implementation of a new computer network system. Transferring a pitfall to a third party inevitably has cost implications to the project team (PMI 2004, p. 262).

Decisions to transfer pitfalls depend on the attitude of the organisation to pitfalls, the cost of transferring the pitfall versus the benefits derived from the transfer and the viability of transferring the pitfall (PMI 2004).

### 4.4.4   Models to evaluate the effectiveness of a mitigation plan

In the context of a pitfall being a negative risk, and a mitigation plan negating the effect of this negative risk, a mitigation plan can be seen as a positive risk or opportunity. Therefore, by viewing mitigation plans as opportunities, the project team can determine the effectiveness of mitigation plans by using the same tools as when performing risk analysis, such as using causal or risk maps (Fenton & Neil 2006a); decision trees (Ahmed, Kayis & Amornsawadwatana 2007), modelling and simulations; and extended matrices (PMI 2004) as in Tables 3 and 4.

## *4.5   Pitfall control*

The PMI (2004) describes the control and monitoring of pitfalls as the identification of new pitfalls, monitoring and re-evaluation of existing pitfalls and continuous scanning for trigger events that may result in a pitfall.

Using the risk register, the project team can document the changes in pitfall magnitudes and also record events that may trigger pitfalls. This register should be continuously reviewed and updated. A dedicated project risk manager should be appointed to monitor the pitfalls in the risk register, but different categories of pitfalls may be the responsibility of different role players in the team; for example, operational pitfalls may be dealt with by the SMEs, and business pitfalls by the business itself, by business executives or by the project sponsor (Thomsett 2004, p. 12; Light & Gerrard 2007, pp. 3–6).

Control measures to prevent pitfalls from occurring and to update and evaluate pitfall mitigation plans are part of the tasks of the risk manager. Certain pitfall control strategies are discussed below.

### 4.5.1 Pitfall control strategies

Cervone (2006, p. 260) argues that the number of pitfalls should be manageable. The author suggests that the project team focus on only the top 20 per cent of identified pitfalls.

One main strategy to avoid pitfalls is for the organisation to focus on effective communication (Cervone 2006). When all stakeholders in the communication process are included, they can contribute to the early identification of pitfalls and can be alerted when pitfall triggers are eminent.

An analogy can be identified between Cooper's (1995, p. 26) training plan to address health and safety issues in a production company and that of maturing the project team in technology, processes and procedures. Ensuring adequate training for project team members will increase communication and common understanding of concepts. Pitfalls due to technological complexities may be reduced by adequate training in the technology that the project is deploying (Tchankova 2002).

Project teams can function more effectively by using a structured approach to pitfall monitoring and control. This approach includes the use of a hierarchical control structure (Cooper 1995, p. 28) or framework (Ahmed, Kayis & Amornsawadwatana 2007, p. 31). Cooper (1995) argues that the removal of the hazard proves the most effective form of control while other pitfalls can be addressed by implementing effective policies and measuring and reviewing compliance and performance. Implementing and adhering to the above structure will minimise the occurrence and effect of pitfalls.

## *4.6    Conclusion*

Organisations that do not apply effective pitfall management in their projects may run a higher risk of project failure than those with a formal process of identifying, categorising, assessing and addressing pitfalls (Martinsuo &

Lehtonen 2007; Zhou, Vasconcelos & Nunes 2008; Elkington & Smallman 2002). Monitoring and control measures are implemented to ensure the identification of new pitfalls, the re-evaluation of current pitfalls and the identification of pitfall triggers as soon as they become visible (PMI 2004; Cervone 2006).

If the management has a common understanding of pitfalls and pitfall management, it will increase its effectiveness in dealing with these problems (Fenton & Neil 2006a; Thomsett 2004). Tchankova (2002) describes a pitfall as having four components or phases it will have to sequentially traverse to have run its full life cycle. These components are the source as the area where the pitfall may occur; the hazard as the trigger of the pitfall; the peril as the result of the pitfall; and the risk exposure as the party or area suffering from the pitfall. The process the pitfall follows affords the project team limited options of dealing with the phases that have not realised at the time, as depicted in Figure 4.3.

The process of pitfall management starts with identifying of the most important pitfalls that may be present in a project, followed by categorising the pitfalls in a risk breakdown-like structure. This step will assist the project team to identify otherwise obscured pitfalls. The most prominent pitfalls need to be assessed and addressed by accepting, avoiding, mitigating or transferring them. Plans to respond to the pitfalls should be discussed by the project team and documented for future reference. Finally, the identified pitfalls should be monitored and re-evaluated. New pitfalls should be evaluated, documented and addressed.

Control measures should be put into place to avoid pitfalls occurring and to minimise the effects of those that cannot be avoided.

The next chapter discusses the results of research to identify pitfalls in the PM implementation project and the assessment and prioritisation of and responses to these identified pitfalls. The results are analysed and discussed in Chapter 5.

# CHAPTER 5

# RESULTS AND FINDINGS

## *5.1 Introduction*

The presence of pitfalls and their identification and subsequent management greatly depend on the environment, the tasks at hand and the circumstances prevailing during the project. The pitfalls that can influence a project are unique to the project, but using a generic approach for identification will enable the project team to successfully recognise and address most of those present.

The identification approach itself should not constitute a pitfall and the project team should carefully consider whom to include in the risk management process. This study focused on ICT project team members in the SARB. About 70 staff members in the Bank were actively involved in ICT project life cycles during the past three years.

Forty Bank staff members were interviewed during this study. Three rounds of interviews were held with the participants. During the first round, 35 staff members were interviewed and 26 responded to the request to complete a questionnaire. This was the only time that demographic information was acquired from participants. Forty-six per cent of the participants have been involved in ICT projects for longer than ten years, 35 per cent for a period between three and ten years and 19 per cent for less than three years. Clients from the IT department were also involved in the study.

Only 4 per cent of the participants in this study had been working in the Bank for less than three years, but they may have been involved in PM prior to working in this organisation.

## *5.2    Research method*

The research process commenced with a literature study of the PM and PPM environments. This was followed by a literature review of pitfalls and pitfall management. A list was compiled of pitfalls that were related to the project at hand and that were discussed in the literature. The pitfalls included in the check list were obtained from Doherty and King (1998); Chaudron (2003); Freedman (2003); Light and Gerrard (2007); and Zhou, Vasconcelos and Nunes (2008).

The feedback from project managers of ICT projects completed in the Bank was used as a source to identify areas where the projects had issues and problems and to determine how these matters influenced the results of the projects. A pitfall list was compiled from the above acquired information (SARB 2008c).

The two lists were then combined; duplicates were removed and the readability of pitfalls was improved. Internal discussions with SMEs and other project stakeholders served to augment the list. These steps resulted in a checklist of 170 pitfalls, and some of them may be present during the implementation of PPM in the Bank. The final checklist is included in Appendix 1 of this paper.

### 5.2.1   Sensitising and solicitation

An information session was held with ICT project stakeholders, outlining the intention of the Bank to implement PPM. These stakeholders represented all levels and disciplines of ICT PM in the Bank. An invitation to attend the presentation session was extended to all members of the PM Forum, as well as to staff members who are currently involved in or who are known to have previously been part of ICT projects. Clients of the IT department involved in ICT projects were included in the invitation to improve overall representation.

The presentation included an overall view of the Bank's vision of PPM. In addition, it outlined this research paper and described its purpose.

### 5.2.2 Population and sample selection

The total population of the IT department comprises close to 160 staff members, of whom about 40 per cent are actively involved in PM (SARB 2006).

The attendance at the presentation was low and only about 25 per cent of the invitees attended. This was not completely unexpected as PM Forum meetings are normally ill attended by project managers and stakeholders. No departmental clients attended the information session.

Following the presentation and based on their availability at the time, 35 staff members were interviewed. The interview included a brief of the presentation if the participant had not attended the event and an explanation of the purpose of the research. The interviewees were requested to complete a questionnaire requiring demographic information that can be used to determine the representation of participants in the study. They were then requested to select pitfalls from a list of 170 compiled from the literature, discussions with SMEs and project stakeholders and feedback from previously conducted projects in the Bank.

Twenty-six completed questionnaires were received from the IT department staff members and clients. This represents approximately 30 per cent of the population who may be part of the stakeholders of the PPM project. The distribution of the respondents to the questionnaire is as follows:

### 5.2.2.1 Time involved in ICT projects

| Period involved in ICT projects | Responses | Percentage of respondents |
|---|---|---|
| More than 10 years | 12 | 46% |
| More than 3 years up to 10 years | 9 | 35% |
| 0 to 3 years | 5 | 19% |

**Table 5.1. Period participants' involvement in ICT project management**

As is shown in Table 6.1 above, participants' general experience in project involvement was high, as 46 per cent of the stakeholders had more than 10 years' experience in ICT projects, while 35 per cent had between 3 and 10 years' practice.

### 5.2.2.2 Roles in ICT projects between 2006 and 2008

| Stakeholder Role | Responses | Percentage |
|---|---|---|
| Administrator | 5 | 19% |
| Client | 2 | 8% |
| Owner/sponsor | 2 | 8% |
| Project manager | 13 | 50% |
| SME | 12 | 46% |
| Team leader | 11 | 42% |
| Team member | 22 | 85% |
| Testing/quality assurance/quality control | 11 | 42% |

**Table 5.2. Participants' roles in ICT project management**

Respondents were requested to indicate all the roles they played in projects between 2006 and 2008. The roles played by respondents in ICT projects cover the spectrum well although bias may be toward active project participation. This can be seen from the level of responses from owner/sponsors and clients.

## 5.3    Identification of pitfalls in the project portfolio management project

Participants in the study were requested to select those pitfalls from a provided list that they believed would be present in the implementation of PPM in the Bank. Participants were afforded the opportunity to add additional pitfalls that had not been included in the list.

Participants received the list in hard-copy format, but they were also given the option to complete it electronically. The author specifically did not enter into a debate with participants about issues surrounding the project or current practices to ensure that the minimum bias was present in the responses from participants. The process of identifying pitfalls was explained and the questionnaire guided participants toward the different sources of possible pitfalls as discussed in Chapter 4.

The result of this round of interviews is presented to this study as Appendix 2 and also serves to answer PQ1: *"Which pitfalls are present during the implementation of a PPM discipline in the SARB?"*

### 5.3.1    Results and analysis of the identification of top-level pitfalls

The 26 responses were consolidated into an Excel spreadsheet and 32 pitfalls (approximately 20 per cent) (Cervone 2006) were identified as being the most likely to occur. Identifying pitfall prominence entailed simply counting the number of participants who believed that a particular pitfall may occur during the project.

The pitfalls that were identified during this first round of interviews may not necessarily have any significant impact on the project as participants were specifically asked to identify those that were most likely present in the project. Given that pitfalls selection was based on probability only, some pitfalls with a low probability but high impact may not have been selected. This poses little

risk to the study and project, since factoring pitfalls with low levels of probability with pitfalls with high levels of impact will result in pitfalls with low- or medium-level magnitudes.

## 5.4    Assessment of the top pitfalls in the project

Although participative processes such as the Delphi technique can be used effectively to assess pitfalls present in a project (Thomsett 2004, p. 10), they would not be viable in this study. By running a Delphi session, participants reach consensus on the levels of pitfall probabilities and impacts. Scheduling more than ten people for a meeting can pose a practical problem in a support organisation such as the IT department of the Bank.

Interviewing the participants reveals diverse views on the levels of probability and impact of pitfalls. This is not detrimental to the research as a great number of participants can be accessed and the categorisation of the responses can provide a suitable qualitative result (Hannabus 2006).

Participants who contributed toward the identification of the top 20 per cent of pitfalls were requested to participate in a second round of interviews to assist in assessing the most prominent pitfalls. Assessment was done in terms of probability and impact on the project. Participants who did not take part in identifying the top pitfalls were also requested to participate in assessing the pitfalls. A total of 31 responses were received. No demographic information was acquired during this second round of interviews.

Because the assessment of pitfalls is based on subjective issues such as personal experience, morale, involvement in other projects, functional responsibilities and circumstances currently being experienced in the Bank, the results are subjective. Therefore, the main output of assessing these pitfalls is limited to determining the magnitude of the individual pitfalls relative to each other (Ahmed, Kayis & Amornsawadwatana 2007, p. 28).

Quantitative assessment is not possible at this time as no baseline plans are in place and too little detailed information is currently available about the project. Quantifying the assessment of pitfalls done later in the project can assist the team to evaluate the effect of the pitfalls occurring in budgeting, deliverables and time lines of the project.

The top pitfalls for this project were assessed by means of a pitfall assessment matrix as described in Chapter 4, Table 4.2. The matrix comprised numerical scales ranging between 1 and 10 on both the probability and the impact axes. By factoring the probability value with the impact value, the pitfall magnitude can be rated as a percentage. The current practice in the Bank is to view pitfalls within the value range of 1 to 30 per cent as low-level, 30 to 50 per cent as medium-level and 50 per cent and higher as high-level pitfalls.

The average of the probability of the pitfall occurring and the average of the impact of the pitfall on projects were multiplied to achieve an average assessment for the pitfall.

As argued above, no absolute quantitative information is required as the project team will focus on the top five to ten pitfalls and will address the rest of the pitfalls as though they are medium- or low-level pitfalls according to their respective ratings.

An arbitrary cut-off point of 45 per cent was selected to determine a high-level pitfall as this resulted in six pitfalls being rated high versus only two with the cut-off level at 50, and 18 at 40 per cent. The evaluation of the pitfall in the matrix is therefore structured as follows:

- 0 to 29 per cent magnitude implies that the pitfall is deemed low
- 30 to 44 per cent magnitude implies that the pitfall is deemed to be medium
- 45 per cent and higher implies that the pitfall is deemed high

### 5.4.1 Results of the assessment of top-level pitfalls

With the aid of the above assessment structure, six pitfalls were rated as high-level. Table 5.3 answers PQ2: "*Of the pitfalls identified above, which present the highest risk?*" These pitfalls are depicted in Table 5.3:

| Rank | Pitfall magnitude | Average probability | Average impact | Pitfall |
|------|------|------|------|------|
| 1 | 56% | 74% | 75% | Timeous project deliverables are hampered by lengthy internal processes |
| 2 | 55% | 72% | 76% | Internal politics between stakeholders may hamper the success of the project |
| 3 | 49% | 74% | 66% | Resources are split amongst various projects |
| 3 | 49% | 75% | 66% | Team members are doing functional work as well |
| 3 | 49% | 71% | 70% | Human resources shortage may hamper the success of the project |
| 6 | 48% | 73% | 66% | A project that seems simple can evolve into something complex |

**Table 5.3. Assessment values of the top six pitfalls**

The top-ranked pitfalls can be categorised according to the divisions used during the identification phase, as depicted in Table 5.4:

| No. | Pitfall | Category | Sub-category |
|-----|---------|----------|--------------|
| 1 | Timeous project deliverables are hampered by lengthy internal processes | Time management | Scheduling of activities |
| 2 | Internal politics between stakeholders may hamper the success of the project | Project integration management | Organisational issues |
| 3 | Resources are split amongst various projects | Human resources management | Roles and responsibilities |
| 4 | Team members are doing functional work as well | Human resources management | Roles and responsibilities |
| 5 | Human resources shortage may hamper the success of the project | Human resources management | Human resources availability |
| 6 | A project that seems simple can evolve into something complex | Scope management | Scope management, including change control |

**Table 5.4. Categorisation of high-level pitfalls**

### 5.4.2   Analysis of the high-level pitfalls

- Timeous project deliverables are hampered by lengthy internal processes: Policies and procedures that influence the procurement and acquisition of resources and services for the project. No third party service may be rendered to the Bank unless a contract has been entered into and the service provider has successfully passed a security vetting process. If conditions are not managed carefully, they may cause delays that could result in missed milestones, upset stakeholders and create an environment of discontent and low morale.

- Internal politics between stakeholders may hamper the success of the project: Functional managers are generally at a higher management level than project managers in a department. As functional managers are individually evaluated according to the performance of their operational division, conflict may exist between their own responsibilities and the provision of resources to project managers in other operational areas. This conflict may additionally result in experienced stakeholders being utilised mostly in their own functional areas and junior staff being assigned to projects that may not have the same impact as those in their own areas. Competition among staff members about to be involved in high-profile projects may also result in ill feelings among staff members.

- A project that seems simple can evolve into something complex: Project team members are also responsible for functional activities in the Bank. Consequently, staff members who were involved in the development of a project now also become responsible for the maintenance of the project. Projects of this nature tend to be endless and will grow evolutionary. Although scope management is applied during the project implementation, it is not necessarily applied after the project has been formally closed out. Maintenance and upgrading become synonymous, resulting in complex and overbuilt applications. Another reason for this pitfall may be a lack of proper communication

between users and developers, leading to scope creep. Users are allowed to change requirements when more information becomes available during the development process. Unless user specifications are properly documented and change control is tightly managed, the scope can become out of control.

The following group of pitfalls dealing with human issues can be handled together:

- Team members are doing functional work as well
- Human resources shortage may hamper the success of the project
- Resources are split amongst various projects

This group of pitfalls may have similar causes. The structure of the department is functionally oriented. Functional managers form the senior management layer of the department together with the departmental head and the newly appointed enterprise architect.

In their main role as support for the line departments of the Bank, the functional divisions' main focus is the stability and maintenance of the operational areas in which their assigned business areas function.

The functional managers need to decide how to deploy the available resources. Project schedules are normally adjusted to allow for high-intensity business activities such as year-ends or other events. Operational activities will generally have preference above project requirements. This may result in team members being over-utilised and eventually they may not be able to meet deadlines and achieve milestones.

Project continuity becomes a problem since training, operational activities and other project commitments may deter the project members from their focus during this project. No pooled resources are available for project managers, and resources are moved from one project to another according to the priority or urgency of projects.

From the table above, it is apparent that HR management issues can pose the biggest threat to the project of implementing PPM (Thomsett 2004, Marr & Parry 2004). By paying specific attention to HR management, the project team should be able to mitigate many of the top-ranked pitfalls in the project.

The list of pitfalls that were identified and assessed can be categorised per level, as depicted in Table 5.5:

| Level of pitfall | Number of pitfalls |
|---|---|
| High | 6 |
| Medium | 24 |
| Low | 140 |

**Table 5.5. Pitfalls per level**

The result of the assessment of the top 32 pitfalls is included as Appendix 3.

## 5.5 Response to high-level pitfalls

Pitfalls may be addressed by
- Accepting the pitfall
- Avoiding the pitfall
- Transferring the pitfall
- Mitigating the pitfall
- Performing any combination of the above actions (Van Wyk, Bowen & Akintoye 2008)

The option of accepting the risks was not viable as this alternative would only be a suitable response to a low-level pitfall (Alexander & Marshall 2006); it is therefore not applicable to any of the top six pitfalls.

Participants were requested to provide appropriate response plans to the high-level pitfalls. These are documented as Appendix 4, which serves to answer PQ3: *"How should these high-priority pitfalls be addressed?"*

Responses were received from ten participants. The responses were not evaluated for credibility. This responsibility rests with the project team.

If a response plan is introduced, the initial value of the pitfall probability or impact may decrease. Many response plans can be implemented to address one pitfall. With the implementation of more than one response plan, the results can be aggregated until the pitfall is rated as low. Care should be taken that a response plan does not create another pitfall in a different area. For example, if controls are removed to streamline a process, a risk of mismanagement may occur in another area.

An example of mitigation plans to address the pitfall "Team members are doing functional work as well" is depicted in Table 5.6:

| Initial probability | Initial impact | Response plan | Change in probability | Change in impact | Comment |
|---|---|---|---|---|---|
| 75% | 66% | 1. Resource planning must be introduced | -20% | -30% | The project manager must create and implement a comprehensive resource plan |
| | | 2. Staff performing maintenance functions must not be allocated to projects | -20% | -20% | This action will indicate clearly which people are not available for projects. The project manager must take note |
| | | 3. Staff performing maintenance functions must not be given more than 20% time on a project | -20% | -10% | (Or maybe less than 20%?)<br><br>This allocation will give the project team the information needed to do accurate HR planning. The project manager must discuss the matter with the functional manager and sign an agreement |

**Table 5.6. Extended pitfall assessment matrix to reflect the effectiveness of mitigation plans**

All the plans may be viable, but Plans 2 and 3 may have a negative impact on the pitfall of "Human resources shortage may hamper the success of the project" as it may remove candidates for the role of stakeholder from the project. The project team should investigate the viability and the impact of the

mitigation scheme on the base plan, document the results and deploy those plans that can lower the number of high-level pitfalls.

Devising plans to address each top-ranked pitfall individually enables the project team to focus on the project instead of spending time and resources to reactively address and act on pitfalls that threaten to harm the project. Reactive practices require the implementation of contingency plans (Ahmed, Kayis & Amornsawadwatana 2007) and may imply the use of slack in the project schedule, employing contingency reserves or fallback plans (PMI 2004). This approach is not desirable and should be avoided if possible.

By viewing a map of the top 32 pitfalls at their respective levels, the project team can gain an overview of the pitfalls in the project. If any one of the pitfalls should have an exceptionally high level of probability, impact or magnitude, it will show on the map and can receive immediate and focused attention as it may cause the project to be stopped. Mapping of the top 32 pitfalls in the project can be based on the pitfall matrix, as shown in Figure 5.1.
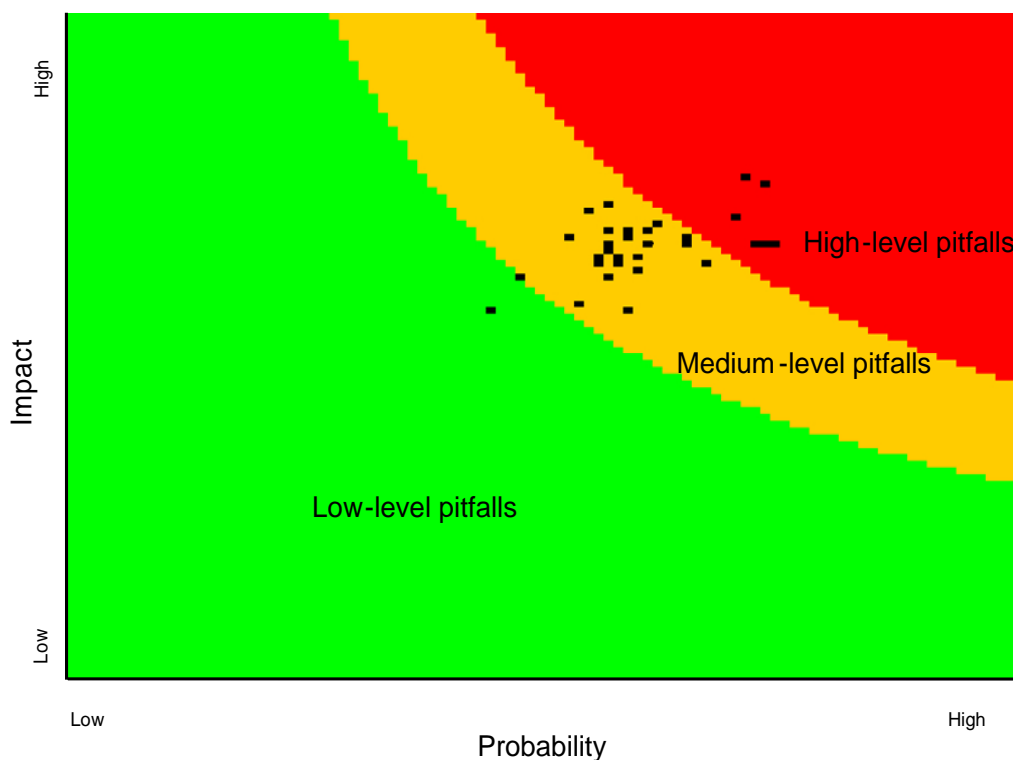


**Figure 5.1. Pitfall map for the project of implementing PPM in the Bank**

Introducing appropriate pitfall controls, as described in Chapter 4, into the general policies and practices of the organisation can help to minimise the effect of many pitfalls. Unfortunately, not all pitfall control measures provide a quick-win solution as they may sometimes require a change in culture or the creation of new policies in the organisation. Many pitfalls will therefore have to be dealt with before the control measures can come into play. Residual risks or pitfalls that remain after appropriate controls have been put into place must be addressed individually.

Devising the appropriate controls and long-term plans to improve the probability of project success is beyond the scope of this study and is therefore left up to the project manager. This issue may also be part of a future initiative or study in the IT department.

## 5.6    Addressing the Research Questions

By addressing the research questions raised in paragraph 1.3.1, the research has attained its objectives of determining which pitfalls are present during the implementation of PPM in the Bank; of ascertaining which of the existing pitfalls present the highest challenge to the project; and of deciding how these high-level pitfalls should be addressed by the project team.

- **Primary Question 1 (PQ1)—***Which pitfalls are present during the implementation of a PPM discipline in the SARB?* The output of the first round of interviews with project stakeholders rendered a list of pitfalls most likely to be present during the project. Ranking this list will provide the project team with the pitfalls to address during the implementation of PPM in the Bank. (Refer to paragraph 5.2.3 and Appendix 2.)

- **Secondary Question 1 (SQ1)—***How do you identify the pitfalls during the project?* Using a comprehensive checklist from the literature and reviews of comparable projects previously conducted in the Bank and by discussing the issues of pitfalls and the management thereof with PM experts and SMEs, stakeholders can indicate which of the pitfalls in

the checklist are most likely to be present in the project. (Refer to paragraph 4.3.2.)

- **Primary Question 2 (PQ2)—***Of the pitfalls identified above, which present the highest risk?* The pitfalls were assessed and ranked according to magnitude. The pitfalls with the highest magnitude are addressed in paragraph 5.2.4.2 and were identified as follows:

  - Timeous project deliverables are hampered by lengthy internal processes
  - Internal politics among stakeholders may hamper the success of the project
  - Resources are split amongst various projects
  - Team members are engaged in functional work as well
  - Human resources shortage may hamper the success of the project
  - A project that seems simple can evolve into something complex

- **Secondary Question 2 (SQ2)—***How do you assess the pitfalls identified above?* Project stakeholders were interviewed and requested to indicate the probability of a pitfall occurring in the project, as well as the impact it may have on the project. Factoring the two variables (Probability x Impact) (PMI 2004, p. 251) provided a ranking list of pitfall magnitude that discriminates between the pitfalls in terms of magnitude.

- **Primary Question 3 (PQ3)—***How should these high-priority pitfalls be addressed?* When appropriate response plans to pitfalls are created, these pitfalls can be avoided, mitigated, transferred or, in the case of low-level pitfalls, accepted by the project team. Creating response plans to pitfalls before the project commences gives the project team the chance of dealing with pitfalls more cheaply and effectively than during the project. The project team now has the opportunity to avoid the pitfall before it realises. Response plans put before the project team are included in Appendix 4 and are discussed in paragraph 5.5.

## 5.7    Conclusion

The demographic profile of the participants in this study indicates that 46 per cent have more than 10 years of ICT project experience, while 35 per cent have between 3 and 10 years of project practice. The roles that the participants have played in the project cover all aspects of PM, with some under-representation in the roles of owner/sponsor and client.

Participants were asked to identify the pitfalls that would most likely be present during the implementation of PPM in the Bank and to assess the top 20 per cent of identified pitfalls. The pitfalls that received a high-level rating were then provided with response plans to decrease their magnitude. These pitfalls must be addressed aggressively or else the project will suffer (PMI 2004, p. 249; Cox 2008, p. 498).

A document containing the list of 32 pitfalls with the highest magnitude and responses to those rated "high" was provided to the project manager for inclusion in the planning of the project.

Chapter 6 recommends ways to deal with pitfalls in projects in general and focuses specifically on the implementation of strategic initiatives in an organisation such as the SARB. In addition, the chapter provides suggestions about future research in regard to the identification and management of pitfalls in strategic projects. A conclusion is provided at the end of Chapter 6.

# CHAPTER 6

# RECOMMENDATIONS AND CONCLUSION

## *6.1    Introduction*

By drawing on the success of the creation of a culture of safety and quality in the industry (Cooper 1995), ICT projects can benefit largely by generating a culture of risk awareness. It is important that project teams' innovation should not be suppressed by the omnipresence of pitfalls in acting, reporting and making decisions. One should, however, keep risks and pitfalls in mind at all times when acting in a project environment (Thomsett 2004).

By embedding control measures in the project life cycle, many areas where pitfalls were identified can be addressed through controls such as good communication and thorough training (Cooper 1995; Tchankova 2002; Cervone 2006). This approach will increase the possibility of project success.

Cooper (1995) suggests that behavioural changes such as being vigilant, reporting on all incidents, taking fellow team members into account, abiding by policies and rules, and taking responsibility for one's own actions can all be supported by proper training. This is applicable to PM as well as to project teams whose members trust one another because they will have greater success in achieving the project objectives.

By improving communication among stakeholders, expectations are managed better, hidden information is brought into the open and concerns and issues are made visible as soon as they are detected. Cervone (2006) argues that the best way to avoid pitfalls is effective communication among project team members and between the project team and the organisation.

## 6.2    Recommendations

By moving toward implementing a PPM discipline, the Bank has indicated its desire to increase PM maturity in the organisation. The understanding of the project environment, the potential conflict between the change manager from the project's side and the operational manager who seeks stability; and the general culture difference between functional and project objectives lead to interesting conflict situations that may cause many pitfalls in the project environment. Internal politics as a pitfall refers to the issues above and received a high-level rating during this study.

Project portfolios should be used to improve, expand and transform the business (Rajegopal, McGuin & Waller 2007; D'Amico 2005; Blichfeldt 2007). Although this research paper concentrated on the process of implementing PPM in the business, it must be recognised that the success of this project depends on the usefulness of the PPM that was implemented.

By successfully identifying and appropriately managing pitfalls that may be present during the implementation of PPM in the Bank, the chances of the project being successful can be significantly improved. By prioritising and limiting the number of pitfalls to be managed, the project team will be able to focus on the actual planning and implementation process instead of overspending resources on pitfall management. Cervone (2006) suggests that the project team focus on the top 20 per cent of identified pitfalls.

Issues that can assist in minimising the influence of pitfalls on the project are discussed below:

### 6.2.1 Social factors

Social factors are rated as the most important issues in PM (Thomsett 2004). The skills and experience of the project manager, functional managers and supervisors are tested to the utmost to satisfy operational, project and personal needs. Three of the six high-level pitfalls fall into the category of HR management.

Stakeholders may serve their relationships best by entering into service level agreements, statements of understanding or operational level agreements. This approach will ensure that stakeholders appreciate the context of resource requirements and use and have an unambiguous understanding of project objectives and deliverables and the processes to be followed for amendments, escalations, penalties and incentives.

The involvement of management can help to address internal politics that may hamper the success of the project. This involvement needs to take place throughout the life cycle of the project (Zhou, Vasconcelos & Nunes 2008, p. 173)

A better project prioritisation process will keep the focus of stakeholders on a balance of projects that are within the resource, technological, time and risk capabilities of the organisation. This will ensure that human resources are applied to projects and project processes where they can contribute most to organisational objectives without being over-extended, overworked and under-trained. This PPM-optimised process can address many human-related pitfalls in projects.

Change management should be implemented and exercised during any project where processes, infrastructure, services, resources usage or applications are non-transparent to customers and other stakeholders. This will also assist with the buy-in of stakeholders.

Project managers should keep the well-being of the stakeholders constantly in mind since PM is about mobilising resources to achieve pre-determined objectives. A motivated team can contribute more than individual geniuses striving to achieve their personal objectives.

## 6.2.2  Resource planning and management

A lack or low level of resource planning and management may be seen as one cause of the human issues experienced in projects in organisations.

During interviews for this study, concerns related to unequal work distribution surfaced. Although these concerns are a general management and skills retention issue, they were reflected in the pitfalls identified in the project.

Skilled staff members believe that the work distribution is skewed by the allocation of most of the work, including virtually all mission-critical tasks, to the skilled workforce, who are in the minority in the department.

Newly appointed staff normally do not have the necessary skills to perform the business-critical work at the level required by the business. Skilled staff members are then required to ensure that new appointees acquire a higher level of competency.

The above factors, in addition to the number of projects accepted by the department and the additional chores of operational activities, place the skilled staff under a great deal of pressure and may lead to bad resource decisions during project team selection.

A recruitment strategy whereby the organisation uses more sophisticated tools to better evaluate the skills of the applications will help to improve the base skills of new appointees. This will alleviate some of the workload of the skilled base and assist in balancing the distribution of tasks within the organisation.

By implementing a resource plan that integrates skills, work distribution, succession planning and long-term views on business and staff retention strategies may address most of the above issues.

A project prioritisation process that integrates with the resource plan is required to ensure that the organisation has the resources and the capabilities to engage in new projects.

### 6.2.3   Roles and responsibilities of project stakeholders

Educating stakeholders about their roles in the project team can improve communication, remove ambiguity and improve understanding and relations.

The roles of owner, sponsor and client must not be underplayed. Although their roles may seem small during the development and planning phases, these stakeholders hold the key to the project being deemed a success or a failure (Pinto & Mantel 1990). It is important that these stakeholders understand their rights, authority and responsibilities. When stakeholders are empowered, the resulting synergy in the team can help to render a difficult project successful.

### 6.2.4   Maturing the project management environment

The Bank will embark on a process of PM improvement by implementing the PPM discipline in the Bank. The PPM maturity model proposed by Fitzgerald and Mieritz (2007) evolves through six levels, from one described as "non-existent" or ad hoc (Level 0) to one that is fully matured or optimised (Level 5). PPM maturity addresses people, PPM processes, financial management, technology and relationship issues.

PPM processes are integrated into the functional area in a mature PPM environment (Levine 2005, pp. 90–92), simplifying access to resources and shortening turnaround times for acquisitions. This will allow project teams to

share resources and information, improve communication and create synergy among projects in the portfolio.

### 6.2.5   Using controls to minimise the peril of pitfalls

By putting the appropriate controls into effect, the organisation can improve PM expertise, reduce the influence of pitfalls on this implementation project and on others, and enhance the level of co-existence of PM within the functional areas, thereby removing many obstacles and pitfalls from the PM environment.

Cervone (2006) argues that effective communication is the key success factor in avoiding pitfalls. Communication achieves common understanding and clarity. Issues are identified and discussed as soon as they become known, enabling the project team to react in time to avoid an escalation of problems and issues.

Cooper's (1995) reasoning about creating a safe environment in an organisation through proper training can be applied to the creation of a technology mature environment for the project team. The implementation of suitable training can render complex technology understandable and manageable, minimising the effect of the complexity in the project (Cervone 2006, p. 258).

The organisation can effectively implement project-friendly policies in, for example, budgeting and procurement during the pre-project, planning and execution phases. Changing existing policies and implementing new ones can take months, or even years, to realise and may only serve as a long-term solution for the PM discipline in the organisation.

## 6.3    Future research

This research has obtained information about pitfalls that can harm a strategic project such as the implementation of a new discipline in an organisation.

Participants in the study have identified, assessed and provided response plans to address these pitfalls. No further analysis was done on the response plans.

Some of the mitigation plans suggested by participants address these pitfalls directly whereas others may require long-term plans to realise. These long-term plans can serve as basis for a PM risk control knowledge base.

By determining pitfalls common to most ICT projects in the organisation, research may reveal ways in which the implementation of a central project risk control knowledge base can help to improve the overall success and throughput of projects in the organisation.

The success of control mechanisms can be measured by comparing historical information on projects and issues such as costs, necessity of appointing contractors and consultants for specialist work, time taken to deliver a product and overall level of maintenance required and service provided to the users against the success of project realisation after the appropriate risk controls have been put into practice.


## 6.4    Conclusion

Organisations such as the SARB depends on the IT department to provide the appropriate tools, mechanisms, services and means to successfully conduct business in the financial sector of the Republic of South Africa. This aim is achieved through the deployment and maintenance of ICT solutions. The Bank is seen as a leader and mentor in countries of the Southern African Development Community (SADC) and others in Africa.

This dependence on ICT solutions awards major responsibilities to the IT department in the Bank. Project failures cannot be tolerated if the Bank's core business can be harmed through these failures.

Improving the rate of project success and throughput is therefore a priority for the IT department and the Bank. The aims are achieved by maturing the PM discipline with the introduction of PPM in the Bank. This maturation includes a change in traits, attitude, culture, capabilities, business organisation and approach to business delivery on the side of the staff of the organisation.

No guidance or method is available to the Bank to pro-actively and comprehensively identify those areas that can render a project unsuccessful. Risk management in projects was one of the areas that were neglected because of lack of guidance, resources and procedures. Although a PSO was established in 2003, no qualified project risk managers specialise in PM in the organisation.

Using a fixed, systematic approach to identifying and dealing with pitfalls in the project of establishing a PPM discipline greatly reduces the risks of the project not being implemented successfully.

This paper described the concepts of PM, the IT portfolio and PPM in Chapter 2. Chapter 3 provided a background of PM in the Bank, and Chapter 4 discussed in detail the anatomy of a pitfall and the categorisation of pitfall types aimed at simplifying pitfall identification. The chapter furthermore discussed the prioritisation and assessment of and responses to pitfalls. Monitoring and controls to minimise the number, probability and impact of pitfalls were also discussed. Chapter 5 reported on project stakeholders' reaction to the provided pitfall checklists and their opinion on the prioritisation, assessment and response to identified pitfalls.

The pitfall checklist acquired from this study (see Appendix 1) identified high-level pitfalls, and response plans were made available to the project team for introduction into the project risk register.

Finally, recommendations were made about implementing controls to address many of the pitfalls identified as possibly present during the implementation project. Although not all of the controls will have a short-term benefit, the organisation can use these controls to enhance the maturity of PM in general.

By following a structured approach to identifying and managing pitfalls during ICT projects, project managers are able to not only develop a better understanding of the technical demands and complexity of the project and other hard issues that influence the project but also identify and address the soft issues that may normally be hidden or interpreted incorrectly and that have the potential to undermine the cohesion and productivity of the project team.

Through experience, trust and good communication, the project manager can address these issues as soon as conditions triggering pitfalls arise, increasing the possibility of completing the project successfully.

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# Appendix 1

**Identification of pitfalls during implementation of PPM in the Bank**

A presentation was made on the 29th floor on 16 September 2008 as an introduction to implement project portfolio management (PPM) in the South African Reserve Bank. During the presentation, mention was made about research being conducted to determine the pitfalls that may be present during the project of implementing PPM.

This questionnaire forms part of an interview with staff to identify which pitfalls may be present during the implementation of PPM

The questionnaire is divided into two areas:

1. Demographic information. The information cannot be used to identify you and results will not be processed to identify the provider of the information.

2. A list of pitfalls is provided from which the participant must select those that are deemed to be present during the mentioned implementation. The list comprises pitfalls identified during other projects in ITD and pitfalls acquired from the literature.

Pitfall information will be used to assist the project team to avoid or minimize the effect of negative risks on the PPM project.

**Please note that participation in the research is voluntary**

If you have not attended this presentation or require additional information; please contact Adri Swanepoel at (012) 313 3938 or per e-mail at Adri.Swanepoel@resbank.co.za.

Thank you for taking the time to complete the interview.

Adri Swanepoel (x3938)

## Section 1: Demographic Information

| 1) How long have you been involved in Information and Communications Technology (ICT) **project management**? | |
| --- | --- |
| 0-3 years | |
| More than 3 years up to 10 years | |
| More than 10 years | |

| 2) What **primary** role(s) do/did you play in projects during the past three years in the Bank (or for the full period that you have been working in the Bank if it is less than three years)? Please select **all** that are applicable. | |
| --- | --- |
| Project Manager | |
| Sponsor | |
| Owner | |
| Administrator | |

| | |
|---|---|
| Subject Matter Expert (SME) | |
| Team Leader | |
| Risk Manager | |
| Testing/Quality Assurance/Quality Control | |
| Team Member | |
| I have been in the Bank for less than three years | |

## Section 2: Identification of pitfalls that can be expected during the project of implementing project portfolio management in the Bank

**The pitfall list below is a combination of information acquired from post-project reviews of projects previously conducted in the Bank and information from literature related to ICT project management (PM) in general**

1) The following pitfalls are related to **Project Integration Management** and include the subcategories of

- Project Vision
- Organisational issues
- Project planning
- Project processes
- Project closeout.

Please select those pitfalls that **you think** may be present during the implementation of a PPM discipline project in the Bank

**Project Vision**

| | |
|---|---|
| The project objectives are not worth the effort put into the project | |
| Project is started without active participation of management, indicating a lack of strategic focus | |
| The project focuses on trends and not real business requirements | |
| Attempting to provide the perfect system instead of creating an organic system | |
| No clarity on the solution | |
| Management does not understand the scope of the project | |
| Stakeholders do not agree on certain aspects of the project | |
| **Organisational Issues** | |
| Organisational culture not taken into account | |
| Internal politics between stakeholders may hamper the success of the project | |
| Lack of trust in the project manager | |
| Project requires a change in organisational culture | |

| | |
|---|---|
| **Project Planning** | |
| Feasibility of the project be done at all levels | |
| Interfaces between the different disciplines in the project should be clearly defined and maintained | |
| **Project Processes** | |
| Bad planning | |
| No clarity on interfaces with existing systems | |
| Bad selection of suppliers | |
| Improper training plan | |
| Improper maintenance plan | |
| Spend adequate time on detailed planning | |
| **Project Processes** | |
| No clear development methodology | |
| Inadequate project processes | |
| Inadequate support for users | |
| Wrong methodology | |
| **Project Closeout** | |
| End-result of the project should be communicated to all stakeholders | |
| Improper cut-over between current and new system | |
| Handover to staff that were not involved and are not adequately trained | |

| | |
|---|---|
| 2) The following pitfalls are related to **scope management** and include the subcategories of<br><br>• User requirements<br>• Scope planning<br>• Scope management<br>• Work breakdown structure<br><br>Please select those pitfalls that **you think** may be present during the implementation of a PPM discipline project in the Bank. | |
| **User requirements** | |
| Business analysts are unclear about their facts before discussing it with IT | |
| Requirements are underestimated | |
| Badly defined requirements specifications | |
| Ambiguous user requirements | |
| Incomplete user requirements | |
| Project manager does not understand the requirements of the project | |

| | |
|---|---|
| User requirements do not correspond to users' ideas | |
| The definition of technical tasks are not specified in adequate detail | |
| **Scope planning** | |
| Exclusions are not documented | |
| Lack of proper scope and objectives | |
| Registering improper milestones | |
| Scope is not defined in adequate detail | |
| Issues that can impact the project are neglected during the feasibility study | |
| **Scope management** | |
| Extra functionality is added without formal scope change requests | |
| Major changes were made from the original defined scope without taking time, costs and quality constraints into account | |
| The domino effect of scope changes are not considered | |
| External users' requirements keep on changing | |
| A project that seems simple can evolve in something complex | |

3) The following pitfalls are related to **Time Management** and include the subcategories of

- Sequence of activities
- Resource availability
- Scheduling of activities

Please select those pitfalls that **you think** may be present during the implementation of a PPM discipline project in the Bank.

| | |
|---|---|
| **Sequence of activities** | |
| Development commences prior to business specifications being completed | |
| Development commences prior to design completion | |
| Hardware, operating systems and database software are implemented after application upgrade commences | |
| Participant connectivity is not ready at connectivity testing prior to commencement of pilot testing | |
| **Resource availability** | |
| The availability of resources during the complete project is not taken into account | |
| Resources should be available for all aspects of the project, including training | |
| Resource capacity changes during the project. | |
| Key resources leaving the project | |

| | |
|---|---|
| No succession plans for team members leaving the project | |
| No moratorium on new development in the functional areas exist | |

**Scheduling of activities**

| | |
|---|---|
| Requirements are not finalised in time | |
| Testing date availability is not confirmed before testing schedules are created | |
| Too little time available for testing | |
| The amount of work needed to be done on customisation is underestimated | |
| The amount of time needed for data take-on is underestimated | |
| Timeous project deliverables are hampered by lengthy internal processes | |
| Operational moratoriums results in time constraints | |
| Not enough time are given to users to provide input to the project | |
| Student syndrome - Waiting until the last moment to complete a deliverable, resulting in rushing work at the cost of quality | |
| The time between training and implementation should be close enough to ensure user-knowledge retention | |
| The project team may spent more time on the project than anticipated | |
| Testing commenced without users being involved | |
| Lack of comprehensive testing | |

4) The following pitfalls are related to **Cost management** and include the subcategories of

- Budgeting
- Cost control

Please select those pitfalls that **you think** may be present during the implementation of a PPM discipline project in the Bank.

**Budgeting**

| | |
|---|---|
| Inadequate financial planning leads to inaccurate budgeting | |
| Budget process negatively influences project dates | |
| No provision in the budget for food and beverages over implementation weekends. | |
| No funds are budgeted for project team functions | |
| Budgeting for hidden costs are neglected | |

5) The following pitfalls are related to **Quality management** and include the subcategories of

- Quality planning
- Quality assurance
- Quality control

Please select those pitfalls that **you think** may be present during the implementation of a PPM discipline project in the Bank.

| Quality Planning | |
|---|---|
| Due to time constraints, quality is neglected | |

| Quality Control | |
|---|---|
| Bad quality controls before the project starts | |
| Bad quality control during the project | |

6) The following pitfalls are related to **HR management** and include the subcategories of

- Human resources planning
- Compiling project team
- Manage the project team
- Roles and responsibilities
- Expectation management
- Stakeholder commitment

Please select those pitfalls that **you think** may be present during the implementation of a PPM discipline project in the Bank.

| Human resources planning | |
|---|---|
| Not all stakeholders are identified | |
| Not all aspects of the project are anticipated during identification of stakeholders | |
| Not all stakeholders are involved from the beginning of the project, including users, BA's, developers, DBA's, sub-contractors, technical staff | |
| Sub-contractors are not adequately represented during project activities | |
| Project managers are appointed based on availability or functional role and not ability | |
| **Human resources availability** | |
| Human resources shortage may hamper the success of the project | |
| **Compiling project team** | |
| Core team must not be too big to hamper communications and activities | |
| Bad resource allocation | |
| Lack of experience from stakeholders | |
| Wrong project structure | |
| Wrong balance of experience and referent power in the team | |
| **Manage the project team** | |

| | |
|---|---|
| Team members' leave arrangements and absence from work are not co-ordinated according to the project schedule | |
| Tight timelines and work pressure | |
| Conflict in stakeholders' perspectives | |
| Inadequate HR management | |
| Team members that are incapable or uncooperative may hamper the progress of the project | |
| **Roles and responsibilities** | |
| Project manager does not have the authority to manage all HR on the project | |
| Resources are split amongst various projects | |
| Team members are doing functional work as well | |
| Stakeholders' roles are unclear | |
| Unclear accountability and responsibility | |
| Project Managers do not lead | |
| No ownership or commitment, leading to confusing and contradictory direction | |
| Project manager, sponsor and owner are all from within the same functional division | |
| Project manager is also involved in developing the product | |
| Project manager is also involved in functional activities | |
| **Expectation management including change management** | |
| Approach and expectations are not agreed upon prior to project initiation | |
| Resistance to change | |
| Human issues are not properly planned for | |
| Project plan is not agreed upon and signed of by all relevant parties | |
| Clients want earlier implementation | |
| Expectations are not clearly defined, documented and understood | |
| **Stakeholder commitment** | |
| No written and signed commitment from stakeholder (including management) regarding the roles and responsibilities of project stakeholders | |
| Executive management and owner support need to be obtained | |
| Lack of follow-up by other resources (external to project) delivering on their commitments | |
| Management participation is not satisfactory | |
| Lack of interest by customers | |
| No initiative from management to start the project | |
| Project running out of steam | |

| | |
|---|---|
| External parties cannot be relied upon for support and commitment | |
| Management participation was unsatisfactory | |
| Users and management do not always take the responsibility they should have | |

7) The following pitfalls are related to **Communications management** and include the subcategories of

- Communications planning
- Information distribution
- Measuring and reporting
- Documentation

Please select those pitfalls that **you think** may be present during the implementation of a PPM discipline project in the Bank.

**Communications planning**

| | |
|---|---|
| Progress meetings are too infrequent, making it difficult to track actual progress. | |
| Documentation is not structured | |
| No clear relationships defined after project completion | |

**Information distribution**

| | |
|---|---|
| Progress meetings are not well attended | |
| To be reliant on other departments for the information posed a problem in terms of timelines. | |
| Communication does not take place on an adequate level | |
| Communication takes place too infrequently | |
| Lack of trust between management and project team | |
| Stakeholders' concerns are not documented and managed | |
| Project schedules are not communicated to all stakeholders | |
| No communication with stakeholders who are away from work during the project | |
| Communication between the service providers is poor | |
| Feedback meetings are not attended well enough by the project team | |
| Project team do not relay problems to the project manager as and when it happens. | |
| Changes to project schedule are not communicated to all stakeholders. | |
| Project documentation are not read by stakeholders | |

**Measuring and reporting**

| | |
|---|---|
| The facilitator/stakeholders at the post-project review meeting are biased for/against the project manager | |

| | |
|---|---|
| Signoff and acceptance criteria for deliverables are not documented and only agreed to when milestones are due | |
| Ineffective reporting | |
| Ineffective controls | |
| Customers and other stakeholders cannot see change taking place during project progress | |
| Failure to understand progress | |
| Success not communicated and celebrated | |
| Lack of follow-up with other resources (external to project) to deliver on their commitments | |

**Documentation**

| | |
|---|---|
| Criteria for measuring completion and success is not documented | |
| Testing plan is not documented | |
| Meetings are not minuted | |
| Assumptions are not recorded, investigated and verified | |
| Progress reports are not filed | |
| Installation checklists are not used when rolling out to the clients. | |
| User manuals are not provided with the system | |
| Test results must be produced and filed | |
| Technical specifications are not document | |

8) The following pitfalls are related to **Risk management** and include the subcategories of

- Pitfall planning
- Pitfall identification
- Pitfall analysis
- Pitfall response
- Pitfall controls

Please select those pitfalls that **you think** may be present during the implementation of a PPM discipline project in the Bank.

**Pitfall planning**

| | |
|---|---|
| Review lessons learnt from previous projects | |
| Inadequate risk management | |

**Pitfall identification**

| | |
|---|---|
| Not all relevant pitfalls are identified | |

**Pitfall response**

| | |
|---|---|
| Ineffective mitigation plans | |

| | |
|---|---|
| Lack of contingency planning | |
| Neglect to consider data related pitfalls | |
| **Pitfall controls** | |
| Risk management is implemented without pitfall control | |
| Risk and issue management process not adequate | |

9) The following pitfalls are related to **Procurement management** and include the subcategories of

- Procurement planning
- Contracts

Please select those pitfalls that **you think** may be present during the implementation of a PPM discipline project in the Bank.

**Contracts**

| | |
|---|---|
| No fixed contract between organisation and service providers | |

10) The following pitfalls are related to **Technology management** and include the subcategories of

- Complexity
- Technologies
- Technical requirements

Please select those pitfalls that **you think** may be present during the implementation of a PPM discipline project in the Bank.

**Complexity**

| | |
|---|---|
| Complex technology | |
| New, unfamiliar environments | |
| Current processes require re-engineering for the new system to work | |
| **Technologies** | |
| New technology is used in or deployed by the project | |
| Unproven technology is used in or deployed by the project | |
| Unsuited technology is used in or deployed by the project | |
| Unstable technology is used in or deployed by the project | |
| Obsolete technology is used in or deployed by the project | |
| Milestones can be missed due to technical problems in the project | |
| **Technical requirements** | |

| | |
|---|---|
| Insufficient technical data is received | |
| Technical information may be incorrect and outdated | |

| |
|---|
| 11) Please provide me with any comments you have on this questionnaire, study or project. You may also provide me with your name and telephone extension number if you want me to contact you regarding this questionnaire. Your responses to the questionnaire will remain confidential. |
| |

# Appendix 2

## *Pitfalls identified to be present during the implementation of project portfolio management in the Bank*

| Rank | Pitfall | Selections |
|---:|---|---:|
| 1 | A project that seems simple can evolve in something complex | 22 |
| 2 | Human resources shortage may hamper the success of the project | 22 |
| 3 | Internal politics between stakeholders may hamper the success of the project | 21 |
| 4 | Handover to staff that were not involved and are not adequately trained | 21 |
| 5 | Requirements are underestimated | 21 |
| 6 | Not all stakeholders are involved from the beginning of the project, including users, BA's, developers, DBA's, sub-contractors, technical staff | 20 |
| 7 | Team members are doing functional work as well | 20 |
| 8 | Resources are split amongst various projects | 19 |
| 9 | No succession plans for team members leaving the project | 18 |
| 10 | Not all relevant pitfalls are identified | 18 |
| 11 | Milestones can be missed due to technical problems | 18 |
| 12 | Incomplete user requirements | 17 |
| 13 | Extra functionality is added without formal scope change requests | 17 |
| 14 | Budgeting for hidden costs are neglected | 17 |
| 15 | Project manager does not have the authority to manage all HR on the project | 17 |
| 16 | Project is started without active participation of management, indicating a lack of strategic focus | 16 |
| 17 | Stakeholders do not agree on certain aspects of the project | 16 |
| 18 | Interfaces between the different disciplines in the project are not clearly defined and maintained | 16 |
| 19 | No clarity on interfaces with existing systems | 16 |
| 20 | Timeous project deliverables are hampered by lengthy internal processes | 16 |
| 21 | Bad quality control during the project | 16 |
| 22 | Team members' leave arrangements and absence from work are not co-ordinated according to the project schedule | 16 |
| 23 | Tight timelines and work pressure | 16 |
| 24 | Inadequate support for users | 15 |

| 25 | Badly defined requirements specifications | 15 |
|---|---|---|
| 26 | User requirements do not correspond to users' ideas | 15 |
| 27 | The availability of resources during the complete project is not taken into account | 15 |
| 28 | Resources should be available for all aspects of the project, including training | 15 |
| 29 | Resource capacity changes during the project. | 15 |
| 30 | Too little time available for testing | 15 |
| 31 | The amount of work needed to be done on customisation is underestimated | 15 |
| 32 | New, unfamiliar environments | 15 |
| 33 | Issues that can impact the project are neglected during the feasibility study | 14 |
| 34 | No moratorium on new development in the functional areas exist | 14 |
| 35 | Budget process negatively influences project dates | 14 |
| 36 | Lack of experience from stakeholders | 14 |
| 37 | Wrong balance of experience and referent power in the team | 14 |
| 38 | Users and management do not always take the responsibility they should have | 14 |
| 39 | Technical information may be incorrect and outdated | 14 |
| 40 | Major changes were made from the original defined scope without taking time, costs and quality constraints into account | 13 |
| 41 | Development commences prior to design completion | 13 |
| 42 | Key resources leaving the project | 13 |
| 43 | The amount of time needed for data take-on is underestimated | 13 |
| 44 | The project team may spent more time on the project than anticipated | 13 |
| 45 | Inadequate financial planning leads to inaccurate budgeting | 13 |
| 46 | Due to time constraints, quality is neglected | 13 |
| 47 | Not all aspects of the project are anticipated during identification of stakeholders | 13 |
| 48 | Project managers are appointed based on availability or functional role and not ability | 13 |
| 49 | Conflict in stakeholders' perspectives | 13 |
| 50 | Inadequate HR management | 13 |
| 51 | Unclear accountability and responsibility | 13 |
| 52 | No ownership or commitment, leading to confusing and contradictory direction | 13 |
| 53 | Expectations are not clearly defined, documented and understood | 13 |
| 54 | No written and signed commitment from stakeholder | 13 |

| | | | |
|---|---|---|---|
| | | (including management) regarding the roles and responsibilities of project stakeholders | |
| | 55 | Management participation is not satisfactory | 13 |
| | 56 | To be reliant on other departments for the information posed a problem in terms of timelines. | 13 |
| | 57 | Lack of trust between management and project team | 13 |
| | 58 | Success not communicated and celebrated | 13 |
| | 59 | Business analysts are unclear about their facts before discussing it with IT | 12 |
| | 60 | Ambiguous user requirements | 12 |
| | 61 | Development commences prior to business specifications being completed | 12 |
| | 62 | Resistance to change | 12 |
| | 63 | Human issues are not properly planned for | 12 |
| | 64 | Lack of interest by customers | 12 |
| | 65 | Management participation was unsatisfactory | 12 |
| | 66 | Progress meetings are not well attended | 12 |
| | 67 | Communication does not take place on an adequate level | 12 |
| | 68 | Project documentation are not read by stakeholders | 12 |
| | 69 | Technical specifications are not documented | 12 |
| | 70 | Lessons are not learnt from previous projects | 12 |
| | 71 | Lack of contingency planning | 12 |
| | 72 | Insufficient technical data is received | 12 |
| | 73 | The project focuses on trends and not real business requirements | 11 |
| | 74 | Attempting to provide the perfect system instead of creating an organic system | 11 |
| | 75 | Project requires a change in organisational culture | 11 |
| | 76 | Spending inadequate time on detailed planning | 11 |
| | 77 | No clear development methodology | 11 |
| | 78 | End result of the project is not communicated to all stakeholders | 11 |
| | 79 | Scope is not defined in adequate detail | 11 |
| | 80 | The domino effects of scope changes are not considered | 11 |
| | 81 | External users' requirements keep on changing | 11 |
| | 82 | Bad resource allocation | 11 |
| | 83 | Project Managers do not lead | 11 |
| | 84 | Project manager is also involved in functional activities | 11 |
| | 85 | Progress meetings are too infrequent, making it difficult to track actual progress. | 11 |
| | 86 | Ineffective controls | 11 |
| | 87 | Assumptions are not recorded, investigated and verified | 11 |
| | 88 | No fixed contract between organisation and service providers | 11 |

| 89 | Complex technology | 11 |
|---|---|---|
| 90 | Current processes require re-engineering for the new system to work | 11 |
| 91 | No clarity on the solution | 10 |
| 92 | Management does not understand the scope of the project | 10 |
| 93 | Organisational culture not taken into account | 10 |
| 94 | Lack of trust in the project manager | 10 |
| 95 | Feasibility of the project is not done at all levels | 10 |
| 96 | Improper training plan | 10 |
| 97 | Project manager does not understand the requirements of the project | 10 |
| 98 | Exclusions are not documented | 10 |
| 99 | Registering improper milestones | 10 |
| 100 | Student syndrome - Waiting until the last moment to complete a deliverable, resulting in rushing work at the cost of quality | 10 |
| 101 | The time between training and implementation is not close enough to ensure user-knowledge retention | 10 |
| 102 | Testing commenced without users being involved | 10 |
| 103 | Lack of comprehensive testing | 10 |
| 104 | No funds are budgeted for project team functions | 10 |
| 105 | Team members that are incapable or uncooperative may hamper the progress of the project | 10 |
| 106 | Stakeholders' roles are unclear | 10 |
| 107 | Approach and expectations are not agreed upon prior to project initiation | 10 |
| 108 | Documentation is not structured | 10 |
| 109 | No clear relationships defined after project completion | 10 |
| 110 | Ineffective reporting | 10 |
| 111 | Testing plan is not documented | 10 |
| 112 | New technology is used in or deployed by the project | 10 |
| 113 | Bad planning | 9 |
| 114 | Improper maintenance plan | 9 |
| 115 | The definition of technical tasks are not specified in adequate detail | 9 |
| 116 | Lack of proper scope and objectives | 9 |
| 117 | Not all stakeholders are identified | 9 |
| 118 | Clients want earlier implementation | 9 |
| 119 | Executive management and owner support need to be obtained | 9 |
| 120 | No initiative from management to start the project | 9 |
| 121 | Project running out of steam | 9 |
| 122 | Failure to understand progress | 9 |
| 123 | Criteria for measuring completion and success is not | 9 |

| | | |
|---|---|---|
| | documented | |
| 124 | Meetings are not minuted | 9 |
| 125 | User manuals are not provided with the system | 9 |
| 126 | Test results are not produced and filed | 9 |
| 127 | Inadequate risk management | 9 |
| 128 | Bad quality controls before the project starts | 8 |
| 129 | Core team must too big, hampering communications and activities | 8 |
| 130 | Project manager is also involved in developing the product | 8 |
| 131 | Project plan is not agreed upon and signed of by all relevant parties | 8 |
| 132 | Lack of follow-up by other resources (external to project) delivering on their commitments | 8 |
| 133 | Stakeholders' concerns are not documented and managed | 8 |
| 134 | Project team do not relay problems to the project manager as and when it happens. | 8 |
| 135 | Signoff and acceptance criteria for deliverables are not documented and only agreed to when milestones are due | 8 |
| 136 | Unsuited technology is used in or deployed by the project | 8 |
| 137 | Bad selection of suppliers | 7 |
| 138 | Improper cut-over between current and new system | 7 |
| 139 | Hardware, operating systems and database software are implemented after application upgrade commences | 7 |
| 140 | Requirements are not finalised in time | 7 |
| 141 | Testing date availability is not confirmed before testing schedules are created | 7 |
| 142 | Not enough time are given to users to provide input to the project | 7 |
| 143 | External parties cannot be relied upon for support and commitment | 7 |
| 144 | Communication takes place too infrequently | 7 |
| 145 | Project schedules are not communicated to all stakeholders | 7 |
| 146 | Communication between the service providers is poor | 7 |
| 147 | Feedback meetings are not attended well enough by the project team | 7 |
| 148 | Ineffective mitigation plans | 7 |
| 149 | Neglect to consider data related pitfalls | 7 |
| 150 | Unproven technology is used in or deployed by the project | 7 |
| 151 | Inadequate project processes | 6 |
| 152 | Participant connectivity is not ready at connectivity testing prior to commencement of pilot testing | 6 |
| 153 | No provision in the budget for food and beverages over implementation weekends. | 6 |
| 154 | Sub-contractors are not adequately represented during | 6 |

| | project activities | |
|---|---|---|
| 155 | Changes to project schedule are not communicated to all stakeholders. | 6 |
| 156 | Progress reports are not filed | 6 |
| 157 | Installation checklists are not used when rolling out to the clients. | 6 |
| 158 | Wrong methodology | 5 |
| 159 | No communication with stakeholders who are away from work during the project | 5 |
| 160 | Lack of follow-up with other resources (external to project) to deliver on their commitments | 5 |
| 161 | Risk management is implemented without risk control | 5 |
| 162 | Risk and issue management process not adequate | 5 |
| 163 | The project objectives are not worth the effort put into the project | 4 |
| 164 | Operational moratoriums results in time constraints | 4 |
| 165 | Wrong project structure | 4 |
| 166 | Customers and other stakeholders cannot see change taking place during project progress | 4 |
| 167 | Customers and other stakeholders cannot see change taking place during project progress | 4 |
| 168 | Obsolete technology is used in or deployed by the project | 4 |
| 169 | The facilitator/stakeholders at the post-project review meeting are biased for/against the project manager | 3 |
| 170 | Unstable technology is used in or deployed by the project | 3 |

# Appendix 3

## *Results from assessing the pitfalls*

| Rank | Pitfall | Magnitude | Average Probability | Average Impact |
|------|---------|-----------|---------------------|----------------|
| 1 | Timeous project deliverables are hampered by lengthy internal processes | 56% | 72.9% | 74.8% |
| 2 | Internal politics between stakeholders may hamper the success of the project | 55% | 71.6% | 74.8% |
| 3 | Resources are split amongst various projects | 49% | 74.2% | 65.8% |
| 3 | Team members are doing functional work as well | 49% | 73.9% | 65.2% |
| 3 | Human resources shortage may hamper the success of the project | 49% | 68.7% | 70.0% |
| 6 | A project that seems simple can evolve in something complex | 48% | 72.9% | 66.5% |
| 7 | Project manager does not have the authority to manage all HR on the project | 44% | 66% | 67% |
| 8 | Incomplete user requirements | 43% | 63% | 69% |
| 8 | Tight timelines and work pressure | 43% | 66% | 66% |
| 8 | No succession plans for team members leaving the project | 43% | 68% | 63% |
| 11 | The amount of work needed to be done on customisation is underestimated | 42% | 62% | 68% |
| 12 | User requirements do not correspond to users' ideas | 41% | 57% | 72% |
| 12 | Too little time available for testing | 41% | 62% | 66% |
| 12 | Not all stakeholders are involved from the beginning of the project, including users, BA's, developers, DBA's, sub-contractors, technical staff | 41% | 62% | 66% |

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| 12 | The availability of resources during the complete project is not taken into account | 41% | 60% | 68% |
| 16 | Badly defined requirements specifications | 40% | 60% | 67% |
| 16 | Stakeholders do not agree on certain aspects of the project | 40% | 59% | 68% |
| 16 | Requirements are underestimated | 40% | 56% | 71% |
| 19 | Budgeting for hidden costs is neglected | 39% | 61% | 64% |
| 19 | Project is started without active participation of management, indicating a lack of strategic focus | 39% | 58% | 66% |
| 19 | Resources should be available for all aspects of the project, including training | 39% | 58% | 67% |
| 22 | Resource capacity changes during the project. | 38% | 61% | 62% |
| 23 | Not all relevant risks are identified | 37% | 59% | 64% |
| 23 | Milestones can be missed due to technical problems | 37% | 59% | 63% |
| 23 | No clarity on interfaces with existing systems | 37% | 57% | 64% |
| 26 | Bad quality control during the project | 36% | 54% | 67% |
| 26 | Handover to staff that were not involved and are not adequately trained | 36% | 57% | 63% |
| 26 | Inadequate support for users | 36% | 58% | 61% |
| 29 | Extra functionality is added without formal scope change requests | 33% | 60% | 56% |
| 30 | Interfaces between the different disciplines in the project should be clearly defined and maintained | 31% | 55% | 57% |
| 31 | New, unfamiliar environments | 30% | 49% | 61% |
| 32 | Team members' leave arrangements and absence from work are not co-ordinated according to the project schedule | 26% | 46% | 56% |

# Appendix 4

## *High-level pitfalls with response plans*

| Pitfall | Probability | Impact | Mitigation Plan | Change in Probability | Change in Impact |
|---------|-------------|--------|-----------------|----------------------|------------------|
| Timeous project deliverables are hampered by lengthy internal processes | 74% | 75% | Improve the internal processes so that they can be streamlined | -50% | -70% |
| | | | Improve project planning and risk management to include these issues and eventualities | -50% | -70% |
| | | | Improve communications between stakeholders | 0% | -10% |
| | | | Time for internal processes must be built into the timeframe of the project | 0% | -50% |
| | | | Keep processes like procurement and budget requests outside of the project | -20% | -20% |
| | | | Make all the processes visible with the responsible parties, keeping a record usable for performance appraisal | -10% | -10% |
| | | | Time line internal processes more accurately - ensure that all members stick to it | -20% | -10% |
| Internal politics between stakeholders may hamper the success of the project | 72% | 76% | Project Management, i.e. owner, sponsor, project manager must take more ownership and responsibilities on the project, not armchair management - more participation | -60% | -60% |
| | | | Project objectives and reasons to be done must be completed / improved. If these are clear then there shouldn't be any reasons for politics hampering the project | -30% | -30% |
| | | | Business should drive the project in these cases and not IT | -20% | -20% |

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| | | | Stakeholders must agree to be part of the project and commit their co-operation | -10% | 0% |
| | | | People should set aside their internal politics as this not only have negative impacts on the department, but on the Bank as a whole | -10% | -25% |
| | | | Ensure all parties / champions are informed and signed off the project | -20% | -20% |
| | | | All parties involved to be notified of all changes / timeline etc | -15% | -10% |
| Resources are split amongst various projects | 74% | 66% | Resource planning must be introduced. This will highlight the over-allocation of resources | -30% | -40% |
| | | | Resources must be scheduled on the electronic office system for the periods that they are to work on the project. Stakeholders must stick to their schedules | -20% | 0% |
| | | | Establish a steering committee to prioritise projects with HR as a constraint kept in mind | -10% | -10% |
| | | | Projects should be prioritized on executive level to ensure business projects get the correct priorities | -5% | -40% |
| | | | Not all staff can be involved in projects, Champions and certain people should be involved. It this is not possible, contractors should be brought in. | -10% | -20% |
| | | | Time management. Ensure a system are put in place to enable all resources to allocate their time correctly | -10% | -10% |
| | | | Resource allocation must be committed to the project based on allocated time slots | -10% | -10% |
| A project that seems simple can evolve in something complex | 73% | 66% | This indicates that the process of PM is not being followed well or doesn't exist. A proper feasibility study will address this issue | -20% | -20% |
| | | | The Business Analysis on the project must be improved | -20% | -20% |

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| | | | The maturity of PM must be improved. Diving into project due to the wrong reasons must be stopped | -20% | -20% |
| | | | Better analysis must be done in planning phases to eliminate scope creep | -10% | 0% |
| | | | Scope management should be rigorously applied | -40% | 0% |
| | | | The user requirements process should be applied according to project principles | -20% | 0% |
| | | | Perform structured feasibility studies with documented outcome prior to conducting the project | 0% | -15% |
| | | | Document project / scope properly and have it signed off. Perform proper change management on scope once finalised | -20% | -20% |
| | | | Good planning and thorough planning must be done before the project starts | -20% | -30% |
| | | | Ensure all changes are put through a change process and all role players are informed | -40% | 0% |
| | | | No changes - make sure the scope has been clearly defined | -10% | -10% |
| Team members are doing functional work as well | 75% | 66%% | Resource planning must be introduced | -20% | -30% |
| | | | Staff performing maintenance functions must not be allocated to projects | -20% | -20% |
| | | | Staff performing maintenance functions must not be given more than 20% time on a project | -20% | -10% |
| | | | Alternative resources must be scheduled for functional activities when staff members are busy on the project | -20% | 0% |
| | | | Employ more skilled people to do functional / operational work | 0% | -20% |

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| | | | Contractors must be brought in | -20% | -10% |
| | | | Time management. Ensure a system are put in place to enable all resources to allocate their time correctly | -10% | -10% |
| | | | Allocate certain time slots for the members and ensure that the time is utilised correctly and efficiently | -5% | 0% |
| | | | Ensure measurement tools / methods are in place to monitor performance | -20% | -10% |
| Human resources shortage may hamper the success of the project | 71% | 70% | Employ more people or allow contractors to be easily employed | -20% | -20% |
| | | | Cut down on the number of projects being undertaken | -20% | -10% |
| | | | Team members should not be scheduled to spend time on the project, unless they have the free time to do it | -10% | 0% |
| | | | Staff should decline to participate in projects unless they have the time to do it | 0% | -10% |
| | | | A project should not commence if there are not sufficient resources | 0% | -30% |
| | | | Employ more people | -30% | 0% |
| | | | Employ only competent staff | -30% | -40% |
| | | | Minimum people form the department should be involved. Contractors should be employed | -10% | -10% |
| | | | Project manager needs to ensure that the resources are allocated and committed to the project | -30% | -10% |
| | | | Do not start project if resources are not available | 0% | -30% |