CHAPTER 1: INTRODUCTION AND CONTEXT

1.1 BACKGROUND

Progressive globalisation and the associated challenges of global competition, the daunting pace at which the information and telecommunication technologies are developing, the breaking down of trade and investment barriers and the emergence of the knowledge worker (Hill, 2003:4) call, among other things, for organisations to develop the capability to operate across time zones, geographical areas, and functional and organisational silos. Organisations confronted with these challenges are increasingly adopting formal **project management** methodologies to develop their capabilities to implement strategy and achieve their objectives successfully (Rosenstock *et al*., cited in Pennypacker & Grant, 2003:5).

As early as the 1970s, Bennis (quoted by Willemon & Gemmill, 1971:315) asserted that the organisations of the future would be "adaptive, rapidly changing **temporary systems** (my emphasis), organized around problems …. Organizational charts will consist of **project groups** (my emphasis) rather than stratified functional groups." Partington (1996:13) makes a similar statement, indicating that managers are increasingly being urged to "transform their organizations from bureaucratic, hierarchical 'mechanistic' structures to flatter, more flexible 'organic' forms based around **project** (my emphasis) teams" to enable organisations to keep up the required pace of technological and administrative innovation. Cadieux (cited in Hebert, 2002:3) maintains that increased competition, the need for specific information, reduced product life cycles and the technological revolution is forcing companies to **change** more rapidly.

In the South African context, concerns surrounding rapid change are also pertinent. Most organisations are joining the effort to become and/or remain globally competitive in the wake of major political, economic and market reform since 1994. This environment requires a proactive strategy from South African business to ensure that its skills, managerial methodologies and work practices are reconfigured in such a way that these companies are positioned to enter, survive and thrive in the new economy. Steyn (2001:38) expresses a similar view. He points out that the accelerated information flow, volatility in the internal business environment and the external environment, changes in economic outlook, socio-cultural issues, politics, the ecology and, finally, technologies have an impact on the way modern organisations are managed and that they require organisations to re-assess and re-engineer their systems and business

processes. According to Steyn (2001), the "integrative implementation link between corporate strategy, business strategy and operations strategy is the management of organisations through projects and programmes".

Project management as a management configuration and catalyst to effect **change** or Business Process Reengineering (BPR) has certainly gained international popularity as a mechanism to ensure that organisations are equipped to react swiftly and effectively to change. According to Hebert (2002:2), project management is considered the fastest-growing professional discipline in North America.

The use of project management methodology is also spreading from its traditional applications (mainly in sectors such as construction and defence) to include organisational change initiatives, such as implementing flatter structures, new information and communication strategies, customer focus and quality initiatives (Partington, 1996:14). The methodology of project management and its temporary matrix configuration makes it an attractive way of dealing with once-off organisational matters which require action. Organisations are increasingly adopting and applying project management methodology as an enabler to implement strategy in diverse business areas such as research and development, new product development, construction, software and hardware development, etc.

However, many projects still fall short of the originally stated intentions and objectives. Kearney and the Economist Intelligence Unit (cited in Boddy & Macbeth, 2000:297) found a high failure rate when European companies adopted Total Quality Management (TQM) systems. Hougham, Boddy and Gunson (cited in Boddy & Macbeth, 2000:297) show how information technology projects can take longer and cost more than originally planned. Wastell, White and Kawalek (1994:230) conclude that "BPR initiatives have typically achieved much less than promised", whilst Burnes (1996:172) observes that "even well established change initiatives, for which a great deal of information, advice and assistance is available, are no guarantee of success".

The complexity of the management of change dynamics within the project context is further exacerbated by rapid technological developments, the expectation of substantial competitive advantages, projects using advanced systems and processes, the unique organisational setting of each attempt at change and the systemic nature of organisations. Given the systemic nature of organisations, "any one project is likely to be part of a wider cluster of changes which will have unpredicted links to each other" (Boddy & Macbeth, 2000:297). The success of a project

also depends predominantly on the way in which the change dynamics are managed by people, the process of implementation, as well as the content or substance of the change (Boddy & Macbeth, 2000:298).

More often than not, the management of **change dynamics** which is so imperative in the context of the project management methodology is either overlooked, neglected or expedited to such an extent that the effort and eventual project outcomes are rendered unsustainable or even worthless. Boddy and Macbeth (2000:298) argue that, although the application of project management techniques can assist in the management of organisational change projects, the methodology will not in itself cope with situations where there are different views of what should be done, where there is conflict of interest, etc. These authors add that even participative or consultative techniques are not sufficient if the change threatens the *status quo* and thus established practices. According to these authors, the difference between successful and unsuccessful projects lies, to a large extent, in the way in which the change is managed.

Grover, Jeong, Kettinger and Teng (1995:121), in researching 105 organisations to establish problem areas surrounding Business Process Reengineering implementation, found that 31.8 percent of the respondents considered that the "need for managing change is not recognized" to be the first item ranked in terms of severity. In fact, six out the first ten most severe implementation problems concern the management of change dynamics. This clearly indicates that respondents regarded change management issues in conducting reengineering projects in a very serious light. The problems related to the management of change dynamics included communicating the rationale for change to employees, addressing the politics around the change initiative and ensuring commitment to new values. These findings confirm the fundamental nature of reengineering, which entails multidimensional organisational changes involving roles and responsibilities, performance/incentive measures, shared values (culture), organisational structure and skills requirements (Grover *et al*, 1995:121).

Grover *et al*. (1995) conclude that change management dynamics occupy centre stage in Business Process Reengineering implementation and that the inability to manage organisational change in reengineering is most likely to lead to project failure. Buchanan and Boddy (in Partington, 1996:19) express a similar argument, arguing that the failure of change programmes is associated more often with poor management of "human factors" than with technical problems. Change is, at best, "complex and not easily accomplished, involving the manipulation of interactive relationships among such organisational subcomponents as management, people, structure, technology and rewards" (Grover *et al.,* 1995:109).

The findings of a study done by the University of Bristol regarding Business Process Reengineering in the United Kingdom financial services industry (McElroy, 1996:328) were similar; and that study listed the communication of a clear vision, staff participation, the creation of process ownership, the instilling of a Business Process Re-engineering culture and staff organisation as matters related to change management critical for project success.

1.2 RATIONALE FOR THE RESEARCH PROJECT

The studies cited above make it abundantly clear that inadequate attention is paid to the human dimension of change management and corporate culture because of an overriding focus on the technical aspects of projects. Hastings (cited in Turner, Grude & Thurloway, 1996:148) points out the popularity of project management and suggests that few organisations seem to get real performance from project teams due to their focus on "hard" management issues (such as cost, quality and goal achievement on time) without adequate appreciation of the "soft" issues (such as motivation, culture and change management aspects). Knutson (1993:2) also asserts that "in the middle of all the specifications and activity, there is no one who can explain what the change is, or how it will benefit the organisation". She adds that "the harsh reality of managing change is that after a project is completed, people either do their jobs in a new way, or they carry on as usual" and "managers seem to find it difficult to take sufficient time to explore and fully understand an organisational change".

It is indeed a daunting task to alter the organisational *status quo* in order to introduce new practices, systems, structures and values within an organisation by means of a project. It is therefore essential that adequate attention is given to sound change management principles and processes within the context of project management to ensure the success and sustainability of the change that is supposed to happen. A project is, in essence, a change intervention in that it is a once-off, unique intervention with the objective of changing a system, process or organisational structure. Gray and Larson (2000:473) express this notion as follows: "[The] project-driven organisation will recognize the project manager as an agent of change." This claim emphasises that the evolving role of the project manager also includes being astute in the management of change dynamics.

It is clear from the above that there is a paradox, in that, even though a project (a once-off intervention) is a change intervention in itself, often it is the lack of the management of the change management principles and the process itself that affects the success of the project

and/or the sustainability of the implemented changes. A lack of proper management of a change process within the project management domain could be a result of the tight deadlines often associated with projects, a potential lack of knowledge around change management, a disregard for the importance of proper change management, etc., or of a combination of these factors.

It is therefore imperative that the quest and search continues for the factors that are the differentiators between successful and unsuccessful projects, such as the management, measurement and implementation of appropriate change dynamics, in order to assist project managers/participants in running projects successfully.

From the above it is evident that the management of change dynamics plays a significant role in project management and the successful completion of projects. Managing the change process throughout a project's life cycle should be understood, planned for, implemented and measured by the project manager, supported by organisational systems and processes for enhanced project success.

1.3 DEFINING THE RESEARCH AND ITS SIGNIFICANCE

The very nature of project management (that is, the rigorous and structured management of the project performance framework, timelines, deliverables, quality criteria, costs and the temporary nature of the project configuration) does not always allow sufficient **focus** or **time** in the process to apply sound change management philosophy, principles and methodology to manage and entrench the change effected by the project.

This is compounded by the fact that project managers are often selected on the basis of their technical expertise, such as product or process development, while they may have only limited or no change management expertise and/or no or limited appreciation for the value that sound change management can add to the success of the project outcome. When change management activities are not built into the work breakdown structure (WBS), and therefore do not appear in the critical path of a project, it is likely that these activities will be considered non-essential and non-critical components that detract from the performance of the project. This inevitably affects the sustainability and longevity of the change brought about by the intervention of any project team negatively. In addition to being proficient in "hard" project management skills such as contracting, finance, costing, scheduling and controlling, measuring performance, quality and risk management, project managers/participants should also be adept at "soft" skills

such as negotiating, managing change, being politically astute, and understanding the needs and wishes of the people with whom they deal (Frame, 2002:10).

1.4 RESEARCH PROBLEMS

It is therefore necessary that more research be done based on the following research problems:

- What constitutes **change dynamics** in the **project management** domain?
- How can these change dynamics be assessed as critical success factors within the context of project management?
- How can change dynamics be managed more pro-actively during the project life cycle, using the elements within the assessment instrument as a mechanism to identify and manage change dynamics appropriately?

1.5 SCOPE OF THE STUDY

The focus of this study therefore revolves around the appropriate management of change dynamics within projects as an issue of central concern to academics, managers, stakeholders and project practitioners. The scope of the study includes the development of an assessment tool to measure change dynamics in the context of project management as change dynamics applies in a South African and international domain. This assessment tool can be applied as a measurement instrument, and it can also serve as a diagnostic tool to assist project managers and their organisations to become aware of different change dynamics within the respective life cycle phases of a project so that these can be addressed and managed pro-actively and continuously through the project life cycle as part of the application of project methodology.

This research focuses on change and project management from an integrated and holistic perspective. It does not focus on individual aspects within the two disciplines.

1.6 RESEARCH QUESTIONS

The current pace of change has necessitated that, in order to be flexible enough to deal with this imperative, organisations adopt project management as a method to achieve organisational objectives. Mirvis and Macy (cited in Seashore, Lawler & Camman, 1983:501) elaborate on the complexity of measuring change as follows: “The intrusion of intangibles into the cost-benefit equation considerably ‘enriches’ the assessor’s job, but it does not remove the obligation to

'cost out' programs." It is therefore important to measure the way change dynamics is managed as a critical success factor in the project management context.

Based on their empirical research on reengineering efforts in 105 organisations, Grover *et al.* (1995:110) assert that change management in Business Process Reengineering is of central importance in the success of the implementation of Business Process Reengineering. They also claim that their findings suggest that reengineering project implementation is complex and that, in order for a change programme to succeed, it is essential that change dynamics be managed and that balanced attention be paid to all the identified factors, such as management support, technological competence, project management, etc.

The following specific research questions were addressed in this study (informed by the above brief review of the relevant literature):

- What constitutes **change dynamics** and how does it apply in the context of **project management?**
- Is there a need for an **assessment tool** to measure change dynamics in project management?
- What process should be followed in developing an assessment tool to assess change dynamics in the context of project management?
- What would ultimately constitute a **change dynamics assessment tool** that could be pro-actively used by **project managers** to **manage change** and its unique dynamics during projects and/or measure how effectively change dynamics is managed to ensure project success?

1.7 RESEARCH OBJECTIVES

The objectives of this study support the research questions. They are the following:

- **Primary objective**: To develop an assessment tool that measures change dynamics in the context of project management in South Africa and some selected internationally-based destinations.
- **Secondary objectives**:

  The following secondary objectives were pursued to establish the content of an assessment tool to measure change dynamics in project management:

- to establish what constitutes change dynamics in the project management domain;
- to develop a framework of change dynamics applicable in the project management domain; and
- to determine which process should be used in developing a change dynamics assessment tool.

The contribution of a change management assessment tool in the project management field is that it will assist project managers/participants in assessing their organisational capability and will empower them to apply sound change management principles, so as to manage change dynamics in the project management context and domain. The assessment tool can also serve the dual purpose of being used, first, as an assessment tool to assess the status of change management within the project management context and/or, second, as a developmental/diagnostic tool to assist organisations using some project management methodology to enhance its change management capability.

1.8 OUTLINE OF THE THESIS

Chapter 1 serves as an introduction to set out some background to the study, the problem statement, context, scope, research questions and objectives of the study.

This is followed in Chapter 2 by a comprehensive literature study of the relevant theory related to the research issue. The literature study covers definitions of key concepts relevant to the study, such as project management and change management/dynamics, as well as a thorough assessment of literature on project management, change management/dynamics and the development of an assessment tool.

Chapter 3 presents the methodological approach followed.

Chapter 4 contains the research methodology applied with the results of the respective statistical applications.

Chapter 5 contains the recommended assessment tool for change management in project management, an assessment of the limitations of the study, as well as recommendations for future research.

1.9 SUMMARY AND CONCLUDING REMARKS

The project management domain is increasingly used to effect organisational change in accordance with an organisation's strategy, in addition to its more traditional applications in the military and construction environment. The methodology lends itself to establishing multi-functional project teams to resolve unique organisational issues, ranging from telecommunication, finance and design to manufacturing and even human resources. This requires project managers to understand, in addition to the technical aspects of the project, more complex, interdependent and fluid factors, in order to be genuinely effective, including the management of change dynamics as an integral part of the project scope. Neglecting to do this will affect the success of the project. It is therefore important that research be conducted to ascertain what constitutes change management within projects, and to design an assessment tool to measure the change achieved.

The outcome of this study should contribute to the body of knowledge of both project management and organisational behaviour focusing on change management.

CHAPTER 2: LITERATURE STUDY

2.1 INTRODUCTION

The purpose of Chapter 2 is to ascertain the theory relevant to the research questions and objectives, and to reflect on this theory. The chapter covers and elaborates on the relevance of the research issues and research questions and also examines contemporary theories on change management and dynamics, project management, change dynamics within project management and literature concerning the development of an assessment tool to measure the effects of the identified constructs on change dynamics.

This study is by nature multi-disciplinary, in that it covers the fields of organisational behaviour (focusing on change management and change dynamics), project management and instrument development. The literature reviewed with regard to these areas informed both the formulation of the research problem and the selection of the research objectives.

2.2 DEFINITIONS

Definitions relevant to this study are provided below to enable the reader to understand the literature in its context better.

2.2.1 Project management

According to Hamilton (1997:69), a project can be defined as “any series of activities and tasks that together achieve predetermined deliverables in accordance with a quality definition, have defined start and end dates, intermediate milestones, funding limits, and utilise resources such as equipment, materials, people, etc”. According to Nicholas (2001:4), Gray and Larson (2000:4), Pinto and Prescott (1988:6) a project tends to have has specific characteristics which warrant its classification as a project. According to these authors, a project has a single, definable purpose and result, and that purpose and result are usually specified in terms of cost, schedule and performance requirements. Every project is unique, is temporary, cuts across organisational lines, involves unfamiliarity and is a process with distinct phases which are usually referred to as the project life cycle.

According to Nicholas (2001: 22) project management (when one applies the principles of the classical, behavioural and systems viewpoints) consists of the following characteristics:

- a single person, the project manager, heads the project organisation and operates independently from the normal chain-of-command, while the organisation reflects the cross-functional, goal-oriented, temporary nature of the project;
- the project manager creates the focal point that ensures synergy toward the project objective;
- the actual work might be performed by cross-functional teams from within or outside the organisation;
- the project manager is responsible for integrating the activities of people from different functional areas working on the project;
- the project manager liaises and negotiates with functional managers for support; functional managers are responsible for individual work tasks and personnel within the project, while the project manager integrates and oversees the completion of activities;
- the project focuses on delivering a product or service at a certain time, at a certain cost and with certain technical requirements;
- a project might have both a vertical and a functional chain of command and people might report to both a project and a functional manager;
- decision-making, accountability, outcomes and rewards are shared among the members of the project team;
- the project organisation is temporary and is disbanded upon completion of the project;
- projects can originate from within or outside the organisation; and
- project management sets into motion other support functions such as personnel evaluation, accounting, procurement and information systems.

According to Hamilton (1997:111), project management is the application of knowledge, skills, tools and techniques in order to meet or exceed the requirements of the intended project sponsor or owner.

Implicit in the definitions given above is the necessity to manage and/or facilitate organisational change management processes appropriately, because of the fact that projects by their very nature are intended to effect and implement significant changes by means of a once-off project intervention. Each project is new, involves various degrees of unfamiliarity, and cuts across organisational functional lines, necessitating proper change management. Due to these

characteristics, each project is, in essence, a change intervention; and sufficient emphasis should therefore be placed on the management of change dynamics within the realm of a specific project(s).

2.2.2 Project success

According to Pinto and Slevin (cited in Gray and Larson, 2000:104), project success is a concept which "has remained ambiguously defined both in the project management literature and, indeed, often within the psyches of project managers". Usually, project objectives focus on cost, quality and timelines and exclude personal objectives and/or the feelings of the people involved. Measuring success by comparing specifications with outcomes is often grossly simplistic, especially since variables and criteria such as the project's budget, schedule or technical specifications are often very subjective (Gray and Larson, 2000:104).

Atkinson (1999:341) offers a more inclusive and balanced view of project success, as set out in Table 2.1.

Table 2.1: Square route to understanding success criteria

Iron triangle	The information system	Benefits (organisation)	Benefits (stakeholder community)
• Cost	• Maintainability	• Improved efficiency	• Satisfied users
• Quality	• Reliability	• Improved effectiveness	• Social and environmental impact
• Time	• Validity	• Increased profits	• Personal development
	• Information-quality use	• Strategic goals	• Professional learning
		• Organisational-learning	• Contractors profits
		• Reduced waste	• Capital suppliers
			• Content project team
			• Economic impact on surrounding community

Source: Adapted from Atkinson (1999:341)

For the purposes of this study, project success is broadly defined as an indication of how successfully the budget, schedule, specifications, quality criteria, management and sustainability of the change, and consultation with relevant stakeholders have been adhered to.

2.2.3 Change

Cummings and Worley (2001:3) refer to change as the effective implementation of planned change through a sequence of activities, processes and leadership that produces organisational improvements to enhance economic potential and the creation of competitive advantage.

According to Grundy (1993:19), strategic change is the "reshaping of strategy, structure and culture of an organisation over time, by internal design, by external forces or by simple drift". Felkins, Chakiris and Chakiris (1993:4) state that "while the dynamics of change can be elusive, the basic components and rules of change are an integral part of the system itself". They characterise change as a "crystallization" of new actions and possibilities based on "reconceptualized" patterns of organisation. They also identify the following characteristics of change:

- organisational change involves contradictions;
- organisational change is a continuous process;
- organisational change is interpreted through the perceptions and interactions of people; and
- organisational change can be facilitated through collaborative inquiry and teamwork.

For the purposes of this study, the terms Business Process Reengineering and/or change intervention(s) are used interchangeably. The terms are used to refer to a major organisational change intervention which is project managed as a once-off intervention to enhance performance. This might result in a change of the entity's strategy and/or structure and/or business processes and/or culture.

2.2.4 Measurement of change dynamics

"Measuring elusive, intangible phenomena derived from multiple, evolving theories poses a clear challenge to social science researchers. Therefore, it is especially important to be mindful of measurement procedures and to recognize fully their strengths and shortcomings" (DeVellis, 1991:7).

As the above quote suggests, the measurement of organisational change management and its related dynamics, mostly an intangible phenomenon based on social theory, is therefore complex in the sense that the measurement of organisational change management consists of variables which are of interest "to social and behavioural scientists [and] which are not directly observable, [and] of which beliefs, motivational states, expectancies, needs, emotions, and social role perceptions are but a few examples" (DeVellis, 1991:7). Furthermore, change is systemic. The different parts of systems are by definition interdependent, which adds to the complexity of the measurement process. Any part that is therefore examined in isolation may provide a limited or distorted picture of its function, determinants or consequences (Seashore *et al.*, 1983:25).

Care was taken in this study to ensure that, as far as possible, all aspects of change management processes and dynamics were taken into account in the development of an assessment tool throughout the project life cycle, that is from project conception/initiation through to the post-project implementation phase, by means of a thorough literature study and the subsequent iterative administration of the Delphi technique and Lawshe's content validity methodology, and the application of DeVellis's scale development process.

2.2.5 Assessment instrument

According to Mouton (2001:100), a measuring instrument refers to such instruments as questionnaires, observations schedules, interviewing schedules and psychological tests. DeVellis (1991:8) is more specific. He defines measurements scales as "collections of items intended to reveal levels of theoretical variables, not readily observable by direct means", in other words he uses the classical measurement model which "assumes that individual items are comparable indicators of the underlying construct".

For the purposes of this study, the term "assessment instrument" refers to a structured questionnaire that measures the management of change dynamics across the life-cycle of a project or projects and/or an instrument or tool which can be used pro-actively as a check-list to ensure that adequate attention is given to the management of change dynamics across the project life cycle.

2.3 THEORY ON MODELS ON CHANGE MANAGEMENT AND CHANGE DYNAMICS

2.3.1 Introduction

There are a myriad theories and models on organisational change and change dynamics. The main focus of this chapter is more contemporary theories and models of change. This focus contextualises the research questions set out in Chapter 1. These theories are used later in the study to evaluate the research outcome, namely the design of the content of an assessment tool to measure change management in the context of project management.

2.3.1.1 Reasons and process of organisational change

According to Grundy (1993:24), triggers of change "are the factors which may conspire to initiate change both internally and externally regardless of whether these are seen as needs, opportunities or threats". The need for change within organisations may thus originate from both within and outside the organisation. Greenberg and Baron (1993:624) describe organisational change with some examples, as set out in Table 2.2.

Table 2.2: Examples of organisational change

	Planned change	Unplanned change
Internal change	• Changes in products or services • Changes in administrative systems	• Changing employee demographics • Performance gaps
External change	• Introduction of new technologies • Advances in information processing and communication	• Government regulations • External competition

Source: Greenberg & Baron (1993:624)

2.3.1.2 Varieties of change

According to Grundy (1993:24), it is possible to single out a number of characteristic types of change. **Incremental change** is experienced when business environments evolve slowly in a systematic and predictable way. **Bumpy, incremental change** is characterised by periods of relative tranquillity, punctuated by acceleration in the pace of the change which is then described as 'overload'. **Discontinuous change** is change which is marked by rapid shifts in

strategy, structure, culture, or all three. Lynch (cited in Steyn, 2001:38) refers to **prescriptive change** which is caused by a top-down formal strategic approach resulting from analysis and planning, or **emergent change** which is caused by unplanned events in either the external or internal environment of the organisation.

Felkins *et al*. (1993:6) describe change as either **directed** (that is, change effected through a definite plan and guiding project teams) **or non-directed** (that is, change effected through pre-programmed decisions and routine policies that are interpreted daily by organisational members in relation to their jobs, structures and processes)**.**

Figure 2.1 illustrates how these two types of change should be aligned on a continuum to ensure maximum benefit realisation.

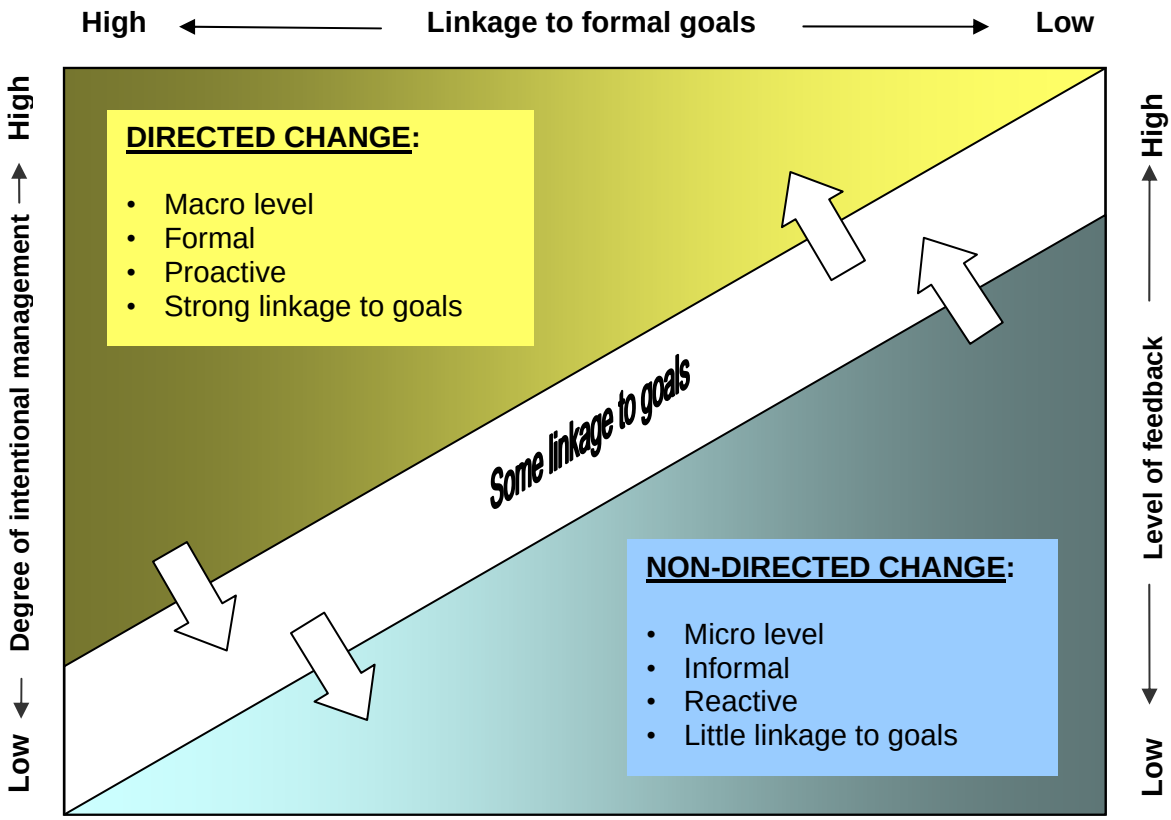

Figure 2.1: Directed and non-directed change
Source: Felkins *et al*. (1993:6)

For the purposes of this study, change is referred to as any change intervention, irrespective of its origin, which is managed by applying project management methodology to bring about the required organisational change.

2.3.1.3 Contemporary theory and models on change management and change dynamics

According to Kotter (2002:3), large-scale organisational change efforts can only be successful if the following eight steps are handled well:

- **Step 1: Increase urgency**

  The first challenge when embarking on a project involving organisational change is creating the necessary sense of urgency among a critical mass of people in the organisation. Sets of behaviour or attitudes such as complacency, immobilisation, deviance and pessimism are typical when actions to achieve necessary change are launched. If such behaviour or attitudes are not addressed appropriately and timeously, they can stifle the effort.

- **Step 2: Building the guiding team**

  When sufficient urgency is created, successful change agents establish a guiding team with the necessary credibility, skills, networks, reputations and formal authority to provide change leadership. This team should function on the basis of trust and emotional commitment, collective effort and simple governance structures with strong task forces.

- **Step 3: Getting the vision right**

  The guiding team then provides unambiguous, simple and inspiring visions and related strategies. Focusing on detailed plans and budgets only (although these are necessary) is insufficient - a clear, sensible vision is the first requirement.

- **Step 4: Communication for buy-in**

  The next step should entail comprehensive communication of the vision and the strategies through various communication channels to various levels and target audiences. The overarching objectives are to ensure awareness and understanding, to develop a gut-level commitment and to liberate more energy from a critical mass of people. Repetition of messages, leading by example and the use of symbols are very effective.

- **Step 5: Empowering action**

  Empowerment should be the next area of emphasis – key obstacles that could prevent people from acting on the vision need to be removed. Change leaders address the problems created by managers who disempower employees with inadequate information and systems, and who create self-confidence barriers within people's minds.

- **Step 6: Creation of short-term wins**

  During this phase, potential short-term wins are identified and acted upon to provide the necessary credibility, resources and momentum to the change effort. Successes should be demonstrated early in the process to ensure the necessary buy-in.

- **Step 7: Sustaining the effort**

  Change leaders should be resilient and not let up. Momentum should be retained by quick wins and the consolidation of early changes until the new vision becomes a reality.

- **Step 8: Making change stick**

  The new behaviours are reinforced despite potential resistance.

The abovementioned elements, such as the development of a strategy, business case, short terms wins, and so forth, are all considered essential steps within a successful change initiative. However, a golden thread woven through all eight stages is recognising how important it is for change leaders to be sensitive to any **emotions** that undermine change and that they should find ways to reduce these negative feelings. These change agents also need to be sensitive to the emotions that facilitate change, and they should find ways to enhance and reinforce those constructive feelings.

Kotter (2002:181) has summarised his theory that people do not change because they are given the results of an **analysis** that is supposed to shift their **thinking**, but because they are **shown** a truth that influences their **feelings**. This is illustrated in Table 2.3 overleaf.

Table 2.3: Kotter's model of change

See, Feel, Change
See Identify a problem, or a solution to a problem, in one stage of a change process, and then help people visualize this in a way that enables a helpful change in behaviour. Show people in a way that is as concrete as possible – touchable, feelable, seeable, especially the latter. Show the problem or solution in an emotionally engaging, dramatic, vivid, and compelling way. Use live presentations, physical environment, visible results, new demands placed on people and old demands taken away. Give the show an afterburner via physical symbols that people see each day, stories that are told and retold, or ongoing role modelling.
Feel The dramatic, vivid visualizations catch people's attention, reducing emotions that undermine a sensible change – feelings of anger, complacency, false pride, pessimism, confusion, panic, [or] cynicism. "Seeing" increases emotions that facilitate a needed change regarding some valid idea – feelings of passion, faith, trust, pride, urgency, hope (and fear, if quickly converted into any of the others).
Change Different feelings – a change of heart – transform behaviour. The new behaviour helps groups and organisations effectively move through the eight steps and leap into a prosperous future.

Source: Kotter (2002:181)

A large amount of research has been conducted around the planned change approach as subscribed to by Lewin (cited in Cummings & Worley, 2001:22). Lewin's three sequential phases of change, namely unfreezing, moving and refreezing, are universally recognised. The first phase, unfreezing, prepares the climate for change in that it creates discomfort with the *status quo*. The moving phase involves evaluation and analysis, the design of a new dispensation and the implementation thereof. The refreezing phase institutionalises the change by reinforcing the new equilibrium of the organisation at a different level through various mechanisms, for instance, performance management, training, entrenching of organisational values, etc. Other studies build on Lewin's model by extending it to include more stages which make provision for feedback, re-diagnosis, and so on (Kolb & Frohman in Grover *et al.*, 1995:113).

Pierce and Delbecq (cited in Grover *et al.,* 1995:113) refer to innovation process literature which describes change as consisting of three phases, namely initiation (scanning organisational problems/opportunities), adoption (investing resources to accommodate the implementation effort) and implementation (initiating activities around development, installation and maintenance). These three phases correlate to a large extent with the phases mentioned above.

Cummings and Worley (2002:22) compare Lewin's change model with the Action Research Model, as well as with the Contemporary Action Research Model which is illustrated in Figure 2.2 overleaf. Lewin's model is sequential, whereas the Action Research Model and Contemporary Action Research Model are cyclical and consist of an iterative cycle of research and action.

In their study, Grover *et al.* (1995:116) collated relevant literature on problems related to the Business Process Reengineering of major change (including product innovation, process- and technology-based changes, etc.) within organisations. According to these researchers, implementation revolves around activities pertaining to the initiation, adoption and institutionalisation of business process change.

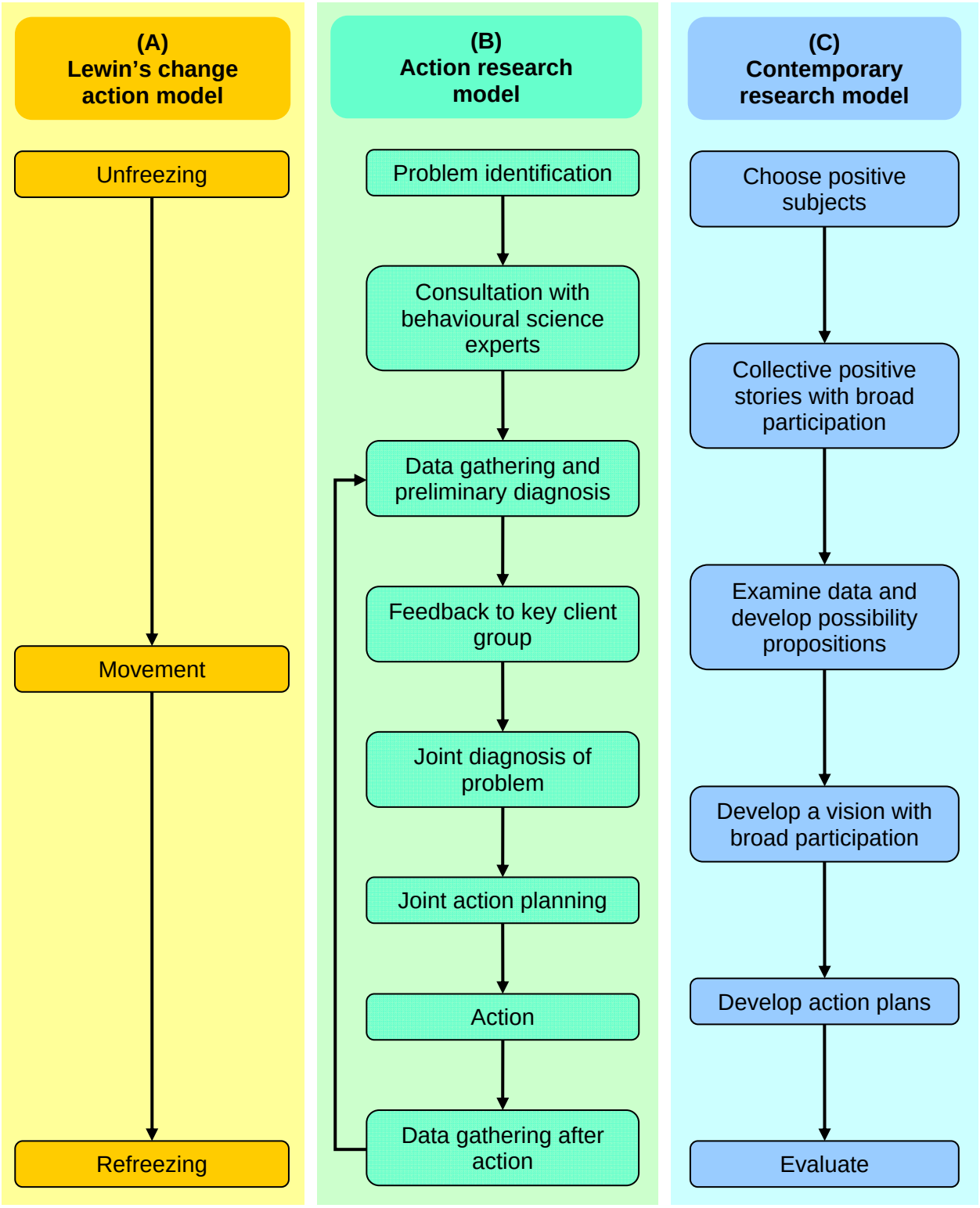

Figure 2.2: Comparison of planned change models
Source: Cummings & Worley (2001:24)

Initiation efforts include establishing a vision, aligning Business Process Reengineering efforts with the organisation's strategy, identifying reengineering opportunities, enabling IT systems, etc.

Adoption revolves around commitment and communication. It may therefore involve senior management's commitment to new values, mustering the required resources, and communication between management and employees with regard to the need for, scope of and commitment required for the project. This phase requires careful preparation in anticipation of organisation-wide radical change.

Institutionalisation includes designing, installing and evaluating new business processes, structures and systems.

In addition to the above, Cummings and Worley (2001:155) focused on several aspects that are critical for successful change management, as set out in Figure 2.3.

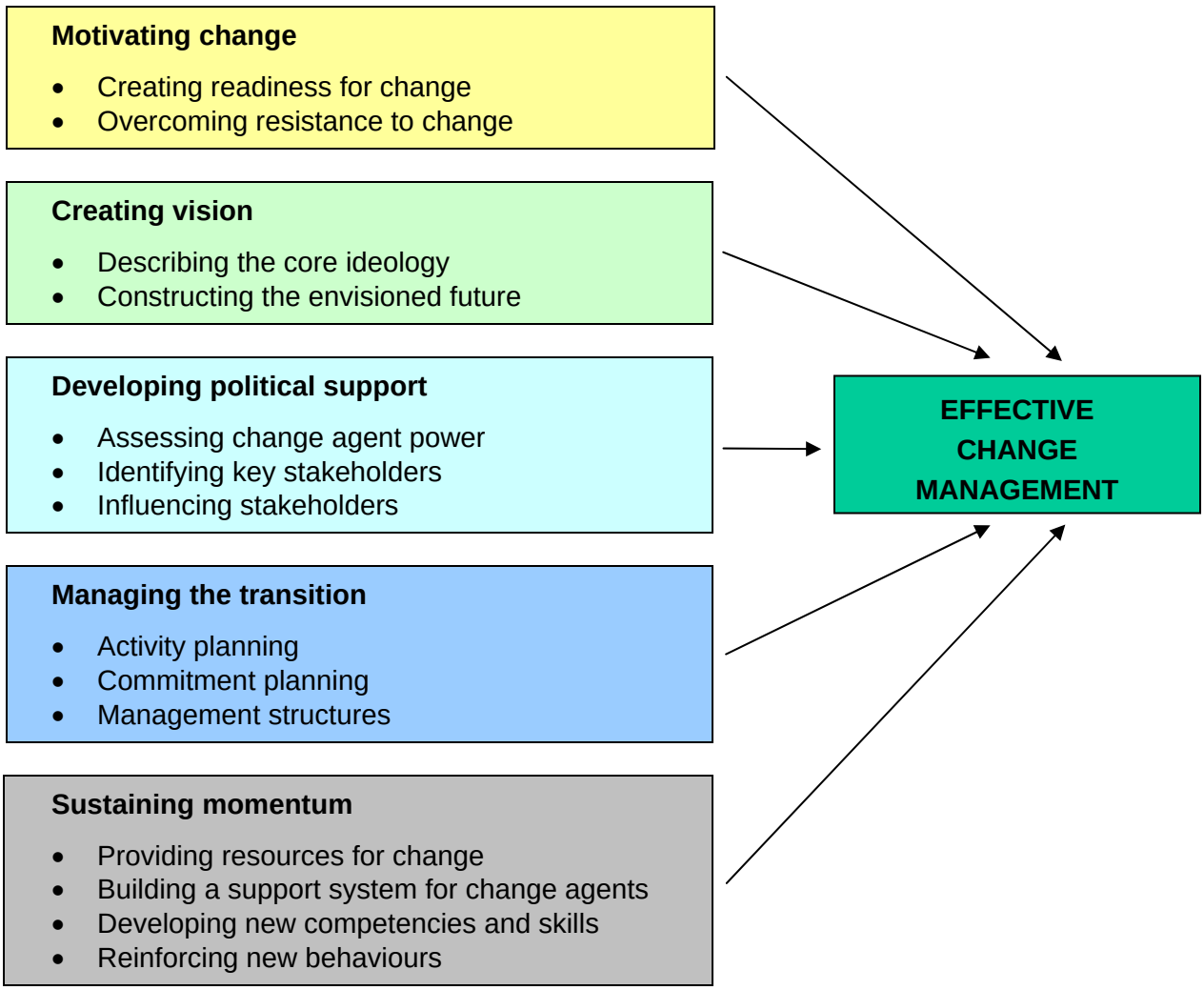

Figure 2.3: Activities contributing to effective change management

Source: Cummings & Worley (2001:155)

Lanning (2001) further summarises different phase models representing a variety of schools of thought over time, as classified under the Bullock and Batten (1985) model as modified by Salminen (cited in Lanning, 2001:14) which is shown in Table 2.4 overleaf.

Table 2.4: Summary of different change management model phases representing different schools of thought over time

Bullock & Batten, 1985	Lewin, 1951	Lippitt *et al*., 1958	Frohman *et al*., 1976	Ackerman, 1982	Burke, 1982	Beer *et al*., 1990a	McCalman & Paton, 1992	Burke, 1994	Walton, 1995	Kotter, 1995
▪ Exploration	▪ Unfreez-ing	▪ Developing need ▪ Establishing change relationship ▪ Diagnosing problems	▪ Scouting ▪ Entry	▪ Awareness of the need and opportunities for change ▪ Assessing the environment and organisation	▪ Entry ▪ Contracting	▪ Mobilising energy	▪ Problem / system specification ▪ Formulation of success criteria ▪ Identification of performance indicators	▪ Generating need	▪ Diagnosis	▪ Establishing a sense of urgency ▪ Forming a powerful guiding coalition
▪ Planning		▪ Examining alternative routes and goals ▪ Establishing intentions of action	▪ Data collection ▪ Data feedback ▪ Diagnosis ▪ Planning	▪ Designing the future state ▪ Defining what needs to be changed ▪ Planning and organising for implementation	▪ Diagnosis ▪ Feedback ▪ Planning	▪ Developing a task-aligned vision ▪ Fostering consensus, competence and cohesion	▪ Generation of options and solutions ▪ Selection of evaluation techniques and option editing ▪ Option evaluation	▪ Determining future state ▪ Addressing organisation power and political dynamics	▪ Clarifying and Coalition Building	▪ Creating a vision ▪ Communicat-ing the vision
▪ Action	▪ Moving	▪ Actual change efforts	▪ Action ▪ Evaluation	▪ Implementing new state ▪ Evaluation and fine-tuning	▪ Intervention ▪ Evaluation	▪ Spreading revitalisation	▪ Development of implementation strategies	▪ Disengaging from past ▪ Organising transition teams ▪ Involving people ▪ Using multiple levers ▪ Providing feedback ▪ Creating symbols and language	▪ Action ▪ Consolidat-ion and Refinement	▪ Empowering others to act on the vision ▪ Planning for and creating short term wins ▪ Consolidating improvements and producing still more change
▪ Integration	▪ Refreez-ing	▪ Stabilising change ▪ Terminating relationship		▪ Formalising the new state		▪ Consolidat-ing changes ▪ Continually monitoring and strategising	▪ Consolidation	▪ Utilising reward system ▪ Deploying guardians of the new way	▪ Sustaining	▪ Institutionalis-ing new approaches

Source: modified by Salminen (cited in Lanning, 2001:14)

It is abundantly clear from the abovementioned literature that a myriad models and theories around change management exist; and those organisations that want to survive in the current milieu need to harness their capacity to manage change. Pieters and Young (2000:3) argue (as set out in Figure 2.4) that synergy and balance should be created between the change and the external environment by managing for change by approaching change from a systems perspective, by continuous improvement on an organisation-wide basis and by continuous learning achieved by putting life/career-long learning support systems in place.

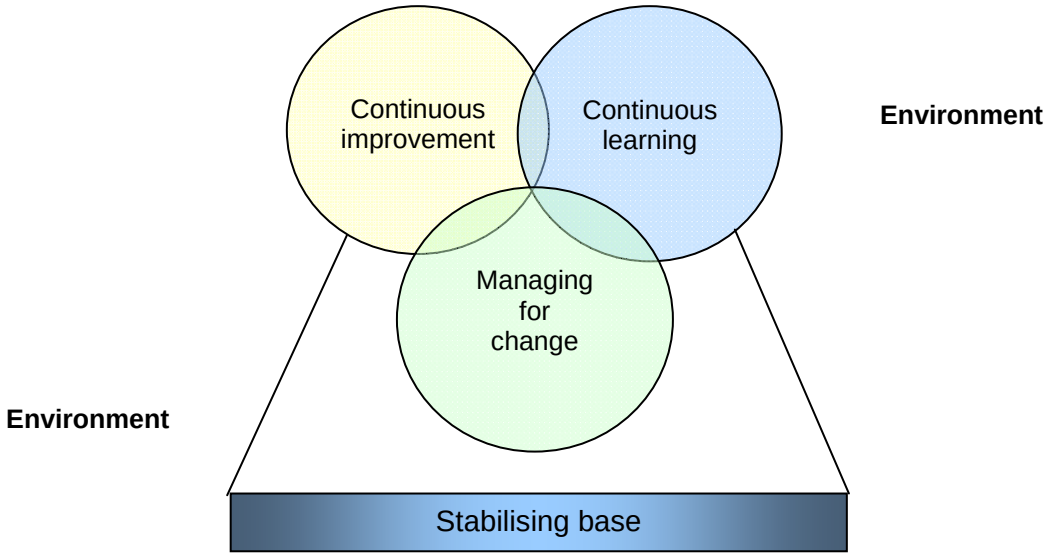

Figure 2.4: Synergy and balance between the change and the external environment
Source: Pieters and Young (1999:3)

In an attempt to manage change, managers worldwide are adopting various project management methodologies to effect change as a means to achieving strategic business objectives. Formerly hierarchical organisational structures are now often modified to include project and programme management as a way to enhance profit and competitive advantage by means of a more flexible and effective management configuration.

2.4 PROJECT MANAGEMENT THEORY AND MODELS

All organisations are faced with the imperative to adapt their strategies, structures and processes continuously to an ever-changing and dynamic environment to remain competitive. In recent years,

project management as a management methodology, has gained a remarkable reputation as a medium which facilitates the execution of strategy in order to enhance performance.

2.4.1 Development of project management

Hebert (2002:2) suggests that project management evolved in three stages, which can be grouped according to when the evolution took place, namely from the 1960s to 1970, the 1970s and after 1979.

- **The 1960s to 1970**

  This era was characterised by an abundance of resources and unprecedented economic growth, supported by optimism. Project management was not a well-known method at the time; it was not taught in management schools; and, when it was used at all, was usually driven by an individual who had only a vague idea of what the task at hand entailed.

- **The period between 1970 and 1979**

  During this era, most businesses undertook a few, mostly highly technical and specialised, projects on an annual basis, for example, the large space projects run by the National Aeronautics and Space Administration (NASA). The global economy was still strong, and product life cycles were relatively long.

  Taylorism, that is the transfer of control of the work process to management and enhancing productivity by means of a division of labour, combined with pyramidal management hierarchies, resulted in rigid structures faced by the need for and challenge of automation-driven production growth.

  Project management during this era was mostly outsourced, especially to engineering firms; and it was seen as a tool for controlling costs and schedules. Project managers, mostly engineers, focused on technical issues such as construction and infrastructure.

- **Evolution from 1979 onwards**

  The world-wide oil crisis of 1979 halted this period of growth. This crisis made businesses realise that they no longer had full control over raw material costs and therefore had to refocus on quality instead. This resulted in stronger global competition, which in turn led to a decline in product life cycles. Businesses had to devise new ways of conducting business as a strategic response to a constantly changing business environment.

This era saw the rapid development of sales and marketing services as new business solutions enabling responsiveness to customer needs. Matrix organisational structures were put in place to optimise resources; and projects were no longer only technical, but also dealt with improving organisational outputs and structures. The concept of total quality, which included human resources management, was embraced.

2.4.2 Current application

The current era of project management is characterised by the use of cutting-edge project management techniques that assist management to focus its resources more efficiently. Leeman (2002:1) asserts that "project management methodology bridges the gap between company strategy and individual projects, between setting goals and achieving those goals". According to the Project Management Institutes, Project Management Body of Knowledge (PMBOK, 2000), there are eight knowledge areas which should be managed across a project life cycle, namely

- **project integration management**, which includes ensuring alignment and synergy between key project elements;
- **project time management,** that is, managing all interdependencies to ensure project completion on time;
- **project cost management,** that is, activities to ensure project completion within the scope of the project budget;
- **project quality management,** that is, ensuring that the project meets all the specified quality criteria;
- **project human resources management,** that is, ensuring that human resources are optimally used;
- **project communication management,** that is, all activities related to the generation and distribution of information related to the project;
- **project risk management,** that is, ensuring that potential risks are mitigated with appropriate contingency planning; and
- **project procurement management,** that is, sourcing appropriate goods and services relevant to the project.

All of the above areas are important when managing projects. However, the management of change and change dynamics are largely excluded and the focus (apart from managing timelines, cost, quality, risk, procurement and communication) is only on limited human resources matters. This might explain the lack of adequate focus on the professional management of change within the project management domain.

Figure 2.5 depicts the difference between project management and normal day-to-day operations management.

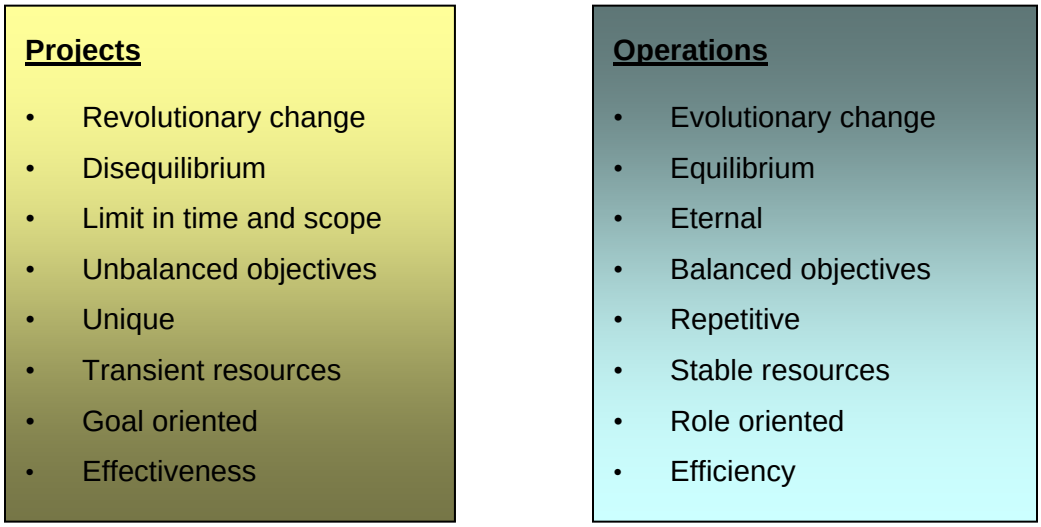

Figure 2.5: Difference between project management and normal operations management
Source: Hamilton (1997:65)

For the purposes of this study, the focus is on projects and related methodologies, as opposed to normal day-to-day operations.

Grundy and Brown (2002:3) have supplemented the approaches of more traditional project management with more strategic perspectives. They define **strategic project management** (SPM) as "the process of managing complex projects by combining business strategy and project management techniques in order to implement the business strategy and to deliver organizational breakthroughs". According to these authors, strategic project management contains five stages, namely:

- **Defining the project**, which involves
  - diagnosing key problems which give rise to the project;

- defining the project's scope and focus;
- clarifying key interdependencies;
- creating a vision for the project as well as key objectives; and
- identifying stakeholders.

- **Creating the project strategy, which involves**
  - exploring the internal and external environment of the project;
  - defining the key strategic objectives of the project;
  - examining strategic options for what to do and how to execute it;
  - assessment of the project's attractiveness and implementation difficulty; and
  - strategising around key stakeholders.
- **Detailed project planning, which requires**
  - analysing key activities and/or subprojects within the overall project strategy;
  - analysing the interdependencies and networking of the key activities, including critical paths;
  - appraising key uncertainties with contingency plans; and
  - appraising the project's value, financials and cost drivers.
- **Implementation and control, which means**
  - defining project milestones and responsibilities;
  - identifying key implementation difficulties and putting corrective measures in place; and
  - creating a preview of likely project dynamics.
- **Review and learning, which involves**
  - revisiting the project to assess the delivery, implementation and positioning of the project and other behavioural lessons; and
  - looking at lessons learnt on how the strategic project management process could be improved.

From the above it is clear that conventional project management is an integral part of strategic planning within organisations, which broadens its original scope from being mechanistic and rigid

(adhering strictly to the more technical aspects of project management) to allow for a certain level of fluidity and adaptability throughout the life cycle of the project. However, again, not much is said about the management of change dynamics within the project and organisational context.

Projects consist of various stages and/or phases within a project management life cycle. Table 2.5 (overleaf) depicts this.

Table 2.5: Summary of the project life cycles according to various authors

Morris, 1982	Adams & Barndt, 1983	Roman, 1986	Burke, 1995	Maylor, 1996	Turner, 1999	Kerzner, 1998
Feasibility: • Project formulation • Feasibility studies • Strategy design and appraisal	Conceptual: • Identify need • Establish goals • Estimate available resources • Sell the project • Make key personnel appointments	Conceptual: • Objectives • Activity forecasting • Review of objectives	• Conceptual		Germination: • Develop proposals • Gather information • Conduct feasibility • Estimate design	• Conceptual
Planning and Design: • Base design • Cost and schedule • Contract terms and conditions • Detailed planning	Planning: • Define organization • Define targets • Schedule • Define and allocate tasks and resources • Build project team	Formative: • Policy decisions • Planning		Planning: • Conceptualisation • Analysis • Proposal • Justification • Agreement	Growth: • Develop design • Estimate costs and returns • Assess viability • Obtain funding	• Planning • Definition and design
Production: • Manufacturing • Delivery • Civil works • Installation • Testing	Execution: • Perform the work	Operational: • Implementation • Control	• Execution	Doing: • Start-up • Execution • Completion • Hand-over	Maturity: • Do detail design • Baseline estimates • Do work • Control progress	• Implementation
Turnover and Start-up: • Final testing • Maintenance	Termination: • Transfer the product • Release the resources • Transfer of commitments • Terminate the project • Reward personnel	Termination: • Evaluation	• Operation	Checking: • Review Acting: • Feedback	Metamorphosis: • Finish work • Commission facility • Obtain benefit • Disband team • Review achievement	• Conversion

Source: Lanning (2001:20)

From Table 2.5 above, it is clear that projects consist of clearly defined phases across the life cycle of a project, are temporary, deal with unique once-off matters, have clear deliverables and time frames and are complex. For the **purposes of this study**, the abovementioned phases have been consolidated into the following **four phases**, which will subsequently be used as basis for this research study, namely

- the conceptual/initiation phase;
- the planning phase;
- the implementation phase; and
- the post-implementation phase.

2.5 RATIONALE FOR CHANGE MANAGEMENT IN THE CONTEXT OF PROJECT MANAGEMENT

2.5.1 Introduction

Felkins *et al*. (1993:23) claim that organisational leaders must find effective ways to deal with the profound changes that are redefining structures, redesigning work, changing relationships, transforming cultures, creating new roles for boards, managers, staff professionals, team members, and employees: "Leaders must take on more facilitative roles, as competencies in change management become critical to creating and sustaining effective organisations". Felkins *et al*. (1993:26) describe the changing roles of a manager in the chart in Figure 2.6.

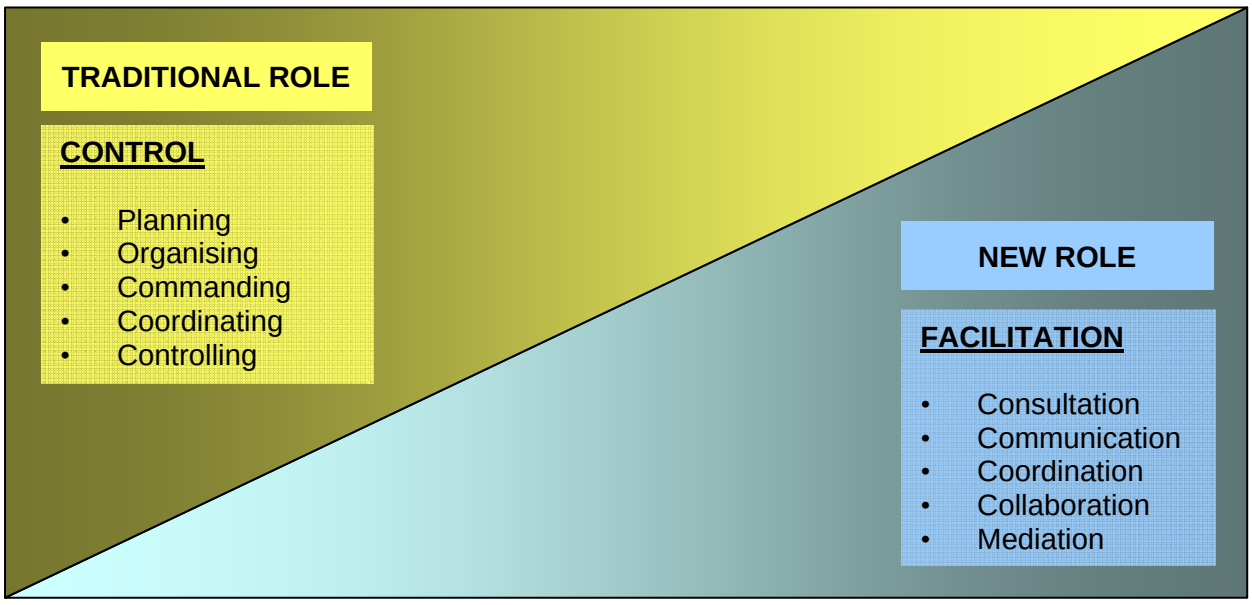

Figure 2.6: Changing roles of a manager

Source: Felkins *et al*. (1993:26)

It is clear from Figure 2.6 that the classic functions of the manager used to revolve around planning, organising, commanding, coordinating and controlling resources, whilst the new required managerial competencies revolve around conflict management, problem solving and resource development in a fluid environment. The old mechanistic role of the manager has therefore evolved into a more facilitatory role which requires the manager to achieve results by means of more collaborative processes.

However, the nature of project management (namely that it is a very structured process with strict deadlines and quality criteria, and that it requires rigorous management of costs) does not lend itself to the proper management of change dynamics, which requires sufficient time to mediate, collaborate and work with and through individuals to ensure buy-in for, participation in and the internalisation of the change that is being effected. This dilemma provides a project manager with a complex paradox which needs to be managed throughout the life cycle of the project.

2.5.2 Project failure

Many change projects fall short of the originally stated intentions and objectives, thus detracting from projects' success in terms of their outcomes, timeframes, quality and cost. Kaplan and Norton (cited in Lanning, 2001:1) refer to their study amongst management consultants which showed that fewer than 10% of clearly formulated strategies were successfully implemented. As many as 60% of South African participants in a study on project success have experienced at least one failed project in the twelve months preceding the survey, with an accompanying average failed project cost of R22 million (KPMG Survey, 2002:1). In the same KPMG survey reference is made, amongst other aspects, to the importance of people aspects which should be addressed through communication and change management initiatives.

Davenport (cited in Grover *et al.,* 1995:116) points researchers toward relevant research streams to enable them to understand Business Process Reengineering implementation issues and problems better. These streams include

- **implementation factors research**, which emphasises top-management support, technological sophistication and the involvement of constituents in the process;
- **implementation process research**, which delineates the boundaries of implementation components and emphasises the need for communication around change;

- **implementation politics research**, which deals with non-rational behaviour and the management of resistance to change;
- **management information system (MIS) planning research**, which focuses on top-down analysis, alignment of systems with corporate goals, the need for broad participation, commitment from top management, resource allocation, alignment with culture and the need for methodology;
- **innovation research**, which emphasises organisational structure, technological resources and positive managerial attitude toward change; and
- **organisational development and socio-technical approaches**, which emphasise the importance of optimising both the technical and human systems within the context of the culture and environment simultaneously.

From the above list it is clear that the failure of projects can often be attributed to a number of aspects, which include the technical aspects related to project management, but also, very importantly, issues related to change management and relevant change dynamics. If a project manager and/or team is not vigilant in integrating all aspects and managing them in a holistic manner (including change management), the project will not achieve its original project scope and objectives.

2.5.3 Change dynamics that affect project success

According to Hebert (2002:5), project managers must be flexible, must be able to work with ambiguity and must be able to manage change. Frame (2002:8) expresses a similar opinion, arguing that traditional project management emphasises the importance of basic skills such as scheduling, budgeting and allocating human and material resources. Frame (2002) adds that project managers should, in addition to being proficient in “hard” skills such as these, be adept at “soft” skills such as negotiating, managing change, being politically astute, and understanding the needs and desires of the people they deal with (including customers, peers, staff, and their own managers).

Two things make this a challenge: first, the nature of project management, which is a structured approach to achieve project timelines, quality standards and budget parameters; and, second, the fact that project managers might not enjoy the same authority as traditional functional managers. Project managers are frequently appointed on the basis of their technical expertise, and without a proper grounding in change management and/or they are rewarded on the basis

of the technical outcome of project deliverables, resulting in no focus or an insufficient focus on change management aspects.

A review of the literature on project management indicates that much emphasis is indeed placed on the mechanistic and technical nature of project management, which includes life cycle planning, quality measures, cycle time, cost, defects reductions, etc. Only a relatively small portion of the literature is dedicated to issues related to organisational behaviour and human resources issues such as leadership, training, resource allocation, project structures, etc. Even less is written about the management of change dynamics within the realm of project management to ensure that the benefits obtained from the project are indeed implemented and embedded within the organisation. Transformational issues such as organisational culture, managing resistance to change, sufficient communication, organisational politics, commitment, and so forth, are therefore seldom recognised or addressed, and their relationship with project success is often ignored or downplayed.

As was mentioned in Chapter 1, on the basis of empirical research on reengineering in 105 organisations, Grover *et al.* (1995:110) assert that, change management within Business Process Reengineering processes is of central importance in the success of the implementation of Business Process Reengineering.

Table 2.6 contains all the change management-related and management support aspects and their respective severity scores or weighting values (as percentages) indicated in the study by Grover *et al.* (1995:137).

Table 2.6: Severity scores of the change management and management support aspects

Rank	Score (in %)	Problem	Category
1	31.8	Need for managing change is not recognised	Change management (CM)
3	30.1	Rigid hierarchical structures in the organisation	CM
4	28.8	Line managers in the organisation unreceptive to innovation	CM
5	27.7	Failure to anticipate and plan for the organisational resistance to change	CM
7	23.3	Failure to consider politics of the business reengineering efforts	CM
10	23.0	Failure to build support from line managers	CM
12	22.1	Unreasonable expectations attributed to business re-engineering as a solution for all organisational	CM

		problems	
16	21.7	Managers' failure to support the new values and beliefs demanded by the redesigned process	Management support (MS)
18	20.6	Absence of management systems (e.g. incentive, training systems) to cultivate required values	CM
20	20.1	Difficulty in gaining cross-functional cooperation	CM
23	18.5	Senior management's failure to commit to new values	CM
24	18.2	Insufficient understanding about the goals of top management in relations to business reengineering	MS
26	16.8	Lack of appropriate employee compensation incentives in the new process	CM
29	16.3	Lack of senior management leadership for reengineering efforts	MS
29	16.3	Failure to communicate reasons for change to members of organisation	CM
33	16.9	Inadequate training for personnel affected by the redesigned process	CM
34	15.9	Necessary changes in human resource policies for business reengineering implementation were not made	CM
36	15.4	Top management's insufficient understanding about business reengineering	MS
36	15.4	Failure to consider existing organisational culture	CM
41	13.5	Lack of top management support in business reengineering efforts	MS
60	7.0	Not enough time to develop new skills for the redesigned process	CM

Source: Grover *et al*. (1995:137)

From Table 2.6 it is clear that change management aspects within the project domain are of critical importance and that they should be regarded as crucial to for the successful execution of projects.

Grover *et al.* (1995:126) conclude that "change management occupies the centre stage in business process reengineering implementation" and claim that "inability to manage organisational change in reengineering will most likely lead to project failure". Their study has shown that there is a critical relationship between change management and project success and that, in fact, there is a stronger correlation between change management and project success than between technological competence and project success. While Grover *et al*. considered technical competence important and complex, they found that it had the least impact on project success. Table 2.7 (overleaf) shows Lanning's (2001:24) summary of various authors' views on critical success factors in carrying out change in organisations.

Table 2.7: Summary of different authors' views on critical success factors in carrying out change in organisations

	Purposeful participation	Management support	Effective communication	Control and feedback	Supporting environment	Vision and clear goals	Purposeful planning	Clear need for change	Training	Key persons & organisation	Motivating people	Paying attention to culture	Risk management and dealing with resistance	Co-operation	Connection to strategy	Leadership
Lippit *et al*., 1958	✓	✓		✓	✓	✓	✓	✓	✓		✓		✓			
Ackerman & Corrigan, 1989	✓	✓	✓	✓	✓	✓	✓	✓		✓			✓			
Kleiner & Corrigan, 1989	✓		✓	✓		✓	✓					✓				
Carnall, 1990		✓		✓	✓		✓	✓	✓					✓	✓	
Mikkelson *et al*., 1991		✓	✓						✓							
Kaufman, 1992	✓	✓	✓		✓	✓	✓								✓	
Cummings & Worley, 1993		✓			✓	✓	✓		✓	✓	✓		✓			
Burke, 1994	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓				
Eichelberger, 1994	✓		✓		✓	✓	✓	✓						✓	✓	
Kotter, 1996	✓	✓	✓	✓		✓		✓		✓		✓	✓			✓
Denton, 1996	✓	✓	✓	✓		✓			✓	✓	✓					
Goodstein & Burke, 1997	✓	✓		✓	✓		✓		✓					✓		
Rafii & Carr, 1997	✓		✓		✓			✓								
Moosbrucker & Loftin, 1998	✓	✓	✓													
Teng *et al*., 1998	✓			✓	✓				✓			✓				
Salminen, 2000	✓	✓	✓	✓		✓	✓	✓	✓		✓					✓
∑	**13**	**12**	**11**	**10**	**10**	**10**	**9**	**8**	**8**	**5**	**5**	**4**	**4**	**3**	**3**	**2**

Source: Lanning (2001:24)

Another study done by the University of Bristol concerning Business Process Reengineering in the United Kingdom financial services industry, discussed by McElroy (1996:328), lists the following factors set out in Table 2.8 as either important or absolutely critical for project success.

Table 2.8: Factors viewed as either important or absolutely critical for project success

Factors	%
Communicating a clear vision	100
Staff participation	100
Instilling process ownership	95
Process improvement teams with staff from all levels	90
Instilling a BPR culture	90
Organising staff around the process	90

Source: McElroy (1996:328)

In their study of 100 companies' managing change to implement collaborative working between organisations, Boddy and Macbeth (2000:298) took into account current theories of organisational change which provided some consistency in terms of the recommended practices for successful change projects and grouped these under broad headings such as project planning, structure and implementation:

- Project planning (setting clear goals; ensuring agreement with goals; and having senior management commitment);
- Project structure (creating structures to manage the change; ensuring adequate resources; having a powerful and respected champion; and appointing a capable project leader); and
- Project implementation (creating a project team with the right membership; preparing a detailed yet flexible project plan; consulting widely with those affected; and setting up adequate controls).

The aim of the study was to establish if there was any quantitative evidence about the recommended practices on how to introduce change to ensure successful project implementation. The recommended practices were drawn from a review of the change management literature. The study requested respondents to indicate which project management practices they had used during their project implementation and whether the project had been successful or not.

Analysis of the responses showed that companies which had been successful in their change initiative showed a statistically significant tendency to agree with the following statements:

- The people affected by the change within my organisation agreed with the goals;
- Management created a clear structure to manage the change;
- Senior management accurately estimated the amount of resources needed to implement the change; and
- A satisfactory system was developed to measure the progress of the change.

The above findings were consistent with the prescriptions on change management and much of the literature, which stressed the value of getting the necessary buy-in from those affected by the change effort. Unexpectedly however, successful companies tended to disagree with the project management practices expressed in the following statements:

- Care was taken to ask people with different perspectives for their views on the change; and
- There was a lot of exploring and experimenting with ideas.

Furthermore, it was observed that other commonly prescribed practices appeared to have had little effect on change initiative outcomes. The results of the study indicated that effective change does not always a) require the public support of senior management, b) have to be backed by a strong champion, or c) achieve success because the company has a detailed project plan in place. These results are contrary to what the change management literature would typically suggest and "show that while common prescriptions may help a project, they do not by themselves ensure success" (Boddy & Macbeth, 2000:298).

The above overview on project success and change management indicates that some research has already been done on determining the impact of and correlation between project success and change management. However, neither the change management and/or the project management literature nor documented practices offer a comprehensive, holistic and integrated approach to the management of change dynamics in project management. The literature tends to focus either on only change management or on only project management, but not on integrating and synergising the two concepts and the interface between the concepts. The aim of this study is therefore to contribute to the body of knowledge of both project management and organisational behaviour, by linking the existing theories of change management/dynamics with the constructs and dimensions of project management, and more specifically with the four stages of a project life cycle to develop an assessment tool to measure change.

2.6 ASSESSING CHANGE DYNAMICS

From the above section it is clear that there is a need for an integrated and scientific approach to the measurement of change dynamics within the realm of project management. The research approach used to assess change dynamics should be both qualitative and quantitative if it is to overcome possible deficiencies that can be attributed to one investigator or method (Babbie & Mouton, 2001:275).

2.6.1 Measurement of change dynamics

Miller (cited in Felkins *et al*., 1993:213) describes three patterns of research, namely basic, applied and evaluative research. **Basic**, or pure, research endeavours to seek new knowledge and is associated with traditional scientific investigation. **Applied** research is more pragmatic. It attempts to provide knowledge which can be used in direct action implementation and problem solving. **Evaluative** research provides an assessment of ongoing programmes and processes. The research done in this study fits best into the realm of applied research in that it will contribute to the practical application of change dynamics in a project management environment. Felkins *et al.* (1993:213) also comment that "collecting and analyzing data for change management includes determining the macro- and micro-units of change and measurement, reviewing statement of need, validating the need, and choosing methods of responding to the need".

Measurement in the social sciences is a much broader and more complex concept than in the physical sciences. According to DeVellis (1991:7), "measuring elusive, intangible phenomena derived from multiple, evolving theories poses a clear challenge to social science researchers. Therefore, it is especially important to be mindful of measurement procedures and to recognise fully their strengths and weaknesses".

The four major techniques for data collection are summarised in Table 2.9.

Table 2.9: A comparison of different methods of data collection

Method	Major advantages	Major potential problems
Questionnaires	1. Responses can be quantified and easily summarised 2. Easy to use with large	1. Non-empathy 2. Predetermined questions/missing issues 3. Over-interpretation of data

	samples 3. Relatively inexpensive 4. Can obtain large volume of date	4. Response bias
Interviews	1. Adaptive – allows data collection on a range of possible subjects 2. Source of "rich" data 3. Empathic 4. Process of interviewing can build rapport	1. Expense 2. Bias in interviewer responses 3. Coding and interpretation difficulties 4. Self-report bias
Observations	1. Collects data on behaviour, rather than reports of behaviour 2. Real time, not retrospective 3. Adaptive	1. Coding and interpretation difficulties 2. Sampling inconsistencies 3. Observer bias and questionable reliability 4. Expense
Unobtrusive measures	1. Non-reactive – no response bias 2. High face validity 3. Easily quantified	1. Access and retrieval difficulties 2. Validity concerns 3. Coding and interpretation difficulties

Source: Nadler (cited in Cummings & Worley, 2001:115)

As can be seen in Table 2.9, no single method or measurement tool can fully assess all the kinds of variables inherent in the organisational development or change process. For example, a questionnaire lends itself to self-report biases, such as the tendency of respondents to give socially desirable answers instead of honest opinions, according to Cummings and Worley (2001:114). The latter authors therefore recommend that more than one method be used to collect data, because of the biases inherent in any data-collection method.

Questionnaires are one of the most efficient ways available of collecting data, in that they typically contain fixed-response queries about organisational features and can be administered to large numbers of people simultaneously. Analysis can be done fairly quickly, using appropriate software, making possible quantitative comparison(s) and evaluation. The downside of using questionnaires includes, first, that responses are only related to questions covered in the instrument; second, that respondents cannot seek clarification; and, third, that they are impersonal and allow response biases (Cummings & Worley, 2001:115). According to Felkins *et al.* (1993:244), questionnaires are often developed by organisations to gather specific

information on a topic or issue related to change management and to provide descriptive and explanatory data. Felkins *et al.* also caution that it is crucial to decide what data is needed and to ensure that the questions provide the data that is required.

Duncan (cited in DeVellis, 1991:6) maintains that psychometrics has emerged as a methodological paradigm within the social sciences in its own right, and supports this argument with three examples of the impact of psychometrics: first, the widespread use of the psychometric definitions of reliability and validity; second, the popularity of factor analysis in social sciences research; and, third, the adoption of psychometric methods in developing scales measuring an array of variables far broader than those with which psychometrics was initially concerned.

Mouton (2001:103) cautions against the following errors in **instrument design**:

- no piloting or pre-testing is done;
- ambiguous or vague items are used (words are undefined, items are too vague, or too much is assumed about the respondents);
- double-barrelled questions are used (such questions combine two or more questions in one);
- item order effects arise (research has shown that the order or sequence of questions may affect response accuracy and response rates);
- fictitious constructs are measured/used;
- leading questions are asked;
- questions are phrased negatively or contain double negatives;
- poor and confusing layout of the questionnaire can lead to non-response or other errors;
- instruments may be too long;
- sensitive or threatening questions are asked; and/or
- mono-operational bias arises (constructs are measured using only a single item or question).

The information reviewed and assessed during the literature study informed the design of the assessment tool and caution was taken to avoid the potential problem areas mentioned above.

2.6.2 Development of an assessment instrument

The following steps were followed in the design of the envisaged assessment tool or instrument:

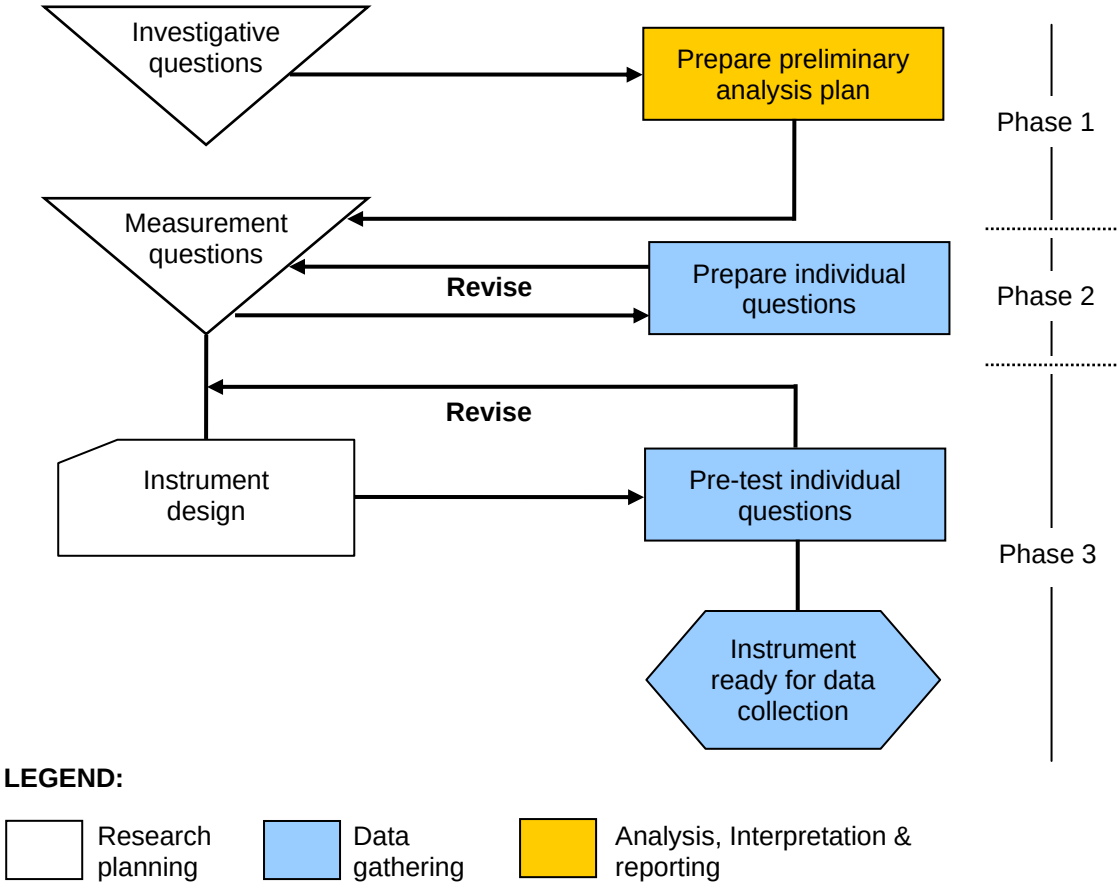

Figure 2.7: Flowchart for Instrument Design
Source: Cooper & Schindler (2003:329)

According to the diagram in Figure 2.7, the process of developing an instrument goes through the following levels (Cooper & Schindler, 2003:329):

- **management question** – the dilemma, stated in question form, that needs to be resolved;
- **research question(s)** – the fact-based translation of the question the researcher must answer to contribute to the solution of the management question;
- **investigative questions** – specific questions the researcher must answer to provide sufficient detail around the research question; and
- **measurement questions** – questions the respondents have to answer to resolve the management question.

Phase 1 of the assessment tool development consisted of a thorough literature review on the constructs relevant to the research questions to be asked in order to narrow down the potential number of constructs to be included in the eventual assessment instrument. This process was complemented by the application of the Delphi Technique.

The Delphi Technique can be defined as "a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem" (Linstone & Turoff, cited in Hanafin, 2004). It can also be described as a technique that can be used to arrive at a group position regarding an issue under investigation. The Delphi method consists of a series of repeated interrogations, usually by means of questionnaires, of a group of individuals whose opinions or judgments are of interest. After the initial interrogation of each individual, each subsequent interrogation is accompanied by information regarding the preceding round of replies, usually presented anonymously. After two or three rounds, the group position is determined by averaging (Principia Cybernetica Web, s.a.).

The methodology for developing a measurement instrument described in the guidelines by DeVellis (1991:51), as presented in Table 2.10, was found to be useful in developing the measurement instrument and was applied.

Table 2.10: Measurement instrument development methodology

Phase 1 **Determining what to measure**	**In this phase, clear and exact parameters of what is to be measured are established by** • using theory and becoming well-versed in theories related to the construct to be measured; • recognising the boundaries of the phenomenon; and • drawing up a theoretical model and/or framework at some level of conceptual formulation to guide the development of the scale, should no relevant theory exist. **The level of specificity versus generality is determined by** • determining a clear frame of reference of the level of specificity or generality at which a construct is to be measured. **Clarity about what to include in a measure is achieved by** • establishing whether the construct to be measured is distinct from other constructs to ensure that the measurement of the construct is in line with

	the objectives of the scale developer.
<u>Phase 2</u> **Generating an item pool**	**In this phase, items are chosen that are in line with the purpose of the scale, bearing in mind the following criteria:** • all items should reflect the construct of interest and the latent underlying variable; and • all items should reflect a construct and not merely a category: "models for scale development regard items as overt manifestations of a common latent variable that is their cause" DeVellis (1991:55). **Items are chosen bearing in mind the principles relating to redundancy:** • the focus is on over-inclusiveness – redundancy is more desirable in the initial item pool than in the final scale; and • although a final number of items for the inclusion in the pool cannot be prescribed, it will obviously be considerably higher than in the eventual scale; and that safeguards the scale developer against possible poor internal consistency. **Items are chosen bearing in mind the characteristics of good and bad items:** • exceptionally lengthy items should be avoided to reduce complexity and enhance clarity; • reading difficulty, including semantic and syntactic factors, should be assessed; • multiple negatives should be avoided to prevent confusion; and • double-barrelled questions, ambiguous pronoun references and misplaced modifiers should be avoided. **Positively and negatively worded items are considered:** • some items should be worded positively and some should be worded negatively to avoid affirmation, an acquiescence or agreement bias (that is, a tendency of a respondent to agree with items irrespective of their content).
<u>Phase 3</u> **Determining the format for measurement**	**In this phase, a decision is made on which scaling methodology to use** • for example, Thurstone or Guttman scaling. **Scales with equally weighted items are considered:** • it is preferable that scales should consist of items that are more or less parallel to allow the scale developer some latitude in constructing a measure which is optimally suited for its purpose. **The number of response categories is determined:** • a scale should discriminate between differences in the underlying attribute(s), otherwise its correlations with other measures will be

	restricted and its usefulness will be limited; • the wording or physical placement of response options should be done in such a way that the respondent is able to discriminate meaningfully; and • other issues for consideration include the investigator's ability and willingness to record a large number of values for each item and whether the number should be odd or even. **A choice is made between specific types of response format:** • specific types of response format, such as the Likert scale, the semantic differential scaling method, visual analoging and binary options should be considered. **It should be decided whether or not to use item time frames:** • a choice should be exercised in terms of whether or not a time frame is specified.
Phase 4 **Expert reviewing of the item pool**	**In this phase, subject matter experts should** • rate how relevant they think each item is to what the developer intends to measure; • evaluate the clarity and conciseness of items; and • point out ways of enhancing the phenomenon by identifying items that have not been included.
Phase 5 **Considering the inclusion of validation items**	In this phase, the construct validity of the final scale must be determined.
Phase 6 **Administering the items to a development sample**	**In this phase, the scale is administered on a suitably sized sample:** • Ghiselli in DeVellis (1991:78) suggest that 300 people are an adequate number.
Phase 7 **Evaluating the items**	**In this phase, item evaluation should be done, which should include the following:** • initial examination of individual items' performance by assessing reliability and correlation; and • considering reverse scoring, item-scale correlations, item means, item variances and coefficient alpha.
Phase 8 **Optimising scale length**	In this phase, the length of the scale should be optimised.

Source: Adapted from DeVellis (1991:51)

2.7 RECONSIDERING THE RESEARCH OBJECTIVES IN THE CONTEXT OF THE LITERATURE SURVEY

The literature survey covered in this chapter provides further context and scope for the study and provides answers to some of the research questions posed in Chapter 1, as summarised below.

- **Question 1: What constitutes change dynamics and how does it apply to the project management context?**

Question one above can be divided into two parts; first, "what constitutes change dynamics?" and second, "how do change dynamics apply in the project management context?" The discussion that follows deals with the second part of the question first.

The importance of the appropriate management of change dynamics in the domain of project management has been validated during the literature study. Previous works by Grover *et al.,* (1995:109), Hebert (2002:5), Lanning (2001:24), Boddy and Macbeth (2000:298), Mirvis and Macy (cited in Seashore *et al.,* 1983:501) and McElroy (1996:328) have been referenced in this regard and emphasised the importance of change management as a critical success factor for successful project implementation. It is essential that balanced attention be paid to all identified change management factors in addition to the traditional technical aspects of project management. The correlation between the appropriate management of change dynamics and successful project outcomes has been confirmed by the literature study and addresses the second part of the first question stated above.

The first part of the question ("what constitutes change dynamics?") has only partially been answered by the literature study. Some elements of change dynamics in project management have been identified, but this aspect needs to be explored more extensively by application of the relevant research methodologies to ensure a comprehensive description of all change dynamic components.

- **Question 2: Is there a need for an assessment tool to measure change dynamics in project management?**

It is evident from the literature study that organisations that give adequate attention to change dynamics during project management have a better success rate than those that do not. The various elements of change dynamics must therefore be included in the work breakdown structure of the project to ensure sustainable success. Without an appropriate assessment tool to guide project managers, the necessary change management elements may not be managed and measured on an ongoing basis, thus negatively impacting project objectives. The need for an assessment tool to measure change dynamics in project management has therefore also been validated by the literature study.

- **Question 3: What process should be followed in developing an assessment tool to assess change dynamics in the context of project management?**
- **Question 4: What could ultimately constitute a change dynamics assessment tool that can be used by project managers to manage change and its unique dynamics in projects?**

Questions 3 and 4 above could not be answered by the literature study and therefore need to be explored by means of the application of the chosen research methodology for this study:

2.8 SUMMARY AND CONCLUDING REMARKS

It is clear from the literature reviewed that there is an abundance of information concerning both change and project management theories and models. However, a comprehensive model on, first, what exactly constitutes change dynamics within the project management domain, and, second, how it can be measured, is does not exist, as any models that are available only cover some relevant aspects. The outcome of this study will contribute to a more integrated and holistic view on this matter.