1. INTRODUCTION

This research paper is presented with the aim of promoting best practice in project management and its application. The assessment tool, developed as part of this research to evaluate the effectiveness of project management practices, can also be utilised or adapted by other organisations and industries to determine their project management competence. The information presented in this document deals with the following issues:
- Role of project management in modern organisations
- Overview of the study
- Summary of the research results
- Recommendations based on the research results

2. ROLE OF PROJECT MANAGEMENT IN MODERN ORGANISATIONS

In order to expand on the significance of this research it is necessary to clarify the role of project management in organisations. The questions that need to be addressed to place the role of project management in perspective are:
- What is the significance of project management?
- What is the value of project management?
- What is the future of project management?

2.1 Significance of project management

The long-term survival of any organisation is to a certain extent dependent on management’s ability to develop and implement corporate strategies in harmony with its ever-changing environments (1). Furthermore, it is stated that the strategic alignment between an organisation and its environment is usually effected through projects such as investments, new products, internal re-organisation, etcetera. The escalating resource constraints faced by organisations require the implementation of project management methods that will maximise the proportion of successful projects. In an increasingly competitive and volatile environment, projects are of growing strategic importance to the survival of any organisation for the following reasons:

(i) The timing and successful implementation of projects can greatly enhance an organisation’s competitive situation. For example, the reduction of the time required to bring a new product to the market can contribute to the erection to prevent barriers to entry for competitors. This in the end determines the overall profitability of the project. Time and, in particular, speed of execution is increasingly considered a strategic factor that needs to be managed as any other resource.

(ii) Projects consume an organisation’s resources such as cash flow, people and equipment. Projects only produce a return on investment when successfully implemented, therefore, the goal of any project management system is to transfer projects into stable operations that will
eventually generate liquidity. That means, to realise profitability, the capital invested needs to be recovered first.

(iii) Projects normally involve significant changes to the infrastructure (and culture) of an organisation. Projects often require the destabilisation of the existing order when they necessitate the re-engineering and restructuring of the internal workings of the organisation. Projects are thus a source of deviation that create tension and provoke the need for change.

The need for project-based management is generally derived from one or several key business drivers, that is, those elements of the business so fundamental, that they often determine a business’ level of competitiveness and success (2). The business drivers identified are:

- Reduced product development time
- Extended product range
- Increased use of multi-functional teams and partnerships
- Creation of global service centers from cross-functional teams
- Increased importance of controlling individual activity
- Multi-national approach to development
- Standardisation of information technology
- Rapid restructuring of industry sectors through acquisition and joint-ventures
- Restricted government spending
- Management of external resources and contractors
- Ease of access to information and knowledge

Modern project management is a fully-integrated part of its host organisation that works across functional lines, business units and geographic regions (3). Today's businesses do not rely on one strategic project, but several parallel initiatives that must combine to meet business objectives. This statement is substantiated on the following grounds (4):

(i) With decentralised and global work forces, projects must co-ordinate the efforts of multiple cross-functional teams operating in different environments and geographic locations.

(ii) Project information needs to be shared and presented to an increasing number of stakeholders, including senior management, clients, suppliers, partners and controlling bodies, whose impact can threaten or strengthen the project outcomes.

(iii) In a dynamic environment traditional business models do not succeed, whereas project-based organisations thrive. With faster response to market demand, better utilisation of resources and improved project control and performance, project-based organisations have the ability to maximise their investments in core business projects and leverage evolving technology.

From the benefits that have been identified, it is evident that project management is of particular importance to modern organisations, especially if the demand to do more with less is considered to provide a competitive edge.

2.2 Value of project management

According to Meredith and Mantel (5), actual experience with project management indicates that the majority of the organisations using it experience better control and better customer relations. Other advantages include lower costs, higher quality and reliability, higher profit margins, a sharper orientation towards results, improved interdepartmental co-ordination and higher employee morale. Other benefits identified by Kerzner (6) are:

- improved efficiency and increased profitability through better utilisation of limited resources; and
- enhanced planning, estimating and cost control leading to a more consistent achievement of milestones and objectives.
The Project Management Institute (7) further confirms that project management helps organisations meet their customers’ needs by standardising routine tasks and reducing the number of tasks that could potentially be forgotten. Project management thus ensures that available resources are used in the most effective and efficient manner. Project management also provides senior executives with insight into what is happening and where things are going within their organisation. The application of project management principles enables senior executives to:

- establish measures of success.
- enable customer focus and alignment.
- quantify value commensurate with cost.
- optimise the use of organisational resources.
- incorporate quality principles.
- put strategic plans into practice.
- ensure fast time-to-market (for example new products or services).

Furthermore, it is stated that project management has gained popularity because of significant changes in the workplace. Some of these changes include:

- Downsizing (fewer people to do more tasks)
- Projects and services have grown larger and more complex
- Fierce global competition
- Easier access to information through vast communications networks
- More sophisticated customers demanding higher quality goods and services
- Exponential technological growth
- Multinational organisations seeking to establish uniform practices for managing projects

According to Pennypacker (8), “implementing project management adds significant value to organisations”. This conclusion is based on the results of a survey of more than 100 senior-level project management practitioners across various organisations and industries. More than 94 percent of the respondents stated that implementing project management added value to their organisations. Organisations cited significant improvements in financial measures, customer measures, project/process measures and learning and growth measures. Organisations of all sizes and in all industries reported improvement. The companies surveyed noted average improvements in the order of 50 percent in project execution, 54 percent in financial performance, 36 percent in customer satisfaction and 30 percent in employee satisfaction.

Based on these results as well as the benefits identified by the respective authors, it can be concluded that those organisations that do not implement project management will be at a competitive disadvantage to those who do.

2.3 The future of project management
Project environment has always been a challenge, but never so much as at the current time (9). Reasons cited are:

- Today’s flatter organisations have to work with leaner resources and shrinking costs.
- The team approach, typical of project management operations, is spreading to all types of organisations and to all kinds of work.
- Philosophies of total quality management, concurrent engineering, partnering and self-directed teams are eroding traditional bureaucratic modes in favour of a more ad hoc style of leadership.
- Conditions are changing, from position power to knowledge power, from managing by procedure to getting the job done and from hierarchical control to individual empowerment.
- The emphasis is on shorter time cycles, quicker response to problems and changes, teamwork and shared responsibility.
More organisations are adopting project-management practices, bringing these special methods to enterprises that were previously considered to be outside of the project domain. It is speculated that in many organisations, project management will no longer be a separately identified function, but will be embedded in the overall management of the business. Also, the emphasis is considered to be shifting from a single project focus to managing the efforts on multiple projects. The typical project management environment will, therefore, be multiple-project which means that most of the project decisions will require consideration of schedule, resource and cost concerns on other project work, necessitating the review and evaluation of multiple-project data. Consequently functional managers, supporting multiple projects with shared and limited resources, will need to know the demands on their resources and the impact of new project loads and changing priorities.

Kwak and Ibbs (10) reiterate that many organisations are projectising their operations and processes to plan, manage and complete their projects successfully. The compelling reason for such projectising is the growing pressure on managers to integrate, plan and control time-intensive and one-of-a-kind endeavours. Project management tools and practices appeal to companies in many industries and application areas because they offer real help in meeting today’s time-to-market in a highly competitive business environment.

3. OVERVIEW OF THE STUDY

Doing more with less is a deciding factor within business today (11). Organisations are compelled to adapt quickly to new environments and to be able to recognise and respond quickly to new business opportunities. Demands are thus being made on organisations to manage more activities with fewer resources and less staff. The future of business, therefore, relies on competitiveness and adaptability. The increase in the demand to compete more effectively in a global (international) marketplace has also resulted in organisations, more than ever, striving to redefine their business practices in order to increase quality, productivity and customer satisfaction (4). Every level of operation should also be re-evaluated based on its ability to meet business goals and objectives. As a result, organisations are becoming project-driven; that is, they are budgeting, planning and gauging business success through the success of its projects and processes that drive their business.

The traditional command and control structures are rapidly disappearing and in their place are task forces, self-directed work teams and various forms of project-driven organisations (12). Project management has thus become the new general management approach through which organisations respond to change and also to facilitate the development and exploitation of markets ahead of their competitors. The project-based approach integrates and co-ordinates strategic and operational dimensions to achieve business success. The increase in demand for services and the scarcity of resources experienced in the communications industry has drastically influenced the way business is done (doing more with less) and has also changed the nature of its projects. The focus has changed from mere project management to managing by projects, where many of the ongoing operations of the organisation are treated as projects. The result is that modern projects are characterised by:

- Technical complexity (technological advances)
- Skills diversity
- Intensive market research (owing to the uncertainty within the dynamic business environment)
- Market analysis (to get ahead of competition)

3.1 Research problem

The aforementioned factors identified, lead to the following problem being identified, which was addressed by this research: How effective are current project management practices in the South African communications industry?
Furthermore, the following risks are usually encountered when managing projects in the dynamic (ever-changing) business environment projects:

- Schedule (time) delays,
- Cost overruns, and
- Performance (quality) deficiencies.

To evaluate the effectiveness of current project management practices, the following sub-problems applied for this study:
(i) *What best practices does the literature reveal which enhances the effectiveness of project management?*
(ii) *To what extent are these best practices applied in the communications industry?*

### 3.2 Demarcation of research

Demarcating the research serves the purpose of making the research topic manageable from a research point of view. The omission of certain topics does not imply that there is no need to research them.

#### 3.2.1 Organisation

For the purpose of this study, the empirical component of the research was be focused on, Telkom SA Limited, hereafter referred to as Telkom. Telkom was thus used as the target group to assess the effectiveness of project management practices in the South African communications industry.

#### 3.2.2 Management level

The study was limited to junior management and middle management which are directly involved with the managing of projects.

#### 3.2.3 Project management practices

This research was limited to examining the project management practices, that is, the generally accepted practices which will enhance the management of projects.

### 3.3 Assumptions

The assumption was made that there are certain universal (generally accepted) project management practices which will enhance the effectiveness of managing projects. It was also assumed that these universal project management practices are independent of the type of organisation and operate in the same way irrespective of the type of organisation.

### 3.4 Significance of the research

The challenging environment, in which organisations operate, has changed the focus from mere project management to managing by projects, where many of the ongoing operations are treated as projects. The results of this research provides the following opportunities:

- Benchmarking current project management practices against sound best practices;
- Identifying the strengths of current practices, that could provide a competitive advantage;
- Identifying areas that may need development in order to enhance the effectiveness of project management; and
- Getting a return on intellectual capital based on the research findings.

### 3.5 Research methodology

In order to resolve the main problem and associated sub-problems of this research, the following methodology was adopted:

- A conceptual framework was compiled after an examination of the different project-management theories that are relevant to modern project-driven organisations. This was conducted as follows:
  - A critical review of existing project management practices and other relevant theories as found in the literature.
Specific best practices for project management was identified by means of a literature survey which focuses on generally accepted practices and processes.

An assessment tool (questionnaire) was developed based on the best practices identified to facilitate the process of evaluating project management practices in the South African communications industry.

The assessment tool was used to evaluate the effectiveness of project management practices in Telkom.

3.6 Design of the empirical study
A number of standard practices from the various authors were identified, which could be considered to be the best practices of project management. These standards were thus used for the development of an assessment tool to evaluate the effectiveness of project management practices in Telkom (the second sub-problem). Particulars of the empirical component of the research are clarified in this section.

3.6.1 Survey Method
A survey questionnaire was selected as measuring instrument for this research. Electronic mail was used as method of distribution for the questionnaire. The use of electronic mail provided the opportunity to develop an on-line (computer-based) questionnaire that is user-friendly and less time-consuming for respondents to complete.

3.6.2 Construction of the research questionnaire
The research questionnaire was divided into the following parts:

- **Part 1:** Personal details of the respondent: - such as job title or position, geographic location and contact details.

- **Part 2:** Project Management Standards and Processes: - questions relating to general project standards and practices in the specific organisation, based on the best practices identified.

- **Part 3:** Planning and Executing projects: - questions concerning general methods/procedures applied during the planning and execution of projects in the specific organisation, again based on the best practices identified.

- **Part 4:** Project Retrospection: - assessing the effectiveness of a recently completed project with which the respondent was involved.

The questions included in Parts 2 and 3 provided the opportunity to assess the standard practices in the organisation, measured against the identified best practices. The questions in Part 4 were used to (a) identify whether the completed projects could be considered to be a success or failure; and (b) also identify the factors that contributed to the success or failure of the specific projects. Although some criteria for the execution of projects were included in the questionnaire for comparative results, it must be mentioned that the major focus in the research questionnaire is on the planning criteria for projects. This facilitated the testing of the hypothesis that planning is crucial to the success of a project.

3.6.3 Pilot study for the questionnaire
The survey questionnaire was tested on a small group of individuals who are representative of the same population for which it is intended. It was concluded that the questionnaire was understandable.
4. SUMMARY OF THE RESEARCH RESULTS

The computer-based questionnaire was mailed electronically to 28 project managers of Telkom, of which 21 responded. A response rate of 75 percent was thus achieved. A statistical comparison was done for the different projects, to determine:

- Whether the general project management standards and practices of the organisation are on par with the best practices identified?
- How effective general project planning and execution methods and procedures are?
- How successful the completed project was, in order to do a comparative analysis of the factors that could have affected the success or failure of the projects?

4.1 Project management standards and processes

It is clear from the research results that the standards and processes in the organisation are well-established, in relation to its project planning methodologies, processes being documented, and the availability of templates. The results also show that the majority of the respondents are involved with multiple projects at one specific time. The respondents, whose projects are staffed from a shared pool of resources, match up with the same number of respondents who are involved with multiple projects. There should be a natural relationship between these two factors if the assumption is made that managing multiple projects require ‘multiple resources’ which means that by default, resources have to be shared amongst the projects. Alternatively, it could be a condition of limited resources that is commonly experienced in most project environments.

A project management office provides the opportunity to prioritise projects and monitor the utilisation of resources across a number of projects. According to the greater part of the respondents, a formal project management office is used. This again correlates well with the respondents who are involved with managing multiple projects, for which a central project office is essential.

4.2 Planning and executing projects

The results for the general methods/procedures applied during the planning and execution of projects compare favourably with the best practices. However, an opportunity for improvement was identified for the identification of risks. Almost half of the respondents said that risks are seldom identified proactively during the planning phase of the projects. In most cases, risks impact negatively on the time and cost goals of a project. It is, therefore, advisable that preventive and/or contingent actions for potential risks are developed proactively (during planning) in order to reduce the probability and seriousness of the risks.

4.3 Project retrospection of completed projects

The main question to be answered was as to whether the completed projects reviewed by the respondents could be considered to be a success or failure, and then to identify the factors that contributed to the success or failure of the specific projects. The following questions were used as the fixed variables to determine the success or failure of the projects reviewed by the respondents:

(i) Did the project take longer than planned?
(ii) Did the final cost of the project exceed the initial budget?
(iii) Did the final deliverables (outcomes) of the project satisfy the needs or requirements of all stakeholders?

These three fixed variables were considered to be the generic project goals (time, cost or performance) to determine whether the projects can be classified as either being a success, or a failure. The three project goals (time, cost or performance) was first analysed as separate fixed variables and, thereafter, in combination where the results were of statistical significance. The results of the projects were then analysed further to identify possible factors (causes) that could have contributed to the failure or success of the project. A comparative analysis of the results that
are of statistical significance was conducted to determine if there is any correlation between the factors that contributed to the success or failure of the projects.

### 4.3.1 Time as a fixed variable
Comparing the results of the failed projects with those for the successful projects (in relation to the time goal), a number of correlations were identified between the success and failure factors. The factors that directly influenced the success or failure of the projects are the:

- Commitment of project stakeholders to the goals of the project.
- Extent to which the scope of the project is changed, or allowed to change, which could be seen as being an obvious one because when the requirements of the project are changed, it would necessarily mean that more time will be needed to complete the project.
- Manner in which the resources allocated to the project are monitored for over- or under-utilisation, that is, the way in which the resources are managed.
- Use of contractors/suppliers for the supply of goods and services, although it should be acknowledged that contractors/suppliers should also be treated as stakeholders of the project. However, for the projects that were completed within the original time schedule, most of them also used contractors/suppliers.

Furthermore, comparing these projects’ results with the general standards and processes in the organisation (as per the specific respondents), the lack of adequate risk-planning and also possible shortage of training for project team members could also have had an indirect influence.

### 4.3.2 Cost as a fixed variable
When analysing the results for the cost goal, similar dynamics as for the time goal are recognised, that is the commitment of stakeholders, changes to the scope of the project, and analysis of resources. However, comparing these projects’ results with the general standards and processes in the organisation (as per the specific respondents), some other factors come into play. Although the lack of risk management is also a possible indirect influence, the other influences are the:

- Extent to which changes to the project scope, budget, or time schedule is controlled.
- Degree to which overall project performance is evaluated.
- Effort applied in keeping the project under control, by balancing its scope, cost and time.

Similarities that can be identified at this stage between the project success and failure factors to achieve the time and cost goals are the:

- Commitment of stakeholders.
- Degree to which the scope of the project is changed.
- Utilisation of resources on the project, that is the way in which the resources are managed for over- or under-utilisation.
- Identifying potential risks and proactively developing responses to minimise its potential impact on the project.

### 4.3.3 Final deliverables (outcomes) as a fixed variable
Focusing on the results for the performance goal (satisfying project requirements) similarities also exist with the success factors that were identified for the other goals (time and cost). The similarities identified are the:

- Commitment of project stakeholders to the goals of the project.
- Extent to which the scope of the project is changed, or allowed to change.
- Manner in which the resources allocated to the project is monitored for over- or under utilisation, that is, the way in which the resources are managed.

### 4.3.4 Time and Cost (combined) as fixed variable
When the project goals of time and cost are used as combined fixed variables, the results of the combined success factors agree with the results that were identified for time and cost as separate criteria. The success factors that are confirmed are the commitment of stakeholders, changes to the scope of the project and analysis of resources. Another factor also comes into consideration when
the results of the time and cost goals are combined and that is the level of skilled people assigned to
the project.

The indirect influences of the general standards and processes are also confirmed as being,
managing risks, control over changes to the project, evaluating project performance and keeping the
project under control.

From the analysis of the research results, it can be concluded that a correlation exists between a
number of project success and failure factors that have been identified.

5. RECOMMENDATIONS BASED ON RESEARCH FINDINGS

Based on the research findings, the following recommendations are appropriate:

5.1 Recommendation 1: Get commitment of stakeholders
As with any business initiative, the commitment of its stakeholders is of imperative importance for
success. After all, it is the stakeholders, the people who will contribute to or are affected by the
project, whose efforts influence the outcomes of a project. The successful completion of a project
thus require commitment to the project scope, quality, time and cost between the organisation’s
management and its client or sponsor.

The question that arises is as to how the commitment of stakeholders can be assured. It could be
seen as being the responsibility of the project manager to attain the willing commitment of people to
assigned tasks in order to achieve the coordination and collaboration of different work groups.
However, to enable the project manager to accept this responsibility he or she needs to have the
support from top management (project sponsor) and also have the authority to drive the project
through to the end.

5.2 Recommendation 2: Control changes to the project
The three-dimensional goals of a project (time, cost and performance) are interrelated which means
that a change in any of the goals (for example, extending the time schedule of a project) will
necessarily affect the other goals (for example, more costs for resources). It has been estimated that
it costs about ten times as much to implement a change in each succeeding phase of a project.
Hence, during execution, changes (and consequent delays) will cost ten or more times as much to
implement, compared to making the same changes during the planning phase.

Evaluation (control) points should be included in the project at regular intervals which will provide
the opportunity to exercise control over the state and timing of the project. The project manager can
thereby ensure that the project is progressing in a manner consistent with its objectives, or the
project can be modified with minimum upset if the objectives (scope) have changed.
Continued monitoring, reporting and forecasting must take place during project implementation and
the forecasts compared to the project plan. Deviations must immediately receive attention, in order
to assess the impact on any of the three-dimensional goals (time, cost and performance).

5.3 Recommendation 3: Analyse resource utilisation
It is acceded that that managing multiple projects in a project-driven organisation by default
requires resources to be shared amongst a number of projects. The optimal utilisation of resources,
therefore, becomes of cardinal importance when a condition of limited resources is experienced.
The efforts of all contributors to the project must be integrated. Projects consist of many diverse
tasks that require the different levels of expertise and resources. These tasks are assigned to various
people and organisations, usually from both within and outside the organisation. The most effective
project management is achieved when all such contributors collaborate and work together as a well-
trained team, under the integrative leadership of the project manager.
One of the best ways of getting people started and organised is to have them review their part of the work (work package) and to set about coordinating it with each of the other parts. In this way a comprehensive and detailed plan can be built up by a team of people who each understand their participation and responsibility and are committed to the success of the project.

5.4 Recommendation 4: Manage risks proactively

Projects are uncertain business, by the very nature of its goal to create a unique product or service. Uncertainty, however, can lead to both risk and opportunities. Consequently, a very important part of a project manager's job is management of risk. The aim is to move potential uncertainties away from risk (that is, adverse time and cost implications) and towards opportunity (that will enhance the project and make it more successful). To do this, potential risks must first be identified and preferably grouped in some way, analysed and then appropriate defensive responses initiated such as preventive actions to reduce the probability of the risk. Alternatively, contingency plans need to be developed as a precaution.

Risk management calls for proactive steps to be taken during the planning of the project to mitigate the possibility of a less favourable outcome, by reducing the project risk wherever this can be achieved cost effectively.

6. SUMMARY

Although a number of factors have been identified that influence the success or failure of projects, some of these factors are specifically related to the planning of projects, whereas others are related to the execution of projects. It can thus not be conclusively confirmed that the success of projects is strongly influenced by its planning, although some of the findings do suggest this.

Further research is required into the factors identified that influence the success or failure of projects. The factors that require further research are:

- The extent to which the commitment of stakeholders in projects is crucial.
- The extent to which uncontrolled changes to the project scope influence the failure on projects in relation to its time and cost goals.
- The affect utilisation of resources has on the success or failure of projects.
- The impact of risks on the success or failure of projects.

Although the empirical component of this research was limited to Telkom it will be very interesting to see whether there are similarities in the project management practices applied in other project-driven organisations. To survive and prosper in the challenging business environment of the 21st century, the ability to effectively manage projects will play a decisive role in separating winning companies from losers.

7. REFERENCES

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