

# A Balanced Approach to IT Project Management

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## 1 INTRODUCTION

The increased use of, and reliance on, projects in organisations as a delivery vehicle for new products and services has increased dramatically in recent times. The focus on Information Technology (IT) project failures in the research literature has also grown. Despite the perceived benefits that project management brings, actual success rates have in general been extremely poor although they have improved over the last decade as shown later in Figure 1 [The Standish Group, 1998].

To address this poor performance, industry effort has focussed on the development of IT project management methodologies like Prince2 and/or accepted frameworks of best practices like the Project Management Institute’s pmbok (project management body-of-knowledge). It is claimed that many of these approaches have remained too narrowly focused on only certain aspects of an IT project [Morris, 2001].

There is a need to investigate the value of a broader focused and more encompassing approach to managing IT projects. A example is the Norton and Kaplan “Balanced Scorecard” which has gained popularity as a methodology in conventional management.

## 2 OBJECTIVES OF THE STUDY

The primary objectives of this study were to identify how IT projects can be managed using the Balanced Scorecard approach. Although the research is positioned to have potential application within international project management discipline, the analysis is limited to a South African project management perspective and only internal aspects of managing projects are considered.

## 3 LITERATURE SURVEY

Measuring the success of IT projects is complicated. Simplistically, success can be measured in terms of adherence to deadlines, budgets and features or services delivered [The Standish Group, 1998]. As shown in Figure 1, an analysis of the Chaos reports from the Standish Group over the last few years shows a steady improvement in project success based on the measures of “on budget, on cost, and to specification”. Failures have also reduced significantly considering the number of projects in the sample analysed has almost doubled over the time period. However, almost half of the projects remain “challenged”. According to the Standish Group, this means that these projects are a com-

	1994	1996	1998	2000	2002
<b>Succeeded</b>	16%	27%	26%	28%	34%
<b>Failed</b>	31%	40%	28%	23%	15%
<b>Challenged</b>	53%	33%	46%	49%	51%

Table 1: Chaos Report findings (collated from Standish Group Reports)

bination of either seriously over budget, over time or under specification.

The extent of the “challenged” problems has, however, reduced considerably. For example, the average cost overrun in 1994 was 189%, whereas in 2000 it was 45%; the time overrun in 1994 was 222% which reduced in 2000 to 63%.

In order to avoid the common pitfalls of low returns on large IT investments, the success of IT projects should also be measured in terms of their value to shareholders and contribution towards the enterprise’s strategic goals [Shenhar et al. 1996]. Which criteria take precedence depends on the nature of the project and the policy or culture of the organisations involved.

A number of critical issues have commonly been identified as significant contributors to IT project failure, which suggest that the IT project performance problem should be addressed by better attention to implementation procedures and management of these projects.

The issues found by numerous studies [Allan 2002; Kolenso 2001; Yetton et al. 2000; The Standish Group 1998, The Standish Group 1996; DeMarco 1997] that increase the likelihood of failure in IT projects include:

1. Absence of a clear vision and statement of requirements
2. Unrealistic expectations due to estimating difficulties and organisational politics
3. Lack of project decomposition
4. Inadequate staffing policies and team conflict
5. Lack of stakeholder involvement and focus
6. Lack of strategic focus and executive management support

This research focuses on existing Project Management approaches which might increase the success rate of IT projects.

### 3.1 Project Management Guidelines and the Balanced Scorecard

The Project Management Institute’s (PMI) Project Management Body of Knowledge (PMBok), now in its 3rd revision, . seeks to define the generally accepted areas of project knowledge in an attempt to standardise

and improve the project management processes. Alternative methodologies, such as the Centre for Research in the Management of Projects Body of Knowledge (CRMP BoK) expand on the traditional PMBOK areas to incorporate additional areas pertinent to project management knowledge — such as technology, design, people issues, environmental matters, finance, marketing, the business case, and general management [Morris 2001].

In the general management field, Kaplan and Norton have developed the *Balanced Scorecard* methodology (originally a performance management system) to replace overemphasised use of financial indicators as measurement benchmarks with a more holistic organisational view [Kaplan and Norton 1992].

By considering both financial and non-financial measures when assessing the health of organisations, the Balanced Scorecard (BSC) gives managers a broader, more accurate and ultimately more balanced perspective. Although the Balanced Scorecard was initially proposed as a system for organisational *measurement*, it has evolved over time — through both design and application — into a mechanism for strategic *management*.

One of the benefits of the BSC approach lies in its inherent flexibility. In their first book, Norton and Kaplan presented different BSC frameworks for different types of enterprises such as governmental establishments, non-profit organisations and strategic business units found within a particular organisation [Kaplan and Norton 1996]. This adaptation of the framework was achieved primarily through the alteration of the four original BSC perspectives shown in figure 2.

This same customisation of the Balanced Scorecard could also be used when applying it to projects. The available literature on this application (which is scarce), suggests that in the application of the BSC to projects, a project can conceptually and simply be seen as a mini-company [Stewart, 2001; Martinsons et. al. 1999]. Thus it can be theorised that the project-based BSC can be used as both an indication of the performance of a project, and even as a complete project management methodology tool.

It has been argued that the flexibility behind the balanced scorecard means it can be applied to IT departments and to IT projects. To date there has been little non-proprietary research into this use of the Balanced Scorecard at the project level. However, a number of IT-based Balanced Scorecard frameworks have been developed, all of which claim that using the scorecard within IT can promote internal alignment and eliminate projects that contribute little or no strategic value [CIO, 2002]. The frameworks have an intrinsic stakeholder focus — placing emphasis on learning and skills development and providing a tangible structure for general communication to all stakeholders.

Thus, at least in theory, the application of the Balanced Scorecard to an IT project has great potential to address the critical problems in managing IT projects.

### 3.2 Inadequacies of the Balanced Scorecard for Project Management

The primary reason for the Balanced Scorecard's flexibility is that its theoretical constructs do not explicitly specify which areas or factors must be considered under each of its four high-level perspectives. This descriptive (and possibly prescriptive) void is also however considered by many to be one of the main reasons for high BSC implementation failure rates [Wagner, 2002]. BSC failure has been estimated at approximately 70% [Neely and Bourne, 2000].

Another inadequacy of the Balanced Scorecard in its application to projects is that in its present form it does not contain a sufficient theoretical knowledgebase applicable to projects. Specifically the four Balanced Scorecard perspectives do not adequately incorporate the relevant project management knowledge areas — areas that have been defined in detail in the CRMP BoK and PMBoK.

## 4 USING A BALANCED APPROACH TO MANAGE IT PROJECTS

To overcome the limitations of the Balanced Scorecard mentioned above, a four-tier model shown in Figure 3 was developed. This is referred to as the “Balanced Approach to IT Project Management”.

This proposed ‘balanced’ model consists of two primary divisions to project management, the *internal focus* and the *external focus*. The internal focus consists of all people processes and practices that reside within the domain of the project itself and are relevant during the lifecycle (*project processes*) of the project. The external focus consists of the influencing factors outside of the project itself, but within the domain of the organisation that initiated it. Within these two divisions are four further subdivisions, namely the *project*, *strategic alignment* and *program management*, *project processes* and the *project foundation*.

### 4.1 The Project

The first tier within this model takes an introspective look at the internal factors influencing a project during its lifecycle. So as to ensure a broad and balanced coverage of majority of relevant internal influencing factors, the nine key areas of knowledge — as specified by the PMI's PM-BoK were selected as a proxy for these perspectives.

The selection of these nine knowledge areas has not however been an arbitrary one and is justified on three grounds. Firstly they were selected due to their rigorous supporting theoretical background (The PMBoK). Secondly parallels between these nine areas and the four perspectives of the Balanced Scorecard can be made and thus imply a form of balance. Finally each of these areas can in theory be seen to address the six impedances to IT project success as previously described (See Figure 4. for an indication of which of the nine areas address which IT project success impedances).

It should be noted that the nine knowledge areas defined within the PMBoK are there not to be applied uniformly across all projects, but rather to be used selec-

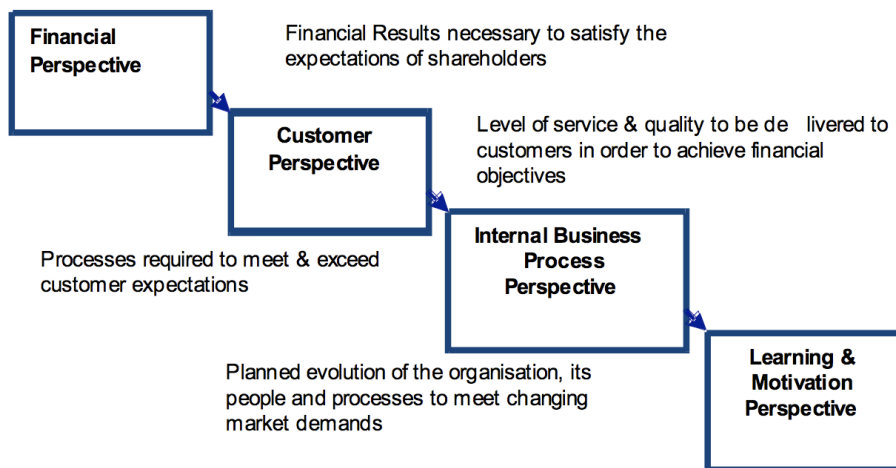


Figure 1: The Four Perspectives of the Balanced Scorecard

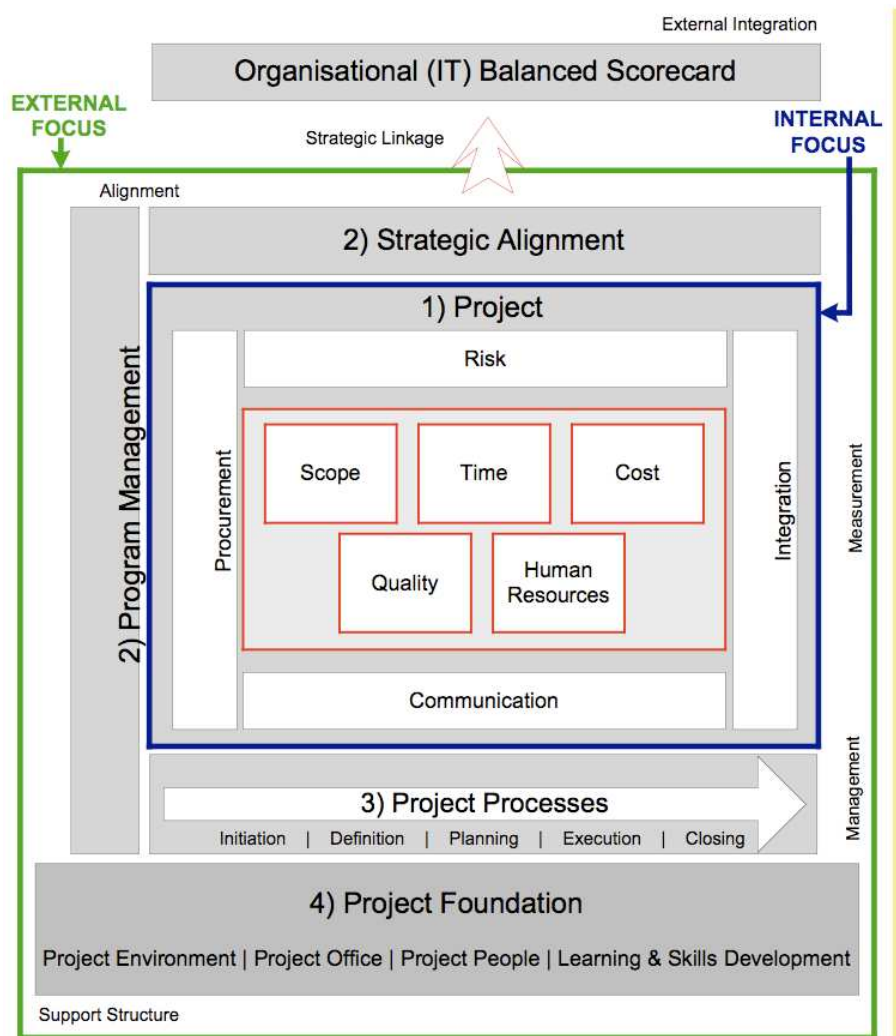


Figure 2: The 'Balanced Approach to IT Project Management' Model

tively in adding rigour to projects where relevant [PMBok Guide, 2000: p3].

It is proposed under this approach that for IT projects to be considered *internally balanced*, the project manager will need to ensure that these nine areas (with the possible exception of 'Procurement' which is not applicable to all projects) receive proportionate consideration in terms of time and effort. These criteria focus primarily on attaining project success in terms of *cost, time* and *scope*.

#### 4.2 Strategic Alignment and Programme Management

The second tier within this proposed model attempts to ensure that the additional criteria to project success, namely its strategic context and stakeholder focus (as defined earlier in the study) are also addressed. This tier takes into account the external context in which a project operates (factors considered lacking in the nine knowledge areas of the PMBoK but included in the CRMP BoK and APM BoK).

It is further suggested under this proposed model, that for IT projects to be considered *externally balanced*, the selection of projects (*Program Management*) must be in-line with the implementation of the firms' strategy (*Strategic Alignment*) and closely linked to the resultant stakeholders' requirements (*Program Management* and *Strategic Alignment*).

#### 4.3 Project Processes

This tier has been included to illustrate that the knowledge areas mentioned within the previous two tiers do occur within a project process continuum and thus the relevance or importance of each knowledge area may fluctuate over the different phases of the project life cycle. Typically each knowledge area can be decomposed into activities for each of the 5 project processes starting at project initiation through to project closing.

#### 4.4 Project Foundation

This final tier is vital for success. Broader organisation issues affect project success. Organisational support for projects from senior management, strong stakeholder support, adequate project resourcing and competent project managers are important for success.

### 5 RESEARCH METHODOLOGY

A theoretical model for managing IT project was developed in the last section. This model is presented as an aid to the better understanding of the project as an entity in order to provide better management and thus alleviate the likelihood of project failure. The purpose of this section is to test the model to assess whether these new influences could be relevant as important criteria to improve the level of IT project success.

The research question posed is:

*Will a balanced approach to the internal management of IT projects lead to an improved degree and rate of project success?*

This question provides the high-level focus from which this study's specific objectives and testable hypotheses were derived (see Table 1 for an explanation of the terms used in the research question).

As noted in the research question, the analysis considered only one dimension (those internal) of the total factors that influence IT project success. Since it is not only possible but also highly probable that factors external to the direct management of a project also contribute to its outcome, when interpreting the effect of these internal influences on a project, it is critical to note that they form only one potential grouping of influencing factors.

Within this internal focus of project management, a balanced project management approach requires only consideration of the nine PMBoK knowledge areas. It is possible however that these nine areas are not the only internal influences that a project manager should focus on and thus this model is limited by their potential exclusion.

To assess whether a balanced perspective improves the likelihood of success (in terms of intensity of focus and general inclusivity, i.e. focusing on all of the relevant individual project management areas and also ensuring that each one is of a high level of individual focus), 6 hypotheses were tested.

Hypothesis 1 — The balanced use of all relevant project management knowledge areas is correlated with project success.

Hypothesis 2 — There is a sub-set within the nine project knowledge areas that receives disproportionate focus during project implementation.

Hypothesis 3 — There is a sub-set within the nine project knowledge areas that contribute more significantly to project success.

Hypothesis 4 — There is a sub-set within the nine project knowledge areas that project managers perceive to contribute more significantly to project success.

Hypothesis 5 — There is a significant difference between project managers' perceived importance of project management knowledge areas and their actual emphasis given to these during a project implementation.

Hypothesis 6 — The differences between a project managers' perceived importance of project management knowledge areas and their actual emphasis given to these during a project implementation negatively affects the level of success attained by that project.

### 6 RESEARCH METHODOLOGY

In order to explore the research question, the survey instrument was designed to aid in the empirical testing of the balanced approach model. A web-based questionnaire was used so that responses could be validated online ensuring integrity and completion of data. Other reasons for this option included the assurance of anonymity, the speed and extent of distribution and the minimisation of cost and time incurred as a result of data collection administration.

The questionnaire comprised three sections. Questions that required attitude-based comment were separated from those that required opinions based on actual events. Although this was an attempt to ensure objectivity of response, the cognitive nature of the questions could not en-

<b>Focus Areas for The Balanced Approach to Project Management</b>				
<b>Project Scope</b> 1, 2, 3, 5	<b>Project Cost</b> 1, 2, 3, 4, 5	<b>Project Communications</b> 3, 6	<b>Project Time</b> 1, 2, 3, 4, 5	<b>Project Quality</b> 1, 2, 3, 4, 5
<b>Strategic Alignment</b> 4, 6	<b>IT Project Success Impedances</b> 1) Unrealistic Expectations 2) Lack of Project Decomposition 3) Lack of Stakeholder Involvement and Focus 4) Inadequate Staffing Policies and Team Conflict 5) Absence of a Clear Vision and Statement of Requirements 6) Lack of Strategic Focus and Executive Management Support			<b>Project Foundation</b> 4, 6
<b>Program Management</b> 3, 6				<b>Project Process</b> 1, 2, 5
<b>Project Procurement</b> 2, 5	<b>Project Human Resource</b> 4	<b>Project Risk</b> 1, 2	<b>Project Integration</b> 5, 6	

Figure 3: Solution Linkages between 'IT Project Success Impedances' and Balanced Approach focus areas

*'Internal Management'* Generally this categorisation would refer to project influences that the project manager has direct control over prior and subsequent to project initiation. In the context of the proposed model under consideration, these influences are limited to the nine areas within the first tier called 'Project'.

*'Balanced Approach'* This refers to a focus of intensity and inclusiveness, during the project life cycle, on the combination of factors defined within the first tier of the proposed model called the 'Project'.

*'Project Success'* Success is defined here as a project being completed on-time, on-budget and on-scope. Additional project success criteria considered in the literature review, such as 'adding value to stakeholders' and 'being inextricably linked to the enterprise's strategic goals and visions' are generally more pertinent to initial project selection and not project management itself. These criteria are thus considered *external success factors* and have subsequently been removed from the definition due to the internal focus of this research question.

Table 2: Explanation of Research terms

tirely prevent the relativity of emphasis placed by respondents.

The first section of the questionnaire contained eight mandatory and one optional question. The purpose of this section was to assess the degree of emphasis given to the nine internal influencing factors as proposed in the 'Balanced Approach to Project Management Model'. The nine questions reflected the nine knowledge areas of the PM-BoK, and required the respondents to rate their focus on each of these areas for the project they were considering. The optional question related to the Procurement Management.

The second section was designed to assess how close the project under consideration had achieved its initial goals in terms of the three components of success — namely *time*, *cost* and *scope*. In the case of projects that were prematurely cancelled, respondents were requested to give qualitative reasoning for this 'failure' so as to allow for the detection of any potential trends.

The third section contained questions based more on the individual project managers' attitudes regarding the nine internal influencing factors. Respondents were first required to supply an ordinal rank to each of the nine factors in terms of their perception of its importance in ensuring a 'successful' project. They were then required to provide a cardinal rating to these factors, but this time in terms of effort required during their project.

41 completed questionnaires were received by the due date. These were validated for any irregularities that would cause bias in the sample. A total of 5 responses were considered incomplete and removed from the sample leaving a valid sample of 36.

As previously noted, the primary data for analysis was collected over three separate sections within the questionnaire. The first two sections, which focused on project management activities and project success over the last two projects was, for the purpose of analysis, partitioned into two separate samples of 36 projects each (72 projects in total), with each sample containing data relevant to one specific project. The third section, however, which was not

project specific, remained in its original sample structure, with one data entry per project manager.

## 7 ANALYSIS OF RESULTS

The results of the analysis were split into various hypotheses, of which each was tested using different statistical tests. A description of the tests as well as the results is provided below.

The first test aimed to assess whether a balanced perspective of project management improves the likelihood of success (in terms of intensity of focus and general inclusiveness, i.e. focussing on all of the relevant individual project management areas and also ensuring that each one is of a high level of individual focus).

The testing of this hypothesis involved the calculation of both the degree of project balance and various measures of success. These two measures were then correlated with each other in order to determine whether a significant relationship existed. This was done for the overall measure of success, as well as each individual measure of success.

The correlations found ( $-0.45$  in sample 1 and  $-0.37$  in sample 2) between project balance and corporate success (all three criteria combined) clearly indicates that a certain degree of success is due, in part to the degree of balance project managers utilise in managing their projects. The negative relationship shown further indicates that the greater the projects' balance the lower its deviation from overall success. Thus it would appear that project managers, in order to achieve a higher total level of success should employ some degree of internal balance when managing projects.

The low correlations found between project balance and the individual types of success indicates that although a balanced approach to project management might increase the degree of corporate success, it is unlikely to influence the success of any one individual success criteria (time, cost or scope). As a result, should a project manager wish to succeed most importantly in, for example, budget attainment, then it would be more beneficial to focus on a smaller sub-set of these management areas that is more aligned to this end. This notion could indicate support for existing project management literature that considers project success as a combination of three forces (time, cost or quality) that act against each other. For example a decrease in the time taken to complete a project might produce an increase in the cost of the project due to increased use of resources.

The assessed low coefficients of determination might indicate that external influences (outside of the internal project management criteria under consideration in this report) play a significant role in project success determination.

The second test aimed to identify which individual project management perspectives correlated most closely with project success.

Although the proposed model initially advises an encompassing (balanced) use of the project management perspectives, the objective of this test was to establish whether there are certain factors among these perspectives that have a greater influence on project success than others.

The statistical technique of forward stepwise regression analysis was used in this case to test the relationship between the project management areas and project success, both corporate (total) and individual (i.e. budget, time and scope), using a P-to-enter of 0.1 and P-to-leave of 0.2.

Although it was expected that certain project management areas would *clearly* be linked with certain areas of project success, results from the above-mentioned tests proved *inconclusive*. Although there were significant relationships found, the relationships and their nature differed widely across the two samples. This discrepancy again reinforces the notion that projects are unique and vary widely in implementation and nature.

Based however, on the individual significant relationships found in the tests, the following tentative conjectures can be made:

- *Scope, Time* and *Quality* management areas were found to have contributed significantly to the *overall* measure of success and this possibly further supports traditional project management theory that considers these three factors as the primary variables that compete against each other in a project's determination of final success.
- *Cost, Quality* and *Human Resource Management* were all found to be significant variables in determining the adherence of a project to its *budget*. Part of this can possibly be justified by the notion that better attention to quality at the beginning of a project, reduces later time and cost spent on maintenance, rework and support.
- *Scope, Quality* and *Cost* management were all found to contribute significantly to determining a projects adherence to *time* delivery. Scope could be seen as a significant factor in affecting the ability of the project to deliver on time. Scope creep is found as a common reason for projects that deliver late, and better management of this area could conceivably lead to reductions in time-to-completion. Quality plays a role in affecting on-time delivery since the pursuit of an improved quality product will in theory take more resources, one of which could be time.
- *Time* and *Cost* management were all found to contribute significantly to determining a projects adherence to *scope* delivery. Time and Cost management could conceivably lead to a project completion on-scope, this due to the extra cost associated with producing more features in a project.

## 8 CONCLUSIONS

This report has, through its review of existing literature, drawn attention to not only the progressive trend within organisations to rely on IT projects for gaining competitive advantage, but also the disappointing levels of success that these projects have actually attained.

It has been further illustrated that many attempts to improve project success have been made frequently through the development of various project management methodologies. Despite these attempts, IT project success has continued to perform poorly and this has resulted in a perception that project management literature frequently re-

mains too narrow in focus. To assess the validity of this perception the report considered a number of broader focussed methodologies, namely the CRMP BoK and the Balanced Scorecard.

Although these methodologies conceptually were an improvement of existing narrow-focussed methodologies, they were all limited to some degree in their applicability to IT projects. To compensate for these limitations, a new methodology, the Balanced Approach to Project Management, was proposed and was used as a means for testing the research question that queried whether a balanced approach to the internal (one domain of the proposed model) management of IT projects would in fact lead to greater project success.

With the research question under consideration, the internal perspective of the model was empirically tested. The results of this analysis highlighted a positive link between the degree of balance in project management and the overall level of success. This implies that in order to obtain a corporate level of success (a combination of time, budget and scope) a project manager would need to pay adequate attention to the broad (balanced) areas of management perspective as prescribed by the balanced model.

It must be noted, however, that in certain cases this corporate level of success is not the primary goal of a project and as can be deduced from the outcome of the first test, there are occasions when one particular success criterion is favoured. In this case 'balanced management' cannot guarantee this specific level of success.

When applying a balanced approach, it is not however automatically the case that the nine project management areas prescribed within the balanced model will cover all the necessary perspectives for successful internal balanced management. Moreover, there is no indication that they are all necessary for every IT project. For example, while procurement may not play a significant role in some projects (perhaps systems development projects), it is crucial to other projects involving the purchase of large amounts of hardware and software. The selection of areas to use as a basis for determining balance should depend on the priorities and success criteria of that project.

## 9 THE USE OF KEY INDICATORS WITHIN THE BALANCED FRAMEWORK

The guiding framework should be used by managers at the project initiation phase to identify the key areas that are pertinent to the success of the project. These areas should be used to manage a project, along with performance measures to evaluate and control the performance of the project during its life-cycle. Whilst the approach is similar to that presented by the Balanced Scorecard theory, it is more focussed in relation to project management's knowledge areas. Specific selection of key areas should be used due to the varied nature of each project, in order to ensure that different projects receive a different focus based on the requirements they need to fulfil.

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