

Bridging the Gap between Strategic Control And Performance Measurement: A Systems Approach

by
Willem Alexander Pienaar

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Supervisors: Dr. CSL Schutte and Mr. K von Leipzig
Faculty of Engineering
Department of Industrial Engineering

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Declaration

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

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Abstract

The main objective of this study was to improve the understanding of how strategic decisions can be influenced by performance measurement data, so as to better facilitate management interventions through the effective use of strategic control. Theories relating to strategic control and performance measurement have however traditionally been developed separately and is widely regarded as two separate schools of thought. Another objective was thus to design a bridging system, capable of bridging the gap between performance measurement and strategic control, by making use of a systems approach. Systems theory dictates that the characteristics and behaviour of the individual parts are different from the characteristics and behaviour of the whole that they form part of. The individual parts, namely the strategic control system and the performance measurement system, can thus only truly be seen as a whole when they are linked by means of a bridging system. The research methodology used to achieve the research objectives consisted of determining the current state of academic thinking, identifying opportunities for potential improvement, designing a framework and methodology, verifying and evaluating the design by means of a case study, and finally drawing research conclusions. It was found that the bridging system design promoted consistency and was subsequently able to successfully link strategic control and performance measurement.

Opsomming

Die hoofdoel van hierdie studie was om die begrip, met betrekking tot hoe strategiese besluite beïnvloed word deur prestasie meting data, om sodoende bestuurs intervensie deur middel van strategiese beheer te verbeter. Teorieë met betrekking tot strategiese beheer en prestasie meting is egter tradisioneel apart gevorm en word in die algemeen beskou as twee afsonderlike navorsings velde. Stelsels teorie vereis egter dat die eienskappe en gedrag van die afsonderlike dele van 'n stelsel verskil van die eienskappe en gedrag van die stelsel as 'n geheel. Die individuele dele, naamlik die strategiese beheer stelsel en die prestasie meting stelsel, kan dus slegs werklik gesien word as geheel wanneer hulle met mekaar verbind word deur middel van 'n oorbruggings stelsel. Nog 'n doelwit was daarom om 'n oorbruggings stelsel te ontwerp wat in staat is om die gaping tussen strategiese beheer en prestasie meting te oorbrug met behulp van 'n stelsels benadering. Die navorsings metode wat gebruik is om die navorsings doelwitte te bereik bestaan uit die bepaling van die huidige stand van die akademiese literatuur, die identifisering van geleenthede vir moontlike verbetering, die ontwerp van 'n raamwerk en metodologie, die verifiëring en evaluëring van die ontwerp deur middel van 'n gevallestudie, en die formulering van gepaste gevolgtrekkings. Daar is gevind dat die oorbruggings stelsel ontwerp konsekwentheid bevorder en die gaping tussen strategiese beheer en prestasie meting suksesvol kan oorbrug.

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“Not to us, OH LORD, but to you goes all the glory for your unfailing love and faithfulness.”

Psalm 115:1

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In my first year as an undergraduate engineering student I was told that the difference between the possible and the impossible lies in a person's determination. Today I understand the full meaning of this saying.

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Part One - Introduction

"The King is only fond of words and cannot carry them into deeds."

Sun Tzu in "The Army of Concubines"

1. The Army of Concubines

Sun Tzu was a Chinese philosopher and military strategist most famous for writing the 7000 word *The Art of War* in around 500 B.C. Sun Tzu, who was already an accomplished military scholar at the time, earned an audience with the King of Wu. After reading the 13 chapters on *The Art of War* the King decided to put Sun Tzu's theory of managing soldiers to the test. According to legend:

"The king of Wu asked, "Can the test be applied to women?" Sun Tzu replied that it could, so arrangements were made to bring 180 beautiful women from the palace. Sun Tzu divided them into two companies with one of the King's favourite concubines at the head of each. He then made all of them take spears in their hands and spoke to them: I presume you know the difference between front and back, right hand, and left hand?" The woman replied, "Yes." Sun Tzu continued, "When to the sound of drums I order 'eyes front,' look straight ahead. When I order 'left turn,' face toward your left hand. When I order 'right turn,' face toward your right hand. When I order 'about turn,' face around to the back." After the words of command had been explained, the women agreed they understood. He gave them spears so he could begin the drill. To the sound of drums, Sun Tzu ordered 'right turn.' In response, the women burst out in laughter. With great patience, Sun Tzu said, "If the instructions and words of command are not clear and distinct, if orders are not thoroughly understood, then the general is to blame." He then repeated the explanations several times. This time he ordered the drums to signal 'left turn,' and again the women burst into laughter. Then Sun Tzu said, "If the instructions and words of command are not clear and distinct, if orders are not thoroughly understood, the general is to blame. But if commands are clear and the soldiers disobey, then it is the fault of the officers." He immediately ordered the women who were at the head of the two companies to be beheaded. Of course, the King was watching from a raised pavilion, and when he saw that his

two favourite concubines were about to be executed, he was alarmed and swiftly sent down a message: "We are now quite satisfied as to the general's ability to manage troops. Without these concubines, my food and drink will not taste good. It is the King's wish that they not be beheaded." Sun Tzu replied, "Having received the sovereign's commission to take charge and direct these troops, there are certain orders I cannot accept." He immediately had the two concubines beheaded as an example and appointed the two next in line as the new leaders. Now the drums were sounded again and the drill began. The women performed all the manoeuvres exactly as commanded, turning to the right or left, marching ahead, turning around, kneeling, or rising. They drilled perfectly in precision and did not utter a single sound. Sun Tzu sent a messenger to the King of Wu saying, "Your Majesty, the soldiers are now correctly drilled and perfectly disciplined. They are ready for your inspection. Put them to any use you desire. As sovereign you may choose to require them to go through fire and water and they will not disobey." The King responded, "Our commander should cease the drill and return to his camp. We do not wish to come down and inspect the troops." With great calm, Sun Tzu said, "The King is only fond of words and cannot carry them into deeds." (Michaelson, Tzu 2001)

2. Background

When confronted with the word "strategy" many senior level managers grimace, as strategy is mostly still associated with intensive "strategy work sessions", often only resulting in a document destined for life on a book shelf, gathering dust, never to be referred to again. The difficulty clearly lies with converting words into deeds.

There is great rift in academic literature that addresses the challenges posed by strategic implementation. Two separate schools of thought are largely responsible for categorising theories pertaining to the subject, as being either contingency based or economic based. Contingency based theories are deeply rooted in traditional management accounting principles, and is generally concerned with strategic control. Economic based studies conversely originated from the need for non-financial performance measures, and are generally concerned with performance measurement. This division in academic thinking directly filters down to industry, and organizations are thus currently faced with the problem of not knowing how to effectively use a performance measurement system and a strategic control system in unison.

Systems theory dictates that the whole is equal to more than the sum of its parts, and that the behaviour and characteristics of the whole are different from the characteristics and behaviours of the individual parts. It subsequently follows that an improved system can be realised, by linking the fields of strategic control and performance measurement, so as to aid in better achieving strategic objectives and ultimately aiding in strategic implementation. This is however not possible at present due to the gap that exists between economic based strategic control theory and contingency based performance measurement theory. It is therefore imperative to design a bridging system capable of seamlessly linking strategic control and performance measurement.

3. Hypothesis

This thesis deals with the hypothesis that the gap between strategic control theory and performance measurement theory can be sufficiently overcome by means of a bridging system that links these two schools of thought. This thesis contributes to both the fields of strategic control and performance measurement, and in addition also attempts to improve the understanding of how these two fields can potentially be interlinked by means of a:

- Systems approach to designing a strategic control system with specific reference to the related inputs, outputs, processes and interfaces.
- Systems approach to designing a performance measurement system with specific reference to the related inputs, outputs, processes and interfaces.
- Systems approach to designing a bridging system with specific reference to the related inputs, outputs, processes and interfaces.

4. Research Objectives

In order to adequately address the hypothesis the following research objectives have been defined:

- Implement a bridging system by making use of a systems approach, so as to ultimately improve the understanding of how management behaviour can be influenced by performance measurement data to better facilitate management interventions by means of strategic control.
- Make use of a systems approach to design a strategic control framework, with the primary focus of being adaptive, and the secondary focus of operating within a process driven framework that acknowledges both the constraints and the structures of the organization.

- Make use of a systems approach to design a performance measurement framework, with the primary focus of being adaptive, and the secondary focus of operating within a process driven framework that acknowledges both the constraints and the structures of the organization.

5. Research Methodology

The research methodology that will be followed is visually depicted in Figure 1-1 below, with the first stage of the methodology being concerned with determining the current state of the art. This involves an extensive literature review that will focus on current academic thinking with specific reference to strategic control systems, performance measurement systems and bridging systems. The “landscape” will therefore only be fully understood once the current state of the art has been determined. The acquisition of in-depth knowledge pertaining to the landscape will lead to the positive identification of various related opportunities. These opportunities serve to ultimately enhance current academic thinking by means of developing a new framework consisting of inputs, outputs, processes and interfaces. The newly developed framework will then be verified and evaluated by means of both the cross verification of initial design requirements and by means of a real world case study. A critical design review will subsequently be conducted and the relevant results will be discussed. Research conclusions will also be drawn and the entire research methodology will be verified by means of a cross verification matrix.

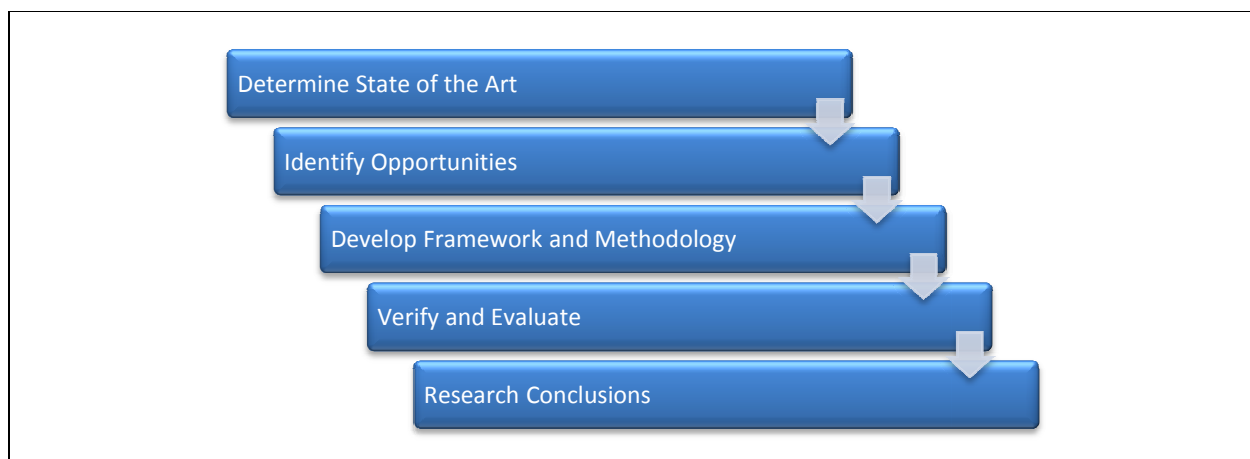


Figure 1-1: Thesis Research Methodology.

The following points further expand on the thesis research methodology:

- **Determine the Current State of the Art:** The current thinking within the academic community, with specific reference to strategic control, performance measurement and bridging systems will first be established. This is absolutely crucial as a good understanding of the current state of the “landscape” promotes the identification of opportunities for possible improvement. Part Two examines the current state of the art of both systems theory and classical strategic management. Academic thinking pertaining to these fields is well established and therefore serves as an excellent starting point. Part Three deals with strategic control and specifically discusses the academic thinking relating to the origins, concept and the different approaches to both management control as well as strategic control. Part Four focuses on the extensive amount of academic literature pertaining to the field of performance measurement. Part Four also specifically investigates the origins of performance measurement, the balanced performance measurement concept and the different approaches to balanced performance measurement. Academic thinking related to the Balanced Scorecard concept, with specific reference to first and second generation Balanced Scorecards, as well as the concept of third generation Balanced Scorecards is also addressed. In addition, Part Four also examines the concept of information asymmetry and the related impact on performance measurement. Part Five deals with academic literature that focuses on strategic alignment. Part Five specifically looks at the origins and implications of the gap between strategic control and performance measurement and what the term “bridging the gap” actually entails.
- **Identify Opportunities:** It is only possible to identify relevant opportunities based on the existing shortfalls and gaps once the academic landscape is fully understood. Opportunities pertaining to the potential strategic control system, performance measurement system and bridging system designs are subsequently translated into a set of functional requirements. Part Three deals with Requirements SC1 to SC4, Part Four with Requirements PM1 to PM5 and Part Five with Requirements BS1 to BS5. Table A-1 in Addendum A provides a complete list of all the requirements.

- **Develop Framework and Methodology:** After the functional have been formulated a systems approach will be used to design the strategic control system, the performance measurement system and the bridging system. The systems approach, as will be discussed in Part Two, serves as the basis for developing the relevant framework and methodology. Part Three, Part Four and Part Five develops the framework and methodology presented in this thesis by first establishing an initial concept solution, and then expands on the solution with specific reference to inputs, outputs, processes and interfaces.
- **Verify and Evaluate:** The framework and methodology is verified by means of cross verification matrices and evaluated by means of a real world case study. The cross verification matrices focus on the functional requirements and are presented after the design phases in Part Three, Part Four and Part Five. These matrices break the requirements down into sub requirements and cross verifies them against how the requirements were met and where the requirements were met. Part Six presents a real world case study which, as mentioned, uses a real world business unit to evaluate the framework and methodology. The case study specifically aims to substantiate, as well as to demonstrate, the practical functionality of the framework and methodology as an indivisible whole.
- **Research Conclusions:** Research conclusions are drawn in Part Six and are largely based on the results of the case study. Both the strengths and the weaknesses of the framework and methodology are highlighted. Further research conclusions, with specific reference to the overall strategic objectives, are discussed in Part Seven.

6. Research Constraints

The research methodology is however subject to a major timescale constraint that is worth mentioning. It can take several years to implement and verify a new business process within even the smallest of organizations. It is for this reason that the case study takes a “post mortem” approach. This approach involves the practical implementation of the overall framework by making use of historical strategic business unit plans, objectives and data. The results and findings are then qualitatively correlated with possible outcomes that could have potentially been a direct result of successfully implementing the suggested framework and methodology.

Part Two - Fundamentals

“No problem can be solved until it is reduced to its simplest form. The changing of a vague difficulty into a specific, concrete form is a very essential element in thinking.”

John Pierpont Morgan

1. Objectives

Part Two of this thesis familiarizes the reader with the principles that constitutes the fundamental building blocks on which the design philosophy is based upon with specific reference to:

- The principles of a systems approach.
- The classical strategic management process.

The design philosophy is applied to the strategic control system design, performance measurement system design as well as to the bridging system design. The relationship between the fundamentals, strategic control system, bridging system and performance measurement system is depicted in Figure 2-1 below.

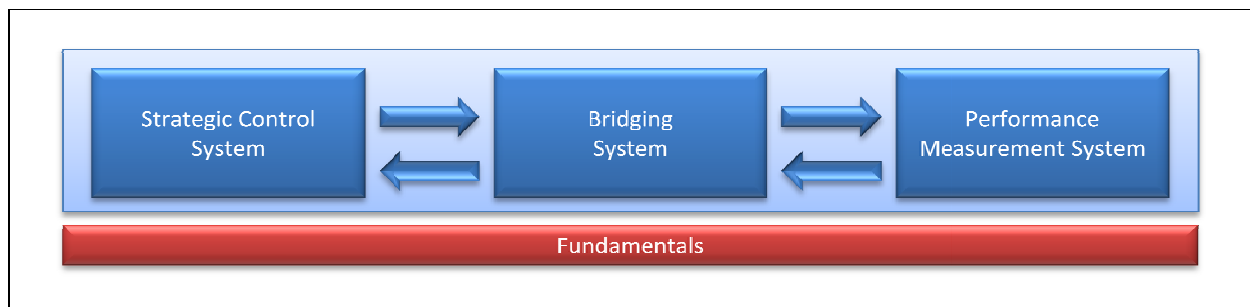


Figure 2-1: Part Two – Fundamentals.

2. The Systems Approach

Conceptual developments during the 1940s, which was consequently also known as the systems age, by prominent philosophers such as Suzanne Langer and Charles Morris, as well as by credible mathematicians such as Claude Shannon and Norbert Wiener, led to the idea that a system can be used as a means to organize and classify scientific thinking. This idea was not new, but how it applied to

science was. The early 1950s saw the biologist Ludwig von Bertalanffy make further contributions to this field, which subsequently led to the general definition of a system:

“The system is a set of interrelated elements of any kind; for example, concepts (as in the number system), objects (as in the telephone system or human body), or people (as in a society).” (Ackoff 1973)

The set of interrelated elements that von Bertalanffy’s definition speaks of has the following three properties:

- 1) The properties or behaviour of each part of the set has an effect on the properties or behaviour of the set as a whole.
- 2) The properties and behaviour of each part and the way they affect the whole depend on the properties and behaviours of at least one other part in the set. Therefore, no part has an independent effect on the whole.
- 3) Every possible subgroup of elements in the set has the first two properties. Each has an effect, and none can have an independent effect, on the whole. Therefore, the elements cannot be organized into independent subgroups.

From the above properties it logically follows that a given systems’ characteristics or behaviour as a whole differs from the characteristics or behaviours of its parts. It also follows that a system as a whole is more than just the sum of its parts.

“A system is more than the sum of its parts; it is an indivisible whole. It loses its essential properties when taken apart. The elements of a system may themselves be systems, and every system may be part of a larger system.” (Ackoff 1973)

The focal point of the systems approach is therefore on the larger whole rather than on the smaller parts (Moll 1998). This systems approach forms the basis of the design philosophy that is applied throughout this thesis. The individual parts, namely the strategic control system and the performance measurement system, can only truly be seen as an indivisible whole when they are linked by means of a bridging system.

3. An Overview of the Classical Approach to Strategic Management

It is extremely difficult for an engineering student to fully grasp the concepts of electromagnetic theory without a fundamental knowledge of engineering mathematics. Much the same can be said about fully grasping the concepts of strategic control and performance measurement without a fundamental knowledge of strategy. The purpose of this section is to provide the reader with a broad overview of the classical approach to strategic management and it covers the fundamental concepts discussed in most texts related to the subject. An overview of the classical approach to strategic management therefore serves as an adequate starting point for the design of a strategic control system, a performance measurement system and ultimately a bridging system.

3.1. Definition and Framework of the Classical Strategic Management Process

Strategy can be defined as the deliberate set of actions that managers take to attain one or more of the organization's defined objectives. Strategy is generally concerned with creating a competitive advantage in order to achieve superior performance. The process by which managers choose which strategies to execute, in order to gain a competitive advantage, and hence achieve superior performance, is known as the *strategic management process*. This process is illustrated in Figure 2-2 below.

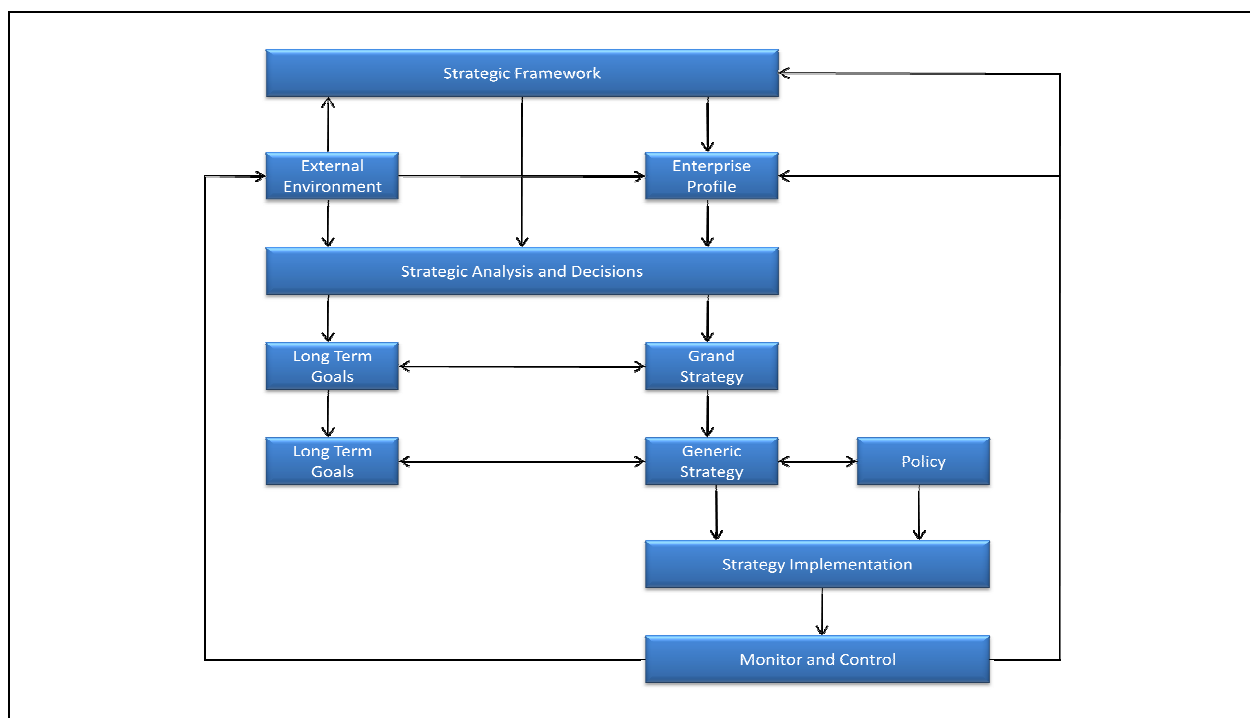


Figure 2-2: The Classical Strategic Management Process.

3.2. Strategic Framework

The strategic framework consists of the vision, the mission and the core values respectively. The strategic framework serves as the reference point for the entire strategic process and directly influences the enterprise profile and the strategic analysis and decisions. The strategic framework is influenced by the external environment in which the organization operates and by the information that is fed back from the monitoring and control element.

3.2.1. The Vision

The vision is generally viewed as the first step in the strategic management process. The vision of an organization should be a dream or a promise that communicates an attractive future. Ehlers and Lazenby believe that a vision should adhere to the following (Ehlers, Lazenby 2004):

- As many managers as possible should give input into the development of a vision statement.
- The organization must be able to achieve its vision.
- The vision needs to be redeveloped, once achieved, in order to maintain focus.

3.2.2. The Mission

The mission statement is the reason why a company exists. It answers questions such as; what is our business? What will it be? What should it be? It can alternatively also be seen as the “goal” that a company wants to achieve. Richards described the characteristics of a well defined goal as (Richards 1986):

- Being precise and measurable.
- Addressing critical issues.
- Being challenging but realistic.
- Specifying a time period in which it is to be achieved.

3.2.3. The Core Values

The core values provide a framework that sets the values and standards within an organization and is seen as the foundation of the organizational culture. They influence employee behaviour, interaction, and work ethic. In South Africa it is extremely important that a company's core values seamlessly tie in with the principles of good corporate governance as set out in the King III report.

3.2.4. The Stakeholders

It is extremely important to identify the organization's stakeholders and how they relate to the strategic management process. No matter what the strategy, man will always be in the loop. Therefore understanding the interface between strategy and the human factor is the key to the successful implementation of any strategy. Human resources therefore play a major role and it is necessary to define all stakeholders that can affect the strategic management process. Below is a list of possible stakeholders in an organization:

- Shareholders.
- Media.
- Government.
- Suppliers.
- Community.
- Customers.
- Financial institutions.
- Employees.

3.3. The External Environment

The external environment is concerned with the environment in which the organization operates. There are three environments in which a business may find itself at any given time and they are illustrated in Figure 2-3 below.



Figure 2-3: The External Environments in Which an Organization May Find Itself.

The operational environment is concerned with all the role players that directly affect the environment in which the organization operates. These include shareholders, competitors and employees. The industrial environment is concerned with barriers to entry, buying power and substitute products. The global environment is concerned with economic, social, political, technological and ecological influences on a global scale.

It is important for any business to develop a surveillance system that surveys the external environment. The surveillance system needs to look at specific Key Performance Indicators which are identified during scenario planning. Scenario planning is the process where managers look at possible future situations in which the business may find itself. Some situations may be positive and other may be negative. A set of Key Performance Indicators are identified for each scenario and are used as flags to follow the development of the operational, industrial and global environment in which the organization finds itself.

Courtney, Kirkland, and Viguerie noted that the objective of scenario planning is to get managers to understand the dynamic and complex nature of the environment and think through proposed solutions and strategies for different circumstances (Courtney, Kirkland & Viguerie 1997). Shoemaker found that over 50 percent of Fortune 500 companies use some form of scenario planning (Shoemaker).

3.4. Enterprise Profile

The enterprise profile directly influences the strategic analysis and the subsequent choices. The enterprise profile is however influenced by the external environment, the strategic framework and the by the strategy implementation results. The enterprise is a complex entity which is constantly evolving and it is difficult to model it precisely. A good starting point is to look at the value creation chain within a business and to model it as a set of interlinking primary and supportive activities. Dess, Lumpkin and Taylor proposed the following model which is illustrated in Figure 2-4 below and in Figure 2-5 on the next page (Dess, Lumpkin & Taylor 2002).

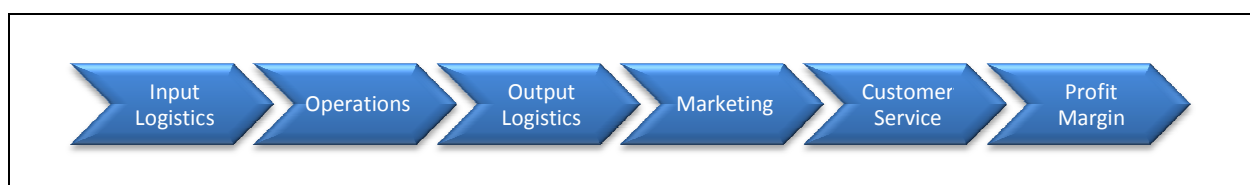


Figure 2-4: Primary Business Activities.

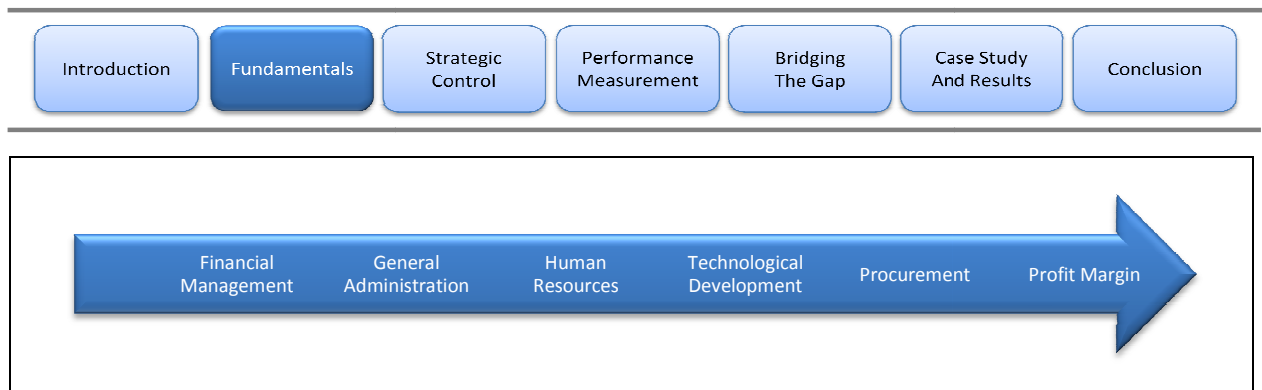


Figure 2-5: *Supportive Business Activities.*

3.5. Strategic Analysis and Choices

The strategic analysis and choices is a crucial part of the strategic management process. It directly influences the long term goals as well as the grand strategy of the organization. The strategic analysis and choices are directly influenced by the external environment and the enterprise profile, strategic analysis therefore usually focuses on both external and internal factors.

3.5.1. External Analysis

Given the feedback from the external environment it is necessary to look at the opportunities and threats that a company faces. Opportunities arise when a company understands its external environment and takes the appropriate action in order to secure an advantage. A threat is when conditions in the external environment jeopardize the well being of the company. A continuous process monitoring these opportunities and threats needs to be implemented. If done properly, the scenario planning accompanied by the surveillance system should take care of this matter. Hitt, Ireland, and Hoskisson proposed a model for external environmental analysis. This model is depicted in Figure 2-6 on the next page (Hitt, Ireland & Hoskisson 2007).

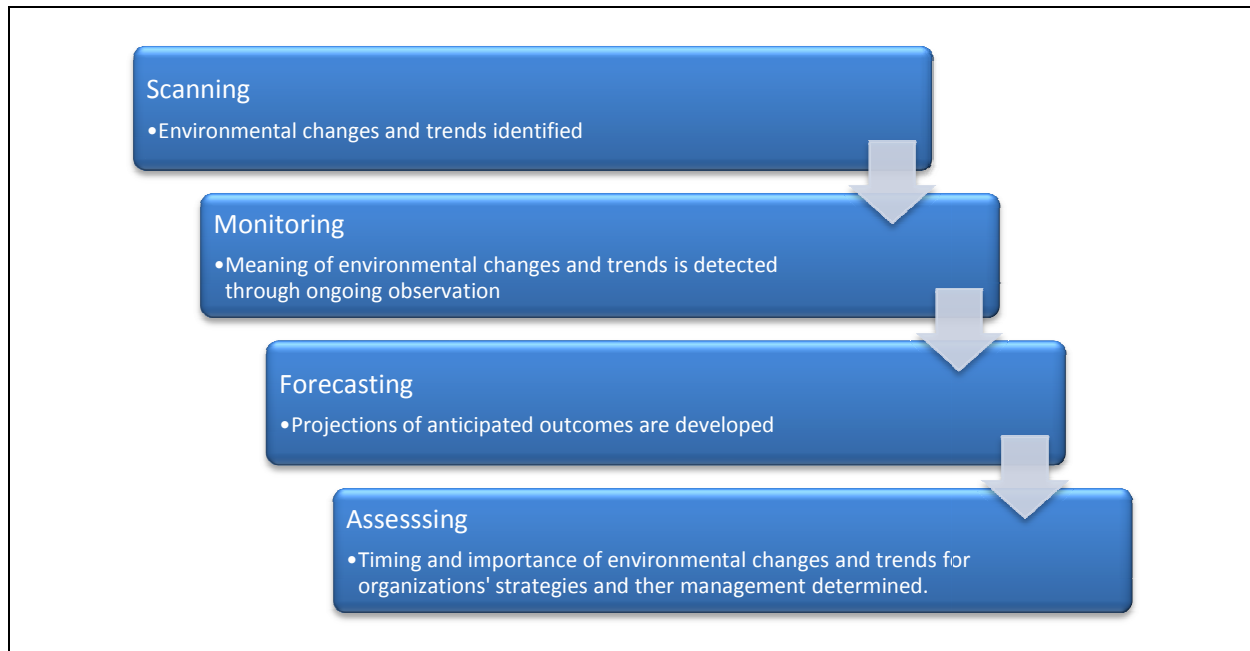


Figure 2-6: Components of the External Environment.

It is also important to analyze the significance of the sector, industry, and market segment in which the organization finds itself along with a thorough analysis of the industry life cycle as identified in the external environment phase. An in depth analysis will lead to a better understanding of changing industry boundaries and how to take full advantage of such changes. This will therefore subsequently result in a better understanding of the opportunities and threats inherent in the industrial environment.

A further tool that can assist with external environmental analysis is Michael E. Porter's five forces model. Porter proposed a model that focuses on the five forces that shape competition within an industry (Porter 1998b). Figure 2-7 on the next page briefly illustrates this model.

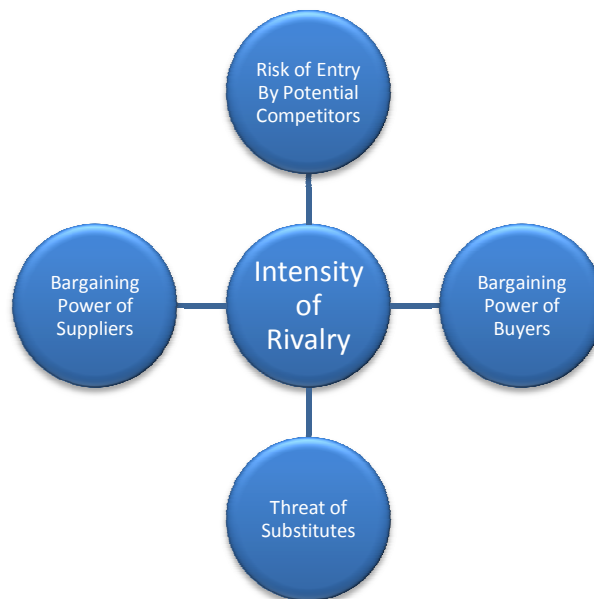


Figure 2-7: Porter's Five Forces Model (Porter 1998b).

Table 2-1 below goes into further detail about each of Porter's five competitive forces.

Table 2-1: Breakdown of Porter's Forces.

Competitive Force	Driving Factor
Risk of entry by potential competitors.	<ul style="list-style-type: none"> • Brand loyalty. • Absolute cost advantage. • Economies of scale. • Customer switching costs. • Government regulation.
Rivalry among established companies.	<ul style="list-style-type: none"> • Industry competitive structure. • Industry demand. • Exit barriers.
The bargaining power of buyers.	<ul style="list-style-type: none"> • Individual buyers and distributors.
The bargaining power of suppliers.	<ul style="list-style-type: none"> • Individuals and organizations.
Substitute products.	<ul style="list-style-type: none"> • Products of different businesses and industries that satisfies the same need.

3.5.2. Internal Analysis

The internal analysis is directly influenced by the enterprise profile and is concerned with identifying the strengths and weakness of the organization. Ehlers and Lazenby define a strength as a resource or capability the organization has, which is an advantage relative to the competitor. They also define a weakness as a lack of, or deficiency in, a resource that represents a relative disadvantage to an organization in comparison with the competitor (Ehlers, Lazenby 2004).

The resource based view is another method of internal strategic analysis. The resource based view is based on the fact that in order to obtain a competitive advantage, an organization's resources should be seen as more important than the structure of the industry in which it operates. It is important to investigate resources and capabilities during internal analysis so as to establish if and where competitive advantage can be obtained, and how it will influence strategic choices. The resource based view also implies that competitive advantage is a direct result of an organization's specific capabilities and resources. The resource based view commonly defines three types of categories:

- 1) Tangible assets.
- 2) Intangible assets.
- 3) Organizational capabilities.

Table 2-2 below was adapted by Ehlers and Lazenby from Pearce and Robinson (Pearce, Robinson 2003) and illustrates examples of different resources within an organization.

Table 2-2: Examples of Different Resources (Ehlers, Lazenby 2004).

Resource	Example	Indicator
Tangible.	Stock of technology such as trademarks. Physical resources such as location, technically advanced equipment, and reserves of raw materials.	Cash flow. Profitability. Solvability. Liquidity. Market value of assets. Capital equipment.
Intangible.	Intellectual property. Employee knowledge and skills. Reputation with customers. Customer perception.	Patents and copyright. Brand recognition. Corporate reputation. Brand equity.

It is important to also carefully analyze the company value chain as modelled in the enterprise profile. Value can be defined as the amount of money that a customer is willing to pay for what the organization is providing. Michael Porter introduced the concept of the value chain, observing that the internal organizational routines and processes are directly related to the value that the customer experiences. Thoroughly investigating the value chain and all primary and secondary activities will lead to a better understanding of where value is created and how it is related to competitive advantage.

3.6. Long Term and Short Term Goals

Long term goals are directly influenced by the strategic analysis and choices made and are mutually related to the grand strategy of an organization. It follows that the short term goals are derived from the long term goals, with the short term goals mutually related to the generic strategy. As mentioned earlier, Richards identified the characteristics of a well defined goal as (Richards 1986):

- 1) Being precise and measurable.
- 2) Addressing critical issues.
- 3) Being challenging but realistic.
- 4) Specifying a time period in which it is to be achieved.

Long term goals usually apply to a time period of three to five years and they are often focused around an organization's competitive advantage with reference to the grand strategy. Short term goals apply to a time period of one to three years and are focused around strategic execution and everyday business activities with reference to the generic strategy.

3.7. Grand Strategy

The grand strategy follows directly from the strategic analysis and strategic choices. It has a mutual relationship with the organization's long term goals as well as directly influencing the generic strategy of the organization. Pearce and Robinson identified the following 14 grand strategies; these strategies are summarized in Table 2-3 on the next page.

Table 2-3: The Fourteen Grand Strategies (Pearce, Robinson 2003).

Strategy	Description	Advantages
Concentrated growth.	Promote a single product in a single market and could also be seen as promoting existing products in existing markets.	Exploit existing capabilities in delimited market. Operate in known environment.
Market development.	Marketing existing products in new channels/markets.	Low risk. Cosmetic changes to products lead to good results.
Product development.	Substantial modification and development of existing products or introduction of new but related products that could be sold to the same clients through the same channels.	New model every year.
Innovation.	To reap the high profits associated by acceptance of a new product. This is not extending the life cycle of existing products.	To make existing products obsolete. To avoid stiff competition in existing market.
Horizontal integration.	Acquisition of competitors.	To eliminate competition. To enter new channels/markets.
Vertical integration.	Acquisition of suppliers or customers.	To control raw materials especially where suppliers are few and buyers are many. To own the channel to the customer.
Concentric diversification.	This is a distinctive departure from existing business to related products and markets.	Spin-offs from own research and development. Acquisitions of related operations.
Conglomerate diversification.	Acquiring business because it is a good investment regardless of any relation with current business. No synergy with existing business is required.	To utilize opportunities for better returns. To even out cyclical sales and cash flow patterns. To acquire core business as part of the deal.
Turnaround.	To recover a firm that has been declining in profitability.	To restore to profitability a company in its core business. To retain its distinctive competencies. Cost reduction. Asset reduction.
Divestiture.	To sell a firm or a significant portion thereof at a premium to net asset value.	The firm is or became a mismatch in the group. To obtain cash.

		Government antitrust. Failed turnaround.
Liquidation.	To sell a firm as a whole or in parts not as a going concern but at tangible asset value.	To minimize losses to shareholders. To admit failure and reduce hardship of all stakeholders.
Joint ventures.	Two or more companies work together to pool resources in order to supply what they could not independently.	Parent companies form a new daughter with defined shareholding by cash. Partners buy into an existing business.
Strategic partnerships.	Strategic agreement to co-operate in supplying the market.	Consortia. Licenses.

The grand strategy applies to all levels of the organization including the investor centre, the profit centre and the cost centre. A grand strategy should be selected that is in line with the interests of stakeholders at all levels of the organization.

3.8. Generic Strategy

The strategy follows directly from the grand strategy and has a mutual relationship with the short term goals of the organization. The generic strategy has a close-knit relationship with the operational strategy of the company and therefore directly influences the policy and the implementation of the strategy within the organization.

Pitts and Lei developed the concept of generic strategies and their relation to both the broad target market and to the narrow target market. These generic strategic approaches are illustrated in Figure 2-8 on the next page (Pitts, Lei 2003).

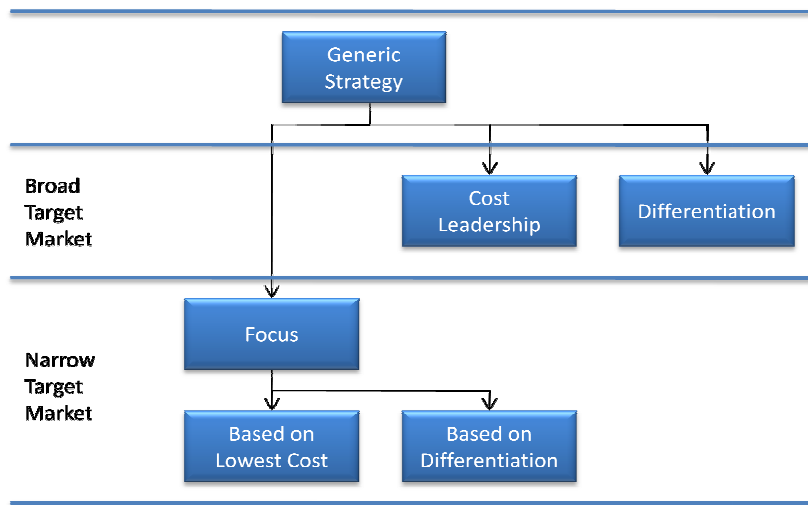


Figure 2-8: Generic Strategy Approach (Pitts, Lei 2003).

Table 2-4 below elaborates on the generic strategies discussed in Figure 2-8 above.

Table 2-4: A Closer Look at Generic Strategy (Ehlers, Lazenby 2004, Porter 1998b, Porter 1980).

Generic Strategy	Definition	Advantages	Disadvantages
Cost leadership.	Striving to become the lowest-cost provider of a specific product or service in a particular market.	Increase the potential to increase market share and profitability. Customer loyalty. Keeps new entrants out of the market.	The risk of imitation. May focus so much on cost-cutting activities that organization loses touch with the market.
Focus.	Selecting a particular market and catering for the very specific needs of consumers in this market. Focus strategies can be based on differentiation or lowest cost.	Uses the ability to carve a niche market. Utilizes a specialized distinctive competence or assets to create new niches.	Needs, expectations and characteristics of the market may shift. Competitors may develop technologies or innovative products that may redefine the preferences of the niche. May sacrifice quality and service in the pursuit of lowest cost and in the process lose market share.
Differentiation.	Distinguishing the organization from competitors by providing consumers with a product	Leads to brand loyalty and customer retention. Loyalty barriers make	Investing too much in differentiation could result in costs that are too high and

or service that is
considered unique.

it difficult to new
competitors to enter
the market.

products/services that
are too expensive.
Imitation risk.

3.9. Policy

Strategy should always be implemented according to well defined policy. It has a mutual relationship with the generic strategy of the company and, as mentioned, has a direct influence on strategy implementation. An organization's policy should always be based on principles of good corporate governance. In South Africa the Companies Act No. 61 of 1973 along with the King III report provides organizations with a good framework from which to formulate and develop policies. King identified the 7 characteristics of good corporate governance as follows (King 2002):

- Social responsibility.
- Fairness.
- Responsibility.
- Accountability.
- Independence.
- Transparency.
- Discipline.

The King III report goes further by identifying key matters that should be taken into consideration when formulating an organization's strategy. King states these matters as (King 2002):

- Stakeholder engagement.
- Triple bottom line reporting.
- Social responsibility.
- Environmental responsibility.
- Sustainability.

3.10. Strategy Implementation

Strategy implementation is one of the most important functions within the strategic management process. It is directly influenced by the generic strategy and by the company policy. Strategy implementation can be defined as the course of action that turns strategic planning into actions so as to achieve the overall strategic objectives. Although the model for the strategic management process presented at the beginning of this section makes a clear distinction between formulation and implementation, it is not always the case. Often in practice these elements tend to overlap and are closely related.

The following problems that are common with the implementation of strategy have been identified (Ehlers, Lazenby 2004):

- 1) The coordination and implementation efforts are not sufficiently effective.
- 2) Leadership and direction provided by top and middle managers is inadequate.
- 3) Goals have not been well defined and are not understood by employees.
- 4) The formulators of the strategy are not involved in the implementation process.
- 5) Key changes in responsibilities of employees have not been clearly defined.

There is however key drivers of the strategic implementation process and these are tabulated in Table 2-5 below:

Table 2-5: Key Drivers of the Strategic Implementation Process.

Key Driver	Implementation Mechanism
Leadership.	<ul style="list-style-type: none"> • Efficiency. • Probity. • Responsibility. • Transparency. • Accountability.
Organizational culture.	<ul style="list-style-type: none"> • Strong cultures. • Weak cultures. • Adaptive cultures.
Resources allocation.	<ul style="list-style-type: none"> • Adequate resource allocation.
Reward system.	<ul style="list-style-type: none"> • Cash bonuses. • Share options. • Profit sharing. • Non-monetary rewards.
Organizational structure.	<ul style="list-style-type: none"> • Tall structure. • Flat structure.

3.11. Monitor and Control

The monitor and control of the strategy implementation entails the evaluation of the implementation process as well as determining whether the strategy and structure is functioning as was originally intended. Strategic control is not only about how well the strategy is being executed, but also about how to create incentives to keep employees motivated and focused on their strategic objectives.

Simons developed the vital relationship between strategic control and competitive advantage and also y developed correlations between control and efficiency, control and quality, control and innovation, and control and responsiveness (Simons 1991). These elements can be fed back into the enterprise profile and into the external environment to gain a better understanding of the organization's competitive advantage.

There are many different types of strategic control and they are summarised in Table 2-6.

Table 2-6: *Types of Strategic Control* (Ehlers, Lazenby 2004, Pearce, Robinson 2003).

Strategic Control	Description
Premise control.	Used to systematically and continuously check whether the premises and assumptions on which the strategy is based are still valid.
Strategic surveillance.	Organization monitors and interprets a broad range of events or information sources, not previously identified.
Special alert control.	Thorough, and often rapid, consideration of the organization's strategy because of a sudden, unexpected event.
Implementation control.	Exercised as implementation unfolds and gives managers feedback regarding success of implementation and whether the basic strategic direction needs to be altered.

A strategic control system might be a mixture of the above mentioned mechanisms. Hill and Jones defined the steps in designing an effective control system. These steps are illustrated in Figure 2-9 below (Hill, Jones 2008).

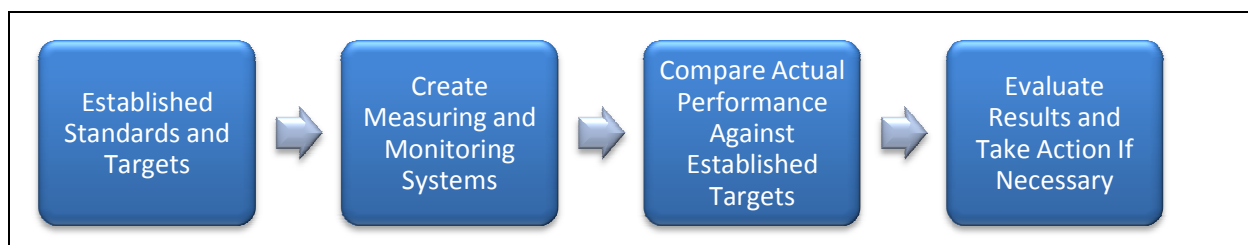


Figure 2-9: *Steps in Designing an Effective Control System.*

Part Three - Strategic Control

"You can't always control the wind, but you can control your sails."

Anthony Robbins

1. Objectives

Part Three of this thesis introduces the reader to the concept of strategic control with specific reference to the following:

- The origins, concept, and the different approaches to management control.
- The concept, different approaches and critical elements of strategic control.
- A systems approach to strategic control system design, specifically addressing basic design considerations, system requirements, inputs, processes, outputs and interfaces.

The strategic control system that is formulated in this part of the thesis follows directly from the fundamentals discussed in Part Two. The relationship between the fundamentals, strategic control system, bridging system and performance measurement system is depicted in Figure 3-1.

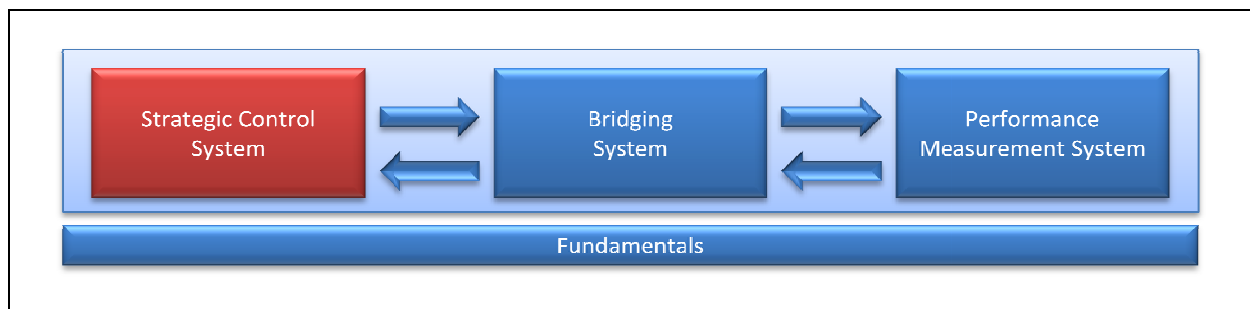


Figure 3-1: Part Three - Strategic Control.

2. Management Control

2.1. The Origins of Management Control

In his paper, *Management Planning and Control Systems: A Framework for Analysis*, Anthony formulated the original framework that addressed the basic concept of management control systems (Anthony 1965). Anthony believed that management control systems aim to provide useful information to managers that help them to develop and maintain acceptable limits for an organization to operate

within. Anthony's approach was based on the notion of separating "strategic planning" and "operational control" from "management control". In doing so, the framework ultimately relied on traditional management accounting principles; a discipline, which at the time, was on the verge of being abandoned (Johnson, Kaplan 1987). Anthony's framework had two main intentions. Firstly, it intended to broaden the scope of information used, to not only include financial measures, but to also consider non-financial measures. Secondly, it intended to highlight managerial motivation and behaviour (Otley 1999). The deliberate disregard for the principles of "strategic planning" and "operational control" had however proven to be detrimental to the original intentions of Anthony's framework. Neglecting "operational control" actually supported the use of short-term financial indicators and budgets as the only form of measurement; while neglecting "strategic planning" led to most organizational strategies having the same set of specified control systems and measures (Otley 1999).

Anthony's work did however contribute to emphasizing the importance of not only focusing on the core idea of "management control", but to take strategy and operations into consideration. This concept was reinforced by the Japanese management movement, where innovative techniques such as just-in-time and total quality management proved to be extremely successful in a post industrial era (Johnson, Kaplan 1987). As a result, management control based on the contingency theory of management accounting emerged.

2.2. The Traditional Management Control Concept

The contingency theory of management accounting built on Anthony's framework, but proposed that there is no common form of management control. It also suggested that the choice of appropriate management control methods will depend upon the unique environment in which an organization may find itself (Otley 1999). The single "contingent" or "dependent" variable is therefore based on the unique strategy and objectives that each individual organization chooses to pursue. The objectives become the benchmark to which the contingent variables are compared to in order to determine the "goodness of fit" of the control system. The chosen objectives also have a significant effect on the type of performance measures that are selected (Otley 1999). Any controlled system requires a reference point to which its outcomes can be compared to (Otley, Broadbent & Berry 1995) and it follows that the existence of a variety of reference points will lead to the selection of different performance measures (Otley, Broadbent & Berry 1995). Distinctive organizational strategies and plans will therefore lead to distinct management control system designs (Simons 1995, Langfield-Smith 1997).

Management control based on the principles of contingency theory can best be described as “traditional management control”. Muralidharan defined the concept of traditional management control in the following way:

Strategies (or plans) are made during the planning stage of the management process. During strategy implementation, control systems track actual performance, and the deviations from the planned performance levels are used to inform corrective action. The process of tracking actual performance and utilizing deviations to inform corrective action ensures that strategies are implemented as planned (Muralidharan 1997).

Figure 3-2 below visually illustrates the concept of traditional management control with specific reference to the excerpt above.

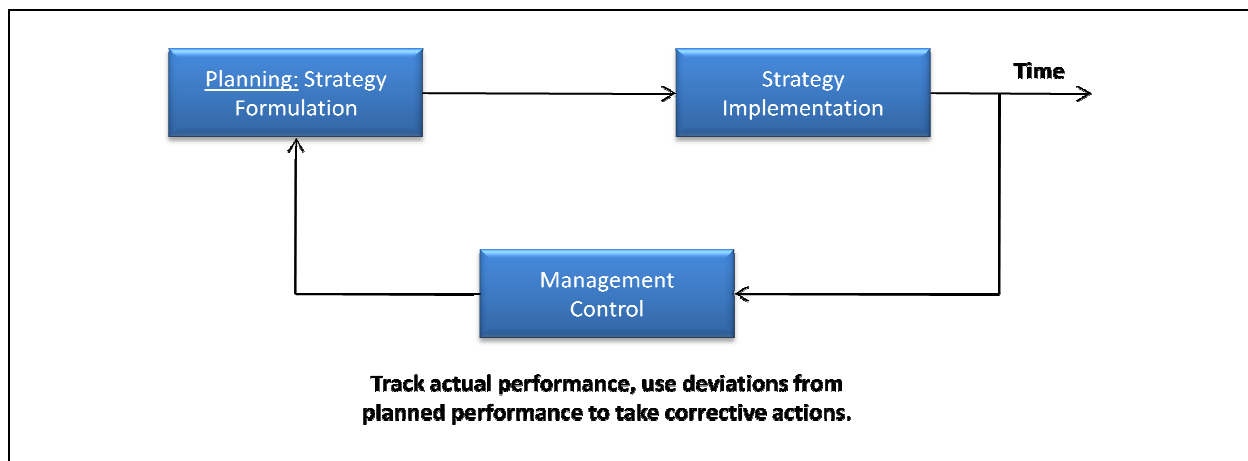


Figure 3-2: Traditional Management Control (Muralidharan 1997).

2.3. The Different Approaches to Traditional Management Control

There are two popular approaches to traditional management control, namely diagnostic control and interactive control. Diagnostic control systems are the formal information structures that are used by management to track the strategic outcomes of the organization. Diagnostic control systems are also used to monitor and correct any deviations from fixed predetermined benchmarks. The main characteristics of diagnostic control systems are (Simons 1995, van Veen-Dirks, Wijn 2002):

- They assist in determining the outputs of a given strategic process;
- They provide fixed benchmarks against which actual results can be compared to; and
- They are able to correct any deviations from these predetermined benchmarks.

Company performance is gauged by looking at the actual strategic accomplishments and comparing them to the predetermined benchmarks and other pre-defined outcomes. Management is therefore able to modify activities and processes according to the benchmarks that were determined during the strategic planning phase (van Veen-Dirks, Wijn 2002). Management is also able to define acceptable deviation limits for the benchmarks and therefore ultimately only manage by exception.

Interactive control systems aim to provide a more “developing” approach to strategy formulation by periodically adapting the strategy to the changing environment. The main characteristics of interactive control systems are (Simons 1991, van Veen-Dirks, Wijn 2002):

- Interactive control systems use information that is deemed important, given the strategic uncertainties within the organizational environment, as a starting point.
- Information produced by the interactive control system is viewed as critical and is constantly reviewed by top level management.
- Operational managers at all levels need to constantly provide the system with results and feedback.
- The data generated by the interactive control system is interpreted in a number of face-to-face discussions between all the organization’s stakeholders. These discussions take the form of a debate and it aims to identify future strategic initiatives that can be fed back into the system.

Interactive control systems are slightly more flexible than diagnostic control systems, in the sense that they can be tailored to suit changes in the environment. Interactive control systems are often used for known strategic uncertainties in the environment. These strategic uncertainties are unique to an organization and managers will therefore elect to control different parts of their organization’s strategy interactively (Anthony, Govindarajan 2001). Interactive control systems are however more customer-orientated, and the central focus is on monitoring the customer needs and identifying expected changes in these needs (Simons 1995). Interactive control systems are not seen as a “new” approach per se, but rather as a diagnostic control system being used interactively (van Veen-Dirks, Wijn 2002).

It is rather important to note that neither diagnostic control systems nor interactive control systems have the ability to signal changes in the competitive environment. They are not able to sense change in the fundamental factors on which an organization’s strategic planning is based and can therefore not control the strategic content. They cannot anticipate opportunities and threats within the competitive

environment, and ultimately fail to determine whether an organization is in fact following the correct strategy.

2.4. The Need for Change

More than fifteen years ago the former Chairman and CEO of General Electric was quoted as saying:

“The old organization was built on control, but the world has changed. The world is moving at such a pace that control has become a limitation. It slows you down. You’ve got to balance freedom with some control, but you’ve got to have more freedom than you ever dreamed of.”
(Slater 1999)

Traditional management control may have been applicable at the time of its development but academics, managers, stakeholders, and corporate regulators were concerned about the concept’s relevance in the 21st century (Otley, Broadbent & Berry 1995, Langfield-Smith 1997, Speklé 2001, Manzoni 2002, Andon, Baxter & Chua 2003, Chenhall 2003, Hartmann, Vaassen 2003). Traditional management control was mostly viewed as inadequate for modern day organizations. This fact can be attributed to the significant difference between the competitive environments in which companies presently operate compared to a decade ago. Strategies need to be constantly updated, as the slightest change needs to be anticipated, compensated for, and exploited.

Change in the 21st Century is seen as instantaneous, abrupt, and unpredictable (Hamel 2000). It is often hard to manage because of its discontinuous and non-linear nature (Nadler, Hibino 1994). Unlike a decade ago managers now have to cope with disruptive changes in the economy and the rapid advancement of technology (Cairncross 2002). Not only are product life cycles shorter, but an ever increasing amount of companies are developing “product platforms” instead of selling custom designed packages (Meyer, Lehnerd 1997). The importance of intangible assets, such as knowledge, reputation, customer loyalty and know-how has become paramount as these factors have become the main drivers of competitive advantage (Paine 2003).

Two necessities for control in the 21st century became apparent: the first is the need for strategic content control so that an organization can be certain that the correct strategy is being followed. The second is the need to identify both financial and non-financial Critical Success Factors in order to ensure

that the organization's strategy is implemented as planned. From these needs the concept of strategic control was developed (Muralidharan 1997, Bungay, Goold 1991, Harrison 1991, Ittner, Larcker 1997).

3. Strategic Control

3.1. The Strategic Control Concept

Strategic control systems in general aim to control strategic content by sensing subtle changes in the fundamental factors on which an organization's strategy is based upon (van Veen-Dirks, Wijn 2002). Strategic control is therefore designed to allow management to ensure that the actual results from the system are in line with the intended results that are vital to the selected strategy (Muralidharan 1997, Harrison 1991). Bungay and Goold noted that "A strategic control system ensures that the immense effort often put into preparing lengthy and detailed strategic plans is in fact translated into action" (Bungay, Goold 1991). The objective of strategic control and traditional management control is therefore exactly the same, with the distinctive difference between the two systems being their approach. A strategic control system focuses on the Critical Success Factors of the selected strategic plan while a traditional management control system focuses on all the aspects of the selected strategic plan (Bungay, Goold 1991). Table 3-1 below compares strategic control with the diagnostic and interactive approaches to traditional management control.

Table 3-1: *Diagnostic, Interactive and Strategic Control* (Simons 1995, van Veen-Dirks, Wijn 2002).

	Diagnostic Control	Interactive Control	Strategic Control
Purpose	Provide motivation, resources and direction to achieve important goals.	Stimulate dialogue and organisational learning by focussing on strategic uncertainties.	Provide motivation and direction to <u>keep on</u> achieving goals.
Nature of System	Feedback systems used to monitor organisational outcomes and correct deviations from preset standards.	Control systems that managers use to regularly and personally involve themselves in the decision activities of subordinates.	Combination of feedback and feed forward systems that focuses on Critical Success Factors and strategic content control.
Goal	No surprises.	Creative search.	Anticipating/changing.
Analytical Complexity	Deductive.	Inductive.	Deductive/inductive.
System Complexity	Complex.	Simple.	Complex formal system.
Time Frame	Past and present.	Present and future.	Present and future.
Targets	Fixed.	Constantly re-estimated.	Set by the business environment.

Introduction	Fundamentals	Strategic Control	Performance Measurement	Bridging The Gap	Case Study And Results	Conclusion
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Feedback	Negative.	Positive.	Mainly negative, but also positive.
Adjustment To	Inputs or process.	Double loop learning.	Continuous adjustment (single and double loop learning).
Communication	Eliminate the need for talk.	Provide a common language.	Provide the necessary information about the changing Critical Success Factors.
Staff Role	Key gatekeepers.	Facilitators.	Translate the Critical Success Factors into internal activities and benchmarks.

Any strategic control system requires, as starting point, the identification of Critical Success Factors. These Critical Success Factors are the basic fundamentals that are viewed as absolutely critical to the success of the chosen strategy or plan. From here the formulation of performance standards for the Critical Success Factors, the measuring of actual performance on these areas and the utilization of these deviations to take corrective action follows (Muralidharan 1997, Bungay, Goold 1991, Roush, Ball 1980). It should once again be noted that the major difference between traditional management control systems and strategic control systems is the identification of Critical Success Factors.

3.2. The Different Approaches to Strategic Control

There are two broad approaches to strategic control, namely the feedback approach and the feed forward approach. The feedback approach views strategic control as the control of strategy implementation (Muralidharan 1997). The main characteristics of the feedback approach to strategic control are (Muralidharan 1997):

- It aims to identify Critical Success Factors.
- It sets the standard of desired performance.
- It tracks the actual performance on the Critical Success Factors.
- It uses deviations to take corrective actions.

The feedback approach to strategic control is very similar to traditional management control in the sense that a negative feedback loop ensures that deviations from the planned strategy are corrected; see Figure 3-2. The feed forward approach, however, contributes a significant amount to the concept of control processes.

The feed forward approach views strategic control as the control of strategic content (Muralidharan 1997). The main characteristics of the feed forward approach to strategic control are (Muralidharan 1997):

- It collects data to check the validity of planning assumptions.
- It identifies emerging opportunities and threats in the competitive environment.
- It interprets the data and responds by changing the strategy content as necessary.

The main contribution of the feed forward approach is its ability to adjust the strategic content, thus adding and removing Critical Success Factors, by adapting to emerging opportunities and threats. Table 3-2 below compares traditional management control with the feedback and feed forward approaches to strategic control.

Table 3-2: Comparison between Management Control and Strategic Control (Muralidharan 1997).

	Management Control	Strategic Control As The Control Of Strategy Implementation	Strategic Control As The Control Of Strategy Content
Purpose	Ensure that strategy is implemented as planned.	Ensure that strategy is implemented as planned.	Change the strategy content in light of invalid planning assumptions and emerging opportunities/threats.
Process	Set standards of desired performance, track actual performance and use deviations to take corrective action.	Set standards of desired performance, track actual performance and use deviations to take corrective action.	Collect data to monitor the validity of planning assumptions and to identify opportunities/threats, interpret the data and respond to the information contained in the data.
Focus	All aspects of strategy implementation.	Key success factors.	Planning assumptions and potential opportunities/threats.

All control approaches that have been discussed up until this point has had their respective advantages and disadvantages. It is necessary to note that a comprehensive strategic control solution will build on the strong points of each of the respective approaches. Doing so will undoubtedly lead to a stable, agile and reliable control system. Figure 3-3 on the next page further develops the model originally depicted in Figure 3-2 and illustrates how the different control processes fit together.

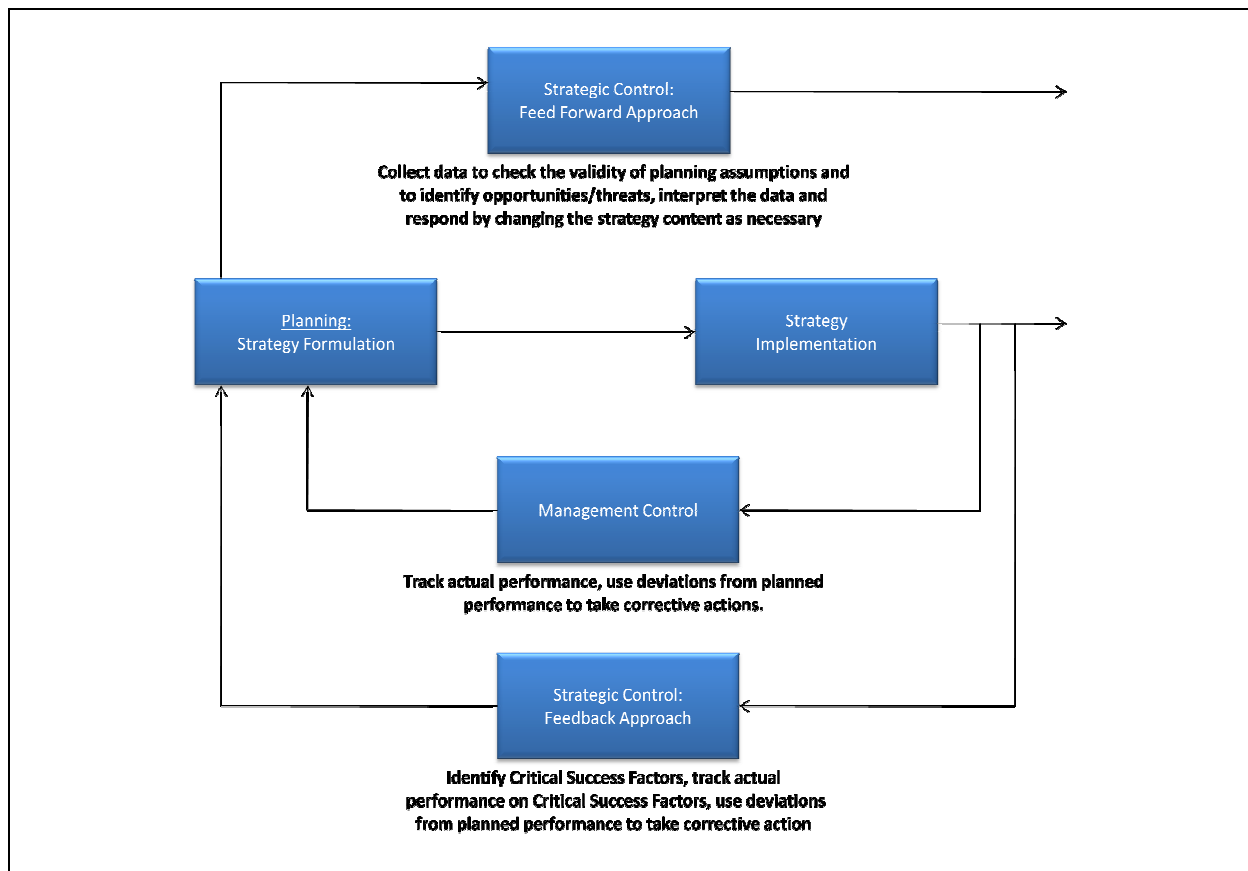


Figure 3-3: A Comprehensive Strategic Control Process (Muralidharan 1997).

Both of the strategic control approaches discussed earlier relies heavily on the identification, validation and regulation of a certain set of Critical Success Factors. The feedback approach focuses on strategic implementation, where the Critical Success Factors are seen as key areas within the organization that must go right. The feed forward approach, however, focuses on strategy formulation by constantly validating or refuting the selected Critical Success Factors based on emerging opportunities and threats. Critical Success Factors therefore form the basis on which a strategic control system should be designed.

3.3. The Critical Element of Strategic Control

There is a vast amount of literature that deals with a wide variety of perspectives on Critical Success Factors and related schools of thought. This thesis will only refer to the two most popular perspectives, namely, the implementation perspective and the formulation perspective.

The strategy implementation perspective views Critical Success Factors as the crucial elements that, if adhered to, will ensure success. It assumes that the Critical Success Factors follow directly from a pre-determined strategy or plan. Rockart provided the following definition:

“Critical Success Factors are for any business, the limited numbers of areas in which results, if they are satisfactory, will ensure competitive performance for the organisation. They are the few key areas where things must go right for the business to flourish.” (Rockart 1979)

Boynton and Zmud defined Critical Success Factors in the following way:

“Critical Success Factors are those few things that must go well to ensure success for a manager or an organization, and, therefore they represent those managerial or enterprise area, that must be given special and continual attention to bring about high performance. Critical success factors include issues vital to an organization’s current operating activities and to its future success.” (Boynton, Zmud 1984)

The feedback approach to strategic control views Critical Success Factors from an implementation perspective. The diagnostic nature of this approach ensures that deviations in the actual performance of the Critical Success Factors are corrected and compensated for so as to ensure successful implementation of the organization’s strategy.

When Critical Success Factors are viewed from a strategy formulation perspective they are seen as playing a key role in the process of strategy formulation (van Veen-Dirks, Wijn 2002). Wijn et al. defined the Critical Success Factors as seen from a strategy formulation perspective as:

“The factors on which a company can distinguish itself from its competitors and which will serve as a basis for a stable, positive relation with the market.” (Wijn et al. 1996)

Atkinson et al. described Critical Success Factors as:

“The elements, such as quality, time, cost reduction, innovativeness, customer service, or product performance, that creates long-term profitability for the organisation.” (Atkinson et al. 1997)

The strategy formulation perspective is in accordance with the feed forward approach to strategic control. It focuses on responding to emerging opportunities and threats in the competitive environment by adjusting the related Critical Success Factors, therefore constantly changing the strategic content, to ultimately keep the organizations strategy relevant.

A comprehensive strategic control solution will therefore make use of both the implementation and the formulation perspective to ensure a stable, agile and reliable control system.

4. A Systems Approach to Strategic Control System Design

4.1. Strategic Control System Design: Basic Design Considerations

It is important to carefully examine the basic design considerations before formulating a strategic control system in terms of requirements, inputs, processes and output. These design considerations listed below as the:

- Competitive environment.
- Technology.
- Organisational structure.
- Organisational size.
- Generic organizational strategy.

Developing a control system with these considerations in mind will ensure that the overall design solution is generic, customisable and adaptable.

4.1.1. *Competitive Environment*

The competitive environment is an extremely influential variable that has to be considered when designing a strategic control system. Perhaps the most extensively researched facet of the competitive environment is the element of uncertainty (Chenhall 2003). It is however very important to differentiate uncertainty from risk. Risk applies to situations where a probability can be attached to the occurrence of a particular event. Uncertainty applies to situations where such a probability cannot be associated with a particular event occurring (Chenhall 2003).

The environment is not only characterised by uncertainty and risk but also by turbulence, hostility, diversity, and complexity (Khandwalla 1977). Other characteristics include dynamism (Duncan 1972), controllability (Ewusi-Mensah 1981), and ambiguity (Ouchi 1979).

The basic design considerations of strategic control systems with reference to the competitive environment are listed below (adapted from Chenhall 2003):

- The more uncertain the external environment, the more receptive and externally focused the Critical Success Factors.
- The more hostile and turbulent the external environment, the greater the reliance on formal, financially-based, Critical Success Factors should be.

4.1.2. Technology

The concept of technology has many applications within the organizational context. Technology usually refers to an organization's work processes, in other words, the operational processes that transform inputs into outputs. Technology may also include physical hardware, such as machines and tools, as well as materials, software, resources, and knowledge (Chenhall 2003). Technology is therefore an important design consideration.

Different organizations will make use of different types of technologies depending on the product that they deliver. An organization that develops specialised, non standard, distinct products will rely heavily on complicated unit or batch technologies (Chenhall 2003). An organization that however produces standard, undifferentiated products will rely heavily on expensive mass production and standardized process technologies (Chenhall 2003).

The basic design considerations of strategic control systems with reference to technology are listed below (adapted from Chenhall 2003):

- The more an organization's technology is characterized by standardized and automated processes, the more formal the strategic control system. The Critical Success Factors will therefore have to rely more on statistical process control and traditional financial measures with little flexibility.
- The more an organization's technology is characterized by high levels of task uncertainty and atypical processes, the more informal the strategic control system. The Critical Success

Factors will therefore have to rely less on standard operating procedures, plans and accounting performance measures.

- The more an organization's technology is characterized by interdependences in the value chain, the more informal the strategic control system. The Critical Success Factors will therefore have to rely less on statistical operating procedures and more on statistical planning reports, informal coordination and employee interactions.

4.1.3. *Organizational Structure*

Organizational structure can be defined as the "formal specification of different roles for organizational members or tasks for groups, to ensure that the activities of the organization are carried out" (Chenhall 2003). Organizational structure is an important design consideration and is an influential variable with regard to the strategic control system design. Structure has an impact on information flow within the organization, employee motivation and the overall operational efficiency of the organization.

There is a definite distinction between the outcomes of structure and the structural mechanisms. Lawrence & Lorsch defined two generic structural outcomes, namely, differentiation and integration (Lawrence, Lorsch 1967). Differentiation deals with the degree of autonomy of individual strategic business units. Differentiation is driven by the decentralization of authority as structural mechanism. Integration deals with the degree of unanimity between business units making use of rules, operating procedures, and committees as structural mechanisms.

The basic design considerations of strategic control systems with reference to organizational structure are listed below (adapted from Chenhall 2003):

- Organizations that depend on sophisticated technologies with a high level of differentiation, requires a strategic control system that relies more on traditional, financially-based, Critical Success Factors.
- Organizations that do not depend heavily on sophisticated technologies with a higher level of integration, requires a strategic control system that relies more on informal Critical Success Factors.
- Hierarchical organizational structures require a strategic control system based on Critical Success Factors that support the concept of traditional profit centres and responsibility accounting.

- Organizations with a flatter structure require a strategic control system based on Critical Success Factors that support concepts such as de-layering, process orientations, and team-based workgroups.

4.1.4. Organizational Size

An organization that experiences long term growth is often associated with an improvement in efficiency, increased opportunities for specialization and the division of labour. Larger organizations are more able to control the environment in which they operate and are thus also able to decrease task uncertainty (Chenhall 2003). As an organization grows larger it faces challenges such as the need for managers to handle more information which results in the implementation of controls such as rules, documentation, specialization of roles and functions, extended hierarchies and greater decentralization down hierarchical structures (Chenhall 2003, Child, Mansfield 1972).

The majority of studies that have been conducted on strategic control systems have mostly considered larger companies. This makes sense, as larger companies tend to implement and make use of more formal strategic control systems. Organizational size is usually seen as a design consideration along with other factors such as technology and structure.

The basic design considerations of strategic control systems with reference to organizational size are listed below (adapted from Chenhall 2003):

- Larger organizations will find Critical Success Factors that are based on diversified operations, formalization of procedures and specialization of functions more useful.
- Larger organizations will find Critical Success Factors that are based on a compartmentalized organizational structure more useful.

4.1.5. Generic Organizational Strategy

Generic organizational strategy is somewhat different from the considerations already discussed previously, as it is not really seen as an element of context. It is however important to consider generic organizational strategy since it has an influence on the nature of the competitive environment, the technology, the organizational structure, and the organizational size; therefore ultimately influencing strategic control system design (Chenhall 2003).

Quite a number of generic organizational strategies have been developed over the years, these include, entrepreneurial-conservative (Miller, Friesen 1982), prospectors-analysers-defenders (Miles et al. 1978), build-hold-harvest (Gupta, Govindarajan 1984) and product differentiation-cost leadership (Porter 1998a).

The basic design considerations of strategic control systems with reference to generic organizational strategy are listed below (adapted from Chenhall 2003):

- Generic organizational strategies such as conservative, defender, and cost leadership are associated more with formal, financially based, Critical Success Factors.
- Generic organizational strategies such as product differentiation and competitor focused strategies are associated with Critical Success Factors that have a broader scope. Critical success factors therefore need to support aggregated, integrated and timely operational decisions by allowing for customisable strategies and future planning.
- Generic organizational strategies such as entrepreneurial and prospector strategies are associated with a good mix of both formal and informal Critical Success Factors.
- Generic organizational strategies such as defender and harvest strategies that are followed by cost leadership strategies are associated more with formal, financially based, Critical Success Factors.

4.2. Strategic Control System Design: Functional System Requirements

The formulation of functional system requirements is a vital part of the system engineering process. The functional system requirements articulate what the strategic control system is required to do. It provides a point of departure, consistent with the proposed concept solution, from where the design of a comprehensive system is made possible.

The concept solution of the proposed strategic control system comprises of inputs, internal processes and outputs as depicted in Figure 3-4 below.

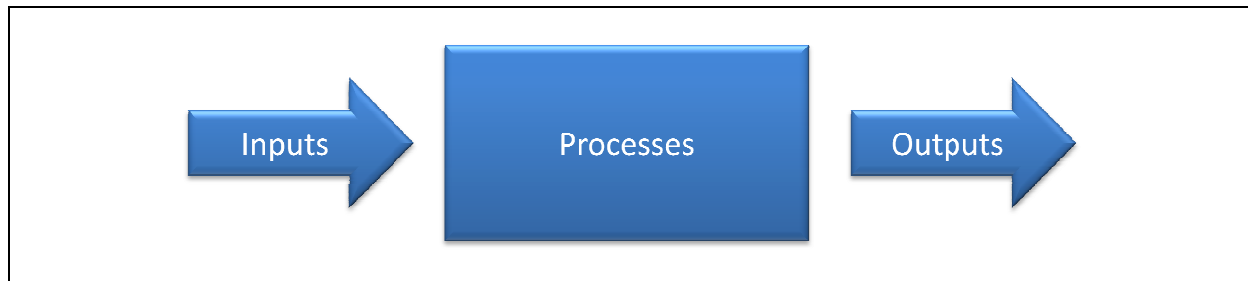


Figure 3-4: The Concept Solution for the Design of A Strategic Control System.

The strategic control system should meet the requirements tabulated in Table 3-3.

Table 3-3: Functional Requirements of the Strategic Control System.

Requirement	Description
Requirement SC1.	The strategic control system should be able to define Critical Success Factors based on the organization's generic strategy as derived from the mission, vision and environmental analysis (feedback approach to formulating Critical Success Factors).
Requirement SC2.	The strategic control system should be able to change the strategic content (Critical Success Factors) in light of invalid planning assumptions and emerging opportunities/threats in the competitive environment (feed forward approach to formulating Critical Success Factors).
Requirement SC3.	The strategic control system should be able to set standards of desired critical success factor performance, track actual performance and use deviations to take corrective action.
Requirement SC4.	The strategic control system should be able to collect data on the Critical Success Factors in order to monitor the validity of planning assumptions and to identify opportunities/threats, interpret the data and to respond to the information contained in the data.

The inputs, processes and outputs of the strategic control system follow directly from the system requirements that were identified. It is therefore sensible to first perform requirement analysis and to subsequently look at how the inputs, processes and outputs of the strategic control system can assist in meeting the above mentioned requirements.

4.3. Strategic Control System Design: System Inputs

In this section the system inputs component of the concept solution model, as depicted in Figure 3-5, are formulated. Requirement SC1 demands that the Critical Success Factors be defined based on the organization's generic strategy as derived from the mission, vision and initial environmental analysis. In order to meet this requirement the strategic control system needs to be provided with the organization's generic strategy. Doing so will allow for the formulation of the appropriate Critical Success Factors. The first input to the strategic control system is therefore the generic strategy that the organization has selected.

Requirement SC2 and Requirement SC4 deals with strategic content control and it requires that the Critical Success Factors be reviewed in the light of either valid or invalid planning assumptions and possible opportunities/threats derived from data collected on the competitive market environment. The second input to the strategic control system is therefore the data collected from the competitive market environment.

Requirement SC3 focuses on the identification of deviations from the desired critical success factor performance levels. The third input to the strategic control system is therefore the deviation from the desired critical success factor performance. Figure 3-5 below visually summarizes the results from the above discussion.

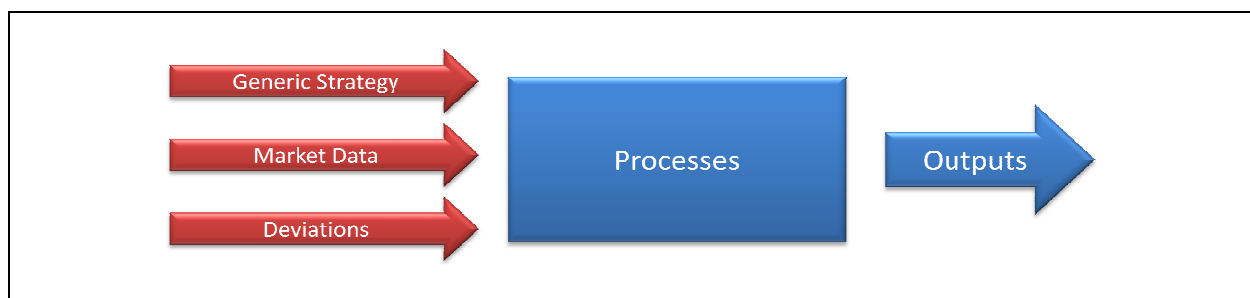


Figure 3-5: The Strategic Control System Inputs.

4.4. Strategic Control System Design: System Processes

In this section the system processes component of the concept solution model, as depicted in Figure 3, are defined and formulated. The process will be broken up into three distinct stages that will be discussed in this section.

Requirement SC1 requires that the Critical Success Factors are initially formulated based on the organization's generic strategy. This is in line with the feedback approach to Critical Success Factors as discussed earlier in this thesis. It therefore logically follows that the first stage of the system process deals with the initial identification of Critical Success Factors.

Requirement SC2 and Requirement SC4 promote the responsiveness and agility of the strategic control system and hence requires the strategic content, in other words, the Critical Success Factors, to be validated and kept in accordance with data collected from the competitive market environment. This is in line with the feed forward approach to Critical Success Factors as discussed earlier in this thesis.

Since Critical Success Factors are also derived from the competitive market environment they are not always automatically manageable and controllable. The second and third stages of the system processes aims to solve this dilemma by connecting the Critical Success Factors to critical business processes and then connecting these business processes to critical control variables (van Veen-Dirks, Wijn 2002, Ward 1990). Figure 3-6 below depicts the strategic control system process and how the three sub-processes are linked.

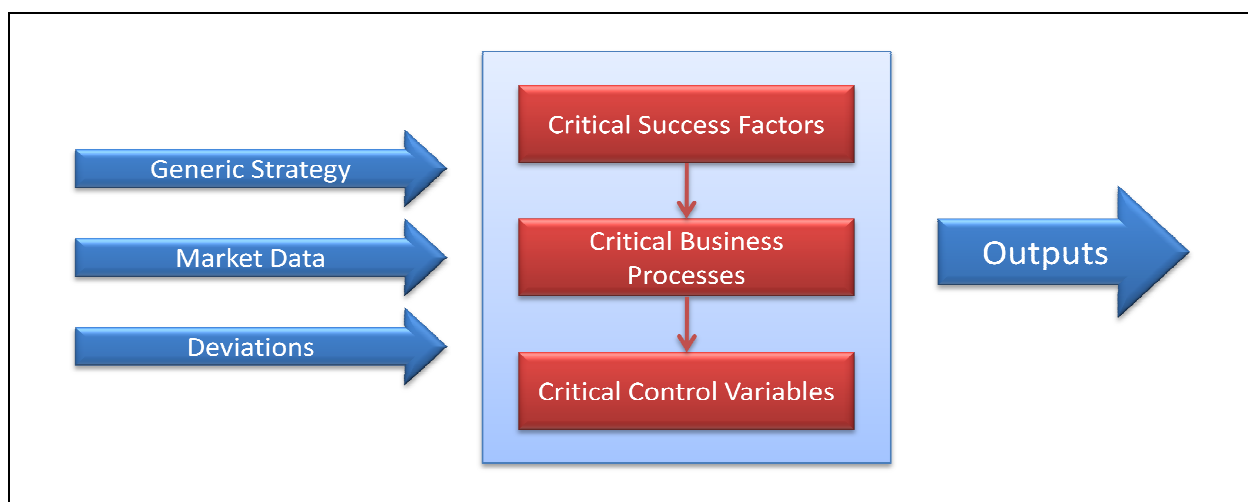


Figure 3-6: The Strategic Control System Processes.

Once an organization has defined its critical business processes, the critical control variables are selected and the desired benchmark values are applied to these control variables. Selecting the critical business processes is however not a trivial task. Ward originally developed the critical success factor method of strategic control which greatly simplified the formulation of the critical business processes. Van Veen-Dirks and Wijn described this method as follows:

“Applying this method, the management team compiles a list of business processes that are essential to fulfil the mission of the company. From the total number of business processes listed, the critical business processes have to be determined. A matrix is used to relate the business processes to the Critical Success Factors in order to get an overview of the importance of each business process for the performance of the company.” (van Veen-Dirks, Wijn 2002)

Table 3-4 on the following page is an adapted example of such a matrix. The left hand side of the matrix contains all the critical business processes deemed important by the organization for establishing a competitive advantage in terms of a unique position and a sustainable relationship with the market. The right hand side of the matrix contains all the Critical Success Factors that have been identified and validated. At the far right hand side two variables serve as the basis for determining the actual critical business processes by taking the importance of the process (A) and process quality (B) into consideration.

Table 3-4: Critical Business Process/Success Factor Matrix (Adapted from van Veen-Dirks, Wijn 2002, Wijn et al. 1996).

Critical Business Processes \ Critical Success Factors									
	1. Best-of-breed product quality.	2. New products that satisfy market needs.	3. Excellent suppliers.	4. Skilled workers.	5. Excellent customer satisfaction.	6. Exploit new business opportunities.	7. Achieve lowest delivered cost.	(A) Count.	(B) Process quality.
1. Research the market place.									
2. Measure the market place.									
3. Advertise products.									
4. Monitor competition.									
5. Measure competition.									
6. Educate vendors.									
7. Measure personnel satisfaction.									
8. Employee training.									
9. Define new product requirements.									
10. Process customer orders.									
11. Develop new products.									
12. Monitor customer complaints.									
13. Pay vendors.									
14. Negotiate manufacturing design.									
15. Define future skills.									
16. Select and certify vendors.									
17. Promote the company.									
18. Track finished products.									
19. Support installed products.									

The first step involves identifying whether a direct relationship exists between a given critical success factor and a critical business process. The second steps summates the number of times a specific business process is deemed to be important under the variable in column A. The variable under column B is an indication of the current quality of the business process. Process quality is rated on a scale from 1 to 5 with “1” corresponding to a process that does not need any further improvement and “5”

corresponding to a process that still has to be developed. In step 3 the critical business processes are identified as those processes which are considered to be of the utmost importance for the organization's future success and those processes of which the quality at the present moment can be improved. It thus easy to see that processes have a high count score (variable A) and a high process quality score (variable B) will be deemed critical.

4.5. Strategic Control System Design: System Outputs

In this section the system output component of the concept solution model, as depicted in Figure 3-7, is defined and formulated. Requirement SC3 deals with the setting of certain standards and benchmarks for the strategic control system. It is important for these standards and benchmarks to be outputted since the process of evaluating actual system performance and identifying deviations (which is in fact an input to the system and closes the loop) follows. It is therefore sensible to consider set standards as an output of the strategic control system.

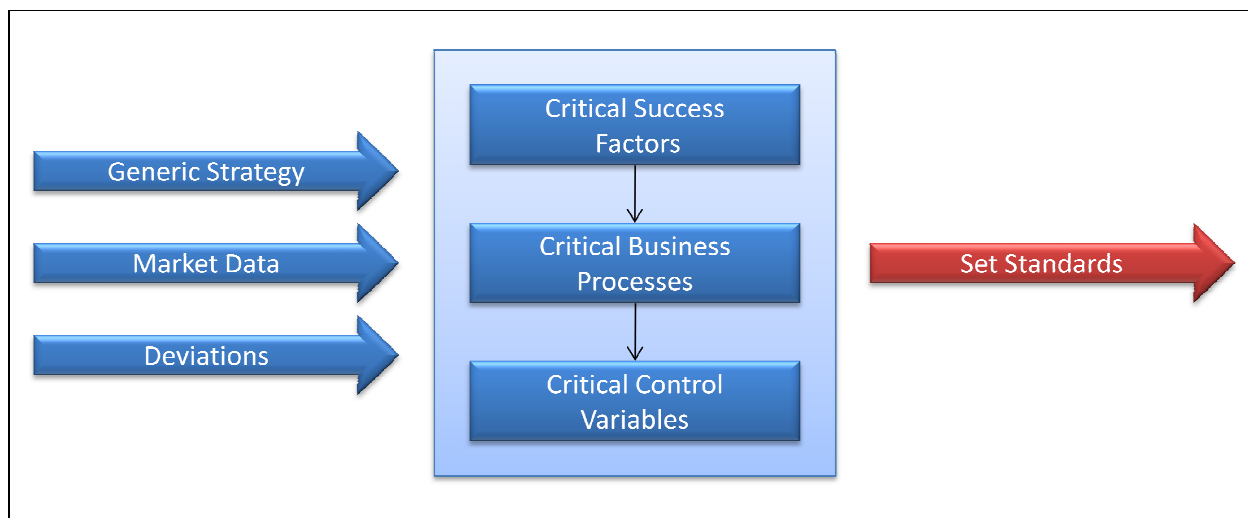


Figure 3-7: The Strategic Control System Outputs.

4.6. Strategic Control System Design: System Interfaces

The last part of the strategic control system design is addressed in this section of the thesis. It deals with the interfaces between the inputs, processes and outputs defined in the preceding sections and ultimately provides a complete solution for a strategic control system.

The Critical Success Factors are initially determined by the organizations generic strategy. The generic strategy is a result of the classical strategic management process as described in Part Two of this thesis.

These Critical Success Factors are not susceptible to changes in the competitive environment since a full scale strategic management process review is needed to finally modify or validate the organization's generic strategy. These Critical Success Factors however remain extremely important. It follows logically that the generic strategy input interfaces with the critical success factor stage of the system processes. This is illustrated in Figure 3-8 below.

Critical success factors are also derived from market data in order to promote the strategic control system's agility and flexibility. Critical success factors are thus validated in the light of market data collected and they are regulated based on opportunities and threats that are sensed within the competitive environment. It makes sense to interface the market data input with the critical success factor stage of the system processes as illustrated in Figure 3-8 below.

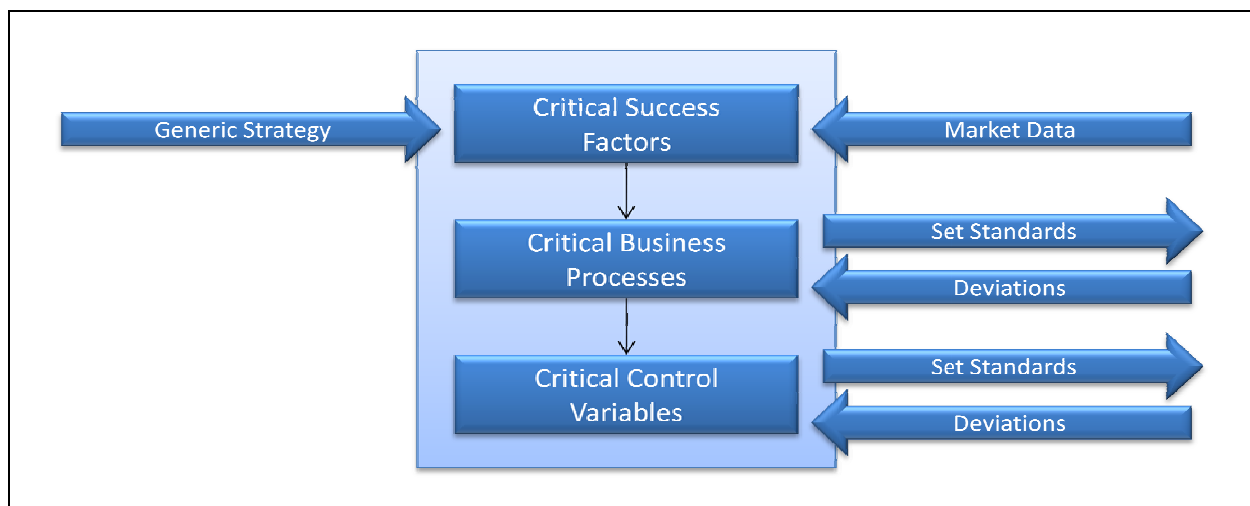


Figure 3-8: Strategic Control System Interfaces.

The critical business processes interfaces with the Critical Success Factors and they aid in rendering the Critical Success Factors more manageable and controllable. These business processes are derived by applying the critical success factor method of strategic control discussed previously. The business processes have to continually strive for a set benchmark or standard, actual performance of the process has to be tracked, and deviations have to be corrected for. Set standards and deviations thus interface with the critical business processes stage of the system processes as outputs and inputs respectively.

Critical control variables are directly derived from the critical business processes. These control variables are the crucial factors within a business process that govern the behaviour of the process itself. These variables will differ from business process to business process and will ultimately also strive towards a

certain set benchmark or standard. Similar to the interface between set standards, deviations and critical business processes; the critical control variables stage interfaces with set standards and deviations as outputs and inputs respectively.

5. Design Verification

The strategic control system design is verified by means of a cross verification matrix. The cross verification matrix compares the “requirements” with “where were they met” and “how were they met”. Table 3-5 below presents the verified requirements for the strategic control design.

Table 3-5: Cross Verification Matrix for the Strategic Control System Design.

Requirement	Where Was It Met	How Was It Met
<u>Requirement SC1:</u> The strategic control system should be able to (1) define Critical Success Factors based on the organization’s generic strategy (2) as derived from the mission, vision and environmental analysis.	1. System processes. 2. System inputs.	1. Define Critical Success Factors based on generic strategy. Generic strategy serves as strategic control system input.
<u>Requirement SC2:</u> The strategic control system should be able to (1) change the strategic content in light of invalid planning assumptions and (2) emerging opportunities/threats in the competitive environment.	1. System processes. 2. System inputs.	1. Strategic content control by making use of Critical Business Processes and Critical Control Variables. 2. Data collected from competitive environment serves as input.
<u>Requirement SC3:</u> The strategic control system should be able to (1) set standards of desired critical success factor performance, track actual performance and (2) use deviations to take corrective action.	1. System outputs. 2. System inputs.	1. Output desired levels of Critical Success Factor performance. 2. Track actual performance by using deviations as inputs.
<u>Requirement SC4:</u> The strategic control system should be able to (1) collect data on the Critical Success Factors in order to monitor the validity of planning assumptions and to (2) identify opportunities/threats, interpret the data and to respond to the information contained in the data.	1. System inputs. 2. System processes.	1. Data collected from competitive environment serves as input. 2. Strategic content control by using information from the system inputs.

6. Conclusion

This part of the thesis dealt with the notion of strategic control system design. It started off by looking at the origins of management control and the development of the traditional management control concept. Management control techniques such as interactive and diagnostic control were discussed and advantages and disadvantages were highlighted. The inadequacies of traditional management control in a competitive environment where change itself has become non-linear, instantaneous and sporadic have also been discussed.

The concept of strategic control was subsequently introduced. Different approaches to strategic control were investigated with specific reference to the feed forward and feedback approaches. Advantages and disadvantages of each of these aforementioned approaches were also identified. It was noted that a comprehensive strategic control system solution will incorporate all facets of possible strategic control approaches.

Critical success factors have been identified as the critical element of strategic control systems. Two viewpoints were discussed, namely, the implementation and formulation viewpoints. It was noted that the implementation viewpoint was in line with the feedback approach to strategic control, whereas the formulation viewpoint was in line with the feed forward approach.

With a well established design base it was subsequently possible to investigate basic design considerations. These considerations took a generic look at various aspects that may play a role in the final strategic control system design process. These considerations included the external environment, technology, size, structure and generic strategy.

Strategic control system design involved the formulation of functional design requirements as per the literature that has been studied. Strategic control system design also dealt with the basic concept solution and identified various components which included inputs, processes and outputs. Each of these components were developed in line with the given functional requirements.

Part Four - Performance Measurement

"The only man I know who behaves sensibly is my tailor, he takes my measurements anew each time he sees me. The rest go on with their old measurements and expect me to fit them."

George Bernard Shaw

1. Objectives

Part Three of this thesis introduces the reader to the concept of performance measurement with specific reference to the following:

- The origins of performance measurement, the balanced performance measurement concept and the different approaches to balanced performance measurement.
- The Balanced Scorecard concept with specific reference to first and second generation Balanced Scorecards.
- The concept of third generation balanced scorecards with specific reference to strategic linkage models.
- The concept of information asymmetry and its impact on performance measurement.
- A systems approach to performance measurement, specifically addressing the basic design considerations, system requirements, inputs, processes, outputs and interfaces.

The performance measurement system that is formulated in this part of the thesis follows directly from the fundamentals discussed in Part Two. The relationship between the fundamentals, strategic control system, bridging system and performance measurement system is depicted in Figure 4-1.

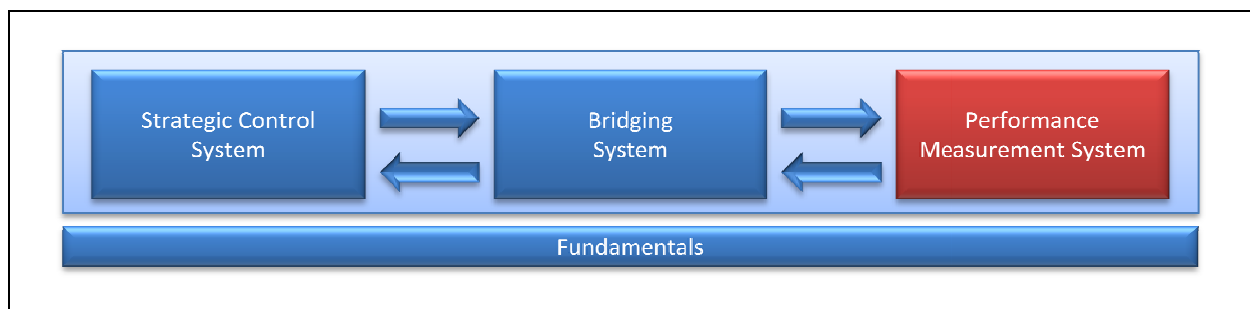


Figure 4-1: Part Three - Performance Measurement System.

2. Performance Measurement

2.1. The Origins of Performance Measurement

Original performance measurement system, such as DuPont's pyramid of financial ratios, aimed to link financial information to a wide range of ratios. These ratios would ultimately link to Return on Investment, the only true performance measure at the time. DuPont's pyramid of financial ratios is depicted in Figure 4-2 below.

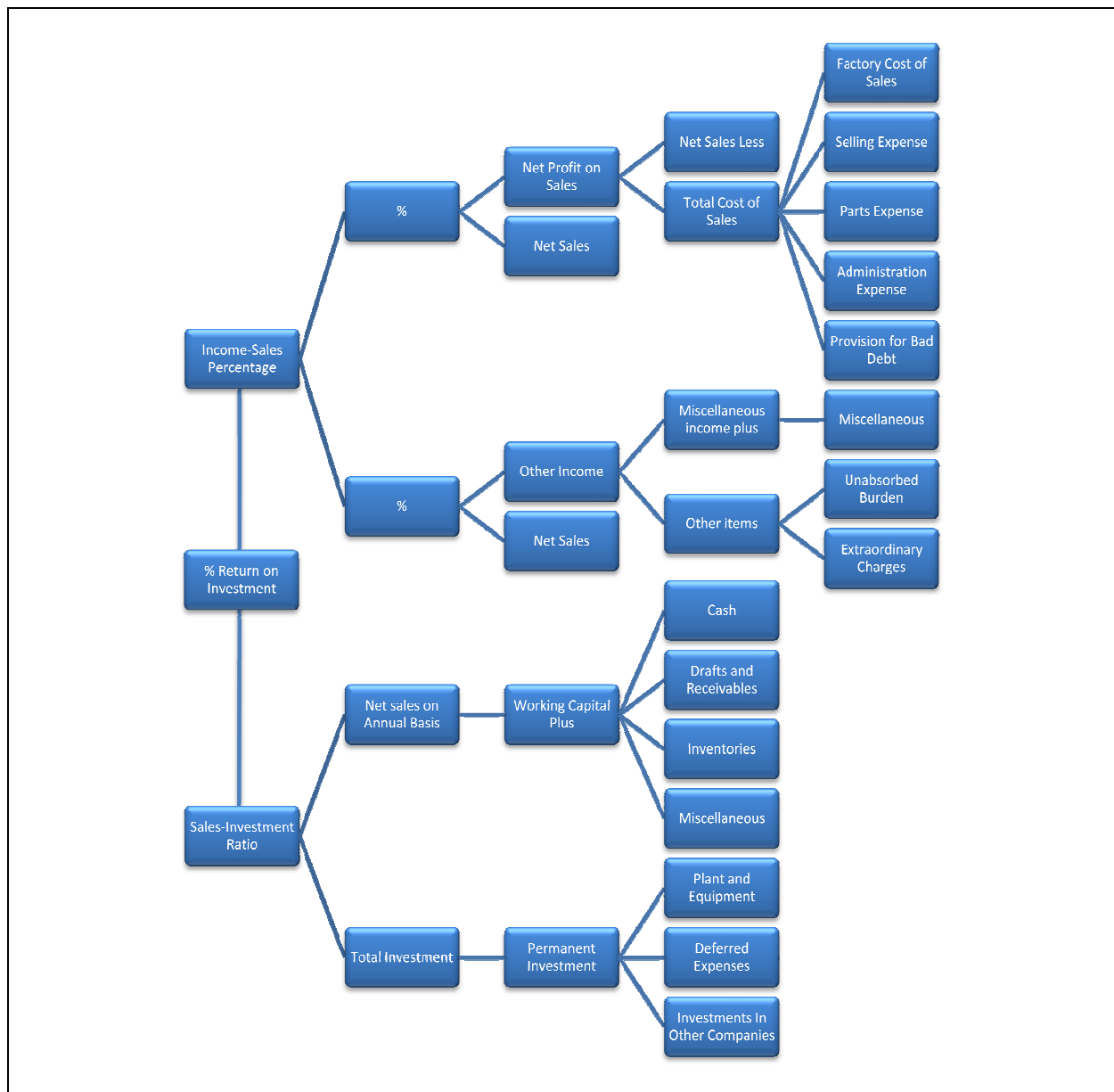


Figure 4-2: Du Pont Pyramid of Financial Ratios (Chandler 1977).

DuPont's framework was not very agile and measurements could only really be made at the financial year end, the ratios thus failed to provide accurately and timely feedback on variations in the competitive environment and in the strategic objectives.

The drawbacks of only using financial data to gauge company performance have since the late 1960s been well documented (Dearden 1969). Additional information regarding improved decision making, as a direct result of using non financial data, has also been well known for over 40 years (Lawrie, Cobbold 2004).

Subsequent studies found that performance measurement, and in particular performance measure selection, is a direct balancing act between the cost of collection and the expected usage of the data (Williamson 1975, Rothschild, Stiglitz 1976).

During the 1980s academic literature supported the notion that an organization's strategic plan can serve to validate the choice of non-financial measures (Johnson, Kaplan 1987, Gupta, Govindarajan 1984, Lawrie, Cobbold 2004). General Electric was the first known company to implement a set of balanced performance measures where non financial measures appropriately mirrored strategic objectives with financial measures reflecting on the outcome of the bottom line (Kennerley, Neely 2002b). It was however not until the 1990s that a general consensus about the need for balanced performance measures was reached.

Increased globalisation, rapid technological development and greater emphasis on productivity lead to the development of management theories such as Just In Time, Benchmarking, Total Quality Management and Six Sigma (Paranjape, Rossiter & Pantano 2006). A concurrent increase in the amount of published reports and articles dealing with the concept of balanced performance measurement was extremely prominent:

"New reports and articles on the topic have been appearing at a rate of one every five hours every working day since 1994." (Neely 2002)

Research that dealt with the implementation of balanced performance measurement systems in particular, found that organizations that make use of such systems, on average, perform better than their counter parts that do not make use of such systems (Lingle, Schiemann 1996).

2.2. The Balanced Performance Measurement Concept

In order to reap benefits from a balanced performance measurement system, as mentioned by Lingle and Schiemann, it is extremely important to implement a system that “enables informed decisions to be made and actions to be taken because it quantifies the efficiency and effectiveness of past actions through acquisition, collation, sorting, analysis, interpretation and dissemination of appropriate data” (Neely 1998).

In their book *Business Performance Measurement: Theory and Practice*, Mike Kennerley and Andy Neely further indicated that a balanced performance measurement system is made up of the following parts (Kennerley, Neely 2002b):

- Individual measures that represents the efficiency and effectiveness of actions.
- A set of measures that, when combined, is able to evaluate the performance of the organization at large.
- An infrastructure that supports and enables data to be acquired, collated, sorted, analyzed, interpreted and disseminated.

To fully explore the advantage that can be gained from making use of balanced performance measurement systems, it is crucial that each of the measurement process parts, as mentioned above, is practical and efficient.

2.3. The Different Approaches to Balanced Performance Measurement

The amount of literature with specific reference to balanced performance measurement systems, as mentioned previously, is staggeringly large. Some of the most popular approaches that have been identified are discussed in the subsequent section (adapted from Kennerley, Neely 2002b).

The Performance Measurement Matrix was first proposed by Keegan, Eiler and Jones in 1989 and placed performance measures into either a “cost” or “non cost” and “external” or “internal” quadrant (Keegan, Eiler & Jones 1989). An example of such a matrix is depicted in Figure 4-3 on the next page.

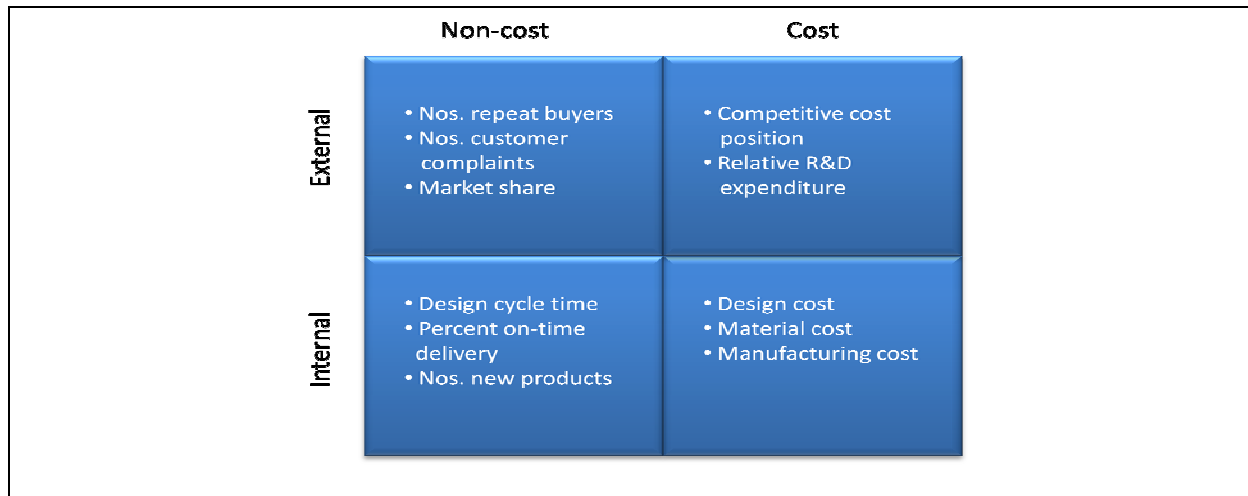


Figure 4-3: The Performance Measurement Matrix (Keegan, Eiler & Jones 1989).

The Performance Measurement Matrix is a relatively simple approach but it allows measures to be positioned on the matrix and highlights areas where there is a need to adjust or add more measures. The Performance Measurement Matrix fails to reflect all of the possible performance measure attributes that a 21st century organization may require.

The Strategic Measurement and Reporting Technique pyramid or also just simply known as the SMART pyramid was developed by Wang Laboratories, refer to Figure 4-4 on the next page. Similarly to the Performance Measurement Matrix it also includes both internal and external measures but goes a step further and divides the measures into departmental and operational levels (Lynch, Cross 1991). These measures subsequently reflect the vision of the organization as well as the internal and external objectives of the departmental and operational levels respectively.

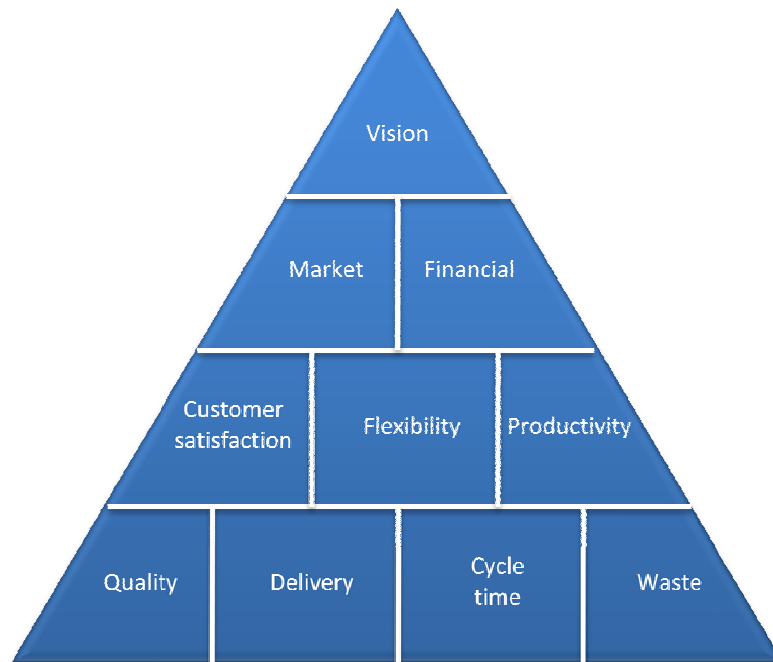


Figure 4-4: The SMART Pyramid (Lynch, Cross 1991).

Subsequently the need to identify performance “enablers” became crucially important when Fitzgerald published his framework that dealt with measures relating to performance measurement system results and those that dealt with performance measurement system enablers. Refer to Figure 4-5 below for a visual representation.



Figure 4-5: Fitzgerald's Causal Framework (Fitzgerald, Johnston & Brignall 1991).

Fitzgerald's framework was the initial development of a concept known as causality, or in simpler terms, cause-and-effect relationships, within performance measurement systems. Fitzgerald found that an organization's competitiveness and financial performance is a direct result of the level of quality assurance, flexibility, resource utilization and innovation of a given organization (Fitzgerald, Johnston & Brignall 1991).

The concept of causality was further developed by Brown through the Macro Process Model of the Organization (Kennerley, Neely 2002b). The model demonstrated an apparent relationship between the inputs, processing system, outputs, outcomes and goals of a given business process, and the results of their measured performance. Figure 4-6 visually depicts this breakdown structure.

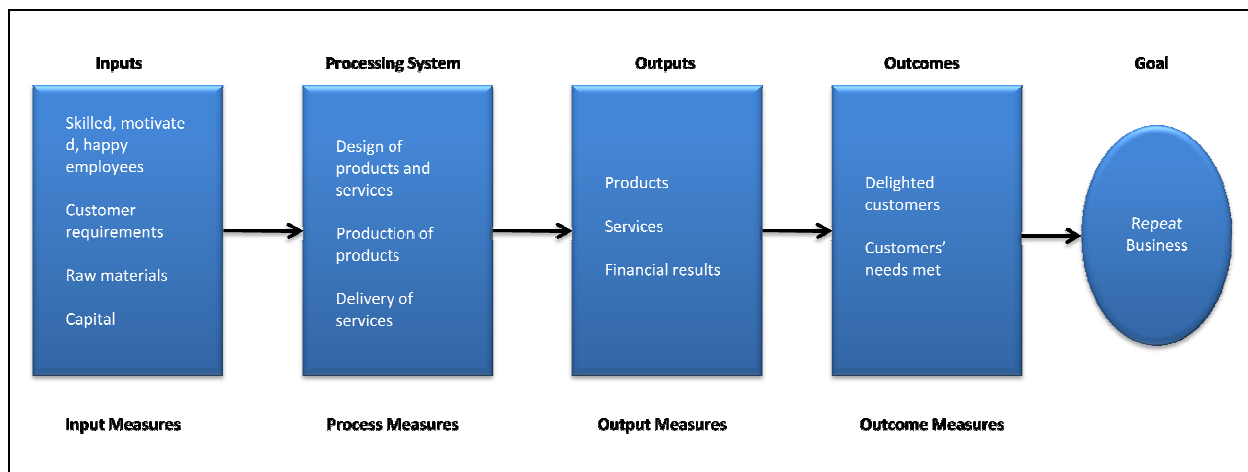


Figure 4-6: The Macro Process Model of the Organization (Kennerley, Neely 2002b).

Brown further showed that each stage “enabled” the following and that the performances of the inputs were ultimately responsible for the successful attainment of the organization's goals.

The Business Excellence Model developed by the European Foundation of Quality Management shifts the focus of performance measurement to a more generalist view of performance measurement systems. The system addresses various concepts and is mainly used to formulate an organization's vision and goals in such a way that it can be quantified and measured. The Business Excellence Model also allows an organization to easily identify both internal and external causal relationships that are essential for achieving high levels of organization performance (Moeller 2001). Figure 4-7 on the next page visually depicts The Business Excellence Model.

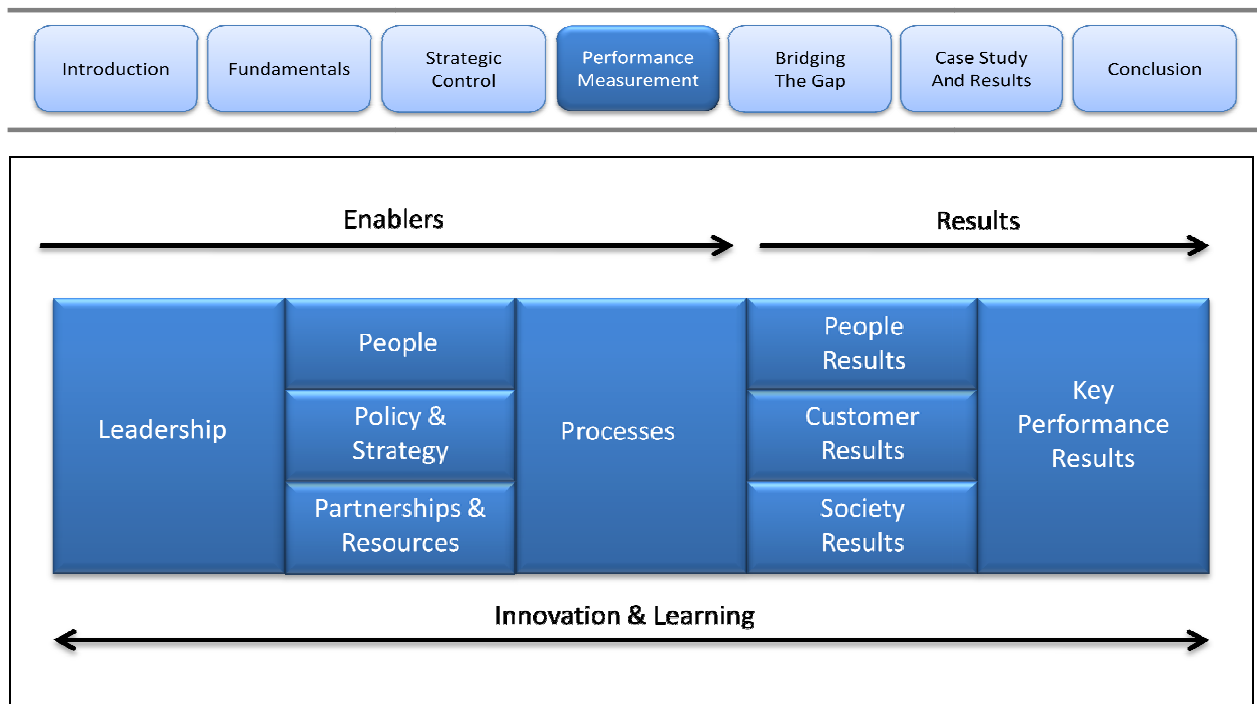


Figure 4-7: The Business Excellence Model (Moeller 2001).

The model can additionally be used as a diagnostic tool to assess the current performance of the organization with specific reference to its priorities, resources, business plans and self assessment.

The Performance Prism, refer to Figure 4-8 on the following page, reflects the increasing importance of focussing performance and organization's performance measures on the stakeholders involved. The shareholders are the most important stakeholder in many organizations and the Performance Prism emphasizes the fact that their requirements should be met. The Performance Prism also places a certain degree of importance on the other stakeholders, such as regulatory and legal groups, the customers, employees and suppliers. An important contribution of the Performance Prism is that it aims to link the contributions made by the stakeholders back to operations of the organization. The Performance Prism aims to answer the following questions (adapted from (Kennerley, Neely 2002b)):

- Who are the key stakeholders and what do they want and need to keep them satisfied?
- What strategies should be put in place to satisfy the requirements of the stakeholders?
- What critical processes are required to operate and enhance these processes?
- What critical capabilities are required to operate and enhance these processes?
- What contributions are required from the stakeholders in order to maintain and develop these capabilities?

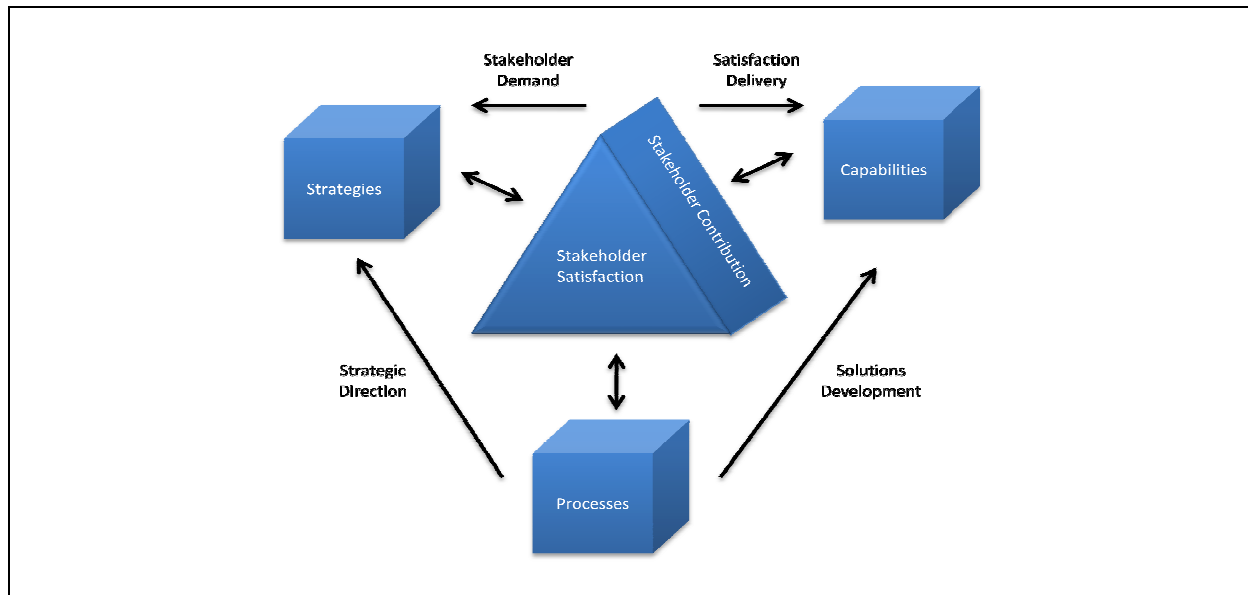


Figure 4-8: *The Performance Prism* (Kennerley, Neely 2002b).

3. The Balanced Scorecard Concept

3.1. The Origins of Balanced Scorecards

The most popular and widely used balanced performance measurement system is undoubtedly the Balanced Scorecard. In their 2007 Management Tools and Trends Survey, Bain found that 66 percent of all companies interviewed made use of Balanced Scorecards (Rigby, Bilodeau 2007). The survey further found that the highest usage of the Balanced Scorecard was in the Asia-Pacific region where 71 % of all companies employed the Balanced Scorecard framework, with 63 % of all European and 62 % of all North American companies using the Balanced Scorecard.

The first Balanced Scorecard framework was developed by Kaplan and Norton in 1992 and it was largely based on the work done by Michael Porter. Porter's concept of strategy aimed to develop a relationship between a company's strategy and the competitive environment in which it operates (Porter 1998b, Porter 1980, Porter 1985). This entails that an organization's strategy should be based on the various market segments that it targets, with the internal business processes aligned, so as to deliver on the value propositions made to its clients (Norreklit 2000). It subsequently followed that an organization's strategy should not be based on its core competencies (Hamel, Prahalad 1990) or resources (Collis, Montgomery), but should rather be based on the competitive environment (Norreklit 2000).

Similarities have also been drawn between the Balanced Scorecard and the Tableau de Bord that was developed in France during the early parts of the 20th century. The Tableau de Bord defined the relationship between related measures and divided these measures into different organizational levels (Epstein, Manzoni 1998). This ensured that the internal and external processes related to the different organizational levels are aligned to the company's overall strategy. The explicit relationship that exists between the Tableau de Bord and The Balanced scorecard is due to the fact that both frameworks aim to specifically link performance measurement to strategy.

3.2. First Generation: Four Interrelated Perspectives

First generation balanced scorecards aimed to translate an organization's vision and strategy into objectives and measures in four main areas also known as perspectives. These perspectives are known as the financial perspective, customer perspective, internal-business-process perspective and the organizational learning and growth perspective. Figure 4-9 below illustrates the generic Balanced Scorecard framework.

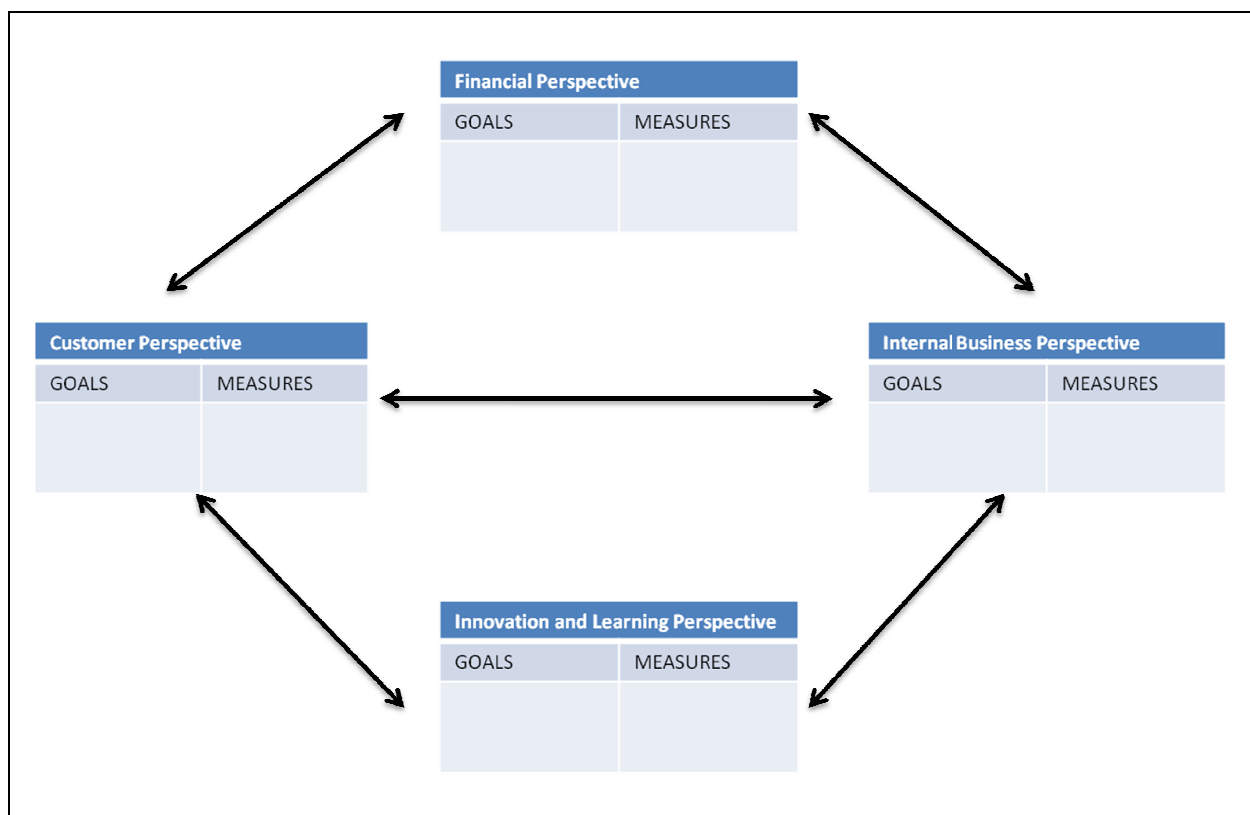


Figure 4-9: Generic Balanced Scorecard Framework.

The financial perspective deals with how the company wishes to be viewed by its shareholders. The customer perspective focuses on how the company wishes to be viewed by its customers. The internal-business-process perspective involves the business processes at which the company should excel in order to satisfy its customer and shareholders. The organizational learning and growth perspective describes the internal changes and improvements which need to be made in order to achieve the vision (Kaplan, David 1992).

The first generation Balanced Scorecards concept was initially popular among organizations due the ability of the framework to efficiently and effectively communicate priorities within an organization, while at the same time presenting the information in a brief and concise manner (Kaplan and Norton 1992). The literature generally accepted the framework (Epstein, Manzoni 1998) but weaknesses with regard to the causal relationships among the four perspectives were noted (Eagleson, Waldersee 2000, Kennerley, Neely 2002a).

However, challenges with regard to performance measure selection became an apparent problem as more organizations attempted to practically implement the framework. The method used to select performance measures (filtering) as well as the method used to decide under which perspective a given measure falls (clustering) came under scrutiny as these methods are critical to the subsequent success of the Balanced Scorecard framework (Lawrie, Cobbold 2004).

3.3. Second Generation: Strategic Linkage

Two major design innovations attempted to overcome the practical difficulties associated with the first generation Balanced Scorecard framework. The first innovation was concerned with replacing the attitudinal approach to measure selection with a more objective approach (Lawrie, Cobbold 2004). In other words, replacing the statement “to succeed financially, how should we appear to our shareholders?” with strategic objectives based on goals. This innovation presented a direct relationship between the strategic objectives of each perspective and the performance measures.

The second innovation was concerned with causality and presented the concept of strategic linkage. Kaplan and Norton suggested that a causal relationship exists not only between individual measures (Kaplan, Norton 1996a) but also between individual strategic objectives (Kaplan, Norton 1996b). This strategic linkage therefore assumes that the measures of organizational learning and growth drives the measures of internal business processes, which in turn drives the measures of the customer perspective,

and which ultimately drives the measures of the financial perspective (Norreklit 2000). Figure 4-10 below graphically depicts this causal relationship.

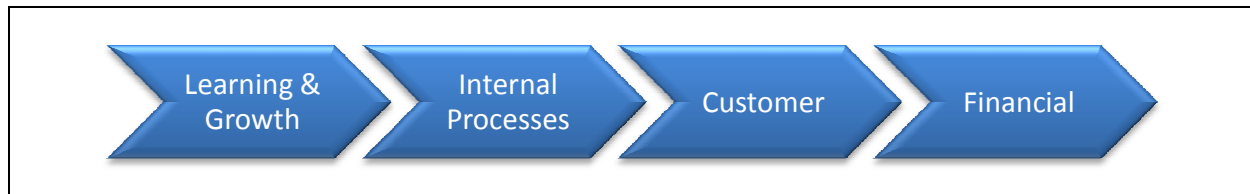


Figure 4-10: Second Generation Strategic Linkage Model.

Performance measures should be a combination of lag and lead indicators, or in other words a combination of outcome measures and performance drivers. A second generation Balanced Scorecard therefore consists of four perspectives, each made up of lead and lag indicators, linking both horizontally and vertically between the perspectives in a cause-and-effect manner. Figure 4-11 below depicts such a cause-and-effect relationship between the four perspectives.

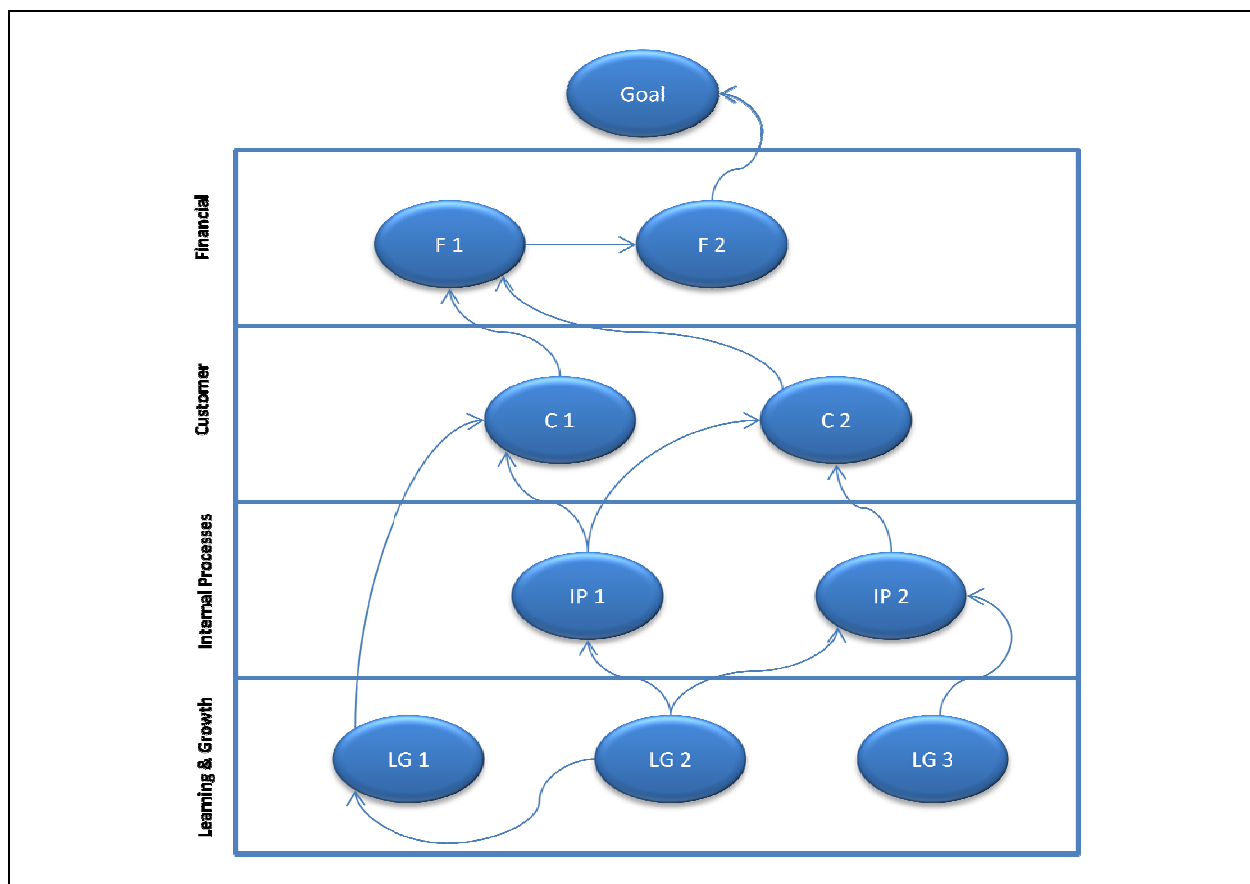


Figure 4-11: Cause-And-Effect Relationship between the Four Perspectives.

Second generation Balanced Scorecards, in essence, exhibits the following two characteristics:

- The measures used in the Balanced Scorecard are selected to specifically relate to a certain perspective (Kaplan, Norton 2000).
- The balanced scorecard consists of strategic linkage models, often depicted visually by means of strategy maps (Kaplan, Norton 2000).

Even though they represent a major improvement, the second generation Balanced Scorecard has not gone without its share of criticism. It is argued that it focuses more on clustering than filtering and that the standard layout of strategy maps pre defines the vertical causal flow between the different perspectives (Lawrie, Cobbold 2004). The subsequent success of the balanced scorecard is therefore based on this causal flow and whether it appropriately models a given organization. Certain organizations feel that some important perspectives are left out and that it is often difficult to justify the particular causal links (Lawrie, Cobbold 2004).

4. The Third Generation Balanced Scorecard

4.1. Destination Statements

Difficulties with performance measure selection validation and target setting in particular led to the development of the third generation Balanced Scorecard design, which in essence “gives better functionality and more strategic relevance” (Lawrie, Cobbold 2004). One of the major advancements that separated third generation Balanced Scorecards from second generation Balanced Scorecards was increased emphasis on the concept of destination statements. Lawrie and Cobbold defined the destination statement as:

“A description, ideally including quantitative detail, of what the organisation, or part thereof, is likely to be like at an agreed future date.”

Destination statements aim to function as a “target setting” tool and they hence become the point of departure as it makes both the strategic objective selection and the articulation of causality linkages simpler. This concept is nothing new, but linking destination statements to the strategic objectives and thus using them as a reference point for the target setting process is a simple yet extremely important innovation. Additional academic studies found that management teams more easily discuss, create and relate to the destination statement than to strategic objectives (Lawrie, Cobbold 2004).

4.2. Strategic Linkage Models: Activities and Outcomes

The original intention of the four perspectives was to ensure that non financial aspects relating to an organization's performance was also considered when selecting measures. The need to use all four perspectives has become less with the advent of destination statements. Lawrie and Cobbold additionally noted that:

“With the destination statement driving the selection of strategic objectives across the four (or more) perspective we have seen public sector managers happy to simply choose “activity” and “outcome” objectives, linked with simple causality. With just two perspectives, debate about “missing” perspectives is eliminated – the issue is simply whether the right activities are represented, and whether the correct consequent outcomes from these activities also are shown.” (Lawrie, Cobbold 2004)

Activity and outcome statements have become prominent in third generation Balanced Scorecards, with the traditional financial and customer perspective substituted by the outcome statement and the organizational learning perspective and the internal business process perspective substituted by the activity statement. Figure 4-12 visually depicts a third generation Balanced Scorecard with respect to activities, outcomes, destination statements and strategic objectives.

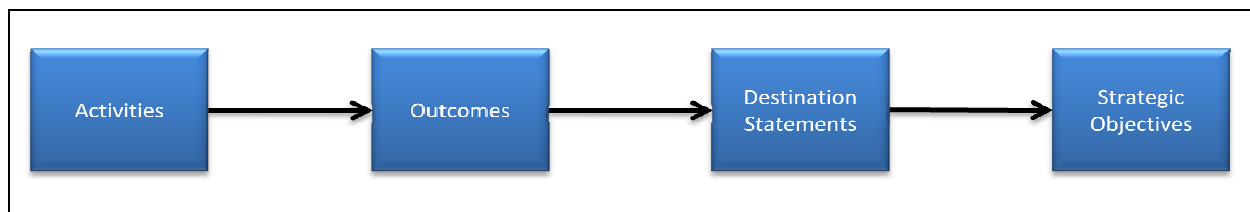


Figure 4-12: *The Third Generation Balanced Scorecard Concept.*

There have been less significant design changes in the third generation of Balanced Scorecards, but these changes nonetheless represent crucial advancements in the field of performance measurement. Third generation Balanced Scorecards allow for complex organizations to make use of multiple scorecards and have greatly simplified the filtering and clustering of performance measures (Lawrie, Andersen & Cobbold 2001). Despite all of this, perhaps the most significant advancement, is the possibility for third generation Balanced Scorecards to support the notion of information asymmetry.

5. The Information Asymmetry Concept

5.1. Imbalanced Information

In 1975 Oliver Williamson first published his findings on the concept of information asymmetry in his book *Markets and Hierarchies: Analysis and Antitrust Implications*. Williamson referred to the concept of information asymmetry as “information impactedness” and argued that, with reference to transaction cost economics, an imbalance of information will always exist between two parties (Williamson 1975). Williamson argued the main cause of information asymmetry is due to the communication bandwidth, which in effect, limits the ability of one party to “know” what the other party knows (Lawrie, Cobbold 2004).

Williamson mainly focused on the insurance industry with specific reference to contractual forms. The concept of information asymmetry was however applied to other areas such as competitive markets (Rothschild, Stiglitz 1976) and to strategic management (Mintzberg 1990). These studies put forward the notion that an organization’s strategy can never be accurately communicated to the different parts that make up the organization due to information asymmetry.

5.2. Impact on Performance Measurement Systems

This notion can also be projected on to performance measurement systems and in particular to the relationship between strategic objectives and destination statements. It therefore follows that the individuals concerned with the strategic objectives inherently “know” more than the individuals concerned with the activities, outcomes and destination statements. This statement is practically feasible since the persons concerned with the strategic objectives of a given organization are most often top management who have a good understanding of the overall strategic environment; whereas the persons concerned with the activities, outcomes and destination statements are most often employees who do not have a good understanding of the overall strategic environment.

5.3. The Abstraction Layer

It is not the purpose of this thesis to resolve the problems that are associated with information asymmetry and its effect on strategy within an organization, but to rather pay heed to the possible pitfalls and dangers. In order to thus tolerate and accommodate the information asymmetry that may be present within a performance measurement system the concept of an abstraction layer is defined.

The abstraction layer, refer to Figure 4-13, informally joins the strategic objectives with the destination statements and replaces the more tangible link that previously existed.

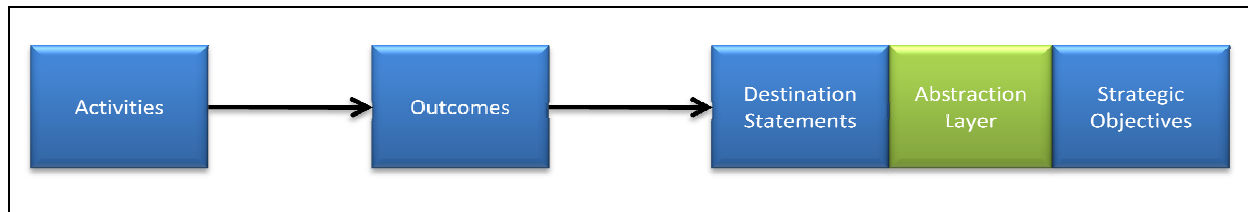


Figure 4-13: The Abstraction Layer.

The abstraction layer breaks the “direct” link between the destination statements and the strategic objectives. It represents what the individuals concerned with the strategic objectives of the organization “knows” and it additionally provides a means for the performance measurement system to represent the “man-in-the-loop”. Strategic objectives are often formulated not solely based on data from the activities and destination statements but more often than not based on gut-feel and manager experience. This is especially true in entrepreneurial, small and medium sized business units or organizations.

6. A Systems Approach to Performance Measurement Design

6.1. Performance Measurement System Design: Basic Design Considerations

It is important to carefully examine the basic design considerations before formulating a performance measurement system in terms of requirements, inputs, processes and outputs. Developing a performance measurement system with these considerations in mind provides insight which will in turn ensure that the overall design solution is generic, customizable and adaptable.

6.1.1. Strategic Objectives

An organization’s strategic objectives should influence the behaviour of managers and employees at all levels (Ferreira, Otley 2009). The focus of a performance measurement system is however on how this information is communicated. It is therefore important to consider:

- The extent to which the current strategic objectives are brought under the attention of the various departments and the employees that form part of the organization.

6.1.2. *Organization Structure*

The organization structure is at the very least a constraint on performance measurement system design and use (Ferreira, Otley 2009). It is therefore important to consider:

- The extent to which the organization's current structure has an impact on the design and use of a performance measurement system.
- The way in which the organization's current structure is influencing performance measurement within the organization.
- The way in which performance measurement within the organization is influencing the organization's current structure.

6.1.3. *Measurement and Targets*

Performance measurement systems often focus the attention of an organization on what is being measured. It also holds true that what is not being measured is more often than not ignored. The influence of what gets measured, and what does not, is substantial (Ferreira, Otley 2009). It is therefore important to consider:

- The current method used by the organization to set appropriate performance targets with respect to the overall strategy.
- The current method used by the organization to set appropriate performance targets with respect to the strategic objectives.

A well known discrepancy with regard to performance measurement systems is the trade-off between the desired target levels and the realistic target levels (Ferreira, Otley 2009). It is therefore important to also consider:

- The method that is currently being used by the organization to measure and assess its success in achieving the overall strategy.
- The method that is currently being used by the organization to measure and assess its success in achieving the strategic objectives.

6.1.4. Evaluation, Rewards and Incentives

Employees are often an organization's most valuable asset. This statement highlights the significance of both formal evaluation process, as are conducted by Human Resources, and informal evaluation processes, such manager endorsement and recognition (Ferreira, Otley 2009). It is therefore important to consider:

- The current process used by the organization to for evaluating individual, group and organizational performance.
- The importance of both formal and informal information with regard to the before mentioned process.
- The extent of the consequences with regard to the before mentioned process.

Rewards can be both financial and non financial and often indicate the relative significance of certain facets of the performance measurement system. It is therefore important to also consider:

- The rewards (both financial and non-financial) that managers and employees currently receive for achieving performance targets.
- The penalties (both financial and non-financial) that managers and employees currently receive for not achieving performance targets.

6.1.5. Information Flow and Use of Information

The end goal of performance measurement systems is to be able to determine deviations and correct for the error and ultimately learn from these experiences so as to be in the position of anticipating future situations that are of a similar nature (Ferreira, Otley 2009). It is therefore important to consider:

- The extent to which the organization has developed information flows for monitoring performance.
- The extent to which the organization has developed information flows so as to learn from its past experiences.
- The extent to which the current use of information within the organization is either diagnostic or interactive.

6.2. Performance Measurement System Design: Functional System Requirements

The definition and formulation of functional system requirements is often seen as the starting point of the system engineering process. A well formulated set of functional requirements greatly increases the probability of a sound design, timely integration and successful implementation. It effectively provides a point of departure, consistent with the proposed concept solution, from where the design of a comprehensive, all encompassing, system is made possible.

The concept solution of the proposed performance measurement system comprises of inputs, internal processes and outputs as depicted in Figure 4-14 below.

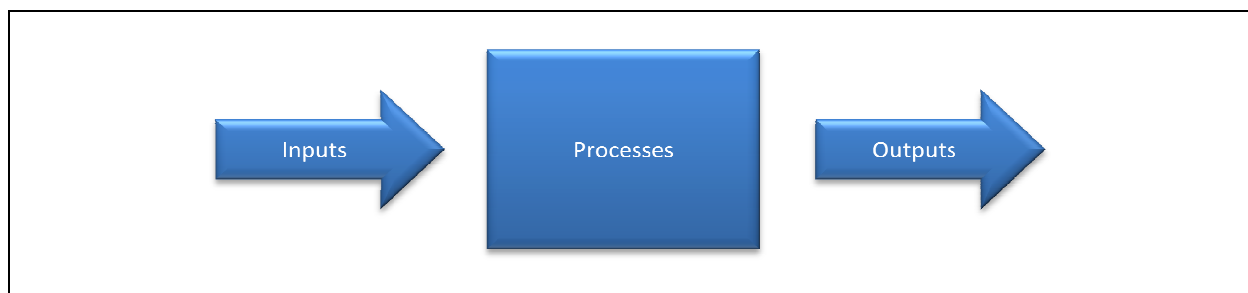


Figure 4-14: The Concept Solution for the Design of a Performance Management System.

The performance measurement system should meet the requirements tabulated in Table 4-1 below.

Table 4-1: Functional Requirements of the Strategic Control System.

Requirement	Description
Requirement PM1.	The performance measurement system should be derived from strategy so as to promote feed forward information flow.
Requirement PM2.	The performance measurement system should be able to link strategic objectives to operations.
Requirement PM3.	The performance measurement system should be able to stimulate continuous improvement.
Requirement PM4.	The performance measurement system should link back to strategy and promote feedback information flow.
Requirement PM5.	The performance measurement system should provide fast and accurate feedback concerning actual performance levels.

The inputs, processes, interfaces and outputs of the performance measurement system follow directly from the functional system requirements that were identified. It is therefore sensible to initially perform requirement analysis and to then look at how these requirements can be means of a good design.

6.3. Performance Measurement System Design: System Inputs

This section defines the various inputs to the concept solution model, as depicted in Figure 4-15. Requirement PM1 deals with the overall strategy of the organization and requires that the performance measurement system be derived from strategy. In order to meet this requirement the performance measurement system needs to be provided with feed forward information flows from the critical parts that constitute the organization's strategy. The first input to the performance measurement system is therefore the feed forward information flow derived from the organization's strategy.

Requirement PM3 is concerned with the topic of continuous improvement and requires that the performance measurement system stimulates this process. Continuous improvement is realised when the internal processes of a given system is continually being improved upon. In order to meet this requirement the performance measurement system needs to provide, as input, a means to make continual changes to the system as a whole. The second input to the performance measurement system is therefore the corrective actions needed to continually improve the overall system.

Figure 4-15 below visually summarizes the results from the above discussion by updating the concept diagram presented in Figure 4-14.

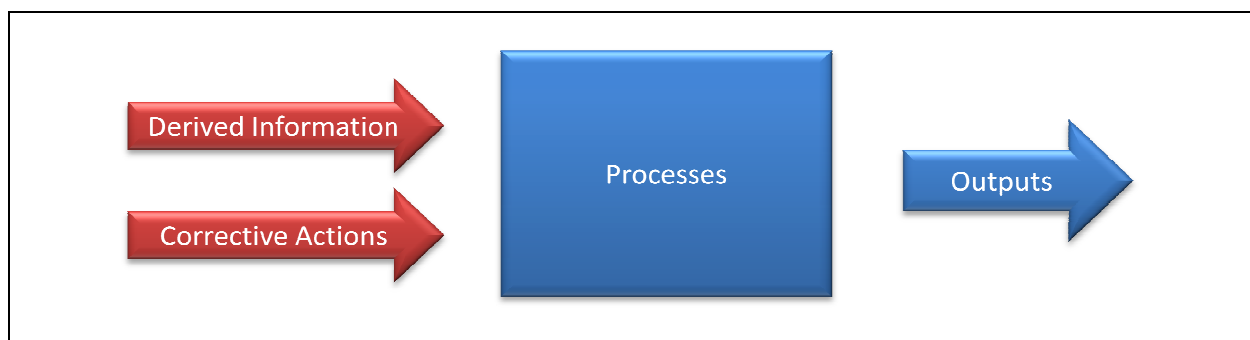


Figure 4-15: The Performance Measurement System Inputs.

6.4. Performance Measurement System Design: System Processes

Requirement PM2 deals with the processes that are internal to the performance measurement system. It requires that the strategic objectives be linked to the operational activities of the organization. The principles on which the third generation Balanced Scorecard concept is based, as discussed previously, is best suited to meet this requirement.

Implementing Balanced Scorecards are extremely resource intensive with respect to both time and money. Successfully using Balanced Scorecards, require that all levels of the organization are in full support of the initiative. The design and proper implementation of a Balanced Scorecard performance measurement system is such an all encompassing process that it in effect justifies an independent thesis study. The principles on which the third generation Balanced Scorecard is based is however of crucial importance. Causal strategic linkage models and destination statements constitutes the core of the performance measurement system designed in this thesis. The system processes therefore comprises of four parts, namely the activities, outcomes, destination statements and strategic objectives. Figure 4-16 below depicts the internal system process of the performance measurement system.

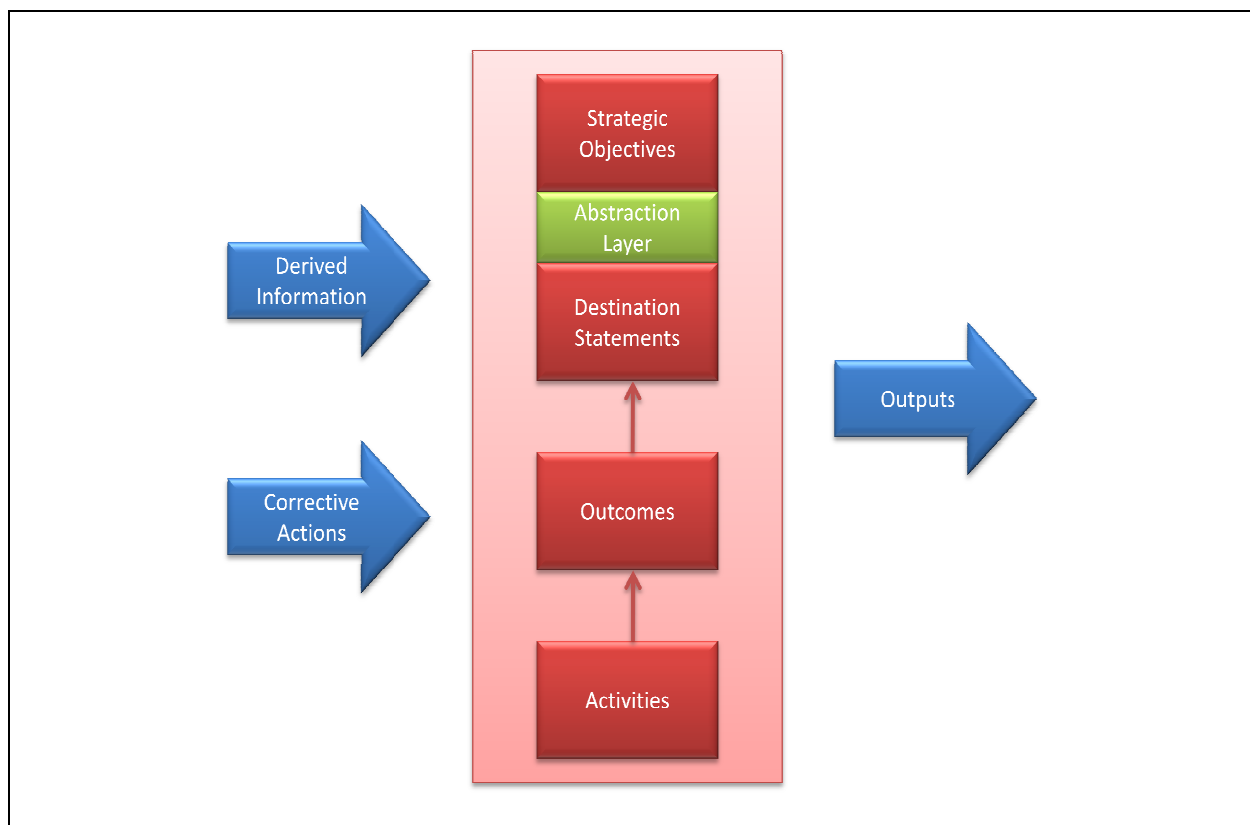


Figure 4-16: Performance Measurement System Process.

The activities represent the operations of the organization and are linked to the quantitative outcomes in a cause-and-effect (causal) manner. What this means is that adjustments or modifications made to the activities of the organization will have a direct impact on the related outcomes. The outcomes are linked to the destination statements, which ideally include quantitative detail of what the organisation, or part thereof, is likely to look like in the future.

Strategic linkage models allows for the strategic objectives to be directly linked to operational activities of the organization. This is problematic since a natural information imbalance, due to information asymmetry, exists between the individuals concerned with the strategic objectives and the individuals concerned with the activities and their respective outcomes. The abstraction layer joins the destination statements and the strategic objectives resulting in an intangible link between the two. As mentioned previously, the abstraction layer represents the “man-in-the loop”, and thus represents the non-figurative “imbalanced link” that exists due to the knowledge of senior level managers. Strategic objectives are also often based on senior manager experience and gut-feel, and the abstraction layer additionally makes provision for this possible incidence by not linking strategic objectives and destination statements by means of a tangible link.

6.5. Performance Measurement System Design: System Outputs

In this section the outputs of the concept solution are formulated. Requirement PM4 requires the performance measurement system to be able to link back to the organization’s strategy. This requirement deals with the concept of strategic content control, which in essence requires the performance measurement system to feedback strategic information with regard to the strategic objectives of the organization. The first output of the performance measurement system is therefore strategic information.

Requirement PM5 requires the performance measurement system to be able to provide fast and accurate feedback about actual performance measures. It subsequently follows that the second output of the performance measurement system is accurate performance feedback. Figure 4-17 on the next page visually summarizes the results from the above discussion by updating the concept diagram presented in Figure 4-14.

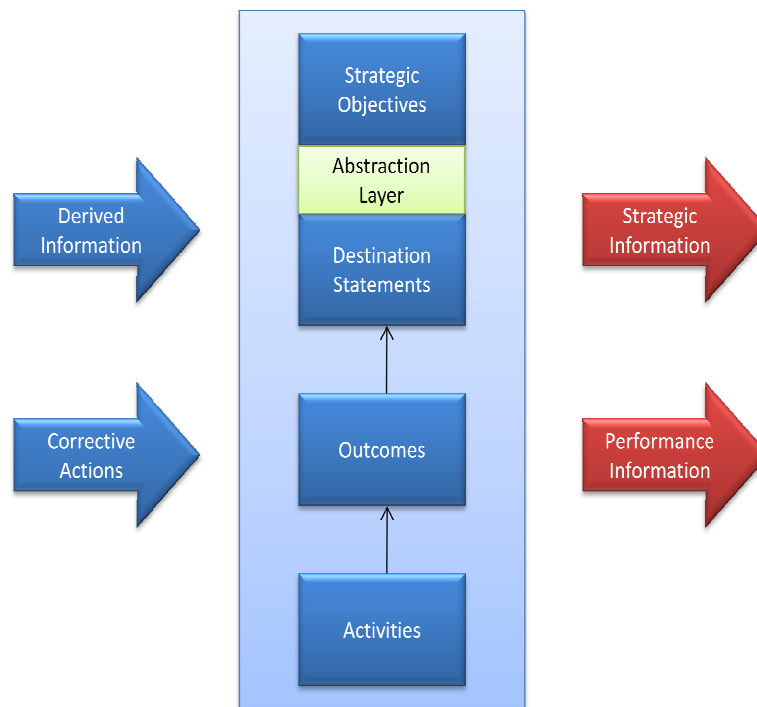


Figure 4-17: The Performance Measurement System Outputs.

6.6. Performance Measurement System Design: System Interfaces

The final part of the system design phase is not only concerned with how the inputs, processes and outputs interface with each other, but also with how the performance measurement system interfaces with the larger system of which it is a part of.

The performance measurement system receives, as inputs, corrective actions and strategic information. Corrective actions serve as input to the activities, as constant modifications and adjustments to the activities will directly affect the rest of the system. This not only stimulates the continuous improvement process, but it also provides the performance measurement system with a means to stay relevant and agile. Strategic information is provided to the outcomes and the destination statements as an input. This ensures that both the outcomes and the destination statements, which form the core of the performance measurement system, are derived from the organization's strategy.

The strategic objectives and performance information have been defined as the outputs of the performance measurement system. The output from the strategic objectives ensures that the performance measurement system links back to the organization's strategy. Performance information

that is outputted by the outcomes and destination statements effectively provides fast and accurate feedback. Figure 4-18 on the following page presents the performance measurement system interfaces.

The interface as depicted Figure 4-18 is summarised as follows. The activities within the performance measurement system are influenced by the applied corrective actions. The outcomes are a direct result of the activities. The outcomes are also provided with strategic information, which may include data such as desired levels of performance, etc. Much the same can be said of the destination statements which are a direct result of the outcomes. The destination statements are linked to the strategic objectives by means of an abstraction layer. The abstraction layer exists so as to tolerate the problems that are associated with information asymmetry. It is also for this reason that the performance measurement system is split into two “tiers”. Tier 1 is associated with a higher level of strategic information whereas tier 2 is more associated with performance based operational strategy. The abstraction layer provides top level managers with the important ability of formulating strategic objectives based on both activities, outcomes and destinations statements as well as based on their gut-feel and experience.

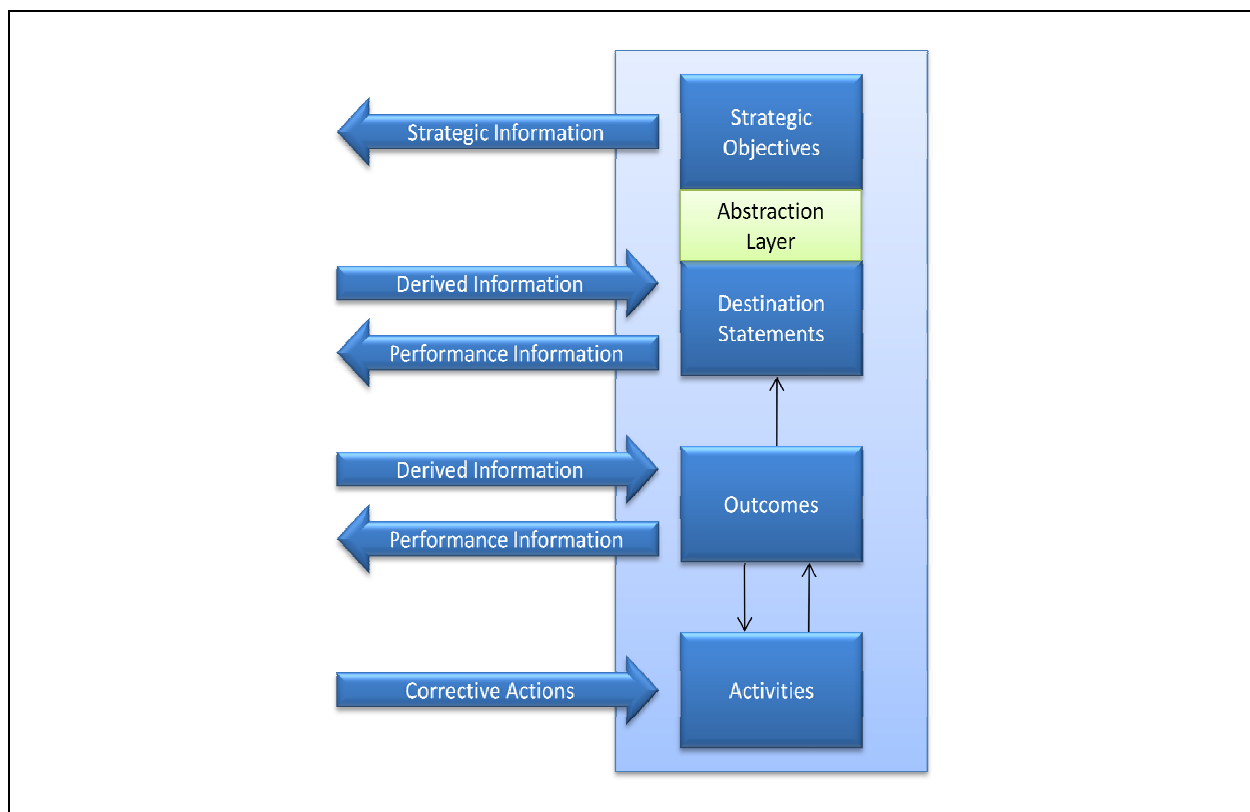


Figure 4-18: Performance Measurement System Interfaces.

7. Design Verification

The performance measurement system design is also verified by means of a cross verification matrix.

Table 4-2 below presents the verified requirements for the performance measurement system design.

Table 4-2: Cross Verification Matrix for the Strategic Control System Design.

Requirement	Where Was It Met	How Was It Met
<u>Requirement PM1:</u> The performance measurement system should be (1) derived from strategy.	1. System inputs.	1. By using feed forward strategic information as input.
<u>Requirement PM2:</u> The performance measurement system should be able to (1) link strategic objectives to operations.	1. System processes.	1. By making use of strategic linkage models and destination statements.
<u>Requirement PM3:</u> The performance measurement system should be able to (1) stimulate continuous improvement.	1. System inputs.	1. By continually making changes to internal process by using corrective actions as input.
<u>Requirement PM4:</u> The performance measurement system should (1) link back to strategy.	1. System outputs.	1. By feeding back strategic information about the organization's objectives.
<u>Requirement PM5:</u> The performance measurement system should provide fast and accurate feedback concerning actual performance levels.	1. System outputs.	1. By providing accurate feedback with specific reference to the performance measures.

8. Conclusion

This part of the thesis dealt with the notion of performance measurement design. The origins of performance measurement were investigated dating back to the set of ratios initially developed by DuPont. Major contributors like General Electric as well as other major concurrent developments such as Just In Time, Total Quality Management and Six Sigma, were highlighted for their contribution to the field of performance measurement.

The balanced performance measurement concept was discussed, with specific reference to the major parts that constitute a balanced performance measurement system. Different approaches to balanced

performance measurement systems were also emphasized such as the Performance Measurement Matrix, the Strategic Measurement and reporting Technique pyramid, Fitzgerald's causal framework, Brown's Macro Model of the Organization, the Business Excellence Model and the Performance Measurement Prism.

Kaplan and Norton's Balanced Scorecard was however a focal point, due to its widespread use and popularity. The original Balanced Scorecard of 1992 emphasized the use of non financial measures by defining four perspectives that covered a whole range of business aspects. The first generation Balanced Scorecard was not without its fair share of criticism, which subsequently led to the introduction of strategic linkage models. Balanced Scorecards that implement this innovation were known as second generation Balanced Scorecards. Strategic linkage models became very popular and led to the introduction of strategy maps.

Further improvements with regard to Balanced Scorecards ensued and this subsequently resulted in what is known as third generation Balanced Scorecards. These scorecards mainly focussed on destination statements. Destination statements allowed managers to better relate to strategy as it quantified objectives and goals. Strategic linkage models that contain activities and outcomes thus reducing the need for the traditional four perspectives were also implemented in third generation Balanced Scorecards.

The concept of information asymmetry as first noted by Williamson was also discussed. The problems and challenges brought about by this imbalance in information with specific reference to balanced performance measurement systems were also discussed. An abstraction was defined in order to tolerate and accommodate the information asymmetry that may exist within a performance measurement system. The abstraction layer joins the strategic objectives and destination statements of an organization in an intangible fashion, which not only accommodates information asymmetry but which is also able to represent the "man-in-the-loop". The principles on which the subsequent design was to be based were now well established.

With this well established design base it was subsequently possible to investigate the basic design considerations. These considerations took a generic look at various aspects that may play a role in the final performance measurement system design process. These considerations included the strategic

objectives, organizational structure, measurement and targets, evaluations and incentives and information flows and use of information.

Performance measurement design involved the formulation of functional design requirements as per the literature that has been studied. Performance measurement system design also dealt with the basic concept solution and further developed the components that made up this solution which included the inputs, outputs, processes and interfaces. These components were developed in line with the given functional requirements.

Part Five - Bridging the Gap

*"If a man can bridge the gap between life and death,
if he can live on after he's dead, then maybe he was a great man."*

James Dean

1. Objectives

Part Five of this thesis aims to bridge the gap between strategic control and performance measurement with specific reference to the following:

- The origins and implications of the gap between strategic control and performance measurement.
- What the term "bridging the gap" entails.
- The development of theoretical concepts such as filtering, signal processing and adaptive processing.
- A systems engineering approach to designing a system that bridges this gap, specifically addressing basic design considerations, system requirements, inputs, processes, outputs and interfaces.

The bridging system that is formulated in this part of the thesis follows directly from the fundamentals discussed in Part Two. The relationship between the fundamentals, strategic control system, bridging system and performance measurement system is depicted in Figure 5-1.

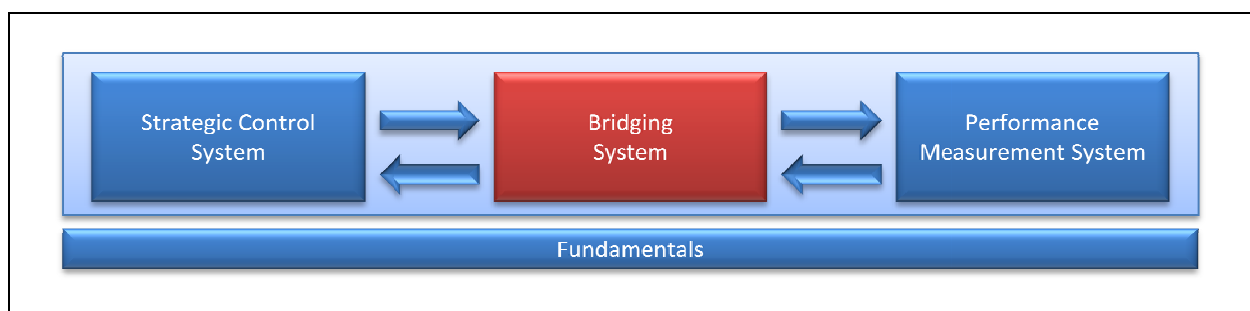


Figure 5-1: Part Five - Bridging the Gap.

2. The Gap between Strategic Control and Performance Measurement

2.1. Origins of the Gap

There is a vast amount of academic literature available that deals with the theoretical concepts of strategic control and performance measurement. These concepts have traditionally been researched and developed independently with very little, if any, integration and mutual understanding.

Much of what is known about strategic control systems originated from research based on contingency-type studies. The primary focus of these studies is on system design choices, with specific emphasis on how organizations design strategic control systems that match their strategy (Perego, Hartmann 2009). Contingency-type studies justify the use of a limited selection of performance measures only as part of the overall design properties of the broader control system. Performance measures are regarded as a by-product of the strategic control system and are therefore not directly associated with, or derived from the organization's strategy.

Theoretical research and developments with regard to the concept of performance measurement can largely be accredited to economic-based studies. The primary focus of these studies is on the attributes of specific performance measures (Perego, Hartmann 2009). These studies specifically emphasize the importance of deriving performance measures from the organization's strategy. The use of performance measures are justified based on the value of the information and data that they are able to provide. Economic-based studies however disregard the significance of the control system of which the performance measures are part of. Figure 5-2 on the following page summarizes the relationship between contingency-type and economic-based studies.

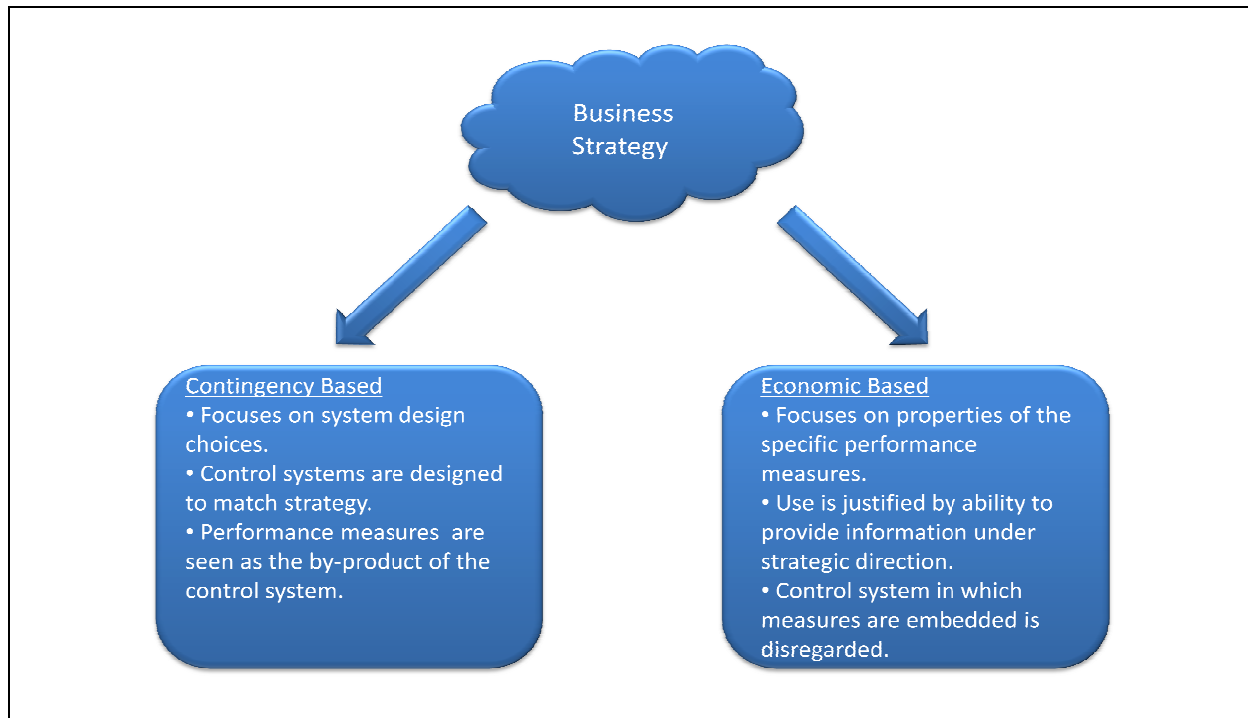


Figure 5-2: The Relationship between Contingency-Based and Economic-Type Studies.

2.2. Implications of the Gap

Past academic research papers by Chenhall, Langfield-Smith and Simons have drawn attention to the significance of bridging the gap between strategic control and performance measurement (Langfield-Smith 1997, Chenhall 2003, Perego, Hartmann 2009, Simons, Dávila & Kaplan 2000) Simons concluded the following about the crucial relationship between these two concepts:

“Business strategy is at the root of effective performance measurement and control for two reasons. First, performance measurement and control systems provide the analytic discipline and communication channels to formalize business strategy and ensure that strategic goals are communicated through the business. Second, performance measurement and control systems are the primary vehicle to monitor the implementation of these strategies.” (Simons, Dávila & Kaplan 2000)

The implications of not bridging the gap between strategic control and performance measurement are rather significant. According to Simons, the implication of not achieving a proper fit will seriously compromise the communication channels throughout the organization. This is largely due to the fact that both strategic control and performance measurement serve to formalize and communicate the

different components of the organization's strategy. Simons also notes that control systems and performance measures are the "primary vehicle" used to monitor implementation. Misalignment will most certainly result in an organization that receives no feedback on whether its adopted strategy has successfully implemented or not. Other negative implications include a loss of strategic scope, flexibility, adaptability and sensitivity. Figure 5-3 below emphasises the diverging gap.

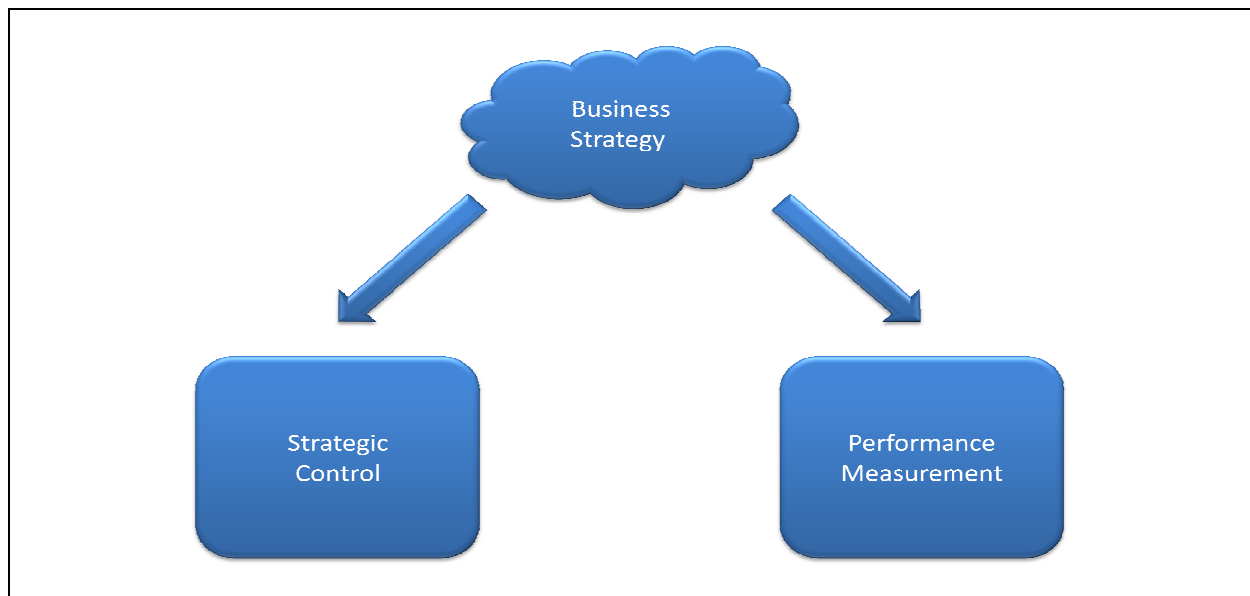


Figure 5-3: *The Diverging Gap between Strategic Control and Performance Measurement.*

It follows from the previous discussions that bridging the gap between strategic control and performance measurement is of the utmost importance. Strategic success can thus only truly be achieved when the gap between strategic control and performance measurement is bridged by a mutual, complimentary relationship. Despite the significance of this fact, it is far from clear what the term "bridging the gap" entails.

2.3. What Is Meant By the Term "Bridging the Gap"

The importance of "bridging the gap" between strategic control and performance measurement is widely recognized, although there is very little academic literature available that deals with what is meant by "bridging the gap". It is however well known that the existence of the gap is a direct result of a misalignment between strategic control theory and performance measurement theory. Facilitating alignment, and thus bridging the gap, is only made possible when "consistency of both decision making and action" (Neely 1999) is attained.

The word consistency has been defined as the ability to retain quality or form over a period of time. Maintaining consistency in a competitive market environment where change is abrupt, non-linear and instantaneous (refer Strategic Control: The Need for Change) is a tremendous challenge for any organization. Consistency between strategic control and performance measurement in an ever changing environment is however only possible when the gap is bridged by an independent and dynamic system (Franklin 1996).

Such a dynamic system will prevent the presence of outdated information and misguided action which is an immediate consequence of “long lead times between decision making and strategy formation” (McAdam, Bailie 2002). Consistency with regard to measurement, monitoring and control will aid in identifying strategic issues, improving overall strategic processes and meeting strategic targets (McAdam, Bailie 2002, Dangayach, Deshmukh 2001). Figure 5-4 below is a modification of the concept presented in Figure 5-3 and illustrates how an independent dynamic system should interface with strategic control and performance measurement.

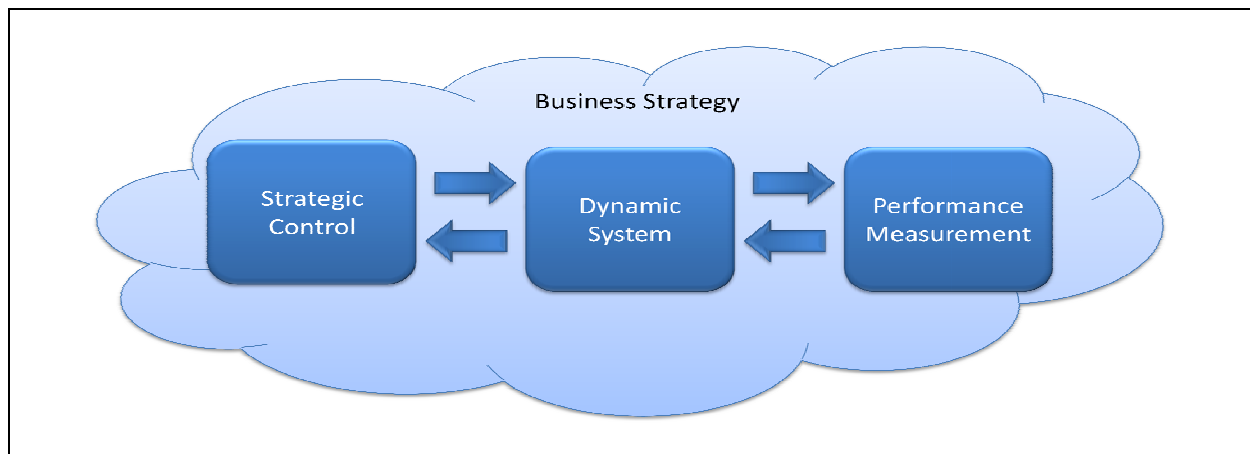


Figure 5-4: An Independent Dynamic System Bridging the Gap between Control and Measurement.

From the discussion in this part of the thesis it subsequently follows that the term “bridging the gap” entails the design of an independent, dynamic system, which promotes consistency of both decision making and action.

3. Theoretical Concept Development

3.1. The Filtering Concept

The objective of filtering is to ensure that the strategic control system metrics are operationally consistent with the performance measurement system. Each of the six filters individually addresses certain aspects of the economic and contingency based theories. These aspects include quantification, timeliness, scope, verifiability, sensitivity and congruity (Perego, Hartmann 2009). Figure 5-5 below visually illustrates the six types of filters and the relationship among them.

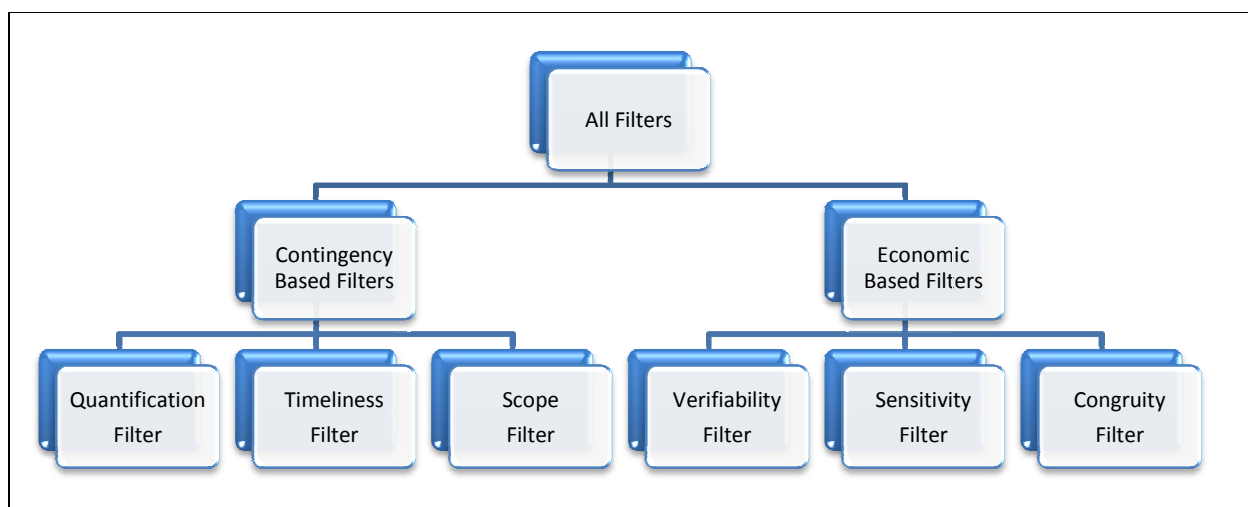


Figure 5-5: The Six Types of Filters.

If a strategic control metric is rejected by any of the filters, it is rendered useless to the system, and is immediately discarded. Such a discarded metric does not advance the consistency of neither decision making nor action within the broader system.

3.1.1. Contingency Based Filters

- **Quantification** concentrates on metrics that can be expressed in measurable, non-financial or financial terms. Non-financial quantification involves accurately depicting metrics in either physical or quantitative terms. Financial quantification on other hand is rather self explanatory and involves appropriately capturing metrics in traditional financial terms. The quantification filter therefore only allows metrics that can be quantified to be used, filtering out those that cannot be quantified.

- **Scope** is concerned with the extent to which metrics are focused on either the internal and external factors that influence the strategic environment. Scope can be classified as being either broad or narrow. Metrics that have a broad scope recognizes events within the organization, but also goes beyond the borders of the organization to reflect on past and future experiences that may affect the overall organizational strategy (Perego, Hartmann 2009, Perego, Hartmann 2009, Chenhall, Morris 1986, Chenhall, Morris 1986). Metrics that have narrow scope are historical in nature, provides financial information, and have a very narrow internal focus that cannot be related to future strategic initiatives. The scope filter therefore only allows metrics with a broad scope to be used, filtering out any metric that has a narrow scope.
- **Timeliness** focuses on the intervals or frequency between measurements (Perego, Hartmann 2009, Chenhall, Morris 1986). Data that is systematically collected significantly increases the consistency of both decision making and action. Infrequent and untimely metrics result in uncertainty and unpredictability within the broader system. The timeliness filter therefore only allows metrics that can be measured on a frequent and timely basis to be used, filtering out any metrics that can only be measured on an infrequent and untimely basis.

3.1.2. *Economic Based Filters*

- Metrics are deemed **verifiable** when their results can be duplicated several times by independent assessors with no variation in the measurement techniques. The verifiability of a given metric therefore implies a negligibly small measurement spread and very little personal bias (Perego, Hartmann 2009, Merchant, Rockness 1994). Metrics that are verified as accurate and objective greatly increase the consistency of the broader system with regard to both decision making and action. Disputable and ambiguous metrics hinder an organization's ability to interpret accurate data and to draw sensible conclusions over time (Perego, Hartmann 2009). The verifiability filter therefore only allows metrics that can be accurately duplicated by independent assessors to be used, filtering out any metric that has significant measurement dispersion or that contains any elements of personal bias.

- **Sensitivity** is concerned with the ability of a manager to influence and control strategic performance through direct actions. The sensitivity of a given metric reflects the amount of change in the mean in response to management intervention (Perego, Hartmann 2009, Merchant, Rockness 1994, Moers 2006). Sensitive metrics allow for a more proactive approach to business strategy and also provide more information on factors such as the inputs and outputs of processes, variables, outcomes, activities and their associated risks. The sensitivity filter therefore only allows metrics that can be directly influenced and controlled to be used, filtering out any metric that cannot be directly intervened with.
- **Congruity** has to do with the extent to which the priorities of an organization's strategy are reflected by a given set of metrics (Perego, Hartmann 2009). Congruent metrics assist in allocating managerial attention to where it is most needed. Incongruent metrics result in managers allocating their efforts and attention in areas that are different from what the organizational strategy expects, thus ultimately leading to inefficiency, misalignment and inconsistency within the broader system (Feltham, Xie 1994). The congruity filter therefore only allows metrics that are congruent with the priorities of the organization's strategy to be used, filtering out any metric that is not related to a strategic priority.

3.2. The Signal Processing Concept

The goal of signal processing is to detect and capture data that is received from the performance measurement system. Signal processing furthermore enables the organization to identify and exploit information patterns within this received data. Information patterns provide valuable insights into the opportunities and threats that are present within the competitive market environment. A solid understanding of how opportunities can be exploited and how threats can be avoided ultimately gives the organization what The Boston Consulting Group refers to as "signal advantage".

Signal advantage is defined as the "ability to rapidly capture, interpret and act upon signals gleaned from rich and dynamic data" (Reeves 2009b). Signal advantage addresses the capturing of data, the extraction of relevant signals, the leveraging of insights gained to make timely interventions, and ultimately the reshaping of the information landscape (Reeves 2009b). Gaining signal advantage is seen as an evolutionary process that consists of several stages. These stages are listed below (Reeves 2009b):

- Acquire relevant data.
- Recognize relevant patterns in data.
- Leverage insights to make operational interventions in real time.
- Continuously reinvent the business model.
- Shape the information landscape.

The concept of signal processing, and what will subsequently be known as the “signal processing chain”, is primarily based on the principles of signal advantage. The signal processing chain, as depicted in Figure 5-6, consists of four links namely, data acquisition, pattern recognition, confirmation or reinvention and strategic content control.

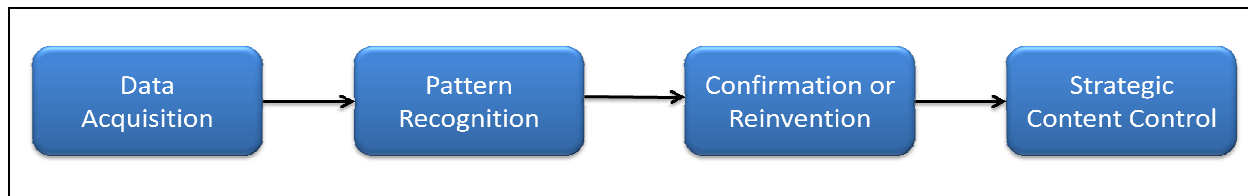


Figure 5-6: The Signal Processing Chain.

Each of the links within the signal processing chain is described in Table 5-1 below.

Table 5-1: Description of Individual Links within Signal Processing Chain.

Processing Link	Input	Output	Description
Data Acquisition	Raw data from performance measures and competitive market environment.	Relevant signals.	Acquires data from the performance measurement system and only processes relevant signals.
Pattern Recognition	Relevant signals.	Opportunities and threats.	Recognizes patterns within the relevant signals that are received and identifies opportunities and threats.
Confirmation or Reinvention	Opportunities and threats.	Confirmed and reinvented strategic objectives.	Confirms and reinvents existing strategic objectives based on current opportunities and threats.
Strategic Content Control	Confirmed and reinvented strategic objectives.	Critical Success Factors.	Strategic content control ensures that Critical Success Factors are still in line with the strategic objectives that have been confirmed or reinvented. Obsolete Critical Success Factors are discarded, existing may be tweaked or kept unchanged, and new critical success factors may be added.

The concept of signal processing differs significantly from traditional methods of data gathering such as strategic and environmental analysis. This is mostly due to the proactive nature of signal processing. This proactive approach to the acquisition of data and information promotes the development of a dynamic system that is able to bridge the gap between performance measurement and strategic control. The differences in approach between traditional data gathering techniques and signal processing are tabulated in Table 5-2 below (Reeves 2009b).

Table 5-2: Traditional data gathering techniques vs. Signal Processing.

Traditional Data Gathering	Signal Processing	Description
Adopts an internal perspective.	Adopts an outside-in perspective.	Traditional data gathering systems are focused solely on optimizing internal operations. By contrast, signal processing additionally focuses on importing, and acting on external signals.
Reports Information.	Mines and interprets data.	Traditional data gathering systems merely capture, aggregate, and report customer and market data. Signal processing goes a step beyond this by interpreting and translating the data. This requires the relevant data to be separated from the irrelevant data. As a result, patterns can be recognized and complex information can be visualized to facilitate decision making.
Processes data on an intermittent and sporadic basis.	Processes data on a consistent and dynamic basis.	Traditional data gathering systems processes data intermittently compared to signal processing that processes data on a continuous, consistent and dynamic basis.
Focuses on local efficiency.	Focuses on global efficiency.	Instead of only optimizing local functions independently, signal processing adapts to a dynamic environment at the organizational level.

3.3. The Adaptive Processing Concept

The primary objective of adaptive processing is to identify any deviations from the prescribed performance standards and to compensate for possible errors by performing corrective actions. Adaptive processing therefore promotes the consistency of both decision making and action by correcting for the error that may exist between what is expected by the strategic control system and what is actually measured by the performance measurement system. It is because of this fact that adaptive processing is seen as playing a key role in the development of an independent and dynamic system that is ultimately able to bridge the gap between strategic control and performance measurement. Figure 5-7 below illustrates the adaptive processing chain.

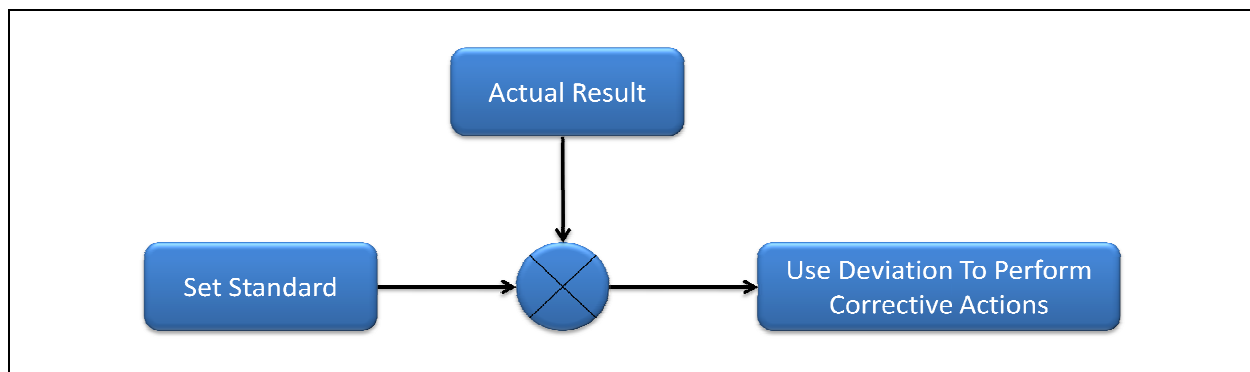


Figure 5-7: The Adaptive Processing Chain.

In order to be in a position to take the needed corrective action it is of the utmost importance to have a sound understanding of the competitive environment in which the error exists. This competitive environment is significant and worth discussing because it directly influences how corrective action should be performed and what impact any actions have on certain processes and activities. The “competitive environment” concept has been subject to much research and deliberation within the academic world. The competitive environment is seen as having a multitude of characteristics which include, but is not limited to, turbulence, hostility, diversity, complexity, dynamism, controllability and ambiguity. Adaptive processing will however only focus on turbulence, where the term turbulence refers to the rate of change and the degree of unpredictability within the competitive environment

Turbulence within the competitive environment can be compensated for by a process that is well equipped, flexible and spontaneous (Reeves 2009a). These attributes can be achieved by static methods such as “improved forecasting, decentralized decision making and buffering with excess capacity” (Reeves 2009a). These static methods are however inadequate for developing the dynamic system that

is required to bridge the gap between control and measurement. What is needed is a set of adaptive methods that are based on what The Boston Consulting Group refers to as the “adaptive advantage”.

Adaptive advantage is defined as “the ability to achieve superior outcomes in a turbulent environment by continuously reshaping the enterprise through a process of managed evolution” (Reeves 2009a). Adaptive advantage essentially provides the broader system with a method that deals with deviations and the corresponding corrective actions performed within a turbulent environment. Adaptive processing makes use of one of either four adaptive methods or styles. These styles are known as migrator, voyager, experimenter and sprinter respectively. The adaptive style used depends on the degree of turbulence present within the competitive environment and the resultant degree of deviation. The different adaptive styles and how they relate to turbulence and deviation are depicted in Figure 5-8 below.

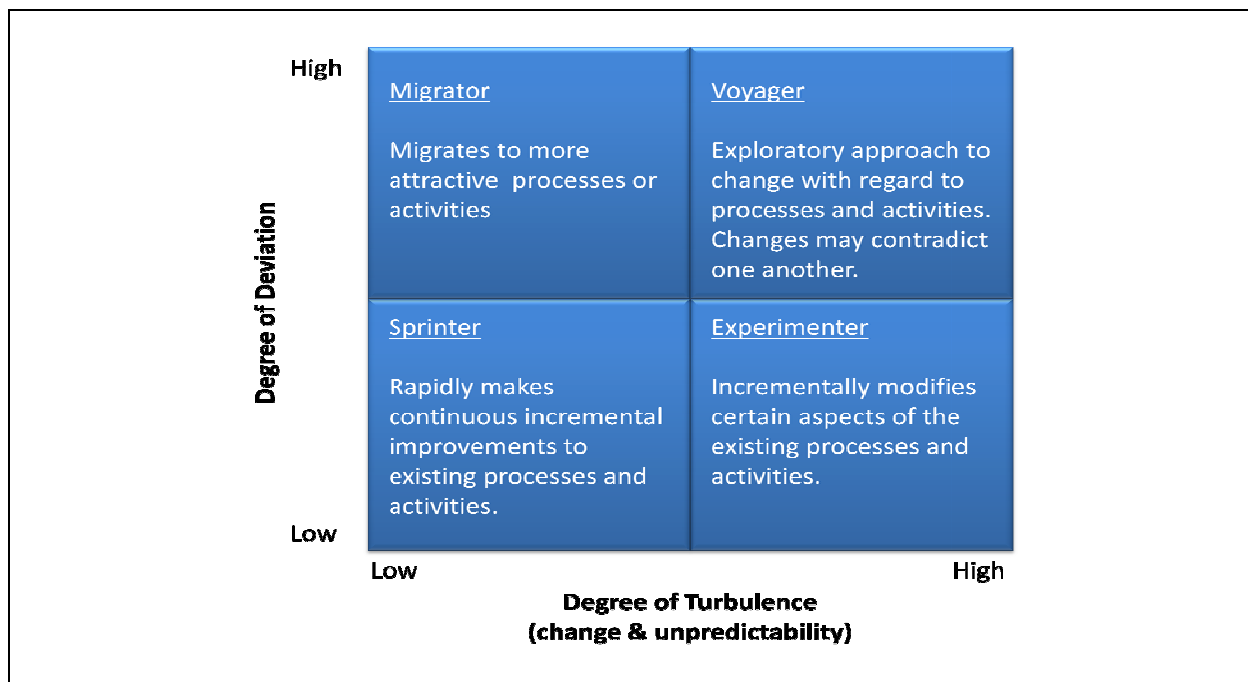


Figure 5-8: The Different Adaptive Styles (Adapted from Reeves, 2010).

- The **migrator** style of adaptive processing is applied in environments that have little to moderate turbulence and a moderate to high degree of deviation in the measured processes or activities. This style focuses on a deliberate and targeted migration to processes and activities that are more attractive. A process or activity that has a high degree of deviation in a relatively stable environment usually points to an inconsistent quantification. Such an activity or process should either be re-thought or totally discarded.
- The **voyager** style of adaptive processing is applied in environments that have moderate to high turbulence and a moderate to high degree of deviation in the measured processes or activities. This style takes an exploratory approach with regard to correcting these deviations. Exploratory changes to processes and activities are made even though these changes may sometimes contradict one another. It is extremely difficult to correct any process or activity with a high degree of deviation in an extremely unstable environment, and it is because of this fact that the exploratory approach to adaptive processing is employed.
- The **experimenter** style of adaptive processing is applied to environments that have moderate to high turbulence and a low to moderate degree of deviation in the measured processes or activities. A process or activity that has a low to moderate deviation in an unstable environment points to accurately quantified measures and a relatively agile strategy. Certain aspects of processes or activities may however need incremental adapting.
- The **sprinter** style of adaptive processing is applied in environments that have low to moderate turbulence and a low to moderate degree of deviation in the measured processes or activities. This style focuses on the rapid optimisation and exploitation of current environmental conditions. Continuous incremental corrective actions are made at frequent intervals in order to correct any deviations as soon as possible. A process or activity that has little deviation in a stable environment should therefore be frequently reviewed and corrected for on a continuous incremental basis.

The term “bridging the gap” ultimately implies consistency of both strategic decision making and strategic action. The abovementioned concepts of economic and contingency based filtering and also signal and adaptive processing are the fundamental subsystems that form part of a dynamic system that is able to seamlessly link strategic control and performance measurement. The following section deals with the design of such a dynamic system.

4. A Systems Approach to Bridging System Design

4.1. Bridging System Design: Basic Design Considerations

As in the previous parts of this thesis that dealt with strategic control and performance measurement system design, the importance of first examining the basic considerations is seen as crucial to the success of the overall design. Designing a bridging system with these considerations in mind will ensure a dynamic and consistent solution.

4.1.1. *Considerations With Regard To Contingency Based Filters*

The quantification of critical business process and critical control variable measures specifically refer to the extent to which they are quantified and reported by the overall strategic control system. As previously discussed, the purpose of the quantification filter is to ensure that all metrics are quantified in either financial or non financial terms. Considering the extent of quantification already present within the organization before implementing the filter plays a crucial role in gaining insight that will ultimately lead to a better understanding of the dynamics and consistency within the current operational environment. It is therefore important to consider the following aspects with specific reference to the organization’s critical business processes (Perego, Hartmann 2009):

- Extent to which non financial and non financial business process resources are reported on.
- Extent to which non financial and financial business process outputs are reported on.
- Extent to which non financial and financial business process efficiency is reported on.
- Extent to which non financial and financial business process risks are reported on.
- Extent to which financial and financial business process management is reported on.

It is also important to consider the following aspects with specific reference to the organization's critical control variables (Perego, Hartmann 2009):

- Extent to which non financial and financial control variable resources are reported on.
- Extent to which non financial and financial control variable outputs are reported on.
- Extent to which non financial and financial control variable efficiency is reported on.
- Extent to which non financial and financial control variable risks are reported on.
- Extent to which non financial and financial control variable management is reported on.

The scope of critical business process and critical control variable measures specifically refers to the extent to which they focus on either or both of the internal and external factors that influence the overall strategy. As previously discussed, the purpose of the scope filter is to filter out measures with a narrow scope. Considering the extent of the scope of the measures already present within the organization will lead to a better insight of how dynamic and consistent the current operating environment is. It is therefore important to consider the following aspects with specific reference to the organization's critical business processes (Perego, Hartmann 2009):

- Extent to which business process information relating to both internal and external factors are available.
- Extent to which business process information relating to both internal and external factors are tracked and monitored.
- Extent to which business process information relating to both internal and external factors are used to predict the likelihood of future events.

It is also important to consider the following aspects with specific reference to the organization's critical control variables:

- Extent to which control variable information relating to both internal and external factors are available.
- Extent to which control variable information relating to both internal and external factors are tracked and monitored.
- Extent to which control variable information relating to both internal and external factors are used to predict the likelihood of future events.

The timeliness of critical business process and critical control variable measures specifically refers to the frequency and speed of reporting. As previously discussed, the purpose of the timeliness filter is to filter out measures that are available on an infrequent and untimely basis. Considering the timeliness of the measures already present within the organization will lead to a better insight of how dynamic and consistent the current operating environment is. It is therefore important to consider the following aspects with specific reference to the organization's critical business processes (Perego, Hartmann 2009):

- Extent to which critical business process information is provided on a systematic and regular basis.
- Extent to which critical business process information is available with little or no delay after the occurrence of a relevant event.

It is also important to consider the following aspects with specific reference to the organization's critical control variables:

- Extent to which critical control variable information is provided on a systematic and regular basis.
- Extent to which critical control variable information is available with little or no delay after the occurrence of a relevant event.

4.1.2. Considerations With Regard To Economic Based Filters

The sensitivity of critical business process and critical control variable measures specifically refers to the ability of a manager to influence and control strategic performance through direct actions and is therefore seen as the amount of change in the mean in response to management intervention. As previously discussed, the purpose of the sensitivity filter is to filter out any insensitive measures. Considering the extent of the sensitivity of the measures already present within the organization will lead to a better insight of how dynamic and consistent the current operating environment is. It is therefore important to consider the following aspects with specific reference to the organization's critical business processes (Perego, Hartmann 2009):