The use of Data Warehouse Technology to implement the balanced scorecard

(In the financial industry)

A Research Report Presented to the

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by

D. M. de Wet
Student Number 0527-501-6

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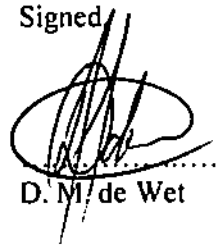
I further wish to thank our good friend, Carol Webber for correcting my language and spelling errors.

DECLARATION

I declare that this report is my own work, except to the extent acknowledged and referenced, as indicated in the text of the report.

The report is submitted as partial fulfillment of the requirements for the degree of Master of Business Leadership at the Graduate School of Business Leadership of the University of South Africa.

Signed



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D. M. de Wet

On the 29th day of November 2000

ABSTRACT

THE USE OF DATA WAREHOUSE TECHNOLOGY TO IMPLEMENT THE BALANCED SCORECARD IN THE FINCANCIAL INDUSTRY

by Marius de Wet

Companies in the financial industry have to navigate their companies through the stormy seas of the internet age. Strategies have to change in a flash where traditional concepts are becoming more and more under threat by new business models which are enabled by IT systems.

The Balanced Scorecard provides a framework to firstly align the different strategic viewpoints of different business units and divisions and then translate the strategy and the vision of a company into operational terms. It is also a performance management system focused on and aligned with the strategy identified by top management.

The implementation of the Balanced Scorecard adds significant value for companies, mainly initially in the strategic learning area and as a tool to communicate the strategy to the higher levels of the company.

It also adds value by forming a basis on which MIS and EIS systems can be built.

More specific advantages were achieved, such as the successful identification of initiatives which support the strategy. Examples of such initiatives include the total reengineering of some business processes, identification of skills gap and the closing thereof on client service centers and many more.

The Balanced Scorecard implementation should be a business project supported by an IT system and the survey found that the IT systems definitely have a significant impact on the success or failure of a Balanced Scorecard initiative.

The ideal IT system should not be too complex, but should have an intranet front end which communicates progress against measures to staff, allow drill down capabilities for more senior staff members and it should be based on a data warehouse fronted by an OLAP tool. The front end must be able to link objectives together and should be simpler rather than more complex. Several third party "front end tools" are available, the most notable being Gentia, SAP and Oracle. The IT system should also support the capability to confirm the cause-effect relationships between measures by correlation analysis.

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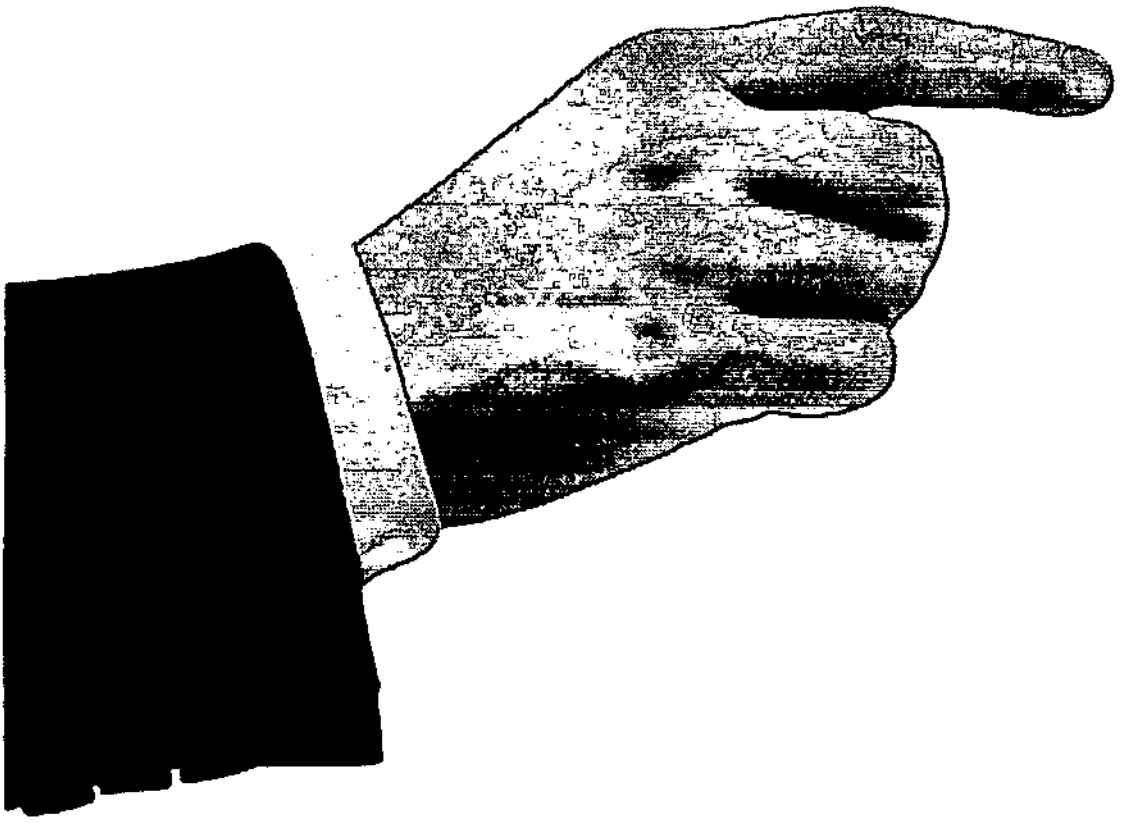
ABBREVIATIONS

ABC	Activity Based Costing
ABM	Activity Based Management
ASP	Application Service Provider
BPR	Business Process Reengineering
BSC	Balanced Scorecard
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CIO	Chief Information Officer
CKO	Chief Knowledge Management Officer
COO	Chief Operating Officer
CRM	Client Relationship Management
DBMS	Database Management System
ECN	Electronic Crossing Network
EIS	Executive Information System
ERP	Enterprise Resource Management
EVA	Economic Value Added
HR	Human Resources
HRO	Human Resources Officer
IDC	International Data Corporation
IT	Information Technology
JSE	Johannesburg Stock Exchange
KPI	Key Performance Indicator
KSF	Key Success Factor
MBO	Management By Objectives
MIS	Management InformationSystem
MOLAP	Multidimensional OLAP
OLAP	On Line Analytical Processing
OLTP	On Line Transaction Processing
RAD	Rapid Application Development
ROE	Return on Equity
ROLAP	Relational OLAP
ROI	Return on Investment
RONA	Return on Net Assets
SBU	Small Business Unit
SEM	Strategic Enterprise Management
SQL	Structured Query Language
STRATE	Share Transactions Totally Electronic
WAP	Wireless Access Protocol

PART ONE :

INTRODUCTION



CHAPTER ONE : INTRODUCTION

1.1 Goals

The goal of this study is to determine to what extent the implementation of the balanced scorecard in organisations within the financial industry typically adds value and if the IT systems play a significant role in the success of the implementation of the balanced scorecard. The study will also examine how data warehouse and related technologies are used to implement these systems in practice.

1.2 Background

During the past decade or two, companies in general turned to various techniques to improve their performance.

Some of the techniques and philosophies used by managers such as TQM, JIT (Just-in-time) production and distribution systems, Lean production/Lean Enterprise concepts, Enterprise Reengineering and ABC (Activity Based Cost Management), at times produced disappointing results.

This was partially because goals became fragmented and were not linked to a specific organisational strategy. Charam and Calvin (1999) estimate in an article in Fortune magazine that 70% of CEO's that fail do so not because of bad strategic planning, but because of bad execution of strategy.

Peter Drucker (1998) stated " A related problem is that management is becoming ever more fashion-conscious. Managers implement strategies like downsizing and reengineering just because they seem the thing to do. Managers are fashion-conscious because, in reality, 90% of running an organisation is routine."

In the same article in Fortune Magazine Drucker points out that : "the managers are so overwhelmed by the short term goal to create shareholder value that they do not give attention to the longer term strategy of the company. Yes, we need to think through

what performance is; we need both short-term and long-term measures. But management hasn't accepted this yet. That's because they're under short-term pressure from investors, who themselves are under pressure from their own management, who are looking for short-term results ."

A new concept or methodology, the Balanced Scorecard, which addresses the problems mentioned above was created by Robert Kaplan and David Norton in 1992. Since that time, it has become one of the most widely used new management approaches of the decade. The Gartner Group, in a study of management practices, predicted that "at least 40% of Fortune 1000 companies will implement a new management philosophy - - - The Balanced Scorecard - - - by the year 2000." Current informal estimates in the industry is that the percentage of companies in the Fortune 500 who have implemented the Balanced Scorecard exceeds the Gartner predictions.

Kaplan and Norton (1996) describe the Balanced Scorecard as a framework to translate the vision and strategy of a firm into operational terms. The Balanced Scorecard is essentially a performance management program that puts strategy at the center of the process. The Balanced Scorecard is a way to implement a new management process, namely to create strategy focused organisations. The Balanced Scorecard is called "balanced" because it balances measures of past success of the company with measures that will drive future (longer term) performance.

A successful Balanced Scorecard program touches every dimension of the management system, from strategy to compensation to budgeting and information technology. A successful program requires the participation of the whole executive team and ultimately, of everyone in the organisation. Without strong and knowledgeable leadership, a Balanced Scorecard program can flounder and opportunities for competitive advantage may be missed. One CEO has likened the process of implementation of the Balanced Scorecard to hammering a nail into concrete – one has to have determination.

If a scorecard is to play a natural part in the process of strategic discussion and learning at a company, it must continually be updated with current, operationally relevant information, for example, monthly progress against the set objectives.

Olve, Roy and Wetter (1999) explain that an important issue the company has to deal with is how to establish procedures and systems of measurement which not only collect operationally relevant information, but also communicate it to employees and partners.

Although vendors such as SAP, Oracle, SAS and PeopleSoft brought out software tools to implement the Balanced Scorecard, these solutions mostly concentrate on the presentation and communication of the information.

Companies are normally faced with a data consolidation challenge, where custom developed data warehouses or data marts have to be created to store the information required by the front end tools. Because of the strategic nature of the information required the Balanced Scorecard needs data that is not kept in the normal financial system. In addition data usually has to be imported from several operational systems.

Prof. René Pellisier (2000) observes that organisations will move through four quadrants in the order listed below as a subsequent need for (strategic) information arises and that it corresponds to the evolution of IT. She listed the order (and quadrants) as Office automation, Database Applications, Online Transaction Processing and finally Business Intelligence.

1.3 Scope of the report

The scope of this report covers the results of a literature survey and an empirical survey.

The literature survey gives a short overview on the Balanced Scorecard to enable the reader to understand the concept of a Balanced Scorecard, what the intended benefits are and how the process of implementing the Balanced Scorecard works.

The literature survey also examines the generic components which are required to implement the Balanced Scorecard, their functions and gives an overview of the IT practices required to create them.

The survey focuses on companies in the financial sector and gives as background a very short overview of the state of the financial industry, with a description of known companies within the sector who have implemented the Balanced Scorecard or are in the process of implementing the Balanced Scorecard.

The goal of the literature survey section is to provide sufficient background information in order to be able to contextualise the results of the empirical research.

The empirical research determines the actual significance and nature of the benefits to the businesses which result from the implementation of a Balanced Scorecard process or methodology in a company. It furthermore examines the significance of the IT implementation in the success of the Balanced Scorecard implementation and establishes guidelines for the IT implementation of a Balanced Scorecard process.

1.4 Why the financial industry was chosen for this study

A specific industry was chosen for this report in order to eliminate possible large differences in the results from very different types of industries. It is conceivable that the type of IT solutions implemented by a company that contracts for bricklaying would be quite different from that of an Andersen Consulting. In order to cater

properly for a cross-industry survey, several variables would have to be taken into account. It was therefore decided to choose one industry.

The Financial industry provides many interesting dynamics. It differs from the old industrial age companies, where the success of the company was based on tangible assets, such as land, factories and inventory. For industrial age companies financial tools such as general ledgers, income statements and balance sheets were sufficient to control the company.

In sharp contrast, companies in the financial industry have to navigate their way through the stormy seas of the internet age. Strategies have to change in a flash, where traditional concepts are becoming more and more under threat by new business models which are enabled by IT systems. Financial companies work in an abstract world of financial instruments and IT plays a major role in the execution of their strategies.

Intangible assets such as staff skills, brand awareness and client relationships play an extremely important role in the success or failure of companies in the financial sector. This means that new methods of control, knowledge management and guidance have to be used, which also take the non-financial aspects of the business into account.

The financial industry therefore contains all the dimensions that require the use of a framework such as the Balanced Scorecard in order to make it successful and is therefore well suited to a study of this kind.

1.5 Research Hypothesis

A descriptive/correlative hypothesis will be used in order to focus this Research Report.

The hypothesis is firstly that implementing the Balanced Scorecard adds significant value to a company and secondly that the IT systems used for its implementation play a major role in the success of the implementation.

In addition to the hypothesis, the nature of the optimal data warehouse or other IT techniques required to implement the Balanced Scorecard is discussed in more detail.

1.6 Themes and report layout

The report is divided into four parts.

The first (current) part is the introduction which gives an overview of the issues discussed in the report and the layout thereof.

The second part is the literature survey. It contains the following chapters:

Chapter two provides an introduction to the Balanced Scorecard. The goals and roots of the scorecard are examined and the nature of the measures used in the four quadrants are discussed.

Chapter three covers the IT implementation issues. The general nature of the IT applications are discussed, thereafter they are broken down to components. The user interface is discussed, followed by the structures these interfaces require to give the user Balanced Scorecard information and the data requirements to monitor the measures as defined in Chapter two. A general overview is given of data warehouse technology. Buy-or-build scenarios are discussed. The main third party applications available for the balanced scorecard are discussed and a short comparison is given.

Chapter four gives an overview of some of the organisations targeted in this research and the (financial) industry they are in.

Chapter five discusses the research methodology used for this report.

Chapter six discusses the actual research methods and instruments used in the research. The flow of the questions is listed.

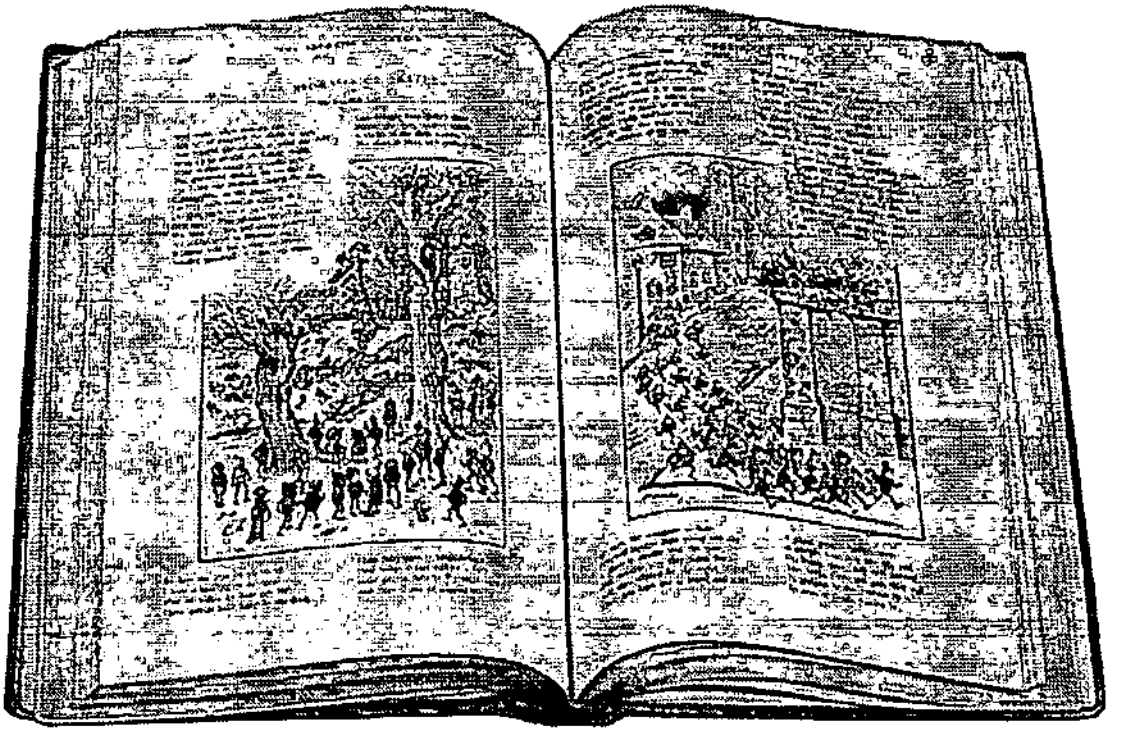
Chapter seven presents the detail results of the survey.

The findings are summarized and recommendations are made based on the literature study and the survey results. This summary is decribed in *Chapter eight*.

This is followed by the conclusion.

PART TWO
LITERATURE REVIEW

"Not everything that can be counted counts and not everything that counts can be counted." Albert Einstein (1879-1955).



CHAPTER TWO : THE BALANCED SCORECARD

2.1 Introduction to the Balanced Scorecard

The Balanced Scorecard is a concept which first made its appearance in February 1992 when Norton and Kaplan summarized the findings of a project that studied innovative performance measurement systems in an article in the Harvard Business Review, titled "The Balanced Scorecard – Measures that drive performance".

The Balanced Scorecard is essentially a simple concept. It is a process to link short-term operational control to the long term vision and strategy of a business by introducing interlinked performance measurements from four key viewpoints of a company, namely financial, customer, internal process and learning/growth. Through this process the company effectively *balances* the measures of past performance with those which drive future long term growth.

Kaplan and Norton (1996:10) state that the Balanced Scorecard "enables management to use the measurement focus of the scorecard to accomplish the following management process :

- Clarify and translate vision and strategy
- Communicate and link strategic objectives and measures
- Plan, set targets and align strategic initiatives
- Enhance strategic feedback and learning"

It is widely accepted that a person or a company will perform based on what is being used as a measure for good performance. Many companies have concentrated on only measuring historical financial performance.

Kaplan and Norton (1996) recommend that the key success factors on which the financial performance is dependent also needs to be measured and controlled to ensure success of the company.

The Balanced Scorecard is not only ***balanced*** between measures of the past financial success and future financial success, but it is composed of a set of objectives and measures that present a balance between external measures for shareholders and customers and internal measures of critical business process, innovation, learning and growth.

Averson (1998a) states that "Senior managers will use sophisticated metrics displays backed by powerful, object-oriented relational database tools to support strategic decision making. Their desktop data warehouses will draw data on the major processes throughout the whole organisation continuously, as well as on a variety of external views of the competitive environment. They will use sophisticated, customized forecasting and 'what if' models of their company's dynamics in order to select the best strategy and implement it. By a coordinated system of retraining, redefinition of metrics and incentives and intelligent project teaming, leaders will be able to turn a large company's strategic thrust quickly in a new direction to meet the changing demands of the global market."

The Balanced Scorecard Collaborative (2000) quotes a study done by IDC Research that found that "Analytic applications - - - a $5.0 billion market by 2003 .... organisations will look to extend business processes to support analytic activities, such as forecasting and optimization, through the adoption of methodologies such as Kaplan and Norton's Balanced Scorecard."

While the use of measurements that concentrate purely on bottom line might have been sufficient in the industrial age economy, in the internet age, consolidation and global competition are forcing executives to pay closer attention to softer statistics such as quality of service, customer retention and satisfaction and employee loyalty.

Performance metrics should therefore also take into account the changing definition of success (such as customer experience) and they should be expressed in terms that make sense for a worker.

It has become clear that navigating to a more competitive, technological and capability driven future cannot be accomplished merely by monitoring and controlling financial measures of past performance.

The Balanced Scorecard approach seems to have been tremendously successful. It was selected by the Harvard Business Review as one of the most influential business ideas of the past 75 years. The Balanced Scorecard was hailed as a landmark achievement by Michael Hammer, the "inventor" of BPR.

But this concept of using multiple measurements (financial and non-financial) to measure performance is not new.

As an example another big buzzword currently in the industry is that of CRM (Customer Relationship Management). The relationship between profitability and looking after the customer is highlighted in many publications. Mody (2000:2-9) hails CRM as the "new strategic imperative" He further states that "firms offering superior relative (customer) value were found to be three times as profitable as those offering inferior relative (customer) value. "

The Management by Objectives (MBO) management philosophy as described in Melnyk and Denzler (1996) is another example of a performance measurement system where the goals are defined top-down and employees are measured on multiple dimensions.

Similarly, in France, executives have used a "Tableau de Bord" which is a "dashboard" of Key Success Factors that helps employees "pilot" the organisation.

Barksy and Marchant (2000) criticize the failure of accounting practices to capture intellectual capital and recommend a model of four groups of resources – financial, people/processes, technology and customer equity as a better way to manage a company.

The Balanced Scorecard has been likened to applying engineering principles to management. Critics sited the similarity of the Balanced Scorecard measures to techniques in measurements, testing, feedback, control loops and risk mitigation which have been used for years in engineering. Is the Balanced Scorecard therefore a reincarnation of Frederick Taylor's efficiency analysis?

Averson (1998b) states that Frederick Taylor's concept, "a product of the industrial age, modeled and organisation as a mechanical system, in which people were just cogs in the wheels. Now, in the information age, this concept is seen as a demeaning and false view of the role of people in an organisation. In the information age, people are the source of new ideas and innovation – the key driver of growth and the source of competitiveness in an organisation. Therefore, in the information economy... information is the lifeblood, the currency of the agency. Proper coddling and nourishing of new ideas is vital to future growth. Any strategic plan must take information – and the people that create it, very seriously."

It is very clear that people amongst other things need to be recognised as intangible assets in the economy of today, rather than just cogs in a machine.

Kaplan and Norton (1996:3) also recognize the importance of intangible assets of a company. They state the role of intangible assets as that they enable a company to:

- "Develop customer relationships that retain the loyalty of existing customers and enable new customer segments and market areas to be served effectively and efficiently;
- Introduce innovative products and services by targeted customer segments;
- Produce high-quality products and services at low cost and with short lead times;
- Mobilize employee skills and motivation for continuous improvements in process capabilities, quality and response times; and
- Deploy information technology, databases and systems."

Ideally, the financial accounting model should have been expanded to include valuation of the company's intangible and intellectual assets, such as high quality products and services; motivated and skilled employees, responsive and predictable internal processes and satisfied & loyal customers.

Realistically, the difficulty in placing a reliable financial value on such assets as "new research team", process capabilities, employee skills, motivation, customer loyalty, databases, etc. will likely preclude them from ever being recognised in organisational balance sheets. Yet these are the assets & capabilities that are critical for success in the information age.

There also has to be the forward-looking aspect. How well the company performs in building the competitive capabilities required in the future.

The question is then what makes the Balanced Scorecard any different than the other approaches with multiple measures which were mentioned earlier ?

According to Kaplan and Norton (1996) the objectives and measures are more than an ad-hoc collection of financial and non-financial performance measures. They are derived from a top-down process driven by mission and strategy of the business unit.

The Balanced Scorecard emphasizes that financial and non-financial measures must be part of the information system for employees at all levels of the organisation.

These measures should all be interrelated – and it should be possible to draw the cause-effect relationship between them.

The strategy diagram shown below in Figure One shows how the strategy of a company can be broken down through the use of a strategy "map" which shows the different components of the strategy and their associated objectives. The strategy map also shows the cause-effect linkages between the different measures and how each play a part in ultimately influencing the shareholder value over a long term.

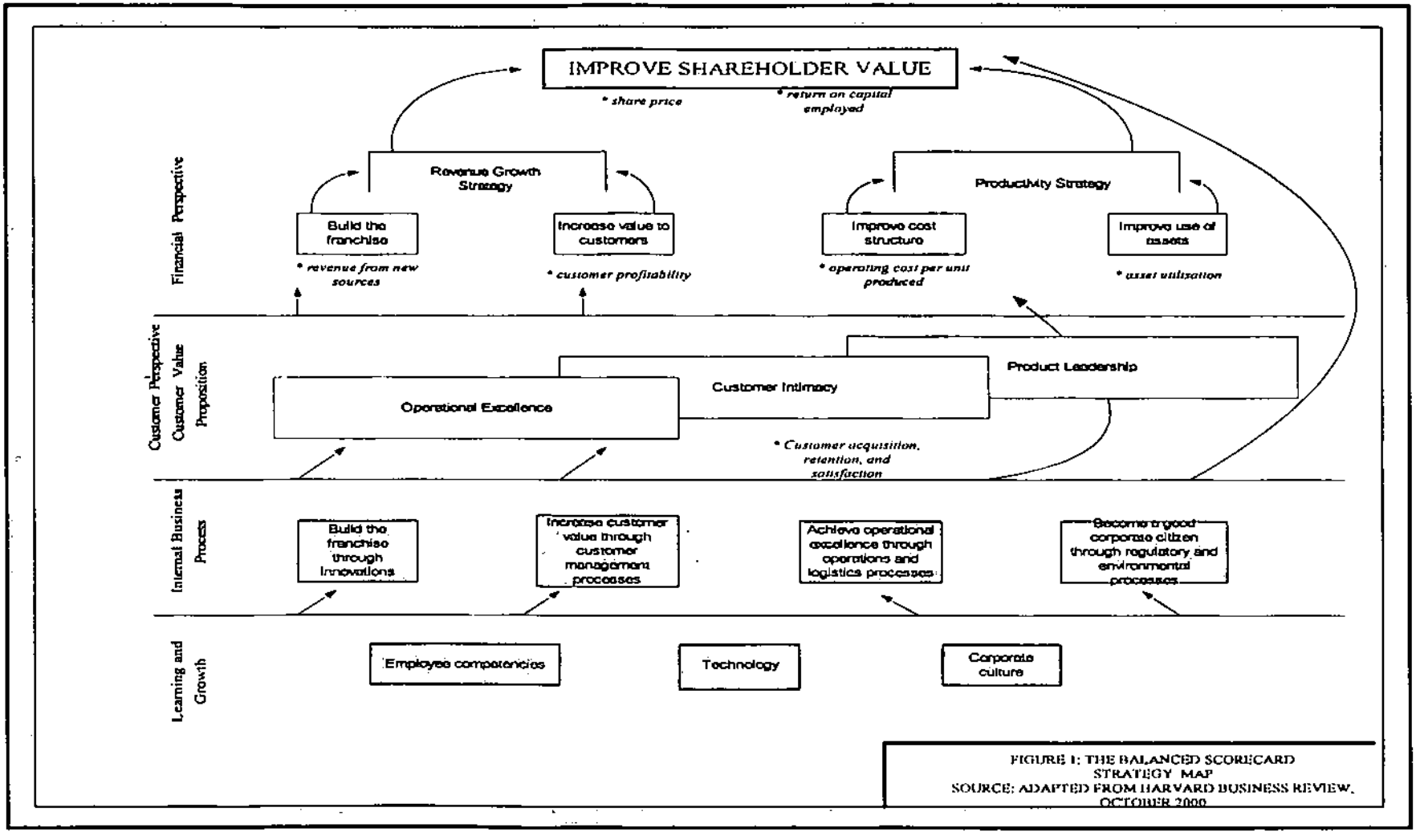


FIGURE 1: THE BALANCED SCORECARD
STRATEGY MAP
SOURCE: ADAPTED FROM HARVARD BUSINESS REVIEW, OCTOBER 2000

The Balanced Scorecard also has some good foundations and roots: it is based upon several generally accepted management frameworks, namely the DuPont ROI model or shareholder value, a customer value proposition, the value chain (business process centered perspective) and a learning and growth perspective.

The Balanced Scorecard should be regarded as a management system aimed at managing the process to attain goals and not as a measurement system.

Brady (1993) recommends the primary use of the BSC should be for management purposes rather than measurement purposes : "It gets worse if you think of the scorecard as a new measurement system that eventually requires hundreds and thousands of measurements in a big, expensive executive information system. These companies lose sight of the essence of the scorecard – its focus, its simplicity, its vision. The real benefit comes from making the scorecard the cornerstone of your business. It should be the core of the management system, not the measurement system. Senior managers alone can determine whether the scorecard becomes a mere record-keeping exercise or the lever to streamline and focus strategy that can lead to breakthrough performance. "

2.2 The process used to determine the measures on a Balanced Scorecard.

This paragraph gives a short overview of the process which leads up to the generation of the measures as described in Paragraph 2.3 and is intended to make the reader understand the role that the Balances Scorecard can play in the strategy process.

The majority of the information in this chapter is summarized from Kaplan and Norton (2000), Kaplan and Norton (1996), Norton et al (1999) and Olve et al (1999) and will therefore not be specifically referenced to avoid cluttering.

The strategy process is shown in Figure Two. As can be seen it is not a once off process, but rather an iterative process which is much like navigating a boat through the ocean, except that the process does not end for as long as the company is operating.

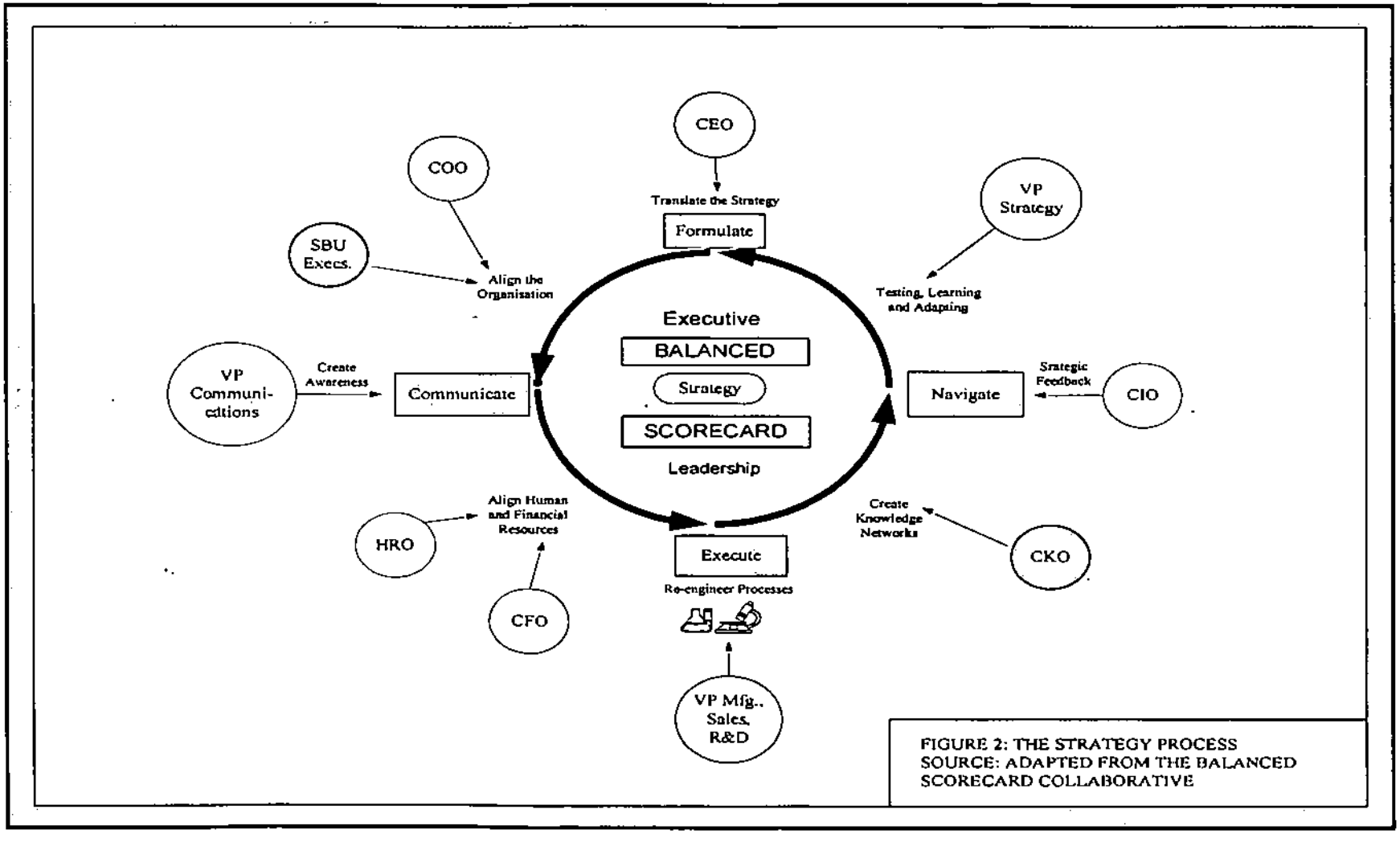


FIGURE 2: THE STRATEGY PROCESS
SOURCE: ADAPTED FROM THE BALANCED SCORECARD COLLABORATIVE

Figure Two also illustrates how the whole management team is involved in the strategy process.

The Balanced Scorecard is used in all phases of the strategic process. During the formulation of strategy it becomes the tool for executives to communicate their strategic intent to one another and align their strategic objectives. Thereafter during the communication phase the Balanced Scorecard is used as the framework to communicate the strategy to the management. The next phase is that management should use the Balanced Scorecard to execute the strategy by reengineering business processes, controlling customer relations and so forth. In the final phase the progress against the goals is measured using the Balanced Scorecard and used as input to re-adjust the strategy and start the whole process over again.

The process described above is the macro overview of the company's strategic process. While different opinions exist about different phases of the process, it clarifies the framework into which the Balanced Scorecard has to fit. The next step is to define the process whereby the Balanced Scorecard is determined. This process is defined below and illustrated in Figure Three.

Kaplan (2000:9-17) describe five principles for creating a strategy-focused organization, namely :

- "translate the strategy to operational terms;
- align the organisation and the strategy;
- make strategy everyone's everyday job;
- make strategy a continual process; and
- mobilize change through executive leadership ".

The first four steps focus on the Balanced Scorecard tool and framework, but even Kaplan and Norton state that you need more than just tools and processes to create a strategy-focused organisation. But let us focus on the first four steps.

The first step to create the Balanced Scorecard is to define a common strategy. This often requires top management to re-examine their view of the industry, themselves and to select a strategy which best exploits the external opportunities relative to the firm's capabilities. During this phase management might or might not use additional tools to aid them in the examination of possible scenarios.

From the strategy a shared comprehensive vision and mission statement should be determined.

Thereafter the perspectives have to be established. In general the scorecard has four perspectives as defined by Kaplan & Norton, namely financial, customer, internal/business process. Some companies tend to add more perspectives, such as an HR, IT or environmental perspective depending on their requirements. Gartner (2000) recommends that two extra IT perspectives are added on, as described in paragraph 2.6. Kaplan and Norton (1996) report that in general it has been found difficult to maintain the extra perspectives properly. It is therefore recommended that HR and IT issues, etc, are incorporated as part of the basic four-perspective model.

The next step would be to break the vision down according to each perspective and to formulate overall strategic aims. (This is what the model should be – an instrument to translate an abstract vision and strategy into specific measures and goals. The Balanced Scorecard should be a system aimed at attaining goals rather than just a measurement system).

The key success factors (KSF's) for each perspective then have to be determined and from that the actual measurements. Every measure selected for a Balanced Scorecard should be an element in a chain of cause-and-effect relationships that communicates the meaning of the business unit's strategy throughout the organisation. An example would be: if enhanced Return on Capital Invested is a financial measure, it will be dependent on an increased customer base, which can be a measure in the customer perspective. The increased customer base can be dependent on one of the internal business processes being performed better. This could in all likelihood be linked to

employee skills, which is the in the learning/growth perspective. A good scorecard should have a mix of outcome measures and performance drivers.

The next thing that normally needs to be done is that the scorecard and measures must be broken down by organisational unit. This presupposes the company has already determined the most appropriate organisational form for optimal utilization of internal and external competence.

Thereafter goals have to be set for every measure used. Short term and long term goals have to be defined for organisations. These goals have to be consistent with the comprehensive vision and overall strategy.

Figure Three as shown below depicts the process graphically.

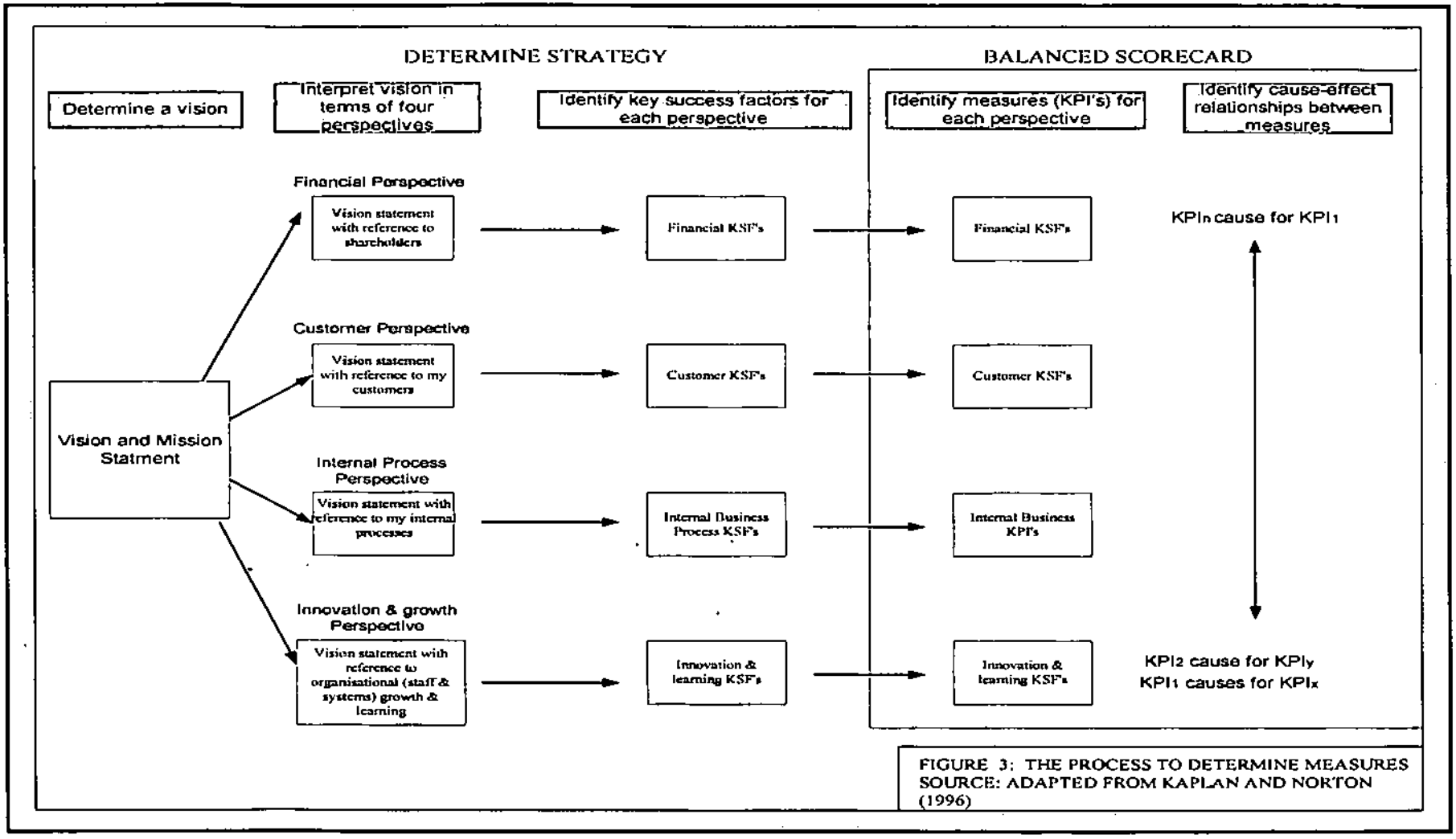


FIGURE 3: THE PROCESS TO DETERMINE MEASURES
SOURCE: ADAPTED FROM KAPLAN AND NORTON (1996)

The steps and initiatives that need to be taken to achieve the goals and vision need to be specified. The people responsible and the priorities and schedule should be agreed to avoid a list of unspoken expectations; which can later become sources of destructive frustration.

Finally, the scorecard has to be implemented as part of the day-to-day running of the business. To maintain interest in the scorecard, it is necessary to monitor it on a continuous basis so that it can fulfill its role as a management tool. This is where the role of IT comes in - to facilitate reporting, data collection and mining. It is recommended that the Balanced Scorecard be used throughout the organisation in day-to-day aspects of management.

The question can be raised whether it is always appropriate to introduce a Balanced Scorecard in a company. A company has distinct phases, each one of them different. Each phase requires a different type of management, with different type of control systems. Although the use of the Balanced Scorecard is normally discussed in the context of large companies, the internet carries many success stories about the implementation of the Balanced Scorecard in small to medium companies.

2.3 The four perspectives

Paragraph 2.3 gives a short overview of the most common strategies for each perspective and the most important measures used for each perspective. The goal of this is to give a background on the goals that companies who are implementing the Balanced Scorecard are attempting to achieve and what the type of measures is for which an IT system will have to cater.

2.3.1 Financial

Financial objectives can differ markedly depending on where the company is in the Boston Consulting Group's matrix as shown in Figure Four.

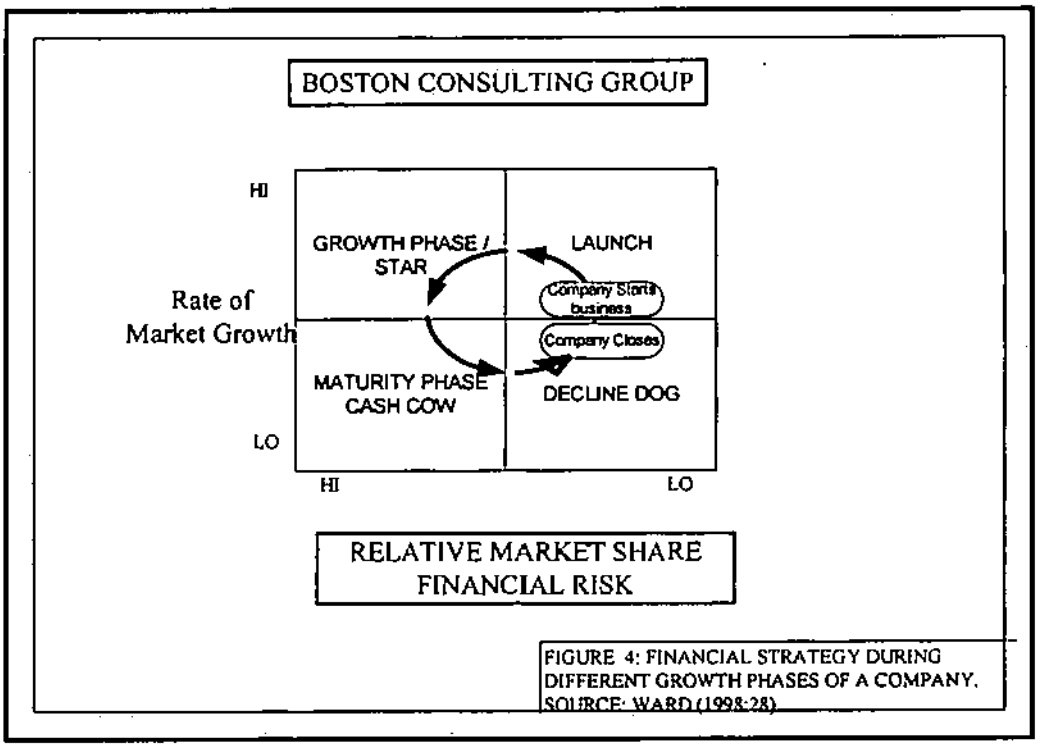


FIGURE 4: FINANCIAL STRATEGY DURING DIFFERENT GROWTH PHASES OF A COMPANY. SOURCE: WARD (1998:28)

Many other aspects can also affect financial strategy, such as stakeholders, e.g. shareholders, debt holders, managers, suppliers, etc.

In general there are three financial themes that drive the business strategy, namely

- revenue growth and mix
- cost reduction/productivity improvement
- asset utilization/investment strategy

Growth phase businesses will emphasize expansion of existing product lines or services. Taking existing products to new markets can also be a source of growth, or implementing new strategies.

Typical measurements in the financial perspective can include ROCE (Return on Capital Employed), EVA (Economic Value Added), Cash Flow or Risk measurements. An example of how the measurements would differ depending on the specific financial strategy as illustrated in Table One.

Table One : Measuring Strategic Financial Themes : Source Kaplan and Norton (1996:52)

Business Unit Strategy	Revenue Growth and Mix	Cost Reduction/Productivity Improvement	Asset Utilisation
Growth	Sales growth rate by segment Percentage revenue from new product, services, customers	Revenue/Employee	Investment (Percentage of sales) R&D (Percentage of sales)
Sustain	Share of targeted customers and accounts Cross-selling Percentage revenues from new applications Customer and product line profitability	Cost versus competitors' Cost Reduction Rates Indirect expenses	Working capital ratios (cash to cash cycle) ROCE by key asset categories Asset utilization rates
Harvest	Customer and product line profitability	Transaction Costs	Payback Throughput

Bettermanagement (2000) publishes a list of the most commonly used measures for the financial perspective as :

- Total assets or Total assets/employee
- Revenues/total assets(%)
- Revenues/employee or Revenues/employee
- Revenues from new products/customers
- Profits/total assets or Profits/employee (%)
- Profit margin
- Cash flow

Zigon Performance Group has the following measures :

- Net Income
- Operating Margin

- ROCE
- Earnings per Share
- RONA
- EVA
- Revenue Growth
- New Product Revenue

Torben (2000) expands on these measures and the list below shows some of the measures he regards as important :

- Shareholder Loyalty (e.g., switching behavior)
- Shareholder Mix (Institutional vs. individual; employee; other)
- EVA - (Economic Value Added)
- MVA - (Market Value Added)
- Net Income
- ROI - (Return on Investment)
- ROE - (Return on Equity)
- ROCE (Return on Capital Employed)
- Financial strength: Assets (liquid assets), Quick ratio, Credit rating, Debt, Debt equity ratio
- Variable vs. non-variable expenses (e.g., non-operation income/expense)
- Programmed expense - controllable expenses including routine, one-time and additional project expenses
- Routine expense (e.g., salaries, maintenance, supplies)
- One-time - truly "non-recurring" expenditures
- Non-operating income/expense - financial impact not directly related to current operations
- Fixed expenses such as depreciation, real estate and personal property taxes
- Allocated expenses - overhead that is reallocated to business units
- Direct department expense
- Net retained expense
- Major cash expenditures
- Administrative costs

- Profit margin
- Revenue/expense ratio
- Capital efficiency
- Revenue/employee
- Cost of product
- Activity costs
- Revenue generated from customer segments (e.g., new; affluent; large vs. small; industry; region)
- Customer revenue list
- Market share - Percentage of market in dollars or number of accounts/ products
- Market share (Value)
- Market potential (Value)
- Increase in major projects--count of number of projects over a specified value

It can therefore be seen that each company is unique and there are different viewpoints as to which measures are important for a specific individual or organisation. In fact, there are books published which list thousands of different possible measures in each area. Management can use these books as a basis from which to generate their own measures.

2.3.2 Customer Perspective

This perspective is said to be the heart of the scorecard. If the company does not have products or services that will satisfy customers demand for value in the short run and long run, the company will not generate revenue and close down.

The strategic plan should define ways in which value will be created for the customer, -how the customer demand for this value is to be satisfied and why the customer would be willing to pay for this value. It should articulate a customer and market strategy that will give superior returns both now and in the future. Strategy should be dynamic and driven by innovation. The requirements for competitive advantage

caused by changes in the industry (a la Porter's five forces) should also be taken into account.

In terms of the value proposition to the company, the value has several components. Melnyk and Denzler (1996:43) define value as "the customer's subjective evaluation, adjusted for cost, of how well a good or a service meets or exceeds expectations." Value can be defined as consisting of product/service attributes, plus image, plus the relationship. In terms of the product/service attributes measurements can include time, quality and price.

While the strategy process should define high level customer plans, the plans should also be defined in terms of each market segment the company intends covering. Strategy to provide value to these different segments might differ markedly from sector to seetor.

Companies direct a great deal of effort to increasing and ensuring customer loyalty and expanding their customer base. In order to do this it is vital to understand every aspect of the customer's current requirements for value. Although many approaches can be taken, the most common is to explore and analyse the current customer activity patterns in order to predict trends.

Kaplan and Norton (1996) recommend a generic group of core measures which are common to all kinds of organisations :

- Market Share – Measure by number of customers, value of the deals, or unit or number of deals
- Customer Acquisition - the rate at which the business unit attracts or wins new customers or business
- Customer Retention – tracks the rate at which the business retains or maintains ongoing relationships with customers.
- Customer Satisfaction – the satisfaction level of customers along specific performance criteria

- Customer profitability – net profitability of a customer or segment

These measures are interrelated and the cause-and-effect relationship between these measures is shown below in Figure Five. While this is generic, each company's relationships will be unique.

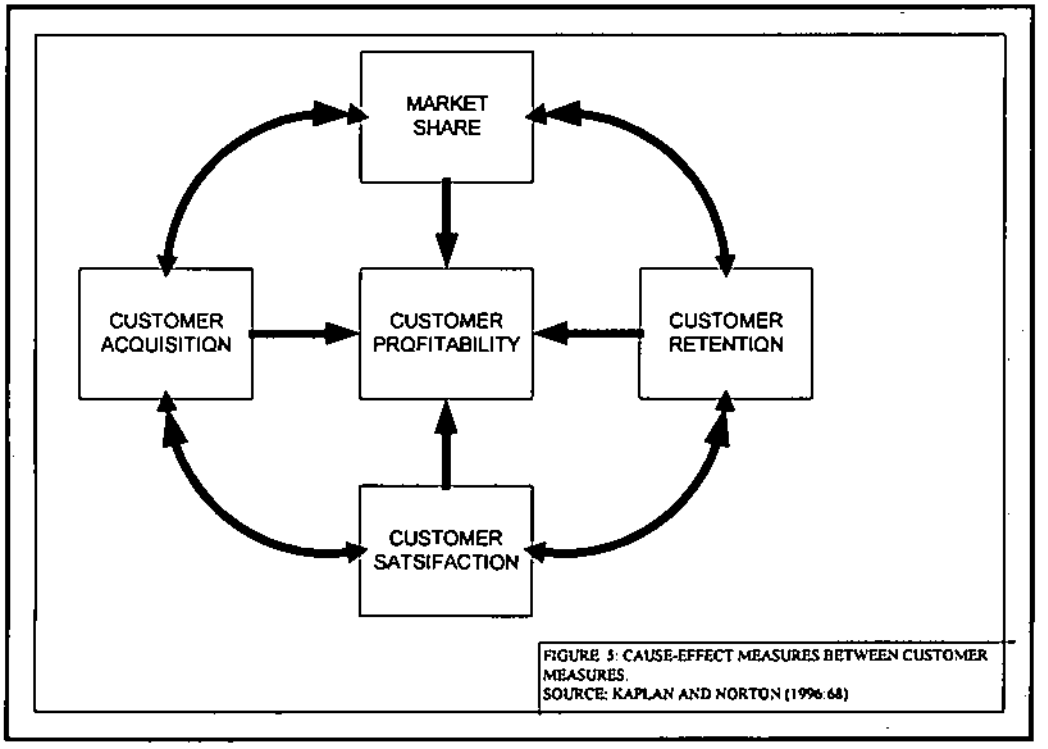


FIGURE 5: CAUSE-EFFECT MEASURES BETWEEN CUSTOMER MEASURES.
SOURCE: KAPLAN AND NORTON (1996:68)

Specific companies normally add on drivers which are specific to their requirements, for example, the value of deals closed per customer/number of sales calls made to the customer, or the risk profiles of the customers. Some companies or business units add internal customers to the list of customers.

The drive to implement Customer Relationship Management (CRM) in companies also affects how these measures are defined, as companies are learning much more about their customers than ever before and are moving to the scenario of marketing to each individual in a unique way. The Balanced Scorecard is also used to keep track of brand awareness and image success and all aspects of the relationship with the customer.

2.3.3 Internal business process perspective

As mentioned in paragraph 2.3.2 there is a very strong cause-effect relationship between the internal business processes and the client value proposition. Business processes that will attract and retain customers should be put in place.

A good example of a business process such as this in the investment banking (Stockbroking) arena is the relationship between the quality of research the financial analysts supply the asset management companies and the amount of business these asset management companies award the different stockbroking companies.

It is widely known that the research teams are rated by the Financial Mail and the asset management companies then direct the majority of their business to the top three to six companies.

In a stockbrocking company, this rating would be a very important measurement of the effectiveness and quality of the business process to supply research recommendations to asset managers. This process would involve the research on companies, knowledge management, production and quality assurance of documents, electronic distribution of various different research products through email and financial networks such as Bloomberg, Reuters, INET, IBES, and the production of printed research and distribution thereof to asset managers.

Each business has its own sets of unique processes which create value for customers and shareholders. If a business process exists that adds no value for the customer or shareholder, it should be very strongly considered whether it is useful to have the process at all.

The strength of using the Balanced Scorecard process to define and communicate the measurements required is that it will identify in terms of the strategy which processes are important for value adding and might identify entirely new processes (and products thereof) that do not exist, which might be required to execute the strategy.

Kaplan and Norton (1996) recommend that companies can customize a generic value-chain model such as the one shown below in Figure Six to prepare their internal business process perspective.

What makes this value chain different from the one normally shown is that the innovation process and post sale process are given special relevance.

The innovation process is an extremely important process as it is one of the drivers for longer term future growth, but is often left out of the normal value chain. The measures that should be used to measure the innovation process will differ from company to company, but can be measures such as percentage of sales from new products/services, new product/service introduction vs. that of competitors, etc.

The operations processes typically have time-quality-cost measurements and are more focused on delivering short term value to customers.

Manas (1999) recommends that the operations measures should include:

- Safety measures,
- IT Enhancement measures,
- Operational Efficiency measures,
- Productivity measures
- New Product Introductions

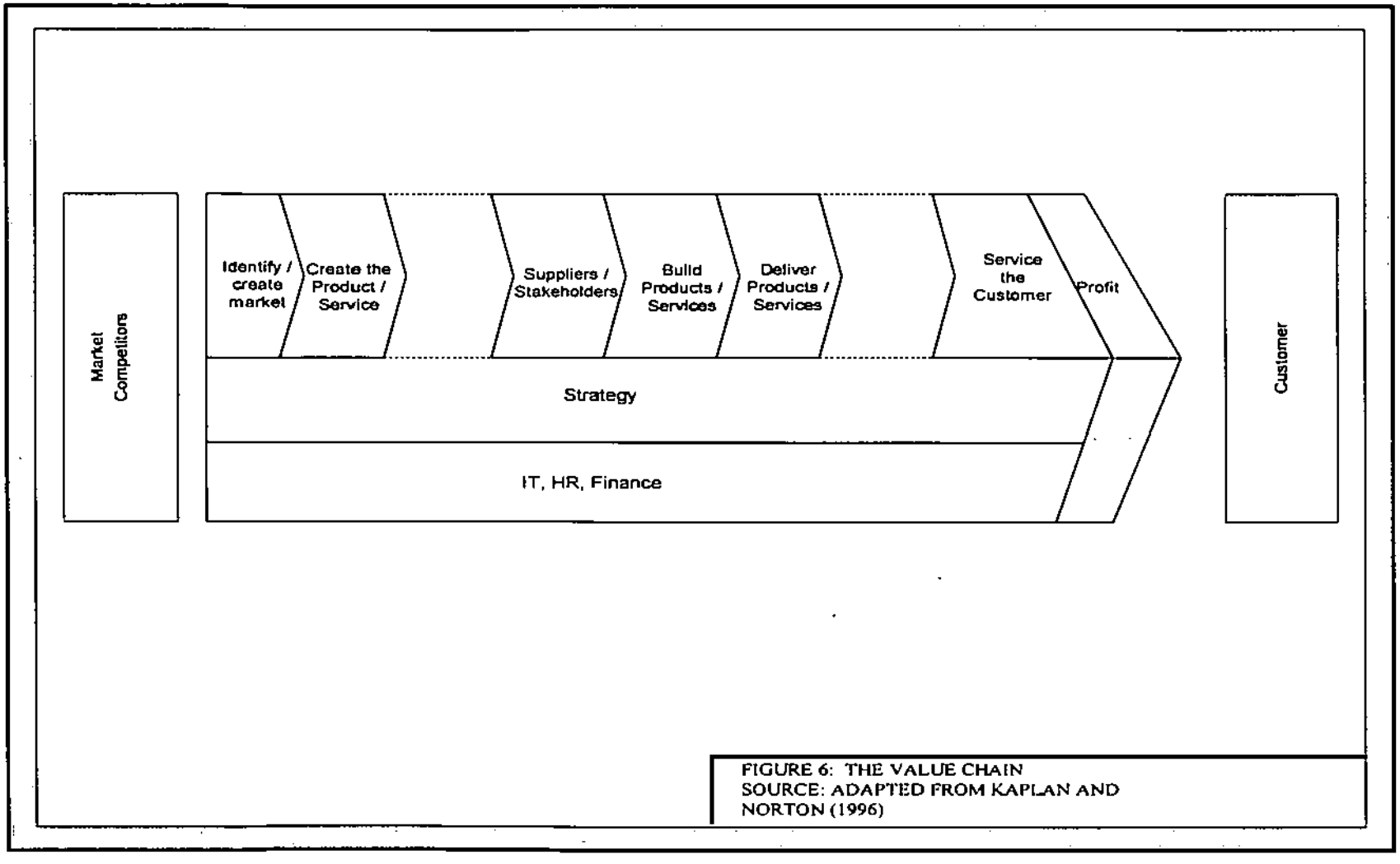


FIGURE 6: THE VALUE CHAIN
SOURCE: ADAPTED FROM KAPLAN AND NORTON (1996)

Torben (2000) lists the measures he recommends for processes as follows :

- Percentage of customer orders not on time, on spec
- Reworks (e.g., Number/percentage of off spec products)
- Response Time (e.g., time to give credit approval)
- On-Time delivery (e.g., Percent of scrip delivered in a certain amount of time)
- Accuracy of information (e.g., Information systems capabilities)
- Margin Opportunity Analysis Index - (e.g., Optimum production scheduling)
- Planned vs. actual throughputs
- Testing efficiency - (e.g., Average of all routine tests measured in hours)
- Ratio of approved to submitted orders
- Speed of processing
- Measures of timeliness

As can be seen, many of these measures can fall under the Time-Quality-Cost headings and the implementation will vary from company to company and industry to industry. Some companies operate as a larger virtual organisation, where their value chains are integrated with those of suppliers and partners. When measuring the processes, a decision has to be made as to where the line should be drawn – if the processes should take the internal organisation into account or the role of stakeholders as well.

In terms of the post-sale service process, there are many options, as this area can overlap with the client perspective and the measures should be planned properly.

2.3.4 Learning and Growth Perspective

The learning and growth perspective is a driver of future (long-term) performance of the company and will ensure the survival of the company in the long run. It is important that the measures here *must* also sustain the necessary efficiency and productivity of processes that *presently* create value for the customer.

The objectives in the learning and growth perspective should be the drivers for success in the outcomes of the other three perspectives.

According to Kaplan and Norton (1996:127) companies have three principal categories of measurements in the learning and growth perspective, namely :

- employee capabilities;
- information system capabilities; and
- motivation, empowerment and alignment.

It is interesting to note that IT system capabilities can appear twice, once in the process environment and again in the learning and growth field. Of course, IT systems should provide a store of organisational knowledge. It is therefore essential to capture knowledge into IT systems, instead of allowing it just to reside in individuals. This helps the organisation learn to an extent and isolates it from the loss of knowledge when there is staff turnover. A good example is if a relationship manager captures the details of his relationship with a client into a good CRM system, the organisation retains the information if the person leaves the company and has "learned". It would therefore be easier for the next person to walk in and continue with the relationship.

Of course it would be senseless to measure staff training if there is a high staff turnover ratio.

Kaplan and Norton (1996) illustrate another reason why IT measurements should be in the learning perspective, by illustrating the cause-effect relationship between the IT systems and the employee measurements in Figure Seven below:

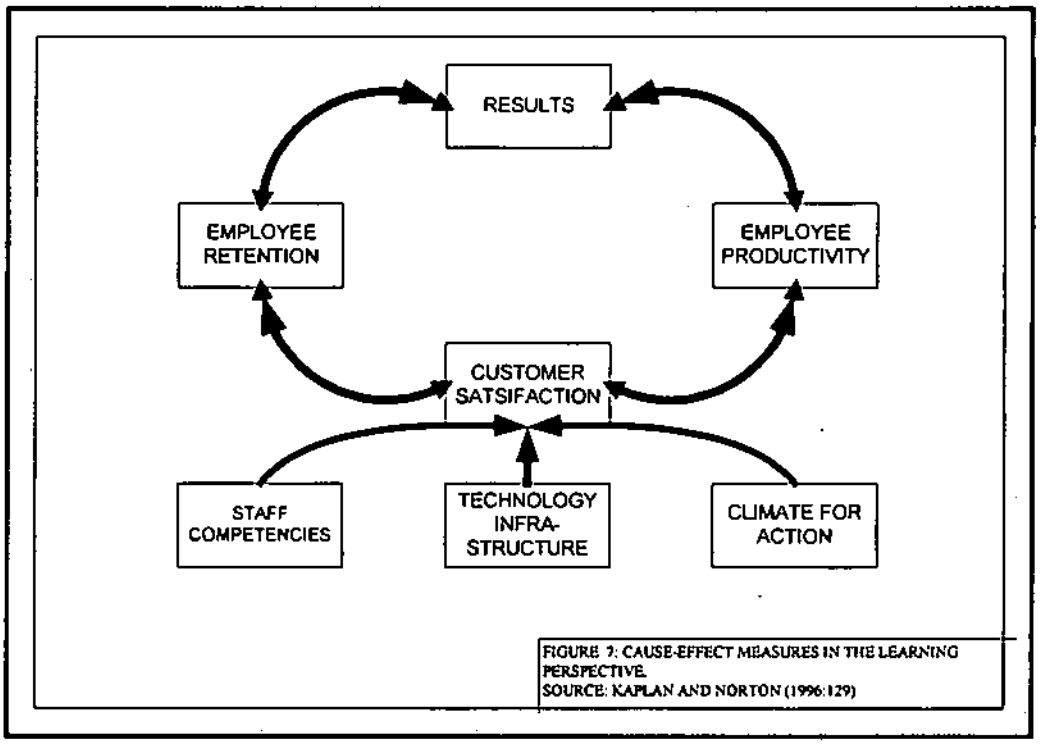


FIGURE 7: CAUSE-EFFECT MEASURES IN THE LEARNING PERSPECTIVE.
SOURCE: KAPLAN AND NORTON (1996:129)

There are essentially three areas where organisational learning has to take place: the employees, the systems in the company and the organisational procedures.

The Balanced Scorecard can reveal gaps between existing capabilities of people, systems and procedures and those capabilities that will be required for breakthrough performance. Actions can be identified to close these gaps, such as re-skilling employees, enhancing IT systems and aligning organisational procedures.

Some of the measures Torben (2000) recommends for the learning perspective as follows :

- Overall satisfaction and commitment (based on employee surveys, measures of turnover, measures of absenteeism)
- Drivers of overall satisfaction and commitment (based on surveys, employee perceptions of the confidence in leadership, recognition/reward, safety climate, teamwork, fair treatment, supervision, open communications)

- Drivers of performance (based on survey based measures: Rewards/Incentives, perceived alignment of processes and systems with strategy, reward, communication, performance management, succession, development, skills training, climate for process improvement, goal clarity)
- organisational Learning (feedback systems, cross functional teamwork, supporting IT technology to enhance learning)
- Performance: output per employee (e.g., sales per employee, delivery per employee), quality of outputs
- Work force capabilities (such as the skills mix, knowledge of products, clients/customers, industry, systems, organisational)

Kulik (2000) lists the most commonly used measures as :

- Leadership index
- Employee turnover
- Time in training
- Average absenteeism
- Per capita annual cost of training
- Satisfied employee index
- Investment training/customer

It must be noted that the implications of using some of these measurements have to be seriously considered. An example is the measurement of "Time in training." If a person spent a large amount of time in training, does that necessarily mean the person has learned ? It might mean the person is a slow learner. The use of input versus output measures therefore has to be taken into careful consideration.

2.4 Expanding to more than four perspectives – Adding the IT scorecard

Under normal conditions IT systems are linked into objectives in other quadrants, such as the process quadrant, or the learning quadrant. As IT is a supporting business unit it will have its own scorecard which is derived from the higher level business scorecards. But different people have different views of the best way to implement the Balanced Scorecard.

Taylor (2000) recommends that in order to create a consistent IT/Business measuring framework, two IT scorecards should be added to the business scorecard in order to be able to completely measure the IT contribution to business. These scorecards are shown in Figure Eight.

Taylor maintains that IT has three areas of impact on an organisation. They are efficiency (delivering more for less), effectiveness (making sure the IT actions actually have a direct contribution to business improvement) and innovation (using technology to differentiate the company's services or products).

Taylor breaks down the contribution that IT makes to a company into three components, namely:

IT Contribution =

IT Innovation (Using IT to differentiate the company's service or product offering) +
IT Management (Managing of IT operating processes and costs) +
IT Alignment (The extent to which the results of IT fulfills the business goals) .

He then recommends the use of a different scorecard for each component.

- Taylor recommends that the normal business scorecard with its four perspectives should then be used to facilitate IT innovation.

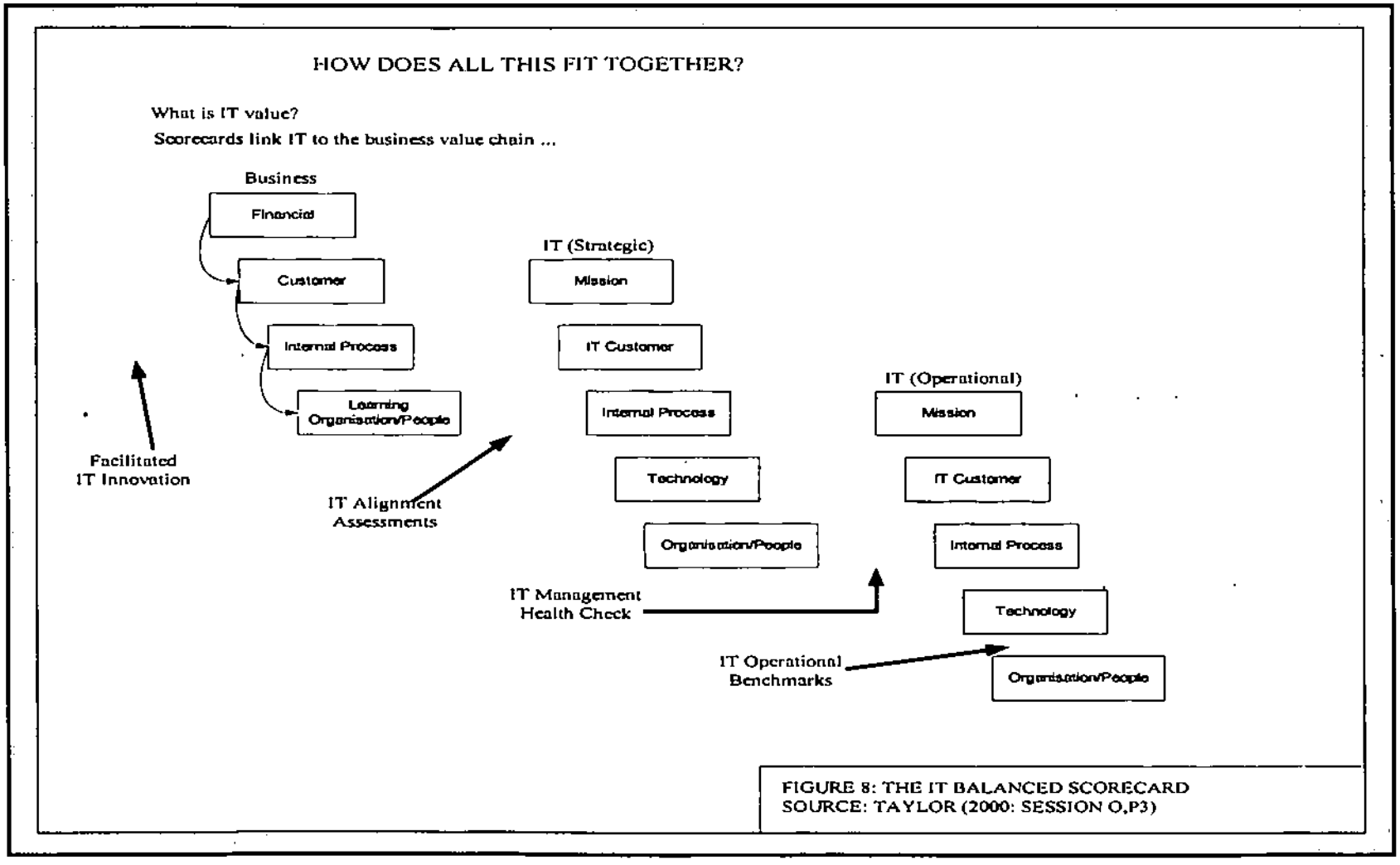


FIGURE 8: THE IT BALANCED SCORECARD
SOURCE: TAYLOR (2000: SESSION O,P3)

Taylor (2000) recommends that a second scorecard should be an IT strategic scorecard, which measures IT's alignment with the business objectives. Alignment scores are collected through a series of management meetings, where

- the degree of alignment is quantified and reported for re-prioritisation of development or other implementation activities; and
- the output is used to recommend a separate "operational" scorecard for the IT management processes.

He recommends that both contain the perspectives of :
Mission, IT Customer, Internal Process, Technology and organisation/People.

5 General implementation notes

Olve (1999:172) explains that in general it is likely that strategy will be reviewed a maximum of once a year, but unlike a budget which takes place at regular yearly intervals, the actual rhythm of the business should determine when the strategy process happens.

In the global fast-changing business environment of today it has become clear that navigating to a more competitive, technological and capability-driven future cannot be accomplished merely by monitoring and controlling financial measures of past performance.

There can be control overload in a company where the amount of time and effort spent on measuring and controlling is worth more than the value added through the effort. It is therefore important that one must not lose sight of the simplicity of the scorecard. Each of the four perspectives in general requires 4-7 measures, with 25 measures in total per scorecard being good practice. In spite of the fact that there are 25 measures, there is still only one strategy. Even if some basic form of the scorecard is introduced, it will be much more control than many companies currently have.

Ideally, this financial accounting model should have been expanded to include valuation of the company's intangible and intellectual assets, such as high quality products and services, motivated and skilled employees and responsive and predictable internal processes. The relationship between management accounting, the budget and the BSC should therefore be clarified.

Table Two: Some Elements of Intangible Assets. Source : Erlhoefer & Marr (1999:14)

External Structure	Internal Structure	Competencies
Brands • Product Brands • Service Brands • Corporate Brands	Intellectual Property • Patents • Copyright • Trademarks and design rights • Trade secrets and know- how	People Competencies • Professional experience • Levels of education and skills • Training methods • Management Education
Customers • Individual Customers • Sales Channels • Distribution Channels	Infrastructure • Processes • IT Systems and databases • Communication systems • Operating models • Financial Structure	Learning Capability • Knowledge sharing • Communities of practice • Problem solving capability
Contracts • Franchise agreements • Licence Agreements • Other favourable contracts	Culture • Management philosophy • Recognition and awards • Management Structure	Management Capability • Entrepreneurship • Leadership • Growth record

The BS and intellectual capital should be regarded as supplements to the income statements and balance sheets of accounting as shown below in Figure Nine.

The Balanced Scorecard is more than a tactical or operational measurement system, it is a strategic management system with which strategy can be managed in the long run. But it is also a management control system that differs from other management control systems through its balance of controls between results of the past and future drivers. Olve et al (1999:148) stress that the value of the Balanced Scorecard is not in the key ratios themselves, but in the discussion that the method entails. It is important to note that many more people than just the executive management should be discussing the current state and desired future of the business.

The challenge in using the Balanced Scorecard for business control is that once the measures have been defined, top management has to establish how important each weighting is. Top management will have to indicate, for example, how much they are prepared to invest in competence development or in overhauling the IT systems. It is almost like conducting a capital budgeting process, but where intangible investments within the company will have to be discussed.

Olve et al (1999) list the best practices required for implementation of the scorecard as follows :

- support and participation of the firm's top management;
- communicating the goals and priority of the Balanced Scorecard to the employees;
- choosing a project group that represents the whole company (not just financial people);
- the scope of the project should be limited initially in order to make it simpler and faster to market; a good way to start is with a pilot project in one division;
- the Balanced Scorecard must be based on the company's comprehensive vision and strategic aims and the strategy must be broken down into goals consistent with it;
- the measures should be defined precisely and in the same way through the organisation;
- the cause-effect relationships between measures should be confirmed;
- non-financial measures should not be neglected;

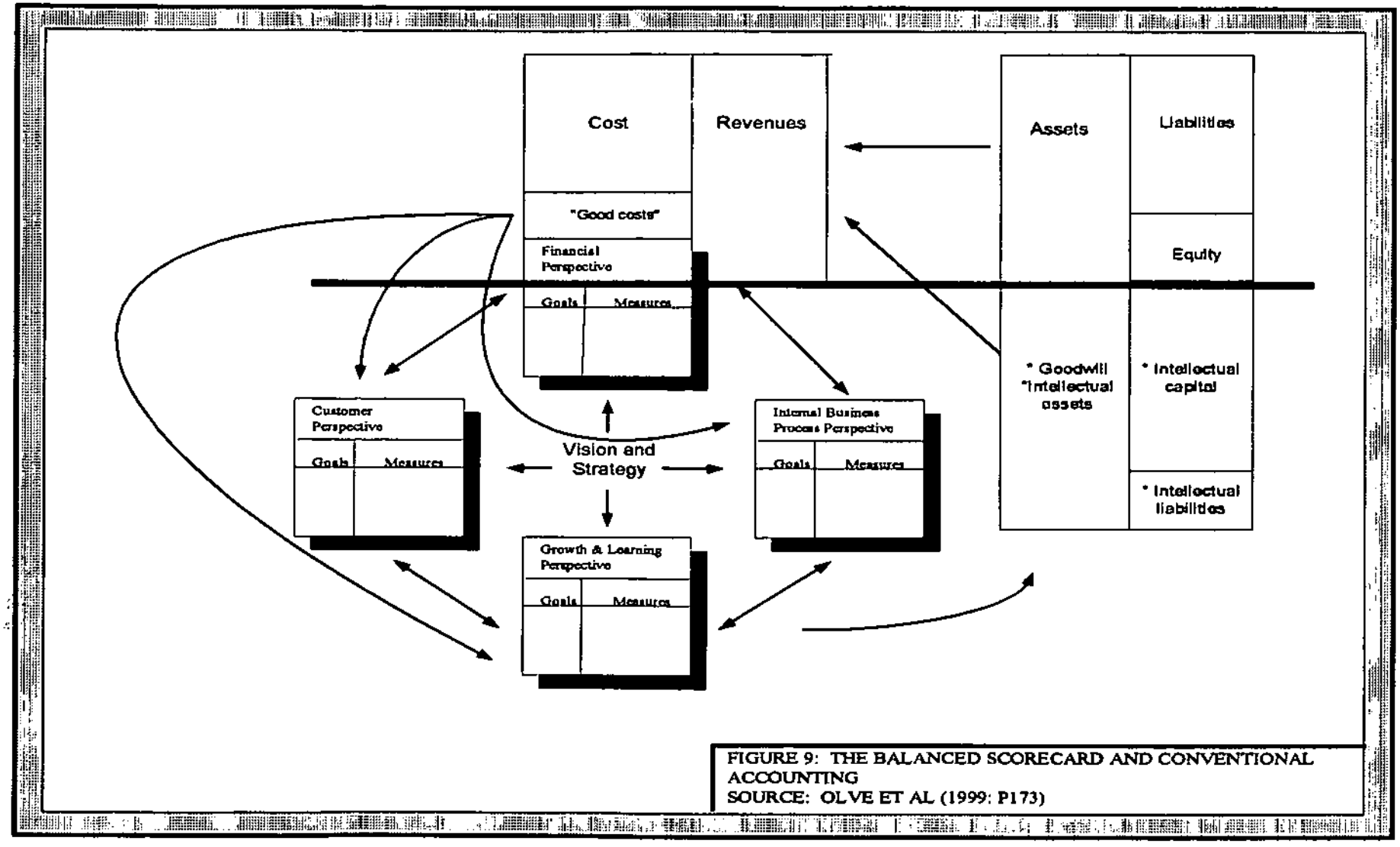


FIGURE 9: THE BALANCED SCORECARD AND CONVENTIONAL ACCOUNTING
SOURCE: OLVE ET AL (1999: P173)

- ambitious, but realistic and attainable goals must be set for each measure;
- existing management control systems, such as budgets, reports, or incentive systems must be adapted to the scorecard;
- the scorecard must be continually filled with current, relevant information so that it can become a natural part of the company's strategic discussion and learning;
- there should be an IT-based presentation and support system; what is important is that it should not take on the nature of a computer project too early in the process or it will run the risk of being too abstract for many people in the organisation;
- training and information must be provided;
- there must be goal achievement analysis;
- the Balanced Scorecard should not be regarded as a static product, but as a living model of the company; and there should therefore be constant re-examination of the measures.

CHAPTER 3 IT IMPLEMENTATION

3.1 Introduction to IT implementation

Once the process to define the strategy and the interlinked measures for the Balanced Scorecard has been completed, the very important implementation phase starts.

Just listing the vision and the measures will not bring about a change in the organisation by itself, but the change will only occur when each employee is shown tangible evidence of what he or she contributes to help the organisation reach its overall goals.

Olve et al (1999:233), state that "the success or failure of a Balanced Scorecard project depends on the reliability and validity of the systems which describe the performance of every individual, group and department in terms of what the organisation as a whole is trying to achieve."

In the light of the role of knowledge management and the importance that humans instead of machines have in today's companies, they carry on to make an interesting observation that the differences between today's information systems and those of the future are as follows :

Table Three : Comparison of the capabilities of IT systems of today with those of the future. Source : Olve et al (1999:263).

Today – systems which supports processes	The future challenge – systems which support competencies
Transactional processes	Communication-Building
Integrated logistics	Conversation and learning at work
Work Flows	Networks connecting people
EDI	Structures for interchange of experience

Balanced Scorecard systems should be presented in a communicative manner with numbers, figures and diagrams presented in a user friendly way, which is simple to access and familiar to the user. The information should be easy to access and the user

should be able to access it from anywhere. Furthermore the data should be collected in a cost-effective manner.

A number of choices influences how the IT systems are implemented. Some of these issues are listed below:

- the Balanced Scorecard can be introduced as a permanent management control system, in which case it should be part of the organisational procedures of the company;
- Olve et al (1999) highlight one of the biggest problems of the IT implementation as finding ambiguous measures throughout a large corporation. It is not possible to implement an IT system when some of the measures are ambiguous;
- a number of measures might already be measured in existing systems;
- a decision has to be taken on new systems which should be put in place to measure and communicate performance to the management and staff;
- the capability of these systems to reduce any additional administrative burden the measurement might put on the staff should be assessed;
- the role of the Balanced Scorecard system in relation to other existing or planned EIS or DSS systems in the company should be defined;
- the role and relation of the Balanced Scorecard system to normal management accounting and reporting systems in the company should be assessed;
- mechanisms to update the soft data should be determined; and
- the cost of measurement must be compared to the utility of the measures.

Olve et al (1999) divide the possible IT solutions for the Balanced Scorecard into three generations:

First Generation:

The most important characteristic of the first generation tools is that they provide user interfaces to the data. Its purpose is to give a user-friendly and easily accessible user interface that allows the user to compare the scores over a period of time. These systems are normally based on data from many sources and present it in an interface

with a combination of text and graphics. Typical technologies used to create these systems are Visual Basic, Excel, HTML and an underlying database. The users of first generation tools are in general non-management staff members.

Second Generation:

There are a number of differences between the first generation and the second-generation tools. The second-generation tools allow the user to drill down into the underlying data to find out why the measures developed in a certain way. In addition they collect the data automatically. This is more of an Executive Information System and the users are typically management or at the executive level. Technologies to develop second-generation software programs include tools such as OLAP. The data retrieval can take place from a data warehouse and is available in multi-dimensional format. The second generation normally does not have the same interface for every user, but rather has a user specific interface, tailored to the role each user has to play.

Third Generation:

Third generation tools have the capability to do what-if analysis. They can simulate how the company will develop based on hypotheses and historical data relating to the cause and effect relationships in the company. These solutions include tools for simulating strategic decision alternatives. Instruments for the effective communication of strategic choices and cause-and-effect relationships form a part of these solutions.

3.2 General characteristics of a Balanced Scorecard IT application

The next section will discuss some of the trends in the user interface and in the way the applications work.

3.2.1 User Interface

Kaplan and Norton (1996) started their book with an analogy to explain the concept of the Balanced Scorecard. The image they used in the analogy was that of a pilot flying a plane with only an airspeed meter. When queried about the available fuel for

the trip, the pilot replies that he was concentrating on airspeed during that flight and that they were doing pretty well. He realised that fuel consumption was important, but intended to concentrate on fuel consumption during a following set of flights.

It seems that this analogy struck a chord with many software designers. Several of the Balanced Scorecard systems that are available resemble the cockpit of an aircraft. Different measures were then represented on dials, or graphically.

As an illustration, the interface shown below is an example from a company called Ergometrics.

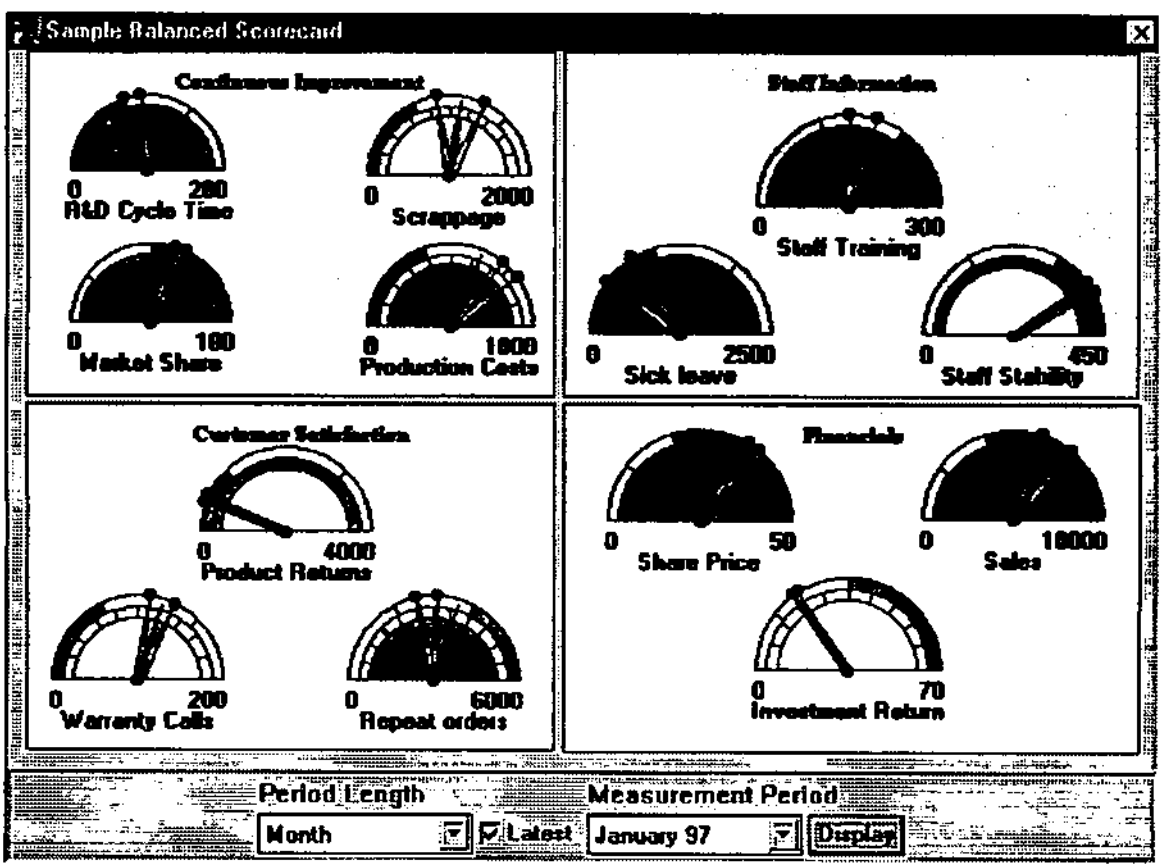


Figure 10 : An example of the user interface for a Balanced Scorecard System.
Source : Ergometrics (2000)

While the dashboard-type user interface is suitable for displaying current and recent performance on various aspects in a nice and graphical way, extra requirements might

force companies to take different approaches. Often several scales might be required on which to base a measure, or descriptive text used in conjunction with graphs to explain the vision and the goals, as well as monthly trends. This data can be combined with internal plans of action and other information that reinforces the objectives.

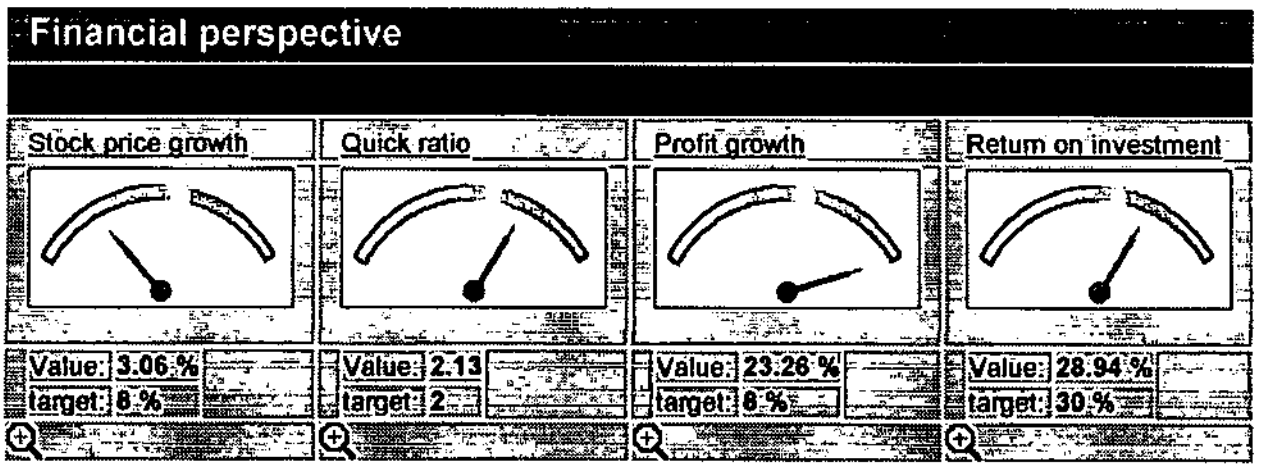


Figure 11: Interfaces allow managers to drill down to the details. Source : Solvision (2000)

The interface from a system from Solvision (a Cognos business partner) is shown above. Note the magnifying glasses below each measure, presumably allowing the user to drill through to more detail.

While the mere presentation of data with some capability to exploit the trends over time might be enough information to communicate the Balanced Scorecard to most employees, managers have a very different need. They want to drill down into the underlying data to find out what caused certain trends or to determine what action plans can be taken to rectify or improve certain measures. Their interface should therefore be able to display summary information but still provide access to all underlying information that makes up an underlying figure.

As an example, if a manager in a stockbroking firm is looking at his monthly brokerage figures, he needs to be able to view the information by client, or by relationship manager, or even by their share purchasing patterns or any combination

of these factors. The manager would then need to be able to drill down into the causes that affect the volume of business that the clients give the company, namely into the actual telephonic or email advice these clients were supplied with by an analyst in a particular sector or a relationship manager. The manager might want to correlate the remuneration of the research analysts to the growth of business the company gets from the institutional clients in the sectors the individual analysts cover. The manager might want to calculate ratios from some of the trends uncovered and do some what-if scenarios.

This type of capability requires a different type of interface than the cockpit type interfaces and might be Microsoft Excel based or intranet based. The capabilities of intranet technology to easily display large amounts of information and graphics anywhere a user has a browser on his desktop, makes it very well suited to implement a Balanced Scorecard implementation.

The user interface needs to be controlled with enough security to allow specific users access to specific information only. Certain (incomplete) information might be very dangerous in the hands of the wrong people. An example is that a downward trend in profitability of a section of the company can be very de-motivating for the staff in that department who do not see the whole picture. It might be caused by factors completely out of their control such as a change in policies for internal cost allocation.

The Balanced Scorecard system should not only act as a system to present the measures of the business, but if it is aimed to be really useful, it should be designed as a communications tool that supports the upward and downward feedback at management level and across business functions.

3.2.2 Under the hood

Much like a car, it is important to note that the best Balanced Scorecard system is not necessarily the one with the flashiest desktop, but with the best engine under the "hood".

If the system is to be used as a permanent management control system, the system will have to be continually updated with current, operationally relevant information. Procedures will have to be in place to ensure that operationally relevant information is collected. Definitions will need to be in place to make sure concepts are defined exactly the same across all divisions of the company in order to obtain meaningful results.

In the light of the sweeping information requirements from all aspects of the business, a data warehouse is well suited to facilitate the consolidation of information into one standard. Unlike the annual performance appraisal, the data warehouse-supported balanced scorecard system enables organisations to monitor their progress continuously.

Griffin (1999:3) concludes that "the Balanced Scorecard and data warehousing are a perfect combination to achieve the greatest, most efficient and accurate performance analysis and management yet. The combined technologies enable organisations to balance their resources and manage their business functions according to process and key performance indicators. The data warehouse is the effective infrastructure that supports the performance management process and it provides a means for collecting and storing the data. Marrying Balanced Scorecard and data warehousing technology provides decision-makers with the ability to drill down on the data delivered to their desktops by the balanced scorecard. "

But while a data warehouse can consolidate the data and reports can be written to report the measures, if real exploration of the data is required the best way to deliver it is by using OLAP to present the data in a multidimensional cube format.

A block diagram of a typical Balanced Scorecard is therefore shown below in Figure Twelve.

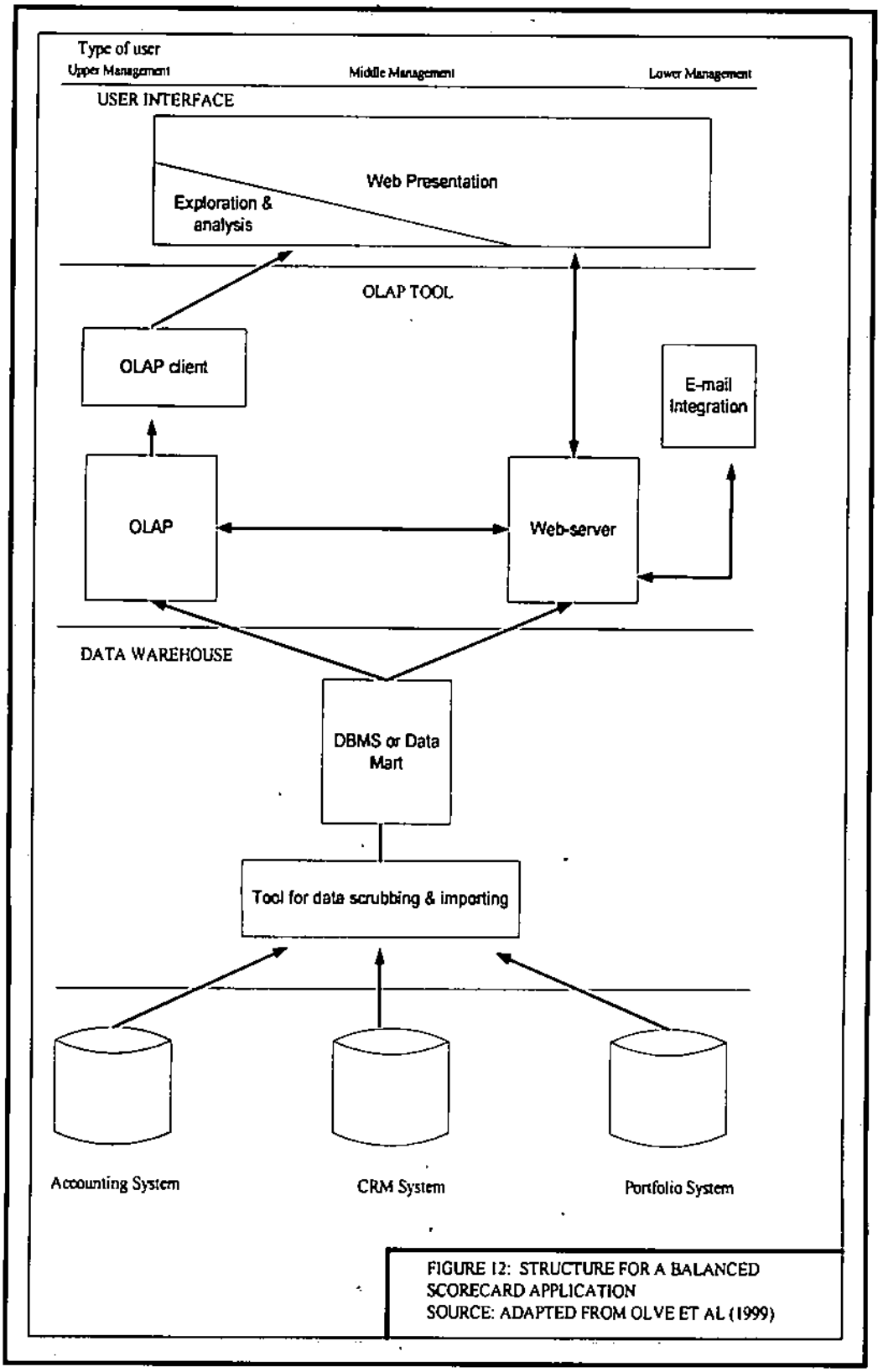


FIGURE 12: STRUCTURE FOR A BALANCED SCORECARD APPLICATION
SOURCE: ADAPTED FROM OLVE ET AL (1999)

The system as shown above essentially creates a data warehouse or a data mart from the different financial and operational systems and uses OLAP to mine it or store operational information in the system.

Intranet technology is used to create a user interface which has drill down capabilities for higher management and is communicative for lower levels of management.

3.2.3 Type and sources of data required

While the Balanced Scorecard can be used as an instrument to implement strategy as well as perform operational control, the strategic nature of information which is required to bring together all the different measures in a single compact view of the business requires input from many different systems.

In a rapidly changing world the data must be timeous. If it is to be used as a managerial control system, it cannot take a month to produce results on the previous month's performance. Some measures should be tracked to the second and some are acceptable at month end.

Determining what data is needed, when and why, should be driven by the cost-to-value ratio of the information and the process. A good Balanced Scorecard should contain the finest grain of data. It should contain data about the measures (KPI's), sub-measures and the data which makes up these measures. The Balanced Scorecard system should keep historical data in order to analyse trends over a period of time, while maintaining the capability to drill down into the detail at a specific time.

The data for the Balanced Scorecard can be sourced from financial/accounting/budgeting systems, as well as HR systems, CRM systems and other day-to-day operational systems. It has to be supplemented with data from input mechanisms as it is bound to require data that is not normally kept in the existing systems. It is highly likely that the data will have to be consolidated in a data warehouse system, to make sure there is only one "view of the world".

3.2.4 OLAP Tools

An online analytical processing (OLAP) tool is essentially a tool that has a multidimensional view of data and supports hierarchies and multiple hierarchies within the data. It then allows the user to drill down and explore the data from multiple dimensions. This has been found to be the most logical way to represent a company.

There is no official definition of what OLAP is and many complex definitions such as the Codd rules were used to attempt to define what OLAP is. The most succinct definition is probably the FASMI definition touted by the OLAP Report organisation.

A summary of the FASMI definition as defined by OLAP Report is given below :

FAST : When a system is on-line it means that the system should be targeted to deliver most responses to users within about five seconds. The simplest analyses should take no more than one second and very few should take more than 20 seconds to complete.

ANALYSIS : The system must cope with any business logic and statistical analysis that is relevant for the application and the user and keep it easy enough for the target user. Enough functionality is necessary to allow the user to define new *ad hoc* calculations as part of the analysis and to report on the data in any desired way, without having to program.

SHARED: means that the system implements all the security requirements for confidentiality (possibly down to cell level) and, if multiple write access is needed, concurrent update locking at an appropriate level. Security is an important issue, as these systems normally cover all data, including salary data. Not all applications need users to write back data, but for the growing number that do, the system should be able to handle multiple updates in a timely and secure manner.

MULTIDIMENSIONAL: this is the key requirement. This is the essence of what OLAP is about. The system must provide a multidimensional conceptual view of the data, including full support for multiple hierarchies.

INFORMATION: is all of the data and derived information needed from wherever it is sourced from and however much is relevant for the application.

A detailed discussion of the different technical architectures such as ROLAP, MOLAP, etc is beyond the scope of this report and is covered in great detail on the OLAP Report Website.

It is important to note the main players in the OLAP marketplace and the key differences between them, with the source being the OLAP Report again.

There are more than 30 vendors supplying OLAP products. While there is no dominant player, the market leader in 1999 was Hyperion/Essbase, with a 28% overall market share. Oracle is second with an 11.4% share, with Cognos a close third with an 11. 1% share. Microsoft was the most significant entrant in the market and although it only entered in 1998, already commands 7.6% of the market share (at the expense of Hyperion).

Some other interesting players are Comshare and SAS. Comshare was one of the early OLAP vendors , but seems to be slipping in marketshare position, to position number seven. Comshare has been selling OLAP – type tools since 1966, long before the eras of relational databases, client/server computing or desktop tools. SAS institute seems to place less emphasis on it's OLAP tools and dropped to 12th position.

An important factor to consider when evaluating OLAP solutions is the security structure that can be put in place and the write-through capabilities. To implement a Balanced Scorecard is akin to an advanced budget exercise, with many people in the company contributing to the forecasts and feeding in information. Some write-through applications currently have a security model that is not sufficient.

Table Four below shows the list of OLAP vendors and their respective market shares. The reason this is included in this report is to show that the best Balanced Scorecard systems do not necessarily have the most widely used OLAP tools, for example Gentia. It is therefore conceivable that one should see the Balanced Scorecard solutions almost as the "presentation layers" and couple them to high powered OLAP tools and data warehouses.

Table 4 : OLAP tool marketshares. Source : Pendse (2000)

Product	Ranking	Marketshare
["Hyperion Solutions total market"]	1	28.40%
Hyperion Solutions (Essbase, Enterprise/Pillar, Wired)	1	23.00%
Oracle	2	11.40%
Cognos	3	11.10%
MicroStrategy (after the revenue restatement)	4	7.90%
Microsoft	5	7.60%
Business Objects	6	5.30%
Comshare (incl Essbase resales)	7	3.20%
Applix	8	3.10%
IBM	9	3.00%
Sterling Software	10	2.80%
PwC (Carat and CLIME)	11	2.50%
SAS Institute	12	2.20%
Seagate Software	13	1.70%
Brio Technology	14	1.50%
Pilot Software	15	1.40%
Gentia Software	16	1.00%
Informix	17	0.90%

During the drawing up of these market shares many assumptions had to be made, which are explained in detail in the OLAP Report and fall outside the scope of this research report. The only comment which is important is that other vendors are reselling Hyperion Essbase, hence the two numbers for Hyperion's Essbase. The first number shows the market share of Essbase if all products of Essbase resold by other vendors is taken into account.

A further aspect to consider is whether the solution makes provision for real-time calculation or only relies on overnight (batched) calculation summaries. The recalculation period might become an important factor during what-if scenarios.

Figure 13 illustrates the range of information that different people in an organisation need, how much value the information adds for the organisation and how the complexity of the multidimensional OLAP cubes increases as the information becomes strategic.

Although the picture is shown in terms of financial systems, a similar picture can be drawn for each of the Balanced Scorecard dimensions.

Initially, it can be seen that the first step is to get the operational information, namely management reporting, Consolidations and Statutory Reporting for use in the day-to-day management of the company. This already requires 5 dimensional OLAP models.

The value of the information increases dramatically as the more strategic it becomes, but so does the complexity. The Balanced Scorecard requires more than 10 dimensions.

This brings a very important aspect to the forefront. If a Balanced Scorecard implementation has to be fully automated and work, the operational information first has to be in place and in a format which can be used for BS queries. It is highly unlikely that most companies will have all the operational information required for Balanced Scorecard available in their systems. This would mean that that capability will first have to be built before the strategic part can be put in place.

It also ties in with the observation by Pelissier (2000) that companies move through the four quadrants as their need for strategic information arises.

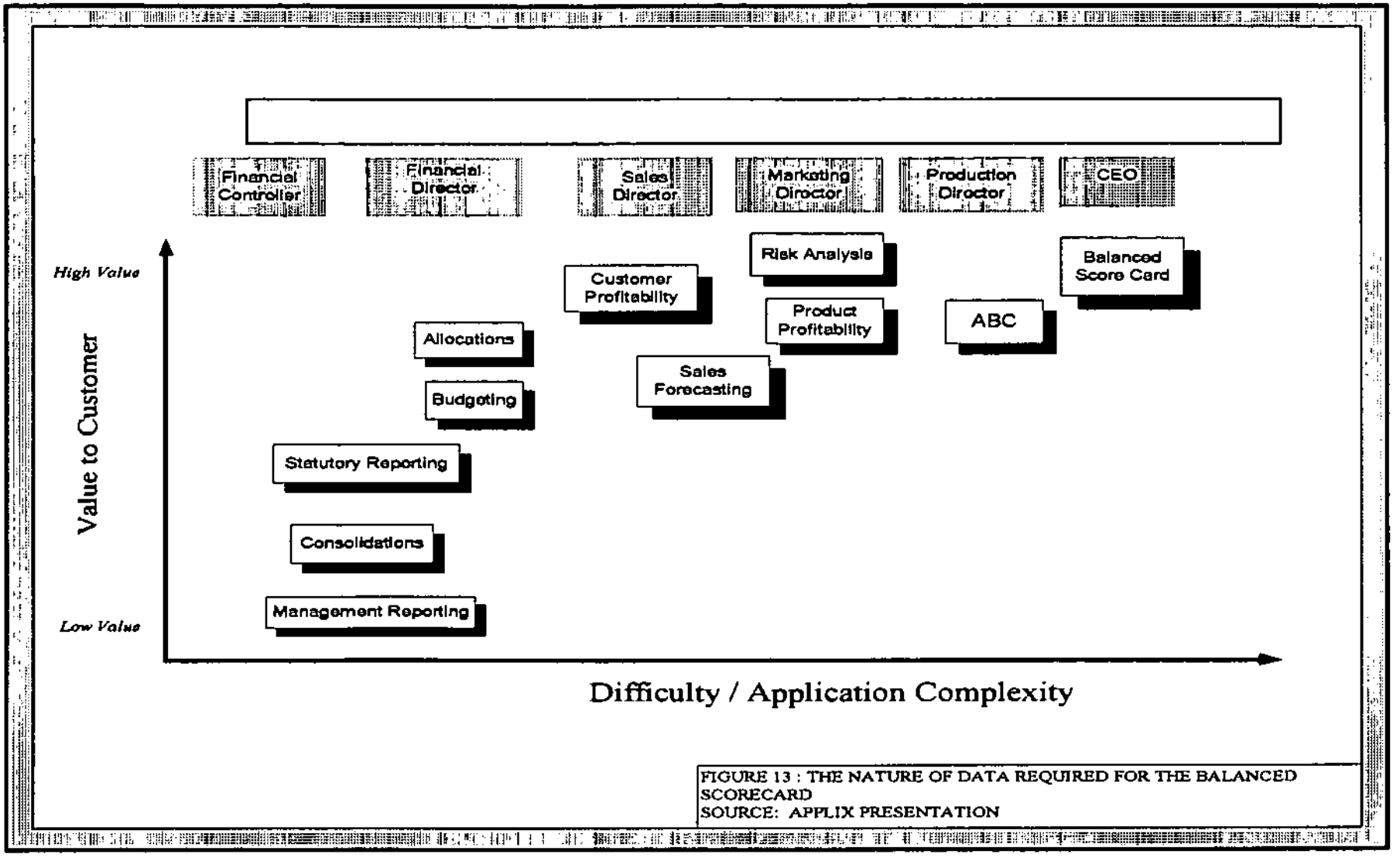


FIGURE 13 : THE NATURE OF DATA REQUIRED FOR THE BALANCED SCORECARD
SOURCE: APPLIX PRESENTATION

3.2.5 Data Warehouse

Data warehousing is a process that extracts data from operational databases and files and loads it into a controlled information store for processing by query, reporting, on-line analytical processing (OLAP) and data-mining decision-support tools.

The process for creating a data warehouse is described in more detail below.

A financial services company normally has different applications that store data in formats that are suited to that application specifically. The applications are typically OLTP applications such as trading, treasury or banking systems or systems that offer live information from OLTP applications. This data is normally protected by security measures from general access in order to protect the integrity of the systems.

To extract data from these systems can be a complex process as the user has to know not only the variant of the SQL language required to extract the queries but also the details of each table, understanding what the variable names mean, etc. Managers will need the Balanced Scorecard information and do not have the time to learn SQL in order to obtain their data.

Even for the database specialist, it might be difficult to extract the information about on a specific aspect. For example, the information about a client might be contained in several of these OLTP systems. To make matters worse, the client's details might be presented in one way in one system and differently in another.

An example of the problem sited above is that a client may be loaded as Smith, J.A. with account number 542397 on a mainframe system, while the same person is loaded as John Smith, Contact number 88990 at Institution A on the CRM system. The challenge is then to decide if these two people are the same person. As can be seen, although they have the same surname, it is not always apparent.

A further problem is that the amount of data contained in these systems can make the extraction of the information required to produce the Balanced Scorecard prohibitively slow.

As an example, let us assume a database contains 1,000,000 transactions of various types. If you have a really fast disk drive that can write 1,000,000 transactions per second, it could take up to twelve days and nights to sort them by a certain parameter, depending how the data is set up and how it is spread through different systems. Databases are generally designed to sort quickly on indexes in order to eliminate the situation above. However, in the case where these records are spread through different systems on different database structures the situation can easily happen where this type of operation is executed on one or more of the fields that have not been indexed. The situation as described above can then occur.

The factors above give rise to the need to centralize data in a common, indexed and "easy to access" format in a data warehouse.

The process to get data into a data warehouse generally involves five steps :

- Load the relevant data from proprietary system
- Convert the data to a common format.
- Scrub the data for errors
- Transform the data to aggregates or other forms that are useful for analysis.
- Place the data into a data warehouse where it can be indexed for fast access.

It should also be noted that in the majority of situations it is not essential to update data warehouses in real time. Especially with the Balanced Scorecard, it is normally sufficient to update the data on an overnight basis.

Once the data is in the data warehouse, two methods can be used to provide access to the information:

- Report Writing : Regular reports that always contain the same information can be created by a programmer using a report writer, such as Crystal Reports and made available to the users over the intranet or in paper format. These reports can be initiated to run regularly every evening, once the data warehouse has been updated.
- The other alternative is to create an OLAP cube, which is a system that represents data in a format in which it can easily be manipulated interactively. This allows the user to drill down into the data and once the user has attained a view or "slice" which represents the data in the way the user wants to see it, the user is able to print the particular view.

While the process above seems simple enough, the reality on these projects is that the real process is much more difficult :

Cost – Time Frames

The sweeping requirements for a data warehouse in general result in the data warehouse being a relatively expensive and long term project.

Rose (1999) quotes IDC that a study of the financial impact of data warehousing showed that the average cost to build a data warehouse was $2.2 million with an average time of 2.3 years to break even. According to IDC 90% of the companies in the study achieved greater than 40% ROI and 50 % achieved over 150%.

In real life the measurement of ROI on a data-warehouse is often difficult and is only performed in a handful of cases. Data warehouses are also notorious for projects never ending, making it difficult to measure an ROI.

Hackney (1999:1-4) claims in DM Review that "In the end, I believe that a valid ROI measurement for data warehouse systems consists of several measures: pure financial ROI, opportunity cost, "do nothing" cost and a "functional ROI." In the real world, your financial ROI may be 0%, but the overall return of all the measures can easily be well over 100%. Taken together, these measures will allow your enterprise to make an

informed decision on the investment in, or the ongoing value of, your data warehouse/data mart system ."

Data marts vs. data warehouses

The length of time it takes to build a data warehouse has prompted many people to implement a strategy of implementing data marts.

A data mart is a subset of a data warehouse and contains data that only relates to a specific department or aspect. As the data is much less than the total data required to implement a full data warehouse, it results in a much smaller and faster implementation.

An IDC/IBM combined study that shows that the ROI on data marts is higher than that of a full data warehouse, could lead one to believe that the correct strategy would be to allow each department to implement its own data mart, but the problem with this thinking is that it ignores the issue of cross-functional analysis. Gartner Group quotes: "The heat is on...to get warehouses up and running fast" (but) "The biggest benefit comes down the road, when you can support 20 different decision support applications with the same architecture".

One of the best practices is therefore to invest a sufficient amount of time at the front end of the project in defining an overall enterprise architecture into which the data marts can connect and then proceed to develop each data mart individually.

Some organisations produce an approach similar to the Rapid Application Development method where iterations of the data warehouse are delivered intentionally. This allows organisations to take advantage of the speed of the smaller approach while eventually overcoming the lack of integration and islands of automation inherent in this approach.

Scalability

Fryer (1999) lists four dimensions of scalability that should be kept in mind: data volume, environmental complexity, user concurrency and support. Data volume is the

most basic form and the first dimension of scalability. The real issue is not how much data you can store, but how much the user can access. The choices of products that can execute several of their operations in parallel and can be scaled over multiple CPU's are therefore imperative. It is therefore recommended that a company choose the platform and models to have the maximum flexibility and capability to scale. The data warehouse should be built to reflect the business and should cater for tremendous growth.

Realise that the business and the technology will change

Data warehouse projects are notorious for never reaching completion. There are a number of reasons for this. LaPlante (1998) writes in an article in Computing SA that the most notable reason for these projects never ending is that the business changes. This should be catered for by putting a process in place to cater for the requests for changes and updates. Similarly, technology keeps on changing. In the way one needs to update PC's every few years, many warehouse owners constantly need to restructure and redesign the warehouses in order to keep their technology up to date.

Put measures in place to keep IT workers interested.

This is one of the most difficult tasks. While the best and brightest people want to build the warehouses with the best tools, an organisation normally struggles to get people who want to maintain data warehouses. LaPlante (1998) gets around it by continually reassigning jobs and cross-training workers from different IT functions.

End-to-end Web deployment

The pervasiveness of the browser makes this the platform on which to deploy.

End-to-end Administration and security

Kimball (1998a), widely regarded as the father of data warehousing, notes that most vendors fail to provide proper scalable administration tools. The administration task

and the task to control the security on a data warehouse becomes a mammoth task, as it gets larger.

User expectations

Kimball (1998a) further cites user expectations, which are way out of the actual scope of the warehouse as a common problem. Many users forget that the data warehouse is a decision-support system at heart and nothing more. It is not a transactional system, bookkeeping system or an operational system. Often, specific data is also out of the scope of the mart, for example, journal adjustments are made by hand on a regular basis. It is extremely difficult for the mart to consider that. Instead, it should be providing an overview on ongoing business trends.

Kimball (1998b) stresses the importance of having executive support and active business involvement for the project in order to make it work. In this type of project it is especially true as the data will be sourced from multiple departments and consensus will be needed on the definition and structure of each dimension. Hand-in-hand with the executive support is the need to educate the executives about the project and maintaining executive interest and excitement through the project through demo's, system prototypes and intermediate deliverables.

3.3 Build or buy

Morris (2000:1) in his article for the IDC states that "the packaged enterprise market consists of software that is primarily transactional and written to capture transactions (e.g. orders) during the course of a business's operations. Analytic functions, such as market segmentation and forecasting, examine the information collected by these transactional systems... The wave to buy rather than build has impacted the market for Balanced Scorecard applications. Over the past two years, packaged balanced scorecard applications have come to market from a variety of sources, such as ERP vendors, consultancies and analytic application specialists."

The Balanced Scorecard Collaborative set up its own set of standards to authorize and approve an application as a Balanced Scorecard "approved" application.

A short list is given below of the applications which are currently approved by the Balanced Scorecard Collaborative, with a short description of the most important features of each.

It can be seen from the description of the different third party products that most of the systems approved by the Balanced Scorecard Collaborative are generation two or three solutions. Almost all of them are based on an underlying database, with OLAP tools and an intranet front end. Although many of the solutions claim to be "shrink-wrap" and work out of the box, it has to be noted that it is assumed that a data warehouse already exists to which they can connect to get the data and that this is front ended by an OLAP tool. This is not always the case and substantial development work is often still required to create the warehouse from which the front ends feed.

SAP Strategic Enterprise Management (SAP SEM)

SAP aimed their products at the execution of strategy. Norton et al (1999) note that companies who successfully executed the scorecards did it in a two phased approach.

Their first step was to create strategic focus by consolidating strategic views between divisions and businesses.

Their second step was to execute that strategy.

SAP SEM is a suite of products that is probably the most comprehensive implementation of the Balanced Scorecard currently available. The basic concept of this product is the same as recommended in 3.2.2. It assumes that as a basis a Business Information Warehouse exists which can be used to execute complex queries and on which complex analyses can be performed. This therefore presumes that all the data required for the Balanced Scorecard is readily available in this information warehouse. Note the subtle distinction between information warehouse

and data warehouse. The information warehouse can also contain shared documents, such as project descriptions, results, methodologies, etc.

SAP SEM has five products, which are implemented to link to this warehouse. The solution that is closest to the basic Balanced Scorecard functionality is the Corporate Performance monitor. This tool is an intranet based system which can be used to monitor the actual performance against the measure. It can also generate reports for the "Management Cockpit Room". It is interesting that according to SAP a relatively simple user interface with green, yellow and red status indicators coupled with supporting dialog has greater payoffs than highly accurate detail data.

But SAP has started adding much more value to their system. They provide ready-to-use BS templates, which include industry specific KPI catalogs and BS models for specific business units, such as IT, Finance, etc.

In addition to the above functions, SAP also creates a system that goes far beyond the traditional EIS systems and implements some of the principles mentioned in Olve et al (1999). They create a network that facilitates dialog so performance can be interpreted and knowledge transferred. In addition to this they provide tools to automatically supplement internal data with external data from the internet.

The system has been integrated with email/workflow and automatically sends the Balanced Scorecard owners performance alerts based on thresholds which can be set up, requesting them to respond with assessments and comments, which can again be shared.

One of the products allows contributions by stakeholders, storage of stakeholder scorecards and the definition of electronic questionnaires to collect structured feedback from stakeholders about the business unit or company's strategy. SAP SEM also allows managers and employees to define their own scorecards and link them to the scorecard of their organisational unit. Navigation through business units to monitor common goals and ensure that strategic linkages are taking place, is possible.

The SAP SEM system is definitely a third generation system as described by Olve, as it also has the capability to run simulations and create scenarios. This allows management to do a "what-if" analysis. The system can also do sophisticated regression and correlation analysis to interpret trends between the measures and check the accuracy of the strategy hypothesis.

Norton et al (1999) describe the difference between Strategic Enterprise Management and ERP in the sense that ERP systems integrate business processes horizontally across the value chain and supports processes such as sales, materials handling, etc. In contrast, the SEM products extend these principles of integration vertically to support strategic management processes such as strategic planning, performance monitoring and risk management.

Oracle Strategic Enterprise Management (Oracle SEM)

Oracle offers a comprehensive suite of four applications under the Oracle SEM banner. The four applications are interrelated and consist of the Oracle Balanced Scorecard, the Oracle Activa (an activity based costing tool), the Strategy Formulation module and the Value-Based Management module.

The Oracle Balanced Scorecard has a graphical Web Browser based interface to offer a graphical display of the Key Performance Indicators. It also captures the cause-effect relationship of these indicators. According to Gill (2000), the goal of the Oracle Balanced Scorecard module is to put "KPIs on managers' desktops, giving them direct and quantifiable targets to achieve and enabling executives to monitor an enterprise's progress toward achieving those goals and objectives in a balanced way"

It is also interesting to note that the Oracle Balanced Scorecard also links the planning and budgeting process to strategy. This product allows managers to request and allocate resources based on what they require in order to meet KPI targets.

Corvu Cormanage

CorVu markets a product aimed at small to medium enterprises. Prospective customers fill in a scorecard survey and a Balanced Scorecard consultant from Corvu

then customizes their application to fit the requirement. This takes approximately 10 days and the product is then shipped to the customer on a CD. Three type of reports can be produced by Corvu, namely a performance report designed to highlight performance results by the company or business unit, a project report designed to highlight project status associated with strategic initiatives and alignment report, which highlights the alignment, or lack thereof between activities and strategy.

It is clear that the time frame and nature of the Corvu development as advertised does not include the creation of or integration with warehouses and other corporate data sources.

The Corvu product implements its multidimensional objects within Corvu rather than relying on an underlying OLAP tool. This is an advantage in smaller companies, but a disadvantage in bigger companies, as it does not take into account that there might already be a large investment in OLAP tools. The Corvu product can also link to Essbase.

Peoplesoft Balanced Scorecard

Peoplesoft assumes that a Peoplesoft Enterprise Warehouse exists in which all the data required for the Balanced Scorecard exists. The tools that Peoplesoft provides are intranet based tools to present the KPI's of the Balanced Scorecard to managers. Email notification is also built in which warn the user when KPI's perform worse or better than certain pre-set thresholds.

Peoplesoft's Balanced Scorecard fits in very well with its other ERP, Human Resource and ABM products. It is likely that companies who already invested in Peoplesoft products in these areas will also use PeopleSoft's front ends to implement the Balanced Scorecard.

SAS Institute Strategic Vision

The basic structure of SAS does not differ from the others. It uses Web front ends to display data that is stored in a data warehouse equipped with an OLAP tool. SAS aims

its product to be a strategic feedback system that should enable CEO's to make better decisions. The front ends display the balanced scorecard information in bar chart graphical interfaces, which are supplemented by communication of the supporting data. SAS is a second-generation tool that allows managers to drill down into information. It is integrated to email to enable it to send emails if thresholds on measures have been exceeded and even offers the facility to push this information to a cellular phone utilizing WAP.

SAS is quick to point out that they will integrate information from ERP systems such as SAP R3, Baan and Peoplesoft with their operational databases and even from personal productivity tools such as Excel.

SAS also supplements the Balanced Scorecard information with Data Mining tools, which allow regression analysis to be performed. The importance of verifying the assumptions on the relationships between the different measures cannot be underestimated, as flawed assumptions on these relationships can guide companies into the wrong direction.

Gentia Renaissance Balanced Scorecard

The Gentia Balanced Scorecard also links to an underlying data warehouse and ERP systems and provides an intranet tool to drill down into measures from a summary scorecard view. It provides a graphical bar chart facility similar to that of SAS supported by text to communicate issues intra-company. Gentia also has a WAP enabled option. It has an OLAP facility to support the multidimensional views and integration with the email system, as well as correlation checks to confirm the relationships between the measures.

An interesting development is that Gentia seems to be the first vendor to also offer its software as an ASP.

General Comparisons

Erlhoefer and Marr (1999) divide the Software Providers for the Balanced Scorecard into three groups :

System Providers :

- Oracle
- Peoplesoft
- SAP

ERP and database vendors try to share in the demand for automated solutions by offering Balanced Scorecard applications that integrate or share functionality with their existing system products.

Balanced Scorecard Standalone Application Vendors :

- Corvu
- Gentia Software
- InPhase Software
- Gentia Software
- QPR

These vendors offer specific standalone software products. They sometimes bundle OLAP tools with their software, but in other cases support third party OLAP tools.

Business Intelligence Providers:

- SAS
- Hyperion
- Comshare
- Cognos

These vendors added a Balanced Scorecard application onto their existing offerings.

What becomes very clear is that although they all based their products on Kaplan and Norton's ideas, each different vendor approached the Balanced Scorecard from a

slightly different angle and places emphasis on slightly different aspects of the process.

All companies seem to use a traffic light system or colours to show if measure over or under perform. Exceptions are Gentia and SAP. They feel that through the setting of thresholds one looses the double loop learning from Kaplan and Norton. The Balanced Scorecard Collaborative (1999) supports this view by stating that the decision whether a measure is on track for meeting a target must ultimately be made by a manager who can subjectively analyse the data.

Many vendors neglect the links even though it is quote an important part of the Balanced Scorecard Functional Standards as set out by the Balanced Scorecard Collaborative (1999).

Table Five below shows the summary results of a detailed comparison between different products which was made by Erlhoefer and Marr in December 1999. It should be noted that the software is developing fast and although they evaluated many Beta versions of software available, some of the versions such as SAP and Oracle has had recent updates that improved their features.

It is nevertheless felt that Table Five provides a useful overview of the capabilities of these products.

Legend :

O:	This feature can not be accessed or the data was insufficient
X:	Data has not been provided
*:	The product supports the feature perfectly
#:	The product supports the feature very well
+:	The product supports the feature sufficiently
- :	The product does not support the feature or supports the feature in an insufficient manner
&	Feature provided by external product

Table Five : Comparison between third party Balanced Scorecard products. Source : Adapted from Erlhoefer and Marr (1999)

Description Of Measure	SAP	SAS	Corvu	Gentia	Oracle	People Soft	Hy-perion	QPR	InPhase
Customizability and Flexibility									
Can you create personal views of the Balanced Scorecard ?	-	*	-	*	*	*	-	#	*
More than four perspectves are supported ?	-	*	*	*	*	*	#	*	*
Can you create personal scorecards ?	*	*	*	*	*	*	#	#	*
Features									
How is the data presented ?	O	*	*	#	#	#	+	+	#
Is it possible to visualize the links of the KPI's ?	*	*	#	*	#	O	-	*	+
Can the measures be defined comprehensively?	*	#	+	+	-	+	#	*	*
Is it possible to assign an owner for the measures?	-	*	-	*	-	*	*	*	+
Is it possible to link the scorecard to a reward scheme ?	+	-	-	-	-	&	-	-	-
Possibility to create roles instead of names ?	#	*	+	+	+	*	+	+	-
Is there a comment-function supporting different types of comments ?	#	#	#	*		#	+	*	+
Does the software show that a new comment has been added ?	-	-	-	+	#	#	-	-	-
Can comments be sent directly to users ?	*	#	#	*	*	#	-	-	-
Is there an alarm feature or	-	#	#	&	*	*	#	#	*

exception alerting ?									
Can the system give an alert if a lower KPI is "red" although an upper KPI is still "green"?	-	*	*	-	-	*	-	-	-
Does the system generate or support an action ?	#	-	&	#	-	&	+	#	-
Can the software create hard copy reports ?	-	-	*	#	+	&	+	#	&
Can graphs be edited before printing ?	-	X	*	*	-	-	-	-	&
Does the software support email ?	*	*	#	#	*	#	-	-	&
Is the software fully Web-enabled ?	-	*	*	*	-	+	#	*	+
What standard of documentation is included ?	O	*	*	#	+	*	+	#	*
Analysing capabilities									
Does the system deliver drill down capabilities ?	#	*	*	*	*	*	*	+	#
Possibility to compare measures to multiple targets ?	#	O	#	*	-	*	-	-	#
Are OLAP capabilities provided ?	&	*	*	-	&	&	&	-	*
How comprehensive are the statistical operations which can be performed ?	-	+	*	-	+	-	+	-	+
Is there a trend feature ?	-	#	*	+	+	-	+	+	+
Is there a simulation/scenario feature ?	&	O	*	-	*	O	-	-	#
What kind of graphs can be created ?	-	#	#	-	-	#	+	+	*

Can tolerance dimensions be defined for each measure ?	-	O	#	-	-	-	*	-	*
Safety and Security									
Is a user ID and Password Required to log onto the system ?	*	*	*	*	*	*	*	*	*
Does the software give the opportunity to set rights and user preferences	+	*	*	#	*	O	+	#	-
Does the software allow a safe way of communication through the Intranet and Internet ?	X	*	X	X	O	O	O	#	*
Data Access									
How well does the software support other data sources ?	&	*	#	#	O	&	#	-	#

CHAPTER 4 : INDUSTRY AND COMPANY BACKGROUND

4.1 Introduction – the current state of the financial industry

The financial industry is experiencing a tremendous amount of change. The reason for this is that the boundaries are blurring between banking, insurance, asset management and other products and those who supply them.

The second factor changing the industry is that of the convergence between technology and financial services. Technology is central to what bankers do, with the internet and mobile phones presenting challenges that bankers cannot afford to ignore. Stockbrokers have been trading financial instruments on electronic exchanges for years, essentially doing business-to-business E-Commerce in a way that normal internet E-Commerce will still take some years to achieve. Even these traditional stock exchanges are under threat from the technology, with ECN's (Electronic Crossing Networks) starting to appear on the internet. To supply financial service products through electronic channels is much cheaper than doing it through the bricks and mortar context.

The industry has a strong knowledge management focus. As an example the UK spends 70 billion pounds per annum on getting advice about financial services.

The internet and on-line shopping is bringing new competitors who are not financial institutions into the financial sector, such as Tescos in the UK selling VISA cards and personal finance products over the internet. Pick 'n Pay followed suit in South Africa by making personal finance options available. Woolworths in South Africa is even offering two Woolworths' unit trusts to clients.

Faced with convergence and increased pressure to increase returns on capital there are strong international trends to consolidate through mergers and acquisitions.

Many financial systems exist that monitor the efficient allocations of financial and physical capital in industrial age companies.

Financial Service companies are solidly in the Information Age and do not "manufacture" any physical goods. Hitami (1987) states the ability of such a company to mobilize and exploit its invisible assets has become far more decisive than investing and managing physical, tangible assets. Methodologies such as the Balanced Scorecard are therefore playing a larger role in the financial sector than before.

4.2 Sample of companies in the financial industry who implemented the Balanced Scorecard

Some of the companies in the financial industry in South Africa who implemented the Balanced Scorecard are listed below. They were therefore targeted for response to the survey described in the second part of this report. A short description of each is given so the nature of each company can be understood.

First National Bank

First National Bank is part of the FirstRand group of companies which employs 32000 people, and had headline earnings of R1 375 million in the first six months of its financial year.

Liberty Life

Liberty Group is a financial services group who is focused on developing, marketing and managing a comprehensive range of investment and risk products. With 3000 employees they had headline earnings of R1 409 million in their previous financial year, Their ROE increased by 30% from the previous year.

HSBC Investment Services (Africa)

HSBC is a wholly owned subsidiary of HSBC plc with 400 employees. They are one of the top five stockbrokers in South Africa.

Sanlam

The Sanlam group provides an extensive range of insurance and financial products to individuals, businesses and institutions. They have over two million policyholders. Sanlam is South Africa's largest life insurer and second largest asset manager. They have 10 159 employees. During their last financial year, they increased their operating profit by 39%, and headline earnings by 65%.

Some of the international companies who implemented the Balanced Scorecard and were therefore targeted for response are :

Credit Suisse

CSFB's businesses include securities underwriting, sales and trading, investment and merchant banking, financial advisory services, investment research, venture capital, correspondent brokerage services and online brokerage services. It operates in over 76 locations across more than 37 countries and 6 continents, and has some 27,000 staff worldwide.

HSBC plc

HSBC is the world's second largest bank with total assets of USD580 billion. They also own a big investment banking division. HSBC is headquartered in London in the UK and has approximately 160 000 employees worldwide with attributable profit of USD5 206 million in the first six months of 2000.

Divisions of other overseas companies such as Fortis, American Express, Charles Schwab and Citibank are also reported to have implemented the Balanced Scorecard, but were not willing to divulge any information.

CHAPTER FIVE : Research Methodology

5.1 Introduction

The goal of this chapter is to provide some background on methods for doing research that are relevant to this report and their respective advantages and limitations. The possible sources of data for use in this report are discussed. Survey methods that are relevant to collect data for this type of research report are thereafter examined. This chapter should place the methods used to collect information for this research report into perspective. The types of respondents that are targeted are discussed.

5.2 Primary versus secondary data and the need for primary data

Cooper and Schindler: (1998) explain that the difference between primary and secondary data is that primary data is data collected by the researcher or his own agents, while secondary data is that collected by other parties for their own purposes.

According to Cooper and Schindler (1998) each of these has its own merits and weak points, some of which are listed below.

Primary Data:

Advantages:

- the exact information the researcher desires can be collected;
- the parameters can be specified to obtain the results in the exact way it is specifically required, so all external influences are eliminated; and
- current information can be obtained.

Disadvantages:

- extremely time consuming and therefore relatively expensive;
- can be impractical (e.g. if information from places inaccessible to the researcher is collected); and
- it is limited to the dimensions the researcher can think off.

Secondary Data:

Advantages:

- generally easier and faster available than primary data (therefore cheaper); and
- it is easy to get the advantage of many individuals input and therefore get a better coverage of all possibilities;

Disadvantages:

- not all secondary data is easily available, it might be proprietary to a specific company and the data is in general copyrighted;
- the information might not meet the specific needs of the researcher; and
- the basic assumptions and limitations the secondary researcher made when preparing the data might not have been that clear, or well prepared; the data might therefore be taken as the truth where the researcher might have omitted important information.

In general, this report relied heavily on some external resources for secondary data. Some examples of the secondary sources that were used are:

- Unisa Library – remote use through SBL conducting searches and main library sending articles
- Unisa library through internet (Emerald intelligence)
- HSBC's company library
- Internet
- Books from bookstores

It was found that there was very little secondary data available that relate directly to the issues covered in this report. This is because the Balanced Scorecard is not a "product" but a management philosophy or methodology. Several Balance Scorecard discussion forums on the internet were joined in an attempt to reach people with more quantitative information. It soon became apparent that there were many others also searching for this type of information. To illustrate the level of information required, many people were looking for a list of companies who implemented the Balanced Scorecard, but none exists. In fact, so many people were looking for this list that Paul

Averson from the Balanced Scorecard Institute even offered to coordinate an effort to poll 5000 companies in the USA with the intention to get a 20% response, which should give a statistical valid sample to make deductions, provided he could get 10 volunteers.

This lack of quantitative information about the Balanced Scorecard made it more essential for research to be conducted to supplement the secondary data with primary data.

The introduction of the Balanced Scorecard is a process that takes a few months and measuring the results can be a matter of years, not to mention the potential disastrous financial effect if an experiment goes wrong. This rules experimentation and observation out as methods for collecting data for this case study.

A case study is always an excellent way to gather information, but in order to get a larger sample from companies who implemented the Balanced Scorecard it was decided that the case study method would not suit this research report well because of its limited scope. If this report was a book, with longer time scales, a collection of case studies could have been a more practical way to explore the impact of the Balanced Scorecard.

A decision was therefore taken to survey a number of companies in the financial sector who have implemented the BS in order to obtain a better sample of opinion.

5.3 Survey methods

The following methods for collecting the data were considered:

- personal interviewing;
- telephone interviewing; and
- self-administered surveys.

Cooper and Schindler (1998) list some advantages and disadvantages of the research methods. The applicable advantages and disadvantages are listed below.

Personal interviewing :

Advantages:

- depth of information and detail that can be secured is the highest, far exceeding that of mail surveys and telephone interviews;
- the interviewer can do more things to improve the quality of the information received than with any other method; and
- interviewers have much more control than with any other method to steer the interview in the direction they want.

Disadvantages :

- personal interviews are very time consuming;
- traveling costs can be expensive;
- this method becomes impractical when individuals around the globe need to be interviewed; and
- some individuals have a reluctance to make themselves available when an appointment needs to be set up for an interview in the light of their limited time availability.

Telephone interviewing :

Advantages :

- moderate cost;
- no travel time;
- can be useful when respondents are difficult to get hold of ; and
- people normally answer a ringing telephone and it is then the interviewer who determine the length and purpose of the call.

Disadvantages :

- the respondent must be available on the telephone;

- a limit of length is appropriate in a telephone call, 10 minutes is seen as appropriate, but the degree of limitation depends on the respondent's interest in the topic;
- it is not possible to use drawings, maps and other visual aids in telephone interviews; and
- the response rate in telephone interviews is lower than in personal interviews, as respondents find it easier to terminate an interview.

Self administered surveys (including email and normal mail surveys – in this report only emailed surveys are considered due to the faster response times):

Advantages :

- cost less than personal interviews;
- easy to cover a geographically dispersed target audience;
- it is mostly a one-person job;
- respondents who are otherwise inaccessible can be reached (such as company CEO's) and in addition, if the right contact person is not known, the mail might be forwarded by the person it was sent to the correct respondent;
- the respondent can take more time to get information to answer the questions and consider his replies than , for example, during a telephone interview; and
- mail surveys are perceived as being more impersonal and that they provide more anonymity than other survey methods.

Disadvantages :

- the first disadvantage is the non-response error; apparently the better educated respondents and those interested in the subject answer mail surveys; As returns on mail surveys can be very low (30% is considered a good return), the problem is that no information has been obtained from the silent 70%, whose input might actually have a significant effect on the outcome of the survey;
- the type an amount of information that can be obtained during an email survey is limited, as users refuse to answer long and complicated questionnaires; in

general, the questionnaire should not take more than ten minutes to complete; this makes it difficult to get detail for some of the qualitative issues; and

- there is no opportunity to adapt the questionnaire dynamically as the user can manipulate or steer a personal interview based on information received during the interview.

In the light of the nature of the research report it was decided to select as the following two methods as the optimal methods to gather primary information :

Telephone interviewing of a selected number of respondents. Personal interviewing would have been better, but in the light of the limited time frame available, telephone interviewing is the more optimal option. And only one company was personally interviewed.

Self administered email survey in terms of a larger selection of respondents. This was especially useful in the gathering of some of the information from international respondents gathered for this Research Report.

Although some quantitative data was collected, the focus of the survey was to obtain qualitative data. The reasons for this are :

- it is a huge task to collect large enough samples of data to conduct a quantitative survey in this complex field; part of the problem during such a quantitative survey is that the measures should be defined in such a way that all respondents would interpret in the same; this is a general report and a quantitative study could be aimed to clarify a specific aspect of this report, but is beyond the scope of this document; and

- more importantly, it is likely that the real success factors might not be the same in each case; for example, it is very likely that the success of a Balanced Scorecard implementation does not lie in a specific aspect of a software package used, but in some of the business or IT implementation aspects.

5.4 Respondents targeted

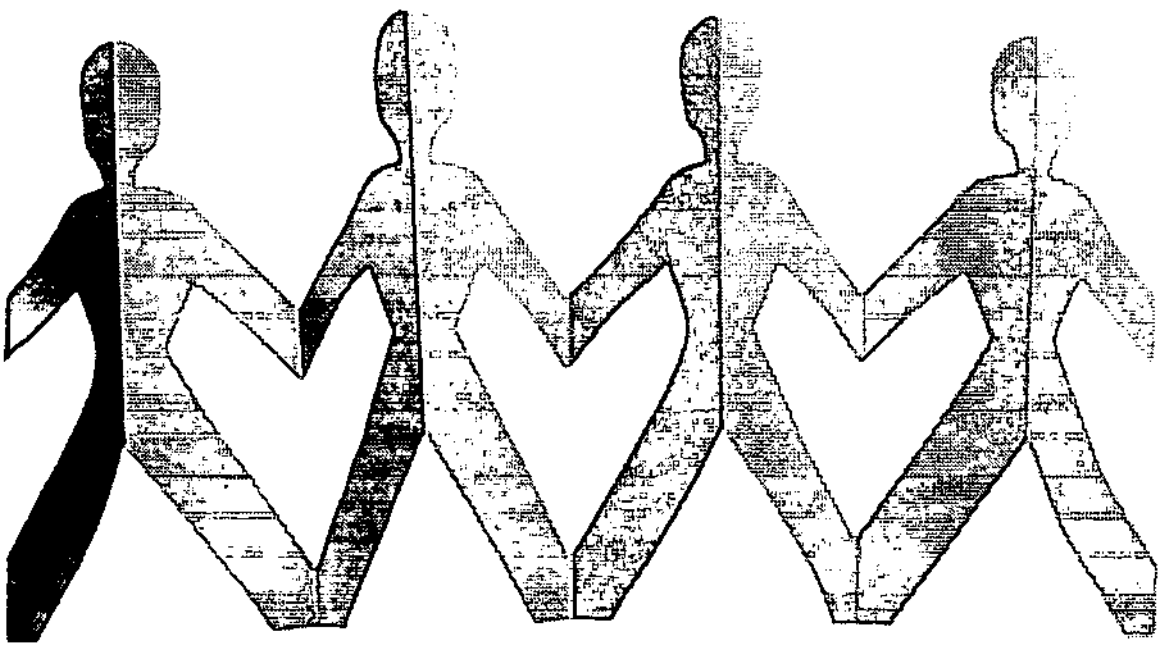
The first part of the hypothesis, namely that implementing the Balanced Scorecard adds value, can only really be answered by the person responsible for the strategy of the organisation. In most cases a high-level businessperson will be responsible for the project to implement the Balanced Scorecard in a company.

The second part of the survey has a strong IT detail focus. Although the business person referred to in the previous paragraph will definitely have some views on the IT infrastructure used to implement the Balanced Scorecard, an IT resource who was involved with the implementation of the Balanced Scorecard will need to be consulted for more technical detail on the IT implementation.

5.5 Instruments for respondent communication

In the light of the different respondents and different instruments targeted, it was necessary to create two instruments. The instruments were designed so that they could be two separate instruments, or two sections of one instrument. The actual instruments will be discussed in the following section.

PART THREE
EMPIRICAL RESEARCH



CHAPTER SIX : RESEARCH APPROACH

6.1 Determination of management – research question hierarchy

Cooper and Schindler (1998) recommended that the first step in planning for the collection of data be to address the management-research question hierarchy.

The *management question* to be answered in this Research Report is at a high level:

- Does the balanced scorecard add significant value to a company and what is the best way to implement the IT systems to support the Balanced Scorecard ?

This can then be broken down to the *research questions*, which were expressed as follows:

To the business:

- does it add significant value to a company to implement the balanced scorecard; and
- do the IT systems have a significant impact on the success of the implementation ?

To the IT department :

- what are these methods which make the implementation more successful than others;

The following *investigative questions* were then considered in the planning of the survey:

- what type of data should be collected: nominal, ordinal, interval or ratio data ?

The difficulty in firstly, determining which companies implemented the Balanced Scorecard and then getting information from them which they regard as giving them a

competitive advantage has prompted the researcher to concentrate on collecting nominal and ordinal data. This means that answers will be classified into groups that have no quantitative value themselves, or have some relationship to one another. In the case of adding value, respondents will be asked if they perceive the balanced scorecard to add significant value, some value or no value at all, which is an ordinal relationship.

The quantitative answers are supplemented with qualitative replies, which are intended to clarify the answers. For example, in order to clarify what exactly "adding significant value to the business" mean for each respondent, this will be further explored by qualitative questions about the different Balanced Scorecard quadrants and the strategic impact of the Balanced Scorecard. For some respondents "significant value" might be that the company is undergoing strategic learning and for others that the share price increased by 100%. There is more value in examining the nature of the value added as perceived by the different respondents than trying to fit their results into an interval scale which everybody understands in the same way, or to determine ratio data.

- What communication approach should be used

As mentioned in chapter five the communication approach is a combination of telephone interview and self-administered email survey.

- What should the process structure be

In the light of the research methods chosen, a structured process should be followed. During telephone interviewing there is very little time and if one drifts away too far from the intended goals there is a real danger of not collecting the information required in the first place.

A structure for the survey was then determined. The structure caters for one survey which can be filled out by two people (a business and an IT person) or send separately to two people, or filled in by one person in the case where the respondent is a Business Analyst from IT. The structure is shown below in Figure 14:

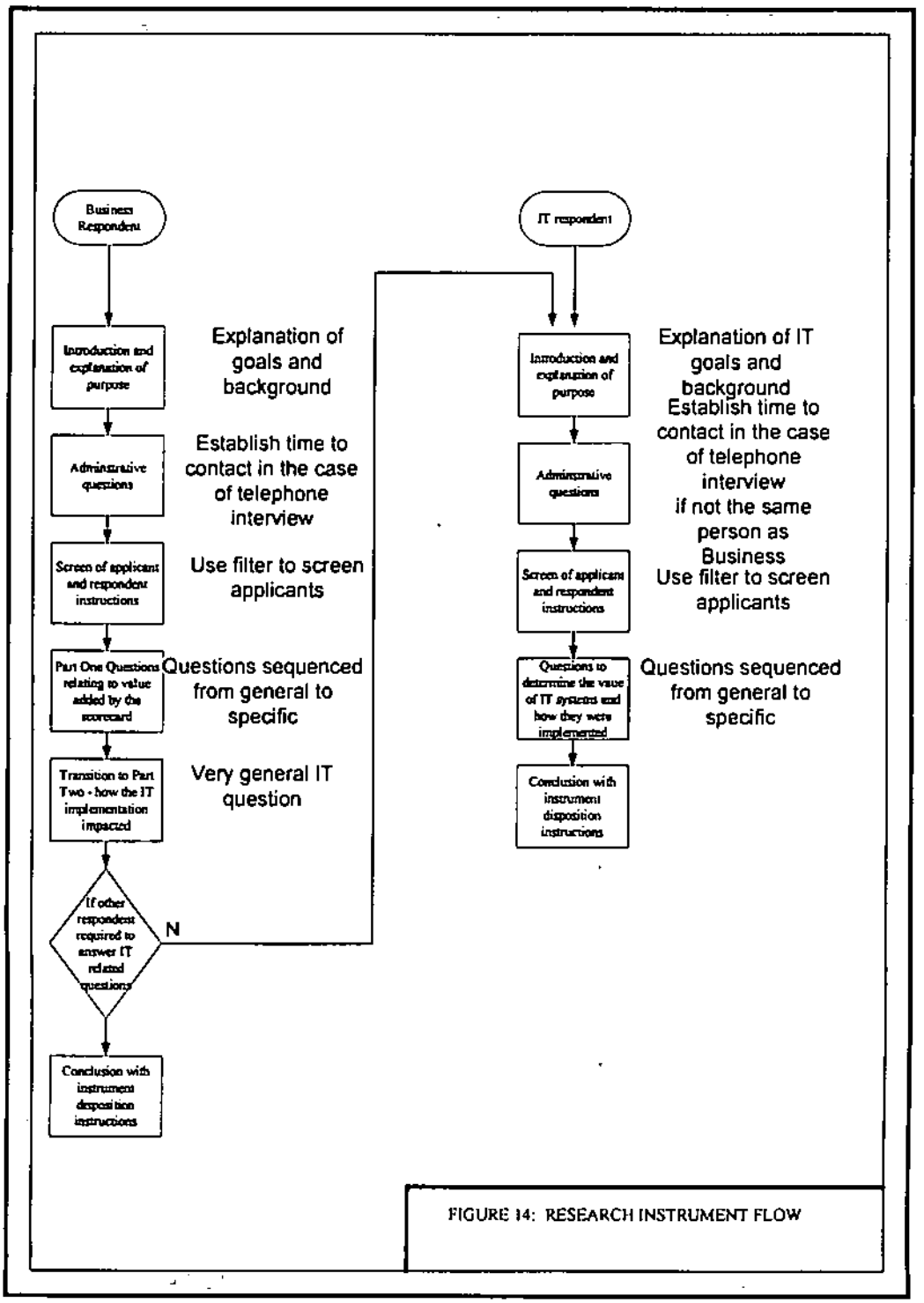


FIGURE 14: RESEARCH INSTRUMENT FLOW

The actual measurement questions were then designed to fit into this structure.

The email questionnaire is shown in Appendix C and contains all the actual measurement questions. This questionnaire is accompanied by the cover letters attached that introduces the author and the goals and purpose of the questionnaire. There are two letters, one for the telephone interview and one for the self – administered email survey. For the telephone survey an appointment is made and the questions sent through upfront to enable the respondent to prepare for the telephone interview.

6.2 Using the answers from the survey to prove the hypotheses

Note : The results of the survey will be used to prove the two hypotheses as specified in Chapter 1 paragraph 1.4, namely :

Hypothesis One : " The adoption and implementation of the Balanced Scorecard adds significant value to a company. "; and

Hypothesis two stated : "The implementation of the BS is successful where companies have used the optimum data warehouse/ data mining techniques to implement the measurements required for the specific scorecard.

In both cases the statements above can be regarded as the null hypothesis.

As the results show, even without going into complex statistical analysis to find out if the alternative hypothesis has any value, the overwhelming results of no company saying that it adds no value, and five out of six of the surveyed companies strongly feeling that significant value is added, and six out of six feeling that IT has a large role to play in the success of the implementation, it can safely be assumed that both hypothesis one and two are correct.

CHAPTER SEVEN : SURVEY RESULTS

7.1 Introduction

This chapter contains the results of the survey.

A comprehensive list of companies who implemented the Balanced Scorecard does not exist. A number of leading local and international companies in financial sector who implemented the Balanced Scorecard were identified through enquiry and references.

The results of the telephone and personal interviews are firstly represented in qualitative format and after that in graphical format. Names of the respondents have been kept anonymous.

7.2 Qualitative results

The following section is a paraphrase of the telephonic or personal interviews held with the different respondents. The structure that was followed was based on the questions as per section six and the results were rearranged to logically flow n approximately the same order.

7.2.1 HSBC plc (HSBC Investment Bank Globally)

City where respondent is located: London, UK

Respondent's role in Balanced Scorecard Project :

Responsible from a business perspective to implement the Balanced Scorecard in eighteen business units which make up the HSBC Investment Banking division globally.

How long ago has project started ?

The Balanced Scorecard project has been in operation since January 2000. There were earlier scorecard projects in the group but they did not necessarily conform to the accepted Balanced Scorecard methodology and the IT solutions associated with them were low-key. They were hence not being used as model projects for the new official Balanced Scorecard project launched in January 2000. The implementation of the Balanced Scorecard forms part of the bigger "Managing for Value" initiative the group started in January 1999.

How much value did the implementation of the Balanced Scorecard add and in what way?

There was tremendous value in launching the scorecards within HSBC's businesses. The initial emphasis for the scorecard project was on the alignment of objectives. The scorecard methodology provides a very simple framework for achieving this goal. Within a very short space of time, the investment banking division was able to align the strategic objectives of all the businesses (that traditionally operated in silos) with the Group Strategic Imperatives. This was perceived as a quick win for the scorecards.

In addition, the scorecard has given the group a platform for integrating its various management processes: budgeting, planning, reporting and performance management. This is being developed.

The scorecard delivered another benefit: it has forced the business to think more deeply about how they want to implement their strategies.

The main benefit of the scorecard is to promote strategic learning within the businesses. This benefit has been unequally captured across businesses, with some businesses submitting quite weak scorecards with very little strategic content. The company has to work on this area in order to deliver the full value of a scorecard implementation.

At this stage of the implementation, it is not possible to isolate specific gains in terms of the perspectives that are a direct result of the implementation of the Balanced Scorecard, although it is likely that there were benefits. .

The approach to the project is to first roll out the top-level scorecards; and thereafter widen the use of the scorecard.

What are the difficult steps in the process to implement the Balanced Scorecard?

It is important to give each business or business unit ownership of their own scorecards, but at the same point in time by relinquishing this control, it is difficult to ensure that the correct strategic thought goes into the scorecards.

Do IT systems contribute to the success of the implementation of the Balanced Scorecard?

The IT systems definitely have a major part to play in the success of the implementation of the Balanced Scorecard. Currently the majority of all scorecards are paper-based. This is clearly not a sustainable situation, as it very quickly becomes chaotic. The equities part of the business implemented a very simple Lotus Notes based user-interface system (Intranet) that has no MIS-abilities and is simply a way of keeping things organized, stored and visible on desktops. It serves a purpose and cuts down on the chaos of the paper-based system, but it does not add much value to the scorecard process. The group is looking at vendors for more sophisticated Balanced Scorecard automation products that can be rolled out across all business areas.

Which technologies and products were used to implement the Balanced Scorecard?

As already stated, the existing Lotus Notes solution does not currently add much value. The difficulty is that twenty business units must all buy into the same solution. They each have slightly different requirements and preferences. At this point in time

Gentia has been chosen as a preferred option and it is being evaluated to see if it will satisfy the business requirement of all the units globally. If it does not, other solutions will be reinvestigated. The part has not yet been reached where the data sources (data warehouse and OLAP tools) are investigated. The focus is to find the right front end.

7.2.2 HSBC Investment Services Africa (Pty) Ltd

City where respondent is located: Johannesburg

Respondent's role in Balanced Scorecard Project :

The respondent is responsible for the Balanced Scorecard Project from a business perspective.

How long ago has project started ?

HSBC Investment Services started implementing the Balanced Scorecard from January 2000.

How much value did the implementation of the Balanced Scorecard add and in what way?

There has definitely been some value in implementing the scorecard for the company so far. The value so far has been in converting the strategy into definable objectives and standards at a macro level. It is also a tool to define the mechanism to ensure consistency of strategy at a divisional level.

The scorecard's value comes in when implementing strategy, not defining it. A clever strategist would not use the scorecard to define his strategy, as there are many cases where quantum changes are required in strategy. The need for these quantum changes is not always apparent from the Balanced Scorecard incremental measurement of improvement and is still dependent on the strategic innovation of the strategist. Once the innovation has taken place, the value of the scorecard is in the communication of this strategy to colleagues and in the mechanism to implement it. The tool is more useful for process or system orientated managers than for strategists themselves.

The fact is that the Balanced Scorecard is another management tool and should not detract from good management in general. Good managers have set multiple, clear objectives in the past which were not all financial as well. Good managers have set these objectives in line with their strategy in the past. These objectives also contained, as an example, inter group objectives. The Balanced Scorecard has more value in assisting medium managers to achieve the same thing and is a tool for making sure the objectives are in line with the strategy. Ultimately all it is a framework for strategic thinking to enforce consistent implementation of the strategy.

The strategist has to make sure that everybody in a company understands the universe or solar system in which things operate. Everything revolves around a strategic core and people have to understand the gravitational impact of what they are doing.

The balanced scorecard is therefore very useful as a communication tool to communicate the strategy to colleagues. In terms of how much it changed the life for the strategist compared to the situation if the scorecard have not existed at all, it is not that significant. However, the scorecard has definitely changed the way many colleagues work.

What are the difficult steps in the process to implement the Balanced Scorecard?

At an individual level the concepts are too complicated and contains too much "consultant/MBAspeak" for all individuals to understand. It is therefore better to determine four to five objectives for every individual by using the scorecard process, show them how these objectives feed into the company scorecard and into their manger's scorecard and manage the individuals on these objectives.

To implement the balanced scorecard correctly is quite a pain. The pain comes in when trying to put in the correct measurement system. People tend to be biased to go for measures that are easy to measure rather than what really should be measured, but might be more complex. An example of this is that people try to measure advertising spend as opposed to brand awareness. Or another example is funds under

management rather than the share of the client's investment wallet. The reason for this is that in order to measure the share of the investment wallet requires considerable knowledge of the customer and the implementation of a good system to keep track of these client details.

A rule was also instituted that not more than 40% of a person's measures should come from one perspective only. This is to prevent the measures for people who were historically measured only on financial grounds to be unbalanced.

Do IT systems contribute to the success of the implementation of the Balanced Scorecard?

The IT systems have to play a major role in making the Balanced Scorecard a success. The scorecard has to be live on everybody's screens. It must be possible to review progress against the objectives. In addition, the IT systems must have the ability to translate progress against objectives and achievement of objectives to reward. This means that the IT system should almost become an objective performance calculator. Ultimately the annual performance appraisal system, which is rating people on the objectives they have attained out of a scale of five, should be replaced by showing the performance rating as one of the measures, calculated from how well the objectives were attained.

On a macro level the IT systems in general will play a big role in attaining the objectives of the scorecards, especially on the process side. As the business is so reliant on the IT systems in the financial industry the Balanced Scorecard should align the IT systems with the strategy of the company as well and make sure the technology is consistent. Some of the biggest advantages in the financial industry come from automating processes with IT systems and totally replacing large portions of departments with IT systems. A good example of this is the STRATE project the JSE is running to automate the settlement of share transactions and dematerializing scrip. This turns the divisional skills required to managing exceptions rather than implementing the process in detail.

This alignment of IT systems with the strategy should ultimately improve the quality of the data and improve the measuring capability of the Balanced Scorecard.

Respondent's role in Balanced Scorecard Project :

Responsible for the building of the OLAP cubes required for the financial and budgeting portion of the Balanced Scorecard.

Which technologies and products were used to implement the Balanced Scorecard?

HSBC Investment Services have not chosen a front end yet, but will be guided by the London efforts which are currently looking at Gentia. The possibility to use in-house development to construct something simple on the intranet or using Excel/TM1 will be investigated.

As for the sources of the data, HSBC Investment Services does not have a data warehouse yet, but it is planned in terms of the architecture to fulfill the need for management information.

HSBC Investment Services chose to implement TM1 from Applix as an OLAP tool. The initial target was to use TM1 in order to implement OLAP capability for the budget and actual financial sets and to implement cost allocations and financial forecasting capability.

There are a number of other projects which first have to happen before the other perspectives can be added. The group is planning to supplement its client database through CRM project that will possibly be based on the Siebel system. The system will act as a source of client related data for the Balanced Scorecard system. In the same way, although some human resource details have been implemented, the data for the learning and growth side will only be available electronically once the planned HR system, HR Focus, is in place.

The work to implement the OLAP requirements for a perspective should not be underestimated. Approximately 30 cubes had to be built just to incorporate the financial input and HR input. On average, each of the cubes has 5 or 6 dimensions, with the cubes being interlinked. The higher level cubes contain the aggregates or some values calculated from the lower level cubes. Even though the TM1 product can handle up to 16 dimensions the application does not require information which is as complex.

The TM1 system was chosen over Essbase as it had the following advantages :

- recalculation is immediate , which allows real time what-if scenarios to be created, where Essbase calculates overnight and only has limited ROLAP capability; and
- the way TM1 stores the data is different from Essbase in that it does not suffer from unused memory space due to the "Sparse matrix" syndrome (common to all OLAP tools) which Essbase suffers from.

To give an indication of how much power is required - the TM1 system takes approximately 1 minute for some of the longest recalculations , except upon boot-up.

The Applix TM1 system has a data import component called the Turbo Integrator which does the conversion of the information and allows for data scrubbing. Data is imported from three sources, namely summary financial information is imported from the in-house Management Accounting program, which contains the results from the general ledger program running on the JSE mainframe, some data was imported from text files and others from the Excel front ends which the users update.

Figures 15 and 16 show how the financial set of accounts is turned into an n-dimensional cube and how the different cubes can feed the master Balanced Scorecard cube in the end. As more and more of the systems to support the data for the dimensions are put in place, their cubes can be created and linked into the main Balanced Scorecard cube. A front end therefore has to be put on this which can be something as elaborate as Gentia, or can just be a simple Web or Excel front-end .

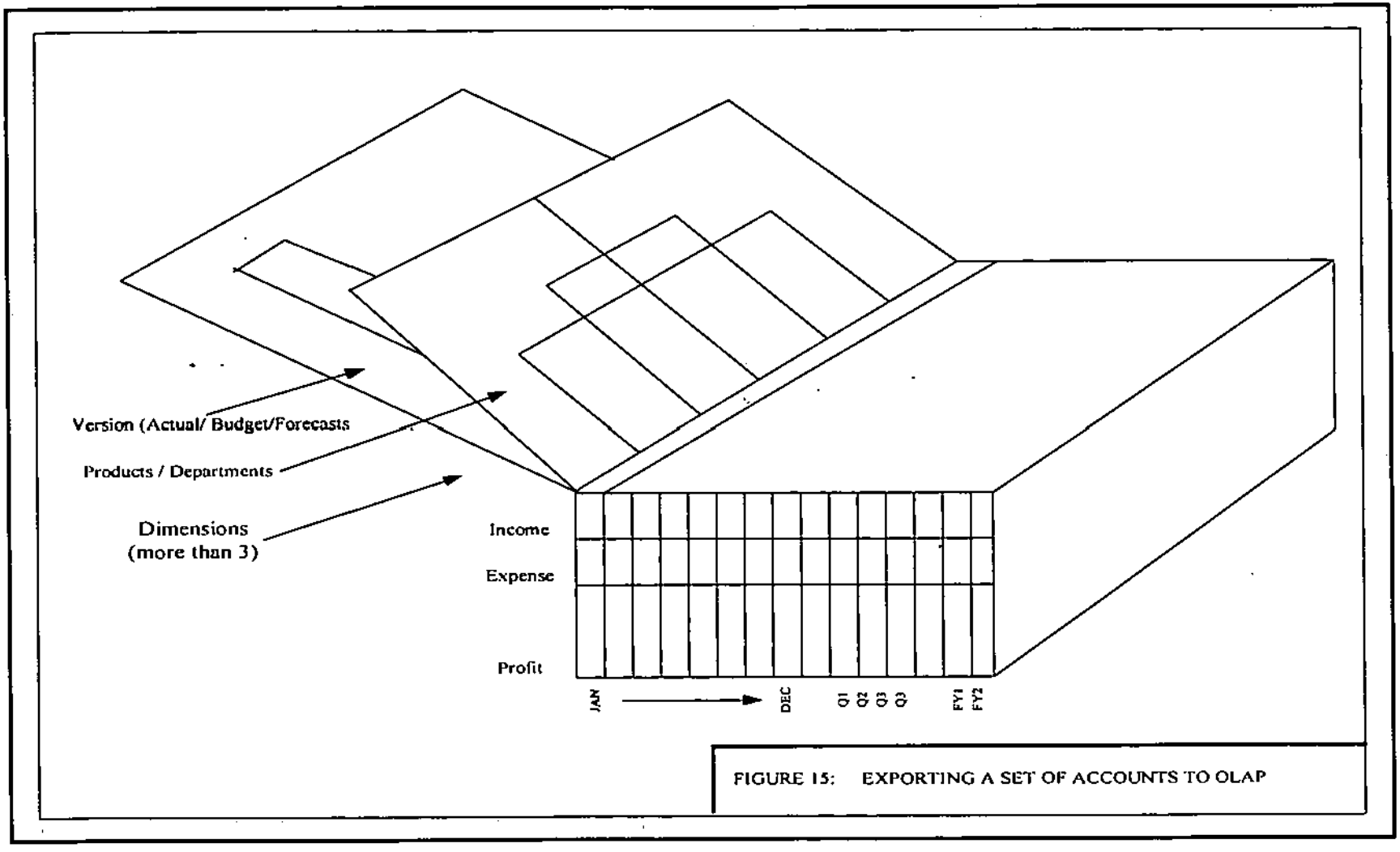


FIGURE 15: EXPORTING A SET OF ACCOUNTS TO OLAP

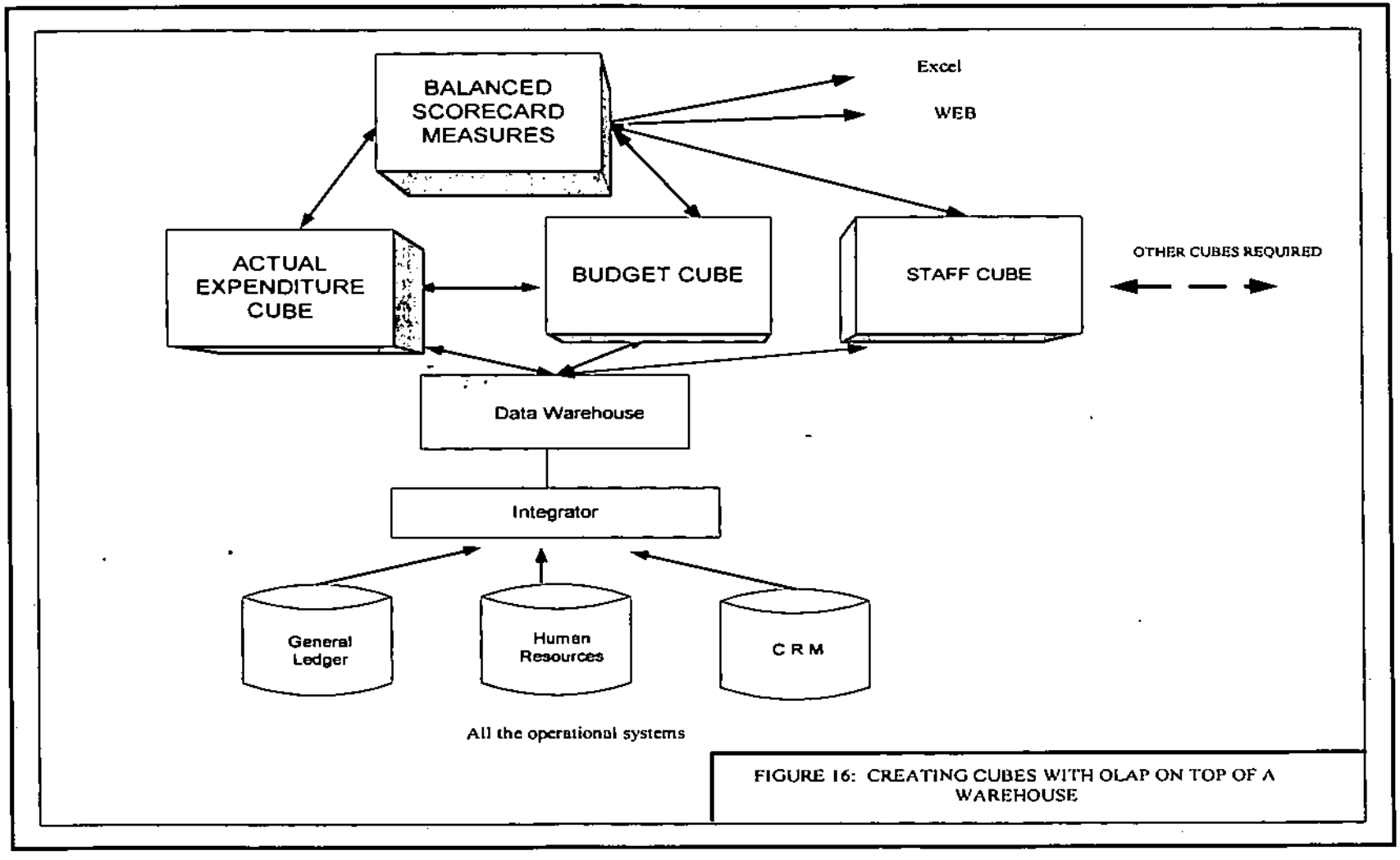


FIGURE 16: CREATING CUBES WITH OLAP ON TOP OF A WAREHOUSE

7.2.3 Liberty Life

City where respondent is located: Johannesburg

Respondent's role in Balanced Scorecard Project :
Responsible for the business and IT projects at Liberty Life

How long ago has project started ?

The group first introduced the Balanced Scorecard concept approximately three years ago, although only at a high level. The group started their process to implement it at a lower level only recently (two to three months ago).

How much value did the implementation of the Balanced Scorecard add and in what way?

The Balanced Scorecard has definitely added tremendous value to the group especially in terms of aligning the strategy and giving feedback on the "vital signs" of the company. At this point in time no financial value has been added yet and no business processes reengineered directly because of the Balanced Scorecard process. The main benefit so far has been the strategic learning.

What are the difficult steps in the process to implement the Balanced Scorecard?

Liberty Life started by having a top down approach – using the scorecard as a tool to align the business unit strategy with the group strategy. This was successful. To implement the Balanced Scorecard on lower levels as well is quite a difficult process.

Do IT systems contribute to the success of the implementation of the Balanced Scorecard?

The IT systems will have a tremendous impact on the success of the scorecard implementation and Liberty would not be able to move the Balanced Scorecard implementation to lower levels without an IT system in place.

Which technologies and products were used to implement the Balanced Scorecard?

Liberty Life did a thorough evaluation using Gartner consultants and decided to implement the Gentia Balanced Scorecard product. They found the system extremely quick and easy to implement. The system has not yet been linked to a data warehouse or mart yet, as the data warehouse still has to be constructed.

Liberty is using Essbase as an OLAP tool and definitely plan to link the Gentia system to Essbase in the future. The Essbase system, which is currently used for Profit and Loss and budgeting purposes, will be used to supply the financial information in the scorecard on a monthly basis. The data sources to populate the Balanced Scorecard is a problem. It is envisaged that the other scorecard information will be updated on a daily basis, as the scorecard is moved from the leadership/management level to individual level.

The Balanced Scorecard is seen as the basis on which the development of future MIS/EIS systems will be based.

7.2.4 First National Bank (FNB)

City where respondent is located: Johannesburg

Respondent's role in Balanced Scorecard Project :

The respondent is a member of the strategic committee of First National Bank.

How long ago has project started ?

First National Bank started with the implementation of the Balanced Scorecard approximately two years ago. They started with the implementation is certain business

units first and because of restructuring they have not rolled up the business units into a FNB Corporate Bank scorecard yet.

How much value did the implementation of the Balanced Scorecard add and in what way?

In terms of the value added for the business – at this point in time there has not been significant value added to the business as a whole, although certain divisions of the business definitely had significant value added.

The most significant value that has been added has been that the focus around strategic initiatives had everybody understand exactly what they wanted to achieve.

At this point in time, the added financial value has not yet been measured, but some initiatives that were identified already made the company considerably more money. For example, the credit process was identified as something that should be re-engineered and FNB totally re-engineered their credit process to be much more effective because of the Balanced Scorecard.

Another area where the Balanced Scorecard added value was in the learning perspective. As a direct result of the Balanced Scorecard initiatives, it was identified that the company needed leadership skills and people who were identified were sent on leadership and business courses with University of the Witwatersrand (WITS) business school. In addition, it was identified that better interpersonal skills was required in the CAS area (Call center services) where staff were sent on interpersonal skill courses. Very positive feedback was received from clients about this change, which was only put in motion because of the Balanced Scorecard project.

What are the difficult steps in the process to implement the Balanced Scorecard?

In order to communicate the scorecard to the people it was made as simple as possible.

The Balanced Scorecard thought process was used to identify goals and initiatives to support these goals and the communication to the staff was not necessarily done in the Balanced Scorecard framework as staff ranged from people in the back-office with only standard eight to highly educated individuals. They were then given goals and targets which fit in with the Balanced Scorecard but which were laid out as simple as possible and not necessarily in the Balanced Scorecard layout.

The difficult part was creating the links – deciding which measures are the drivers for other measures and linking them. This is an area where IT support in terms of correlation analysis will be very helpful.

Do IT systems contribute to the success of the implementation of the Balanced Scorecard?

Most definitely. A paper based system is unsustainable. Currently many of the systems are still paper based, but the company is investigating putting in a CRM system to get the client data improved, such as that from Oracle or SAP and maybe purchasing a user front end to support the Balanced Scorecard specifically. Having better IT support for the Balanced Scorecard will add tremendous value.

Respondent's role in Balanced Scorecard Project :

Respondent is in the Knowledge Management division of FNB.

Which technologies and products were used to implement the Balanced Scorecard?

At the moment the majority of the scorecard information is still paper based and the rest of the information resides in a data warehouse and data mart. This was one of the things that were the right choice, to choose the data warehouse and data mart approach.

FNB is using Essbase as an OLAP tool. The knowledge management team first built a data mart as the mainframe warehouse contained firstly too much of some data that was required and secondly did not contain other data that was required, so the data had to be sourced from other places as well.

The strength of Essbase is that it can cope with extremely complex analysis. Essbase also supplemented its functionality with a utility to do small ROLAP analyses.

Some of the data is updated daily, some weekly, but the data is mostly updated monthly.

As a front the team is using the new version of Wired for OLAP (analyser) that is very powerful. The old version had a Java front end that had a fairly heavy footprint and was therefore slow. The new version with just pure HTML works much better, especially with the Intranet front ends.

What FNB did right is they used a RAD (Rapid Application Development) approach to the data mart. They endeavoured to keep the cubes small and simple and kept the development in-house. They did a little bit at a time and gave the users an example, form which we got more requirements and then adapted our initial offering. This is a much better approach than doing a two or three year data warehouse project and only delivering results at the end of that. With the RAD approach, the users immediately get results.

In terms of the Balanced Scorecard, FNB plans to add the data in the client perspective on by implementing a CRM system in the near future and using the output from that to populate the client specific information into our data mart.

Using OLAP technology was the right route – it was the right technology to choose.

The Balanced Scorecard system is already acting as an MIS system. It is well accepted as the new way to do financial reporting and it is the basis for future EIS systems.

7.2.5 Credit Suisse

City where respondent is located: Zurich, Switzerland

Respondent's role in Balanced Scorecard Project :

Responsible from the business side for the project.

How long ago has project started ?

As Credit Suisse is a very decentralized organisation with five business units, who went through a substantial amount of restructuring recently, the Credit Suisse group started implementing the Balanced Scorecard 6 months ago in order to align the strategy of the different business units with that of the Credit Suisse group as a whole.

How much value did the implementation of the Balanced Scorecard add and in what way?

The Balanced Scorecard is a tool for defining the strategy of the group and cross-referencing the financial aspects and initiatives to the group strategy. The Balanced Scorecard added a tremendous amount of value, although not in financial terms yet, but in terms of the strategy process.

What are the difficult steps in the process to implement the Balanced Scorecard?

At this point in time the Balanced Scorecards are not that Balanced yet, but mostly financially focused, as sources for the information for the other perspectives still have to be found and details have to be clarified.

Do IT systems contribute to the success of the implementation of the Balanced Scorecard?

Yes, the IT systems will play a very important role in the implementation.

Which technologies and products were used to implement the Balanced Scorecard?

Even so, it is too early in the process and no IT implementation for measuring the scorecard has been planned yet, but Credit Suisse sees it as a method to "clear up" their management information systems. The management information systems for Credit Suisse have become incredibly complex and "dense" over time and it became difficult to pinpoint where the KPI's could be identified in the systems.

Credit Suisse plans to use the Balanced Scorecard to clarify the details to be kept in the MIS systems.

7.2.5 Sanlam

City where respondent is located: Cape Town

Respondent's role in Balanced Scorecard Project :

The respondent is responsible for the Balanced Scorecard project from a business perspective.

How long ago has project started ?

Sanlam first implemented the Balanced Scorecard two years ago.

How much value did the implementation of the Balanced Scorecard add and in what way?

Significant benefit was achieved essentially on the alignment and communication of the objectives. One thing that became clear is that even though the strategy has been defined previously, once the Balanced Scorecard was used to describe it, it was

realised that many of the executives understood our previously defined strategy with respect to the insurance industry differently from one another.

It is too early to attribute any significant financial gains in terms of the process. The problem with defining the gains with the balanced scorecard is that it is sometimes hard to relate specific gains to the balanced scorecard. Certain successful initiatives can be related to the balanced scorecard; for example, the balanced scorecard is used to monitor the relationship with Gensec and is being used as a tool to renegotiate required performance in the relationship. It was used to make decisions on the product types that should be offered.

The Balanced Scorecard is seen as essentially a tool for Exco (The Executive Management) and to see if they are on track. Its biggest benefits are clearly the implementation in the top two levels of management in the company. To implement scorecards to lower levels is debatable; tools that are more specific should be used there.

What are the difficult steps in the process to implement the Balanced Scorecard?

At lower levels of the organisation, other methods of control should be used such as Activity Based Costing (ABC). It was difficult getting the data for the Balanced Scorecard . ABC should be used in the back-office to collect data. Other data had to be collected using surveys e.g. cultural surveys and had to be typed in. The financial measures were fairly easy, such as the rolled up high level premium income.

Do IT systems contribute to the success of the implementation of the Balanced Scorecard?

Yes, definitely. The implementation cannot be done fully without the proper IT systems in place.The IT systems definitely had a significant impact on the Balanced Scorecard project.

Which technologies and products were used to implement the Balanced Scorecard?

Sanlam used a data warehouse with data marts to analyse the data. An in-house system was put together that was relatively simple.

Most of the third party applications are a total overkill with their "speedometers" etc.

The Balanced Scorecard is a tactical solution aid for the strategy of the organisation and should be as basic as possible. One must have some analysis capability to understand the environment. Do not let IT people interpret these analysis ! The business should be firmly responsible for interpreting and contextualising the results.

7.2.6 Transnet

Note : Transnet is not a financial service company and the only reason why some feedback were asked from them, is that they developed an in-house system which works so well that Kaplan visited them to have a look at the system when they were in South Africa for the conference. It was decided to only interview the IT people responsible for this system.

City where respondent is located: Johannesburg

Respondent's role in Balanced Scorecard Project :

Project Manager for the development of the Balanced Scorecard Project.

How long ago has project started ?

Approximately two years ago.

Do IT systems contribute to the success of the implementation of the Balanced Scorecard?

IT has a big impact on the success of the Balanced Scorecard project.

Which technologies and products were used to implement the Balanced Scorecard?

The company decided to implement the Balanced Scorecard using their own developed intranet front ends (with DecisionWeb) coupled to Essbase which runs on a data warehouse. It was felt that many of the third party applications were too complex for the company. The company felt their application was so different the third party applications did not suit their needs.

The most difficult issue was the sourcing of the operational data. Financial data was easy, but to get data such as training and operational data was a huge task. Kaplan's ideas and methodologies were followed and eventually everything was broken down to small databases to store the data that was required.

Recommended action for balanced scorecard : design the framework for the data warehouse and then build data marts – one financial, one customer, on learning and one operational – these have to be in place before you start thinking about the scorecard. The biggest mistake that was made was that we did not do an impact analysis to figure out what data would be required to deliver the balanced scorecard before we committed to implement it.

The front end was kept simple and implemented with red, green and yellow indicators. In terms of the business of Transnet the divisions between green, yellow and red could be defined without ambiguity. The system is not email enabled at this point in time and does not allow the people to comment on the measures.

7.3 Graphical Presentation of Quantitative results

The results of the hypothesis are shown using a simple bar graph. Please note that those results need to be qualified by the previous section, especially in terms of IT's role. The secondary questions are better answered through qualitative descriptions.

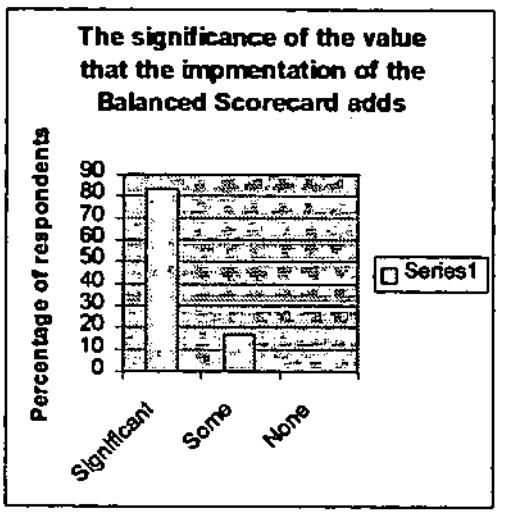
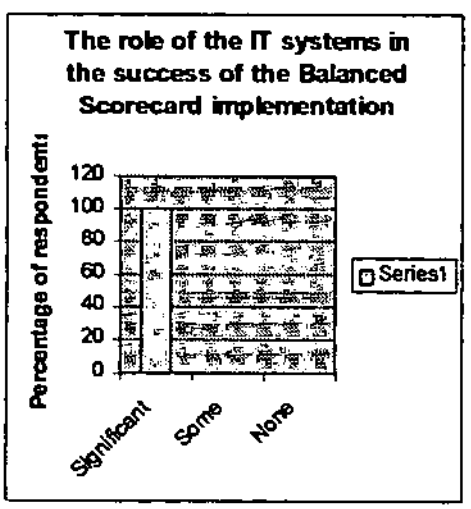


FIGURE 17: SURVEY RESULTS : THE SIGNIFICANCE OF THE VALUE AN IMPLEMENTATION OF THE BALANCED SCORECARD ADDS TO A COMPANY.



ALL AGREES - BUT WHERE IS THE CATCH ?

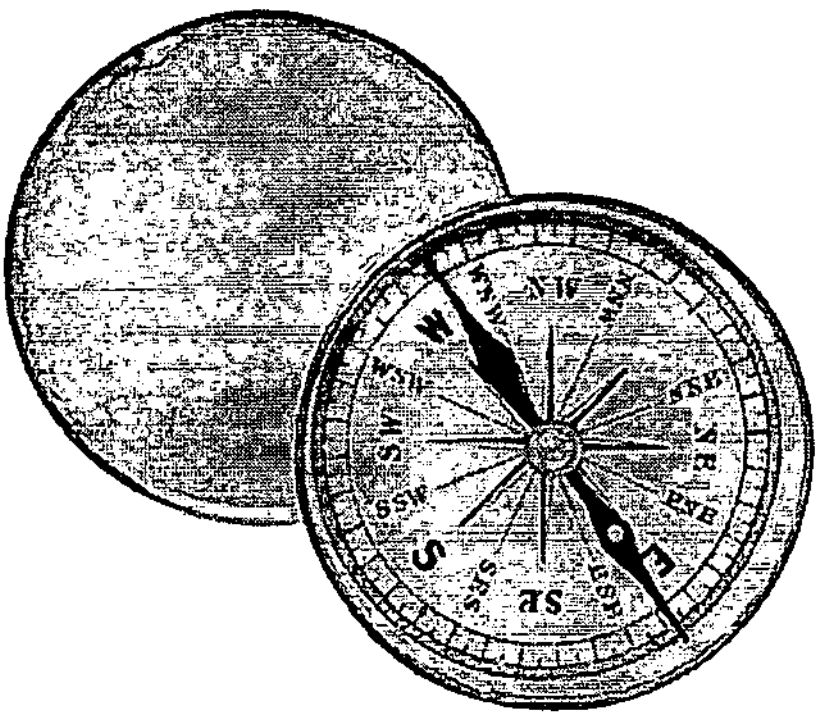
IT STILL HAS TO BE A BUSINESS PROJECT OWNED BY BUSINESS WITH THE RESULTS INTERPRETED BY BUSINESS!

FIGURE 18: SURVEY RESULTS : THE SIGNIFICANCE OF THE ROLE OF IT IN A SUCCESSFUL IMPLEMENTATION OF THE BALANCED SCORECARD

PART FOUR

SUMMARY OF RESULTS AND RECOMMENDATIONS

"Someone is sitting in the shade today because someone planted a tree long ago".
Warren Buffet.



CHAPTER EIGHT : SUMMARY OF RESULTS AND RECOMMENDATIONS

8.1 The implementation of the Balanced Scorecard adds value to the company who implements it.

The Balanced Scorecard as a management tool definitely adds value to the company who implements it. The value that is derived through the implementation is significant in the majority of cases, but in other cases only limited value is added.

For those seeking immediate financial gain, they will have to look elsewhere. The majority of respondents did not experience immediate significant increases in financial profits due to the implementation of the Balanced Scorecard, but experienced the value in other ways.

This might be because most of the respondents of the survey were in very early stages of the implementation of the methodology. The majority of companies interviewed have been using their Balanced Scorecard for two years or less.

It is generally accepted that the implementation of the strategy in a company and the implementation of the Balanced Scorecard has a number of different phases. The first major step is to create a strategy and align the strategy of the different business units or divisions to this strategy. The second major step is to implement the strategy.

Most of the companies surveyed were able to go through the first phase relatively easily and experienced most of their value in the first phase. It does seem that the second phase is more difficult and only some of the companies have actually moved down the process far enough to achieve significant benefits in the second phase.

The process to articulate a complex strategy by breaking the strategy down into the four main areas as recommended by the Kaplan and Norton (1996) and then identifying the specific actions or programs required to implement that action has clearly forced many companies to rethink their strategies.

From the survey it became clear that there were many executives who realised for the first time what their strategies actually implied when they went through the Balanced Scorecard process, especially when different business units of large companies were concerned. Although strategies had been determined before, there were differences in how the different executives interpreted and understood the strategy.

To determine a strategy is no trivial task – one respondent expressed his view that the alignment of the strategic view amongst top management was a "difficult enough" process without even starting to think about the implementation phase. Others mentioned that the challenge that was faced was to take a number of totally different businesses, whose strategies have to be aligned and cascade from the top scorecard to lower level scorecards for each business unit.

But this is exactly the area in which most of the gains have taken place.

The main benefits to implement the Balanced Scorecard seem to be:

- the Balanced Scorecard promotes strategic learning in the enterprise;
- the Balanced Scorecard provides a simple framework for the alignment of objectives;
- the Balanced Scorecard is a tool for cross-referencing the initiatives to the strategy the initiatives are supposed to implement;
- the Balanced Scorecard is a useful tool to convert the strategy into definable objectives at macro level;
- there has been tremendous value in using the Balanced Scorecard to communicate the strategy to colleagues at a senior level;
- the implementation of the Balanced Scorecard ensures consistency of strategy at divisional level; and
- the Balanced Scorecard can act as a mechanism to integrate and consolidate the various management processes in place, such as budgeting, planning, reporting and performance appraisal.

It is therefore conceivable that in the longer term, considerable financial gain can be achieved by actually making sure that the top structures of the company understand the strategy in the same way.

With the top levels of the company understanding the strategy in the same way, with tangible initiatives to support the strategy, there is a far better chance that the company can be navigated correctly through the stormy seas of the business environment, have a long term chance of survival and outperforming the competition.

The biggest selling point of the Balanced Scorecard is that it helps companies execute strategy. Yet, this does seem to be the more difficult part of implementation of the Balanced Scorecard, in all likelihood because of the pure size and complexity of what has to be accomplished.

Companies who have progressed further with their implementations have discovered benefits specifically in terms of the four perspectives. Some benefits which were a direct result of the Balanced Scorecard process were :

Certain processes were identified who had to be totally reengineered (the credit process in this case). This resulted in a much more efficient operation, which saved the company a substantial amount of money. The specific company also became aware of gaps between the capabilities of its staff and the job requirements. They proceeded to send management on leadership courses and call desk staff who have to deal with clients on interpersonal skills courses, which had a major effect on their client relationships. Other benefits mentioned include the adjustment of the product mix and the use of the Balanced Scorecard in the efficient control of supplier relationships.

From the above it can be seen that the Balanced Scorecard does have a specific impact in the business, in more aspects than just the financial aspects.

It is therefore expected that as companies travel down the road of execution of the identified strategy, many more specific benefits such as the ones mentioned, will

come to light as companies actually improve the measures they identified. The relative shortage of specific examples of "execution" benefits is therefore only due to the fact that most companies have only recently started implementing the balanced scorecard.

Kaplan and Norton (2000) covers case studies of companies who are further down the process of implementation than the companies surveyed for this Research Report and they report substantial financial benefits.

A problem with attributing benefits to the Balanced Scorecard is that it is often difficult to separate the benefits of the Balanced Scorecard from the benefits of other initiatives.

A case in point is HSBC who started a Managing for Value strategic program two years ago. This strategic program had as an objective to maximize value for shareholders. One of the actions which was taken to implement the Group's strategy was to introduce the Balanced Scorecard in January 2000. The share price rose from three pounds at the end of 1998 to more than 10 pounds per share in the corresponding period. The attributable profit in the first six months of 2000 increased by 31% over the first six months of 1999 (to USD3.525 billion for the six months period). How much of this increase in profits was due to the Balanced Scorecard implementation? It is impossible to tell.

8.2 Limitations of the Balanced Scorecard

The Balanced Scorecard is not a substitute for good management, or original thinking/innovation.

Strategists have been quick to point out that the way the Balanced Scorecard measures performance is promoting incremental (linear) improvement. Strategy often involves total destruction of some business units and processes, the creation of client demand and supply of new business capabilities through innovation. This kind of process

requires a lot of original thinking. In this original thinking area, the Balanced Scorecard does not add value.

Once the innovation has taken place the Balanced Scorecard can be used to communicate and execute the strategy by providing a mechanism to communicate the requirements to colleagues.

The Balanced Scorecard is therefore seen firstly as a communication framework for strategists and as an execution tool for the "linear thinkers" or process oriented managers who have to implement the strategy.

It is also seen as a framework for what-if scenarios.

Almost all of the respondents had difficulty in moving the implementation of the Balanced Scorecard down to the lowest staff levels. Many of them stopped the implementation of the scorecard at managerial level. The reason for this seems to be that it was felt that the concept of the Balanced Scorecard was too difficult to understand for unskilled workers. Others felt that the determination of cause-and effect relationships became problematic and while data was available on the higher levels to confirm these relationships, the data was not always available on the lower staff levels.

To get around this problem, the approach recommended by the respondents was to use the Balanced Scorecard process to determine approximately four or five objectives for each member of staff at the low levels and get them to focus on that alone. The format of the way these objectives are represented to the staff member must be very simple, perhaps in the form that the staff might be used to for performance appraisals. It is felt that staff should see how their objectives relate to the measures of success on the manager's scorecard.

Many companies are combining the use of the Balanced Scorecard system on higher levels with Management by Objectives (MBO) on lower levels. This overcomes the original problem of MBO, namely that the objectives were normally set along the

hierarchical and functional lines of the organisation, which meant the individual objectives would be defined in silos and promoted fragmentation. By using the Balanced Scorecard to determine the individual objectives for the lower staff levels, it ensures that those objectives are in line with the company strategy as a whole.

Other respondents recommended the use of Activity Based Costing on lower levels instead of the Balanced Scorecard. It was clear that opinions were divided.

A respondent are saw the implementation of a comprehensive performance "calculating" system as the answer to solve this problem. This might be costly and the success will depend on the availability of the information for measures for low levels.

8.3 Variations on the Balanced Scorecard

Normally it is prudent not to have more than the four perspectives. A problem is that at times in a service division, the financial perspective is not as useful as a final overarching measure. In those cases a fifth perspective, mission, can be added to measure how well the service division is performing its function of serving the company.

8.4 The IT systems have a major role in the success of the Balanced scorecard initiative.

The majority of companies start their Balanced Scorecard process off by aligning their objectives and therefore initially only use a paper based system. While the Balanced Scorecard is still at top level this is an acceptable method of aligning the strategy. As an example, Gentia consultants related the fact that at board level, where the people are not keen on using computers, one of their largest banking customers is using a blackboard with the different perspectives. They mark the different initiatives using a mark which has a longer length if the initiative has a bigger impact on the objectives and a colour ranging from green to red to show the difficulty of executing the initiative.

When the execution phase starts, the paper based system becomes unsustainable and quite chaotic. The same customer mentioned above has implemented a 300 user Gentia system for managing the execution.

The value that a good IT system can add to this process is seen as significant by all respondents.

There are several ways in which an IT system adds value to the Balanced Scorecard as listed below.

- The IT system should be used to communicate the goals to the staff and feed back their progress. Most executives have a desire to put the Balanced Scorecard and the progress against the scorecard on the desktop for every staff member ("in-your-face management").
- Current MIS/EIS systems became cluttered, making it difficult for executives to identify the Key Performance Areas or Key Success Factors amongst the data. The Balanced Scorecard is seen as the solution to "unclutter" MIS and EIS systems and form the basis on which the management information required to run the business is communicated.
- The IT system must support the Balanced Scorecard initiative by being able to confirm the cause and effect relationship assumptions which are made for the measures by being able to do correlation analysis on the underlying data. Respondents expressed concerns that if the wrong assumptions are made as to the cause-effect relationships, it will have a serious negative effect on the company as it could lead the company into the wrong directions and cause wasted time and money and inappropriate capabilities.
- The IT Balanced Scorecard system can integrate information from various other systems, such as the budgeting, financial reporting system and performance management systems to present all the data in the context of the strategy. This will eliminate a substantial amount of work involved to interpret the results from the various systems and manually integrate these results into the Balanced Scorecard.

- It is conceivable that in advanced stages IT systems can be used as a basis for simulation of scenarios to assist strategists to assess the feasibility of their requirements. It must be noted that there are many, many pieces of the jigsaw puzzle which have to be in place to achieve this and it is likely that management will concentrate on simpler models to do this analysis.
- If the Balanced Scorecard is to really become a management control system instead of an "aligning of objectives system" it has to be automated.

8.5 Recommendations on how to execute the IT implementation of the Balanced Scorecard

The IT systems for the Balanced Scorecard are definitely in an immature phase. In fact, the current status of the IT systems for the Balanced Scorecard is nothing more than a "primordial soup status" where different products and directions are busy forming, but the evolutionary process still has to go a long way and the hype has to be separated from the facts.

It is with the abovementioned environment in mind that some guidelines are given for the IT implementation of the Balanced Scorecard.

8.5.1 Who should be driving the process

The most important condition for success is the active involvement of the executive team. Olve (1999) recommends that it does not become an IT project too early. The Balanced Scorecard should in essence not be a measurement project with the main focus on tracking measurements, but should be recognised as a change project.

This sentiment is echoed by Kaplan and Norton (2000). They state that some of the most expensive failures happened when companies implemented their Balanced Scorecard project as a systems project rather than a management project. These failures happened especially if an outside consulting firm was hired to implement the system. Kaplan and Norton (2000) further note that giving managers access to hundreds of thousands of pieces of data is not a substitute for having an organized

strategy map, with cause-and-effect linkages across the twenty or thirty measures that actually represent the most important strategic variables.

One of the most important recommendations that has been stressed by many is that the Balanced Scorecard process requires more than a process and a tool to achieve the benefits required. It is not a replacement for good management.

The focus of the project should therefore be to implement the Balanced Scorecard in as simple a way as possible, while still being able to ensure accurate and relevant information and communication and not to create a hugely complex IT system with infinite measures. The focus of the IT system and project should be to support the business Balanced Scorecard project, unlike some over enthusiastic data warehouse "experts" on the internet who claim that IT should be the leaders of the Balanced Scorecard project. Top management should be the driving force behind the project.

8.5.2 Choose meaningful measures

People gravitate towards measures which are easy to measure, but are not necessarily concerned if they describe the anticipated result. This means that people will choose to measure ad spend, rather than brand awareness, or training courses attended rather than actual skill level.

This does of course show that many of the measures are going to require separate projects to collect the data required to measure them. The data for many measurements will not be monitored in any current system and may require manual input. This must be accepted from the start.

If required, steps should also be taken to ensure that every person's measures are spread through the different perspectives and are not all grouped in one. As an example, it is easy to make a CEO's measures financial only. While it is accepted that some individuals will have a larger percentage of measures in one of the perspective as others, a maximum should be set if it becomes problematic. As an example, a rule

can be made that no individual is allowed more than 40% of his or her measures in one perspective.

The first thing that should be realised is that there is a large amount of complex data required for the implementation of the Balanced Scorecard. The majority of the data has to be updated at least once a month for the system to make sense. In some cases it makes sense to update some measures quarterly only. It is highly likely that a large percentage of the measures (e.g. 30%) does not have any supporting data to measure them and data will have to be manually entered.

8.5.3 Use the correct IT components

Many of the products that Balanced Scorecard vendors sell have a "sting in the tail". These vendors advertise that you could have the Balanced Scorecard up and running within two or three days and get a very quick "ROI".

The fact is that these third party vendors assume that the data is there and that there is an underlying data warehouse from which the data can be imported, or even worse, that it is stored in ways in different systems which provide one version of the "truth". These operational systems constantly change (version changes, business changes) and often contain data that is not indexed by the indices required for the Balanced Scorecard and can contain the same data stored in very incompatible ways.

The reality is that this has been pointed out as the one obstacle over which several companies stumbled and that the collection and consolidation of data does form a major part of the application.

A respondent mentioned their oversight to do an audit of exactly what data they had available, before time frames were determined of when they planned to roll out the Balanced Scorecard to the desktop, as the biggest error they made in their implementation of the Balanced Scorecard.

The complete picture required for the IT system requirements for the Balanced Scorecard is therefore the situation as depicted in Figure 12.

It consists of the daily operational systems feeding through a stage of data scrubbing into a data warehouse. The construction of the data warehouse would involve the use of programming resources, whether internal or external. The choice of what technology to build the warehouse with is a technical choice and there is more than one right way.

To analyse the data in the data warehouse, an OLAP tool should be used to build multidimensional cubes of data. This will allow the power user to drill down into the data. The financial data is normally the easiest to populate and is normally followed by Client Data. Process data is not always available as well as a large percentage of the soft measures. In fact, Kaplan and Norton (2000) state mechanisms have to be created to support all measures and not only financial ones.

Figure 15 and 16 show how these OLAP cubes can be constructed.

Some third party Balanced Scorecard software products include their own OLAP functionality. If existing structures have to be re-used, the integration aspect of the OLAP tools has to be carefully considered. Almost all third party Balanced Scorecard products offer integration into Essbase (the market leader) but do not always offer native integration to some of the more obscure OLAP tools.

As a front end, intranet or Web enabled front ends are recommended purely in terms of ease of use and ease of deployment. Excel can also be a useful front end, especially for the power users who want to drill down into the information and extract it afterwards. There has to be differentiation between the normal user who wants to monitor his own scorecard only and the management user who wants to drill down into the information.

The system should contain communication ability and allow the user to contribute feedback, either through the use of the email system or bulletin board type functionality that is integrated with the system.

Although it is not a part of the Balanced Scorecard functionality, the ability to do regression analysis is an important aspect of the complete IT picture to run a successful Balanced Scorecard system.

8.5.4 Keep it simple

One must be very aware of the "noise" that some IT solutions can introduce to the process. Some software vendors, such as Corvu, have a step in the process where the user has to interpret every measure in terms of a scale from 0 to 10 or whichever scale one chooses. The idea is that this will allow the person to allocate a weight to different measures (e.g customer service might be more important than the reengineering of a process which already works fairly well) and to be able to compare different measures that are not expressed in the same units.

This can be quite dangerous and a big amount of information can be lost in this process. It is the difference between the business user seeing a Total Shareholder Return of 31% or a Total Shareholder Return on 9 out of 10. It can be argued that the power user will have the capability to drill down and get the real figures, but it still distorts the real information. Does it mean that if the shareholder return is upped another 4% that the user will get a 10 out of 10 and can start relaxing? By all means not. In the opinion of the researcher it is far better to show actual figures to the user who can contextualise them in terms of the business environment.

The same argument is true of the hard changeovers between the green, yellow and red portions of the dials used in many cases to display the measures. In some cases it was felt that one could very clearly interpret where the green should end and the yellow begin. But in many cases these borders between the colours are not seen as fixed lines but rather a gradual transition such as in Figure 11.

Some vendors use the regression analysis to act as a basis to determine the ratio in which different cause measures contribute to the measure they have an effect on and determine an almost DuPont-Like structure for the measures. The author strongly argues against actually determining ratios between the non-financial measures and using them to determine other measures for management purposes. While this is useful for the performance management aspect, the dynamic nature of business makes the maintenance of accurate ratios for hundreds of people quite complex and error-prone. Regression analysis should be used to confirm if the cause-effect relationships do exist, but should not be used to determine fixed ratios between the measures.

8.5.6 Allow for user interpretation

This section expands on the ideas in 8.5.5. If an IT system has been established, people are inclined to trust it and accept that the model and underlying data that is presented is correct. While many vendors and consultants will argue for automating everything, the danger of an automated Balanced Scorecard system is exactly this, namely that the system will present the information and the graphs in a confident manner and the users might be temped not to question the measures and the data. Then the model becomes fixed and loses its dynamic. This inhibits the "double-loop learning process" which Kaplan and Norton (2000:274) consider one of the advantages of the Balanced Scorecard. Some systems, such as Gentia, allows the user to adjust measures based on interpretation, provided they add comment.

In spite of the dangers mentioned, it is not possible to utilize the Balanced Scorecard methodology for large number of users without the use of a powerful IT system.

8.5.7 Build versus buy

The answer is in all likelihood a combination of the above. The data warehouse portion and OLAP portions of the system definitely requires software development, as they cannot be purchased off-the-shelf.

When developing a data warehouse, this best solution is to spend time to determine the overall architecture, but then have interim deliverables (data marts) which offer some of the data quickly.

There are companies who offer data warehouse frameworks and if one is already using SAP, SAS, PeopleSoft or Oracle, many of the building blocks might already be in place.

When purchasing an OLAP system, many options are possible. The overwhelming majority of companies seem to be using Essbase/Hyperion in South Africa. There are also smaller contenders such as TM1 from Applix who have some unique advantages over Essbase. There is no right or wrong, one has to carefully analyse the requirements in each situation and make a choice that fits that. The feeling is that the OLAP tools from Microsoft are destined to play an important role in the future but that their product is not ready to cope with big requirements yet.

The choice whether to develop or buy the user interface portion, which sits on top of the data warehouse and OLAP tools will depend on the availability of time, resources and money as development is expensive. Despite this, a relatively large part of the respondents leaned towards this option.

The reason for this is twofold. The third party solutions are currently quite expensive. Substantial software development has to be done on the data warehouse to get the data right for the Balanced Scorecard. The complexity of integrating a third party tool vs developing the front ends has to be weighed up, as intranet technology can easily be used to develop large numbers of relatively simple interfaces. Products such as Excel and Crystal Reports can be used to limit the development time.

When looking at the comparison between different third party products, it becomes clear that the vendors all understand things a little differently.

There are a few points worth noting. A select number of vendors have been authorized by the Balaneed Scorecard Collaborative, which means that they comply to the standards laid down by the Balanced Scorecard Collaborative. One of these vendors, Gentia has a relationship with Renaissance (Norton and Kaplan's consulting company) and has an advantage over many of the other vendors in terms of how it adheres to the spirit and philosophy of the Balanced Scorecard methodology.

If the user is already a SAP, SAS, PeopleSoft or Oracle user, it makes sense to use their Balanced Scorecard product, as it integrates well with their other products already.

CHAPTER NINE : CONCLUSION

The Balanced Scorecard has indeed adds significant value to a company in terms of strategic learning, aligning strategy and by acting as a framework to communicate strategy and execute strategy. It forces management to consider more than just immediate financial gain as goals and focus on providing short term and long term value. To implement the Balanced Scorecard is a change management project and not a measurement project, or an IT systems project.

The Balanced Scorecard methodology cannot be implemented in situations where there are more than a handful of Balanced Scorecards without an IT system to support it. The IT systems therefore have a major role to play in the success of the Balanced Scorecard implementation and must act as the system to measure process, provide a strategic communication and feedback mechanism and allow the users to confirm the links between measures.

The companies who most successfully implemented the Balanced Scorecard used a data warehouse, fronted by an OLAP tool, with a user interface which is either self-built or purchased from one of the vendors which are authorized by the Balanced Scorecard. These vendors have their own strengths and weaknesses and it is likely that integration with existing systems will play a strong role in the choice, but if a SAP or Oracle solution is not present yet, one of the leaders seems to be Gentia.

Finally, whatever the choice of IT system, it is important that the business users (and not IT) keep ownership of the project, actually interpret the data in the context of the business situation and do not trust the pretty graphs blindly.

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Appendix A : Cover Letter for Email Questionnaire

81 13th Avenue
Northcliff
2195
South Africa

Dear Sir or Madam

UNISA MASTER OF BUSINESS LEADERSHIP RESEARCH REPORT SURVEY

My name is Marius de Wet, I am a final year MBL (Master of Business Leadership) student at the University of South Africa (UNISA). My study leader is Prof. René Pelissier of the UNISA Graduate School of Business Leadership.

I am conducting a survey in the Financial Industry to collect data for my Research Report entitled "The use of Data Warehouse Technology to implement the Balanced Scorecard in the Financial Industry." The survey will be aimed at major financial institutions in South Africa, as well as some of the top international financial institutions.

There are two major goals of the survey. The first goal is to determine to what extent the implementation of the Balanced Scorecard adds value or not. The second goal is to determine the best way to implement an IT system to support the Balanced Scorecard project.

As such this survey is divided into two sections, the first part aimed at the business project owner and the second part aimed at the IT person responsible for implementing the systems for the BS.

The survey takes approximately 10 minutes to complete and requires you to save this MS Word document on your machine and modify the contents. It will be greatly appreciated if you could email it back to me at my email address mariusd@mweb.co.za before 12 October 2000.

Should you wish to remain anonymous, please indicate so in the answer.

Should you wish to receive a copy of the results of the survey (by end of November 2000) please indicate so in the document.

Thank you for the time taken to complete the survey.

Yours sincerely

Marius de Wet

Appendix B : Cover letter for telephone interview

81 13th Avenue
Northcliff
2195
South Africa

Dear xxx

UNISA MASTER OF BUSINESS LEADERSHIP RESEARCH REPORT SURVEY

My name is Marius de Wet, I am a final year MBL (Master of Business Leadership) student at the University of South Africa (UNISA). My study leader is Prof. René Pelissier of the UNISA Graduate School of Business Leadership.

I am conducting a survey in the Financial Industry to collect data for my Research Report entitled "The use of Data Warehouse Technology to implement the Balanced Scorecard in the Financial Industry." The survey will be aimed at major financial institutions in South Africa, as well as some of the top international financial institutions.

There are two major goals of the survey. The first goal is to determine to what extent the implementation of the Balanced Scorecard adds value or not. The second goal is to determine the best way to implement an IT system to support the Balanced Scorecard project.

As such this survey is divided into two sections, the first part aimed at the business project owner and the second part aimed at the IT person responsible for implementing the systems for the BS.

I will call you by telephone as arranged to discuss the issues in the survey. This should not take longer than 10 minutes to complete.

Should you wish to remain anonymous, please indicate so.

Should you wish to receive a copy of the results of the survey (by end of November 2000) please indicate so.

Yours sincerely

Marius de Wet

Appendix C : Survey

NOTE : This survey is divided into two parts. Part One is aimed at the business person responsible for implementing the Balanced Scorecard and Part Two is aimed at the person responsible for the IT project (if applicable) to implement the Balanced Scorecard.

Please tick one or more answers as appropriate, or type in a response between the brackets. All information is very welcome and please feel free to supply as much information as you deem appropriate.

SURVEY PART ONE :

NOTE : THE QUESTIONS IN THIS SECTION RELATE TO THE BUSINESS IMPACT OF THE BALANCED SCORECARD . IF YOU ARE RESPONSIBLE FOR THE IT IMPLEMENTATION RATHER THAN THE BUSINESS IMPLEMENTATION, PLEASE SKIP PART ONE AND START WITH PART TWO.

i.) What is your name: [ ]

ii) What is your email address : [ ]

iii) What is your company's name [ ]

iii) Would you like the answers to the survey to be anonymous ?

Yes ☐

No ☐

(Note : If you choose yes at this option your name or your company's name will not be mentioned in the results of the survey)

iv) What was your role in your company's Balanced Scorecard Project ?

[ ]

v) How long ago did your company start with the implementation of the Balanced Scorecard ?

0- 3 Months ☐ 4- 6 Months ☐

7- 9 Months ☐ 9-12 Months ☐

13-24 Months ☐ 24 Months + ☐

vi) How much value did the Balanced Scorecard add in your company ?

Significant ☐ Some ☐ Nothing ☐

vii) Please describe in general in your view in what way the most significant value is that was added because of the implementation as a management methodology in your company.

[ ]

viii) Did the BS improve your strategic process in terms of aligning strategic vision?

Yes No ☐

ix) Did the BS improve the communication of the strategy to the company ?

Yes ☐ No ☐

In respect to the four quadrants :

x) How much financial value did the Balanced Scorecard add to the company ?

Significant ☐ Some ☐ Nothing ☐

xi) How much value did the Balanced Scorecard add to the customer relationship ?

Significant ☐ Some ☐ Nothing ☐

xii) How much did the Balanced Scorecard improve internal Business Process ?

Significant ☐ Some ☐ Nothing ☐

xiii) How much did the Balanced Scorecard improve organisational learning and growth ?

Significant ☐ Some ☐ Nothing ☐

xiv) If possible, please describe in what way value was added for each area and if value was not added, why you feel that value was not added.

[ ]

xv) Did IT systems contribute to the success of your Balanced Scorecard Project ?

Significant ☐ Some ☐ Nothing ☐

xvi) Would you like to receive a copy of the results of this survey ?

Yes ☐ No ☐

Note : It will be highly appreciated if you could email this survey back to mariusd@mweb.co.za as soon as possible, but not later than 31 October 2000.

SURVEY PART TWO :

NOTE : THE QUESTIONS IN THIS SECTION RELATE TO THE DETAIL OF THE WAY THAT IT SYSTEMS WERE USED IN THE IMPLEMENTATION OF THE BALANCED SCORECARD, AND IS AIMED AT AN IT PERSON. IF YOU WERE THE BUSINESS PERSON RESPONSIBLE FOR THE BALANCED SCORECARD RATHER THAN THE IT PERSON RESPONSIBLE FOR IMPLEMENTING THE SYSTEM, PLEASE IGNORE THIS PART OF THE SURVEY.

Note : If you are the same person who replied to part one, please ignore questions one to five.

i.) What is your name: [ ]

ii) What is your email address : [ ]

iii) What is your company's name [ ]

iii) Would you like the answers to the survey to be anonymous ?

Yes ☐

No ☐

(Note : If you choose yes at this option your name or your company's name will not be mentioned in the results of the survey)

iv) What was your role in your company's Balanced Scorecard Project ?

[ ]

v) Did IT systems contribute to the success of your Balanced Scorecard Project ?

Significant ☐ Some ☐ Nothing ☐

vi) Please explain what the most significant reason for your answer in (v) is.

[ ]

vii) Which of the following technologies or products did you use to implement the Balanced Scorecard ?

Data warehouse	☐
OLAP Tools	☐
Intranet Technologies	☐
SAP Strategic Enterprise Management (SAP SEM)	☐
Oracle Strategic Enterprise Management (Oracle SEM)	☐
Corvu Cormanage	☐
PeopleSoft Balanced Scorecard	☐
Gentia Renaissance Balanced Scorecard	☐
SAS Institute Strategic Vision	☐
Solution Developed In-House	☐
Other – Please Specify	☐

vii) If you used an OLAP Tool , which OLAP tool did you use ?

Essbase	☐
Applix TM1	☐
Microsoft OLAP	☐
Cognos	☐
SAS Institute	☐
Comshare	☐

Business Objects ☐

MicroStrategy ☐

Sterling Software ☐

Gentia ☐

Other - Please Specify ☐

viii) If one of these OLAP solutions was employed, what do you see as the strong and weak points of the solution ?

[ ]

viii) What percentage of the measures in the scorecards have been automated ?

0-25% ☐

26-50% ☐

51-75% ☐

76-100% ☐

ix) How often are the measures updated ?

Once a year ☐

Once a month ☐

Daily ☐

x) If a data warehouse or data mart was implemented, please describe the approach

you used to develop it and what you did right and would you would do differently next time.

[ ]

xi) Do you see the Balanced Scorecard as a forming the basis for your MIS/EIS systems of the future ?

Yes ☐ No ☐

xii) Would you like to receive a copy of the results of this survey ?

Yes ☐ No ☐

Note : It will be highly appreciated if you could email this survey back to mariusd@mweb.co.za as soon as possible, but not later than 31 October 2000.

Appendix D : Results of survey in tabular form

Question number	Question Company	1	2	3	4	5	6	7
Survey Part One		Legend :		1 - Choice NR = No Reply				
v)	How long ago was project started ?							
	0-3 Months					1		
	4-6 Months							
	7-9 Months							
	9-12 Months	1	1					
	13-24 Months				1		1	1
	24+ Months			1				
vi)	How much value did the Balanced Scorecard							
	add to your company ?							
	Significant	1		1	1	1	1	NR
	Some		1					
	Nothing							
vii)	Did the Balance Scorecard improve your strategic							
	process in terms of aligning your vision ?							
	Yes	1	1	1	1	1	1	NR
	No							
ix)	Did the Balanced Scorecard improve the							
	communication of the strategy of the							
	company ?							
	Yes	1	1	1	1	1	1	NR
	No							

Question number	Question	Company 1	2	3	4	5	6	7
	In respect of the four perspectives, how much							
	value did the Implementation of the Balanced							
	Scorecard add ?							
x)	Financial Perspective							
	Significant			1				
	Some							
	Nothing				1			
	Can not say	1	1			1	1	NR
xi)	Customer Relationship							
	Significant			1				
	Some							
	Nothing							
	Can not say	1	1		1	1	1	NR
xii)	Business Process							
	Significant	1		1				
	Some						1	
	Nothing				1	1		NR
	Can not say	1	1					
xiii)	Organisational Learning							
	Significant	1		1				
	Some							
	Nothing							
	Can not say	1	1		1	1	1	NR
xv)	Do IT systems play a significant role of the							
	Balanced Scorecard Project ?							
	Yes	1	1	1	1	1	1	1
	No							

Question number	Question	Company 1	2	3	4	5	6	7
Survey Part Two								
v)	Do IT systems play a significant role of the							
	Balanced Scorecard Project ?							
	Yes	1	1	1	1	1	1	1
	No							
vii)	Which of the following technologies or products							
	did you implement using the Balanced Scorecard							
	Datawarehouse			1			1	1
	OLAP Tools		1	1	1		1	1
	Intranet	1	1	1	1		1	1
	SAP SEM							
	Oracle SEM							
	Corvu							
	Peoplesoft							
	Gentia	1			1			
	SAS							
	In-House solution	1	1	1			1	1
	Other					NR		
vii)	Which OLAP tool did you use ? (Only ones which had replies shown)							
	Essbase			1	1			1
	Applix TM1		1					
	Comshare						1	
	Gentia							
viii)	What percentage of scorecards are automated ?							
	0-25%	NR	NR	NR	NR	NR		NR
	26-50%	NR	NR	NR	NR	NR		NR
	51-75%	NR	NR	NR	NR	NR		NR
	76-100%	NR	NR	NR	NR	NR		NR
ix)	How often are measures updated ?							
	Once a year					1		
	Once a month	1	1	1	1		1	1
	Daily		1	1	1			1
xi)	Do you see the Balanced Scorecard as forming a							
	basies for your MIS systems of the future?							
	Yes	1	1	1	1	1	1	1
	No							