

**BALANCING THE BALANCED SCORECARD:  
A NEW ROLE FOR HUMAN RESOURCE  
ACCOUNTING IN SUSTAINING THE  
KNOWLEDGE-BASED ORGANISATIONS  
OF THE FUTURE**

by

**Geoffrey Turner**

Student Number: 95990130

A research project submitted in fulfilment of the requirements for the degree of  
Doctor of Philosophy in Accounting at the University of Kent at Canterbury

**Canterbury Business School**

**University of Kent**

**Canterbury, England**

Submitted

**August, 1999**

# TABLE OF CONTENTS

Dedication	iv
Acknowledgements	v
List of figures	vi
List of tables	viii
ABSTRACT	ix
CHAPTER 1: Introduction	1
Preamble	1
A view of the concepts	2
Philosophy of the approach	6
Research methodology and direction	7
Expected outcomes	10
CHAPTER 2: The development of human resource accounting	12
Introduction	12
Accounting for human resources	13
The first excuse	17
The second excuse	18
The third excuse	22
The role of accounting	26
Pathways to the future	29
Conclusion	32
CHAPTER 3: The path to human resource management	36
Introduction	36
Management of human resources through time	38
Roles, functions and strategies	43
The changing role of human resource management	46
Accountability	51
Conclusion	53
CHAPTER 4: Decision support systems for human resource management	57
Introduction	57
The essence of information systems	58
Human resource information systems	60
Source of information	65
Using the human resource information system	67
Supporting human resource management	73
Conclusion	76

CHAPTER 5: Accounting and the supply of information	80
Introduction	80
The nature of management accounting	82
A control system	84
Accountability	88
Limitations of traditional management accounting	93
Management accounting in crisis	98
Beyond the tangible	102
Conclusion	105
CHAPTER 6: Human resource accounting – whim or wisdom?	109
Introduction	109
The renaissance of human resource accounting	110
Whim or wisdom?	113
Linking the concepts	115
Strengthening the links	119
Decision support system	127
Conclusion	131
CHAPTER 7: Development of a model	135
Introduction	135
Measuring knowledge	136
Compiling the scorecard	150
Conclusion	160
CHAPTER 8: Establishing the credibility	165
Introduction	165
Crown Company Monitoring Advisory Unit	167
Crown Research Institutes	170
New Zealand Institute for Crop and Food Research	173
Institute of Environmental Science and Research	175
Industrial Research Limited	178
Landcare Research New Zealand	180
Using the model for comparative analysis	182
Effect of the research	185
Future opportunities	190
Conclusion	192
CHAPTER 9: Into the next millennium	195
Introduction	195
The nature of organisations	198
The changing face of human resource management	202
Accounting in support	209

Team effort?	212
Conclusion	214
CHAPTER 10: Epilogue	218
In summary	218
Further research	222
APPENDICES	225
AURION HR software	226
Supplement to Skandia's 1996 interim report	230
Telia's statement of human resources	242
Extract from CFR's 1997 annual report	254
Extract from ESR's 1997 annual report	256
Extract from IRL's 1997 annual report	257
Extract from LRL's 1997 annual report	258
Definitions of terminology used in CRIs' performance indicators	259
Shell's sustainable development roadmap	261
BIBLIOGRAPHY	262

# DEDICATION

**to my mother and the memory of my father**

their encouragement and unwavering belief in my ability  
nourished the challenge to 'continue climbing mountains' and  
gave me the courage to undertake this task

# ACKNOWLEDGEMENTS

In the course of conducting this research, I have received a great deal of support from many friends, acquaintances and other people to whom I extend my thanks. There are far too many people to acknowledge individually and for that I apologise.

To my wife Sue, my children Kelly and Keith, my grandchildren Emma and Jack, and all the other members of our family: I am deeply indebted. Without their forbearance, encouragement and ongoing support I would have never finished the task.

To my supervisor Jacky Jackson-Cox: for her agreement to undertake this assignment by long distance and then provide the right amount of guidance, encouragement, and insightful comments and criticisms, as well as tolerate the erratic communications and visits, I shall be forever indebted.

To the Crown Company Monitoring Advisory Unit and the Crown Research Institutes in New Zealand: my deep appreciation for their cooperation in providing the confidential data that allowed me to experiment with my ideas.

To the host of authors whose books or articles are referenced in the text: I extend my thanks for the excellent material they provided me.

To the fraternity of academics, particularly at the University of South Australia, Stockholm University, University of Dundee, Cornell University and Skidmore College: thank you for listening to my ideas and providing beneficial comments and criticisms during the completion of this thesis.

To the library staff of the University of Kent at Canterbury and the University of South Australia in Adelaide and Whyalla: my thanks for the valuable assistance they rendered me.

To Eric and Shirley Knight and their extended family: my heartfelt thanks for sharing their home and providing friendship and support during my many visits to Canterbury.

# LIST OF FIGURES

2.1	Elements to be considered in determining the cost of staff turnover	25
3.1	Storey's dimensions of personnel/IR and HRM	40
3.2	Key human resource issues for the future	46
4.1	Components of a HRIS	62
4.2	Inputs and outputs of a HRIS	63
4.3	Objectives of HORACE	64
5.1	Management accounting and the decision making process	83
5.2	Change in accounting characteristics	103
5.3	The Skandia value scheme	104
6.1	Linking the concepts	116
6.2	The value chain	121
6.3	The balanced scorecard	123
6.4	Linkages between levels of HR measurement	129
7.1	Cumulative rate of diffusion	147
7.2	Employee's human capital value	149
7.3	Productivity indicator #1	152
7.4	Productivity indicator #2	152
7.5	Productivity indicator #3	153
7.6	Process indicator #2	155
7.7	Process indicator #3	155
7.8	People indicator #1	156
7.9	People indicator #3	157
7.10	Financial indicator #1	158
7.11	Financial indicator #2	159
7.12	Financial indicator #3	160
8.1	CFR human resource performance indicators	174
8.2	ESR human resource performance indicators	177
8.3	IRL human resource performance indicators	179
8.4	LRL human resource performance indicators	181
8.5	Recommended generic CRI performance indicators	183
8.6	Benchmarking CRI performance indicators	186

8.7	Description of the CCMAU's generic performance indicators	188
9.1	Features of organisational structure	200

# LIST OF TABLES

7.1	Calculation of a real long-run interest rate	140
7.2	Attributed value of domain knowledge	141
7.3	Selected rates of acquisition	146
7.4	Selected values of tacit knowledge per employee	148
7.5	Selected data	151

# ABSTRACT

The discipline of management is, among other things, the skill of translating accounting information into behaviour. Where the knowledge and skills of its employees are the principal asset of an organisation, current performance measurement information rarely provides appropriate or relevant information and indeed may be misleading to management. Since managing the knowledge and skills of employees is the current organisational challenge (Handy, 1996) it is now time to rethink the presentation of accounting information to management.

This thesis is, in part, a search for ways of meeting this challenge. For this purpose, it considers what is required for accounting and human resource professionals to work effectively together to develop and sustain an organisation's human resources. A model is developed that balances the balanced scorecard by strengthening its innovation and learning perspective. The aim is to provide an information chain that not only allows managements to monitor the performance of their human resources, but also others to assess their ability to manage the talent and accumulated knowledge of the organisations' human resources. This model could be considered the beginning of Puxty's (1993) long road in search of a planning, control and performance measurement system that accounts for the human element of an organisation's intellectual assets.

The model is then evaluated in several organisations. From the direction being taken subsequently in these organisations, it would appear that this human resource accounting model could enhance the performance measurement and accountability of these organisations. Although the model may be considered useful in some of today's organisations, what of the future? The form and nature of organisations in the future are considered and a conclusion drawn that the human resource accounting proposals developed for the present should have a more influential role to play in the knowledge-based organisations of the twenty-first century.

Chapter

# 1

## *Introduction*

Labor is prior to, and independent of capital. Capital is only the fruit of labor, and would never have existed if labor had not first existed. Labor is the superior to capital, and deserves much higher consideration.

*Abraham Lincoln*  
Message to Congress  
3 December 1861

### **Preamble**

My interest in the notion of accounting for human resources germinated while working in the aerospace industry. The organisation was primarily a research and development organisation. Its most powerful asset was not the limited property or capital resources at its disposal, but the knowledge and skills of its employees and the ability of the organisation to harness them effectively. When contractual arrangements provided for reward based on the level of corporate investment, it became clear that the organisation was disadvantaged because the value of the knowledge and skills of the organisation's human resources appeared nowhere in the traditional accounting system.

Management tools are dominated by accounting data and the discipline of management is, among other things, the skill of translating accounting information into behaviour. Despite the development of new tools, such as the value chain and the balanced scorecard, the accounting profession has, in recent times, failed to broaden its scope sufficiently. Its current operational framework is derived from the needs of business since the industrial revolution when wealth was created through a

combination of capital, commodities and labour, all of which had to be controlled and accounted for. Where the knowledge and skills of its employees are the principal asset of an organisation, the performance measurement information currently produced by the accounting professional rarely provides appropriate or relevant information and indeed may be misleading to management. Since managing the knowledge and skills of employees is the current organisational challenge (Handy, 1996) it is now time to rethink the presentation of accounting information to management.

This thesis is, in part, a search for ways of meeting this challenge. For this purpose, it will be necessary to consider whether it is possible for accounting and human resource professionals to work effectively together to facilitate the creation, and nurture the growth, of organisational wealth and competitive advantage. The judicious management of the talent and accumulated knowledge of an organisation's human resources will require the existence or development of an information chain between these two concepts. Such an information chain should not only enable managements to monitor the performance of their human resources, but also enable others to assess an organisation's ability to manage the talent and accumulated knowledge of its human resources effectively. In many respects, it could be considered the beginning of Puxty's (1993) long road in search of a planning, control and performance measurement system that accounts for the human element of an organisation's intellectual assets.

### **A view of the concepts**

Since one task of this thesis is to assess the possibility of a mutually supportive relationship between two management concepts, human resource accounting and human resource management, it is essential to have a clear understanding of their nature and purpose.

The American Accounting Association's Committee on Human Resource Accounting (1973) provides the following traditional definition of human resource accounting:

the process of identifying and measuring data about human resources and communicating this information to interested parties. (p.169)

Arguably this definition should be expanded to clarify the meaning of 'data', 'human resources' and the process of 'communicating'. In consonance with the development in this thesis of a contemporary role for human resource accounting, each of these elements in the definition will be examined to determine whether this definition remains valid some twenty-five years later.

A coexistent definition for human resource management is not available because the two concepts are not of the same generation. Human resource management was conceived in the late 1970s (Bradley, 1992) while human resource accounting has its origins in the 1960s (Hermanson, 1964). A recent definition of human resource management by Storey (1995) provides an appropriate starting point:

Human resource management is a distinctive approach to employment management which seeks to achieve competitive advantage through the strategic deployment of a highly committed and capable workforce, using an integrated array of cultural, structural and personnel techniques. (p. 5)

This is a comprehensive and more recent definition of the concept of human resource management. However because of the juxtaposition between human resource accounting and human resource management, these definitions are not considered immutable and may be modified in this thesis.

The development of these concepts is chronologically disparate. Substantial academic debate regarding the relevance of human resource accounting reached its zenith shortly after the 1974 topic-specific seminars in Bonn and Brussels<sup>1</sup>. Until recently<sup>2</sup> there has been only limited academic debate and virtually no practitioner interest in the topic. Yet human resource management only entered organisational parlance during the hiatus in the human resource accounting debate. Since the early 1980s, internationalisation of the global economy has accelerated, bringing with it an increase in labour market flexibility. In this environment of change, academia, business and trade unions have enthusiastically embraced the concept of human resource management (Beaumont, 1993).

Despite the observed difference in the development era of the two concepts, this thesis contends that their dependence upon each other is conceived in the seminal work of Likert (1967). Likert, a psychologist, is a pre-eminent researcher in the social sciences, particularly in relation to the management of organisations. The foundation of his research was that the success or failure of any organisation was predicated on the effectiveness of its human organisation. He advocated a science-based system of management, known as *System 4*, to harness the capabilities of the human resource. He expressed some concern, however, that any evaluation of organisational performance in this domain would be tainted by the inadequate and inaccurate information being supplied by the accounting system. Supported by R. Lee Brummett<sup>3</sup>, Likert advocated the use of human asset accounting to measure the present condition of the human organisation and the trends over time. This, he believed, would “help greatly in avoiding serious and costly mistakes in policy and operating decisions” (Likert, 1967, p.105).

The development years of human resource accounting and human resource management have certainly been different but both have reached a point where each must justify their usefulness or return to obscurity. Human resource management is not part of the inner circle of corporate management because, unlike other business functions, it is generally unable to measure its own performance in achieving organisational objectives. It must learn to speak the language of business<sup>4</sup> to avoid being considered superfluous to the overall management structure (Armstrong, 1995). It is here that human resource accounting is likely to find its *raison d'être*. Furthermore, if human resource accounting is embraced by the management accounting discipline, it is more likely to succeed because it will not be subjected to the regulatory framework that enshrines financial accounting (Caplan and Landekich, 1974).

The management accounting discipline has introduced several new concepts since human resource accounting was first mooted. One of the most widely accepted of these is the *balanced scorecard* (Kaplan and Norton, 1992). In viewing an organisation from four vital perspectives – financial perspective, customer perspective, internal process perspective and innovation and learning perspective - the balanced scorecard is intended to link short-term operational control to the long-

term vision and strategy of the organisation. In this way, the organisation focuses on a few critical key ratios in meaningful target areas. In other words, the organisation is forced to control and monitor day-to-day operations as they affect development tomorrow. The balanced scorecard concept is thus an element of a well developed system of strategic control and a response to the criticism levelled at traditional management control systems (Johnson and Kaplan, 1987). This criticism arises because today's environment is no longer the same as when the traditional systems emerged.

For most of the twentieth century, traditional management control systems have existed in an environment of mature products and stable technologies (Hally, 1994). Since World War II the environment has undergone massive technological change and most organisations have become larger and more complex. Sophisticated technologies and operational processes have led to new demands on organisational systems of management control. Financial measures showed the effects of decisions already taken but failed to provide adequate guidance for long-term strategic development (Kaplan and Norton, 1992). Many managements began to realise that, to be competitive, an organisation needed more complete reporting on the various aspects of its business. This was the nexus for the development of the balanced scorecard where an explicit vision and strategy underlie all four perspectives, and for each perspective, managements formulate strategic aims, measures, specific goals and action plans.

A continuous process, centred on the balanced scorecard, combines the four perspectives. In it, the role of the balanced scorecard is to highlight what should be the focal points of an organisation's efforts. Kaplan and Norton (1996) describe the process as a cycle. The vision is made explicit and shared. It is communicated in terms of goals and incentives. These are used to focus the work, allocate resources and set targets. Follow-up results in learning, which in turn leads managements to re-examine their vision. At every step, the balanced scorecard serves as the means of communication. In this way, the balanced scorecard concept adds a strategic dimension to management control.

This suggests it is the ideal medium through which an organisation may exploit any synergy that may exist between human resource accounting and human resource management. For, if either or both concepts are to avoid an inglorious demise they must move forward together by optimising the strengths of each and developing a synergy that exists in a mutually supportive relationship.

## **Philosophy of the approach**

As a prelude to describing the broad outline of this thesis, it is essential to provide an insight into the philosophical approach that will be taken. In the social sciences, particularly accounting, there are two principal research methodologies. First, normative accounting theory is concerned with providing ideas about what should be done. It provides options which reasonable people may evaluate prior to selecting the most appropriate for their particular circumstance. Second, positive accounting theory begins with existing alternative practices and evaluates them to provide practitioners with expected outcomes from each identified alternative (Watts and Zimmerman, 1986). Certain accounting paradigms, of which human resource accounting is one, have failed to enter the mainstream of accounting practice. When trying to confirm the possibility of the existence of a relationship between a modern management concept and these rejected paradigms, the second methodology is not relevant, despite Popper's (1972) belief that any attempt to support theory with applications exhibits positivist tendencies.

This style of thinking is at odds with the style – one that assumes every intelligible question has either a scientific<sup>5</sup> solution or no solution at all – that dominates the present era. There are many questions to which there are no scientific answers, not because they are deep, impenetrable mysteries, but simply because they are not scientific questions. They are all questions, in fact, that relate to the attempt to better understand the connectivity of things. They strive, Wittgenstein suggests, not for scientific truth but for conceptual clarity (Monk, 1999). That is the ideology of this research for it will attempt to establish what should be rather than reinforce what is. Indeed, it will propose an 'ought' because it is questionable whether currently there is anything to reinforce. With this in mind, it is accepted that a favourable 'ought' judgement will not in itself provide a reason for human resource management to use

human resource accounting alone as its *entrée* to the inner circle of corporate management (Schueler, 1995).

Normative accounting research<sup>6</sup> demands the application of deductive reasoning to argue the practical rationality of a developing concept. Untried concepts may be acceptable but will be considered inconsequential and therefore worthless unless they spawn useful, practical applications (Tinker and Puxty, 1995). A way of overcoming this and encouraging practical adoption, once the logic has been developed, is to verify the practicability of the underlying model thereby establishing credibility in the idea. Without credibility, an idea is only an opinion and not, according to the eminent philosopher, Socrates, knowledge. His basic tenet was that knowledge only exists if it is possible to provide a reason, something abiding that will withstand any reasonable challenge, for what we know (Hare, 1982).

### **Research methodology and direction**

It has already been suggested that, since this thesis is searching for ways to meet a contemporary organisational challenge, it will attempt to establish what should be rather than what is. The implication is that, currently, there are no appropriate ways to assess an organisation's ability to manage the talent and accumulated knowledge of its human resources effectively. In a situation such as this, it seems inappropriate to develop useful propositions for empirical testing for there are no benchmarks against which to test any proposition. What appears more urgent at this time is the development of a model that would enable management, and future researchers, to gain a greater understanding of how it may be possible to undertake this process.

An important aim of the research is, therefore, to develop a model and then consider its adequacy for assessing an organisation's ability to manage the talent and accumulated knowledge of its human resources. It is also the intention that this thesis should contain a rich description of the environment into which the model would be introduced. This is why a normative research methodology has been adopted, relying on subsequent fieldwork to verify the practicability of the model. It follows that surveys involving questionnaires, however detailed, are not the way to proceed and that the collection of data that could be subjected to statistical analysis is out of the

question. This approach is consistent with a more general acceptance of field-based research in the management accounting discipline<sup>7</sup>.

Information is needed for effective management of the human resources of an organisation. Accounting already provides much of the information used to underpin the majority of organisational control and reporting practices (Seal, 1993). This thesis proposes that human resource accounting should be the substantive provider of information in support of human resource management. The primary objective of this research is to test that hypothesis and determine whether these two management concepts have a future together.

To chart a way forward it is important to understand where we have been, if only to ensure we do not repeat the mistakes of the past. Chapters two to five focus on this purpose as a prelude to examining the opportunities and limitations of each link in the chain connecting human resource accounting with human resource management.

Chapter two reviews the initial development and subsequent stagnation of the concept of human resource accounting. It considers the myopic nature of a profession that has proffered a trilogy of reasons, or excuses if you prefer, to explain the lack of progress in the development of accounting for human resources.

Chapter three presents an historical review of the management of employees to observe changing practices over time and to consider what may be learnt from the past that will enable decision-makers to act with more humanity and effectiveness in the future. What is more, a clear understanding of the current role of the human resource management function will ensure that proposals for the future will provide a valuable contribution to the evolving organisations in our society.

Chapter four examines existing human resource information systems, with particular emphasis on how they are presently used and what may be expected of them in the future to fulfil the expectations outlined in the preceding chapter. The source of relevant data either within or outside the organisation will be established. The chapter concludes by identifying any gaps in the information system, particularly in relation to the provision of reliable data that may be used in appropriate measures of people management, and assessing whether a valid decision support system exists.

Chapter five considers accounting's role in the development and maintenance of the decision support system relevant to human resource management and the limitations of traditional accounting information in performing this role. The environmental changes forcing an expansion of the accounting discipline, and in particular the management accounting subset, into areas relating to the monitoring of management and business performance are then reviewed.

The remaining four chapters, from six to nine, look to the future. Chapter six will examine the practice of accounting, particularly management accounting, to see how it may be able to contribute to the improvement in the information and decision-making systems that shape human capital acquisition and utilisation. Contemporary developments in the management accounting field, such as the balanced scorecard, will be evaluated to determine whether or not they are able to provide an acceptable and useful decision support system for the management of human resources.

By reference to the positions elucidated in earlier chapters, a working model for human resource accounting in the next epoch will be developed in chapter seven. Apart from providing a mechanism by which managements may discharge their accountability obligations in respect of their human resources, the aim is to develop a model that will contribute to the creation and progress of a learning organisation. Data from a single organisation will be used to develop the model. This will determine whether it is possible to 'feed' the model with data existing in human resource information systems and, if not, what additional data may need to be included in that system or obtained in other ways.

The Socratic view, supported in the modern era by Wittgenstein (Edwards, 1967), is that if it is not possible to convert these propositions into credible practical applications they will remain inconsequential ideas and not develop new knowledge. To provide a legitimate addition to knowledge, the model developed in chapter seven will be tested in several organisations that are significantly dependent on their human resources for acquiring a strategic competitive advantage.

In chapter eight, data gathered in the field will be used to prepare a 'live' presentation of the human resource accounting model developed in the previous chapter. In research of this nature the validity of the data will inevitably be subject to question. It

is intended that the source of data for these presentations will be the same as that used for other management and external reports. Innes and Mitchell (1990) suggest that this will enhance the validity of the data collected and strengthen the validity of any subsequent analysis. The outcomes will be discussed with line managers, accountants and human resource managers in each of the organisations to determine whether the proposed human resource accounting model would influence, in any way, the decision making process in their organisations. A positive outcome from these field studies will assist human resource managements in their quest for a louder voice in the strategic decision-making process within organisations and establish human resource accounting to be a wisdom rather than a whim.

Assuming an effective model for human resource accounting, particularly in support of human resource management, that is useful in today's organisations can be established, the penultimate step in the research will be to contemplate the form and nature of organisations in the future. With the formulation of an idea about the future, a proactive approach will be taken in chapter nine to outlining the expected changes in the profession of human resource management and remodelling, if necessary, the human resource accounting proposals developed for the present to accommodate the new order.

### **Expected outcomes**

A central proposition to this thesis is that, as separate and distinct concepts, human resource accounting and human resource management will wither and fade into obscurity but together they could form a propitious partnership that would provide management strength to any organisation. Indeed, the intention of this thesis is to propose and evaluate a rigorous, but flexible, human resource accounting model that focuses on the measuring and internal reporting of the performance and management of human resources. The development of such an innovative and, perhaps, controversial system for assessing performance and providing accountability for the stewardship of employee talent and accumulated knowledge is intended to resuscitate academic and practitioner interest in human resource accounting. The ultimate objective of this thesis is to act as a catalyst in the development of an acceptable methodology for use in the provision, to all stakeholders of an organisation, of

decision-useful information regarding the management and utilisation of the human resource.

## Notes

- <sup>1</sup> Ausschuss für Wirtschaftliche Verwaltung Seminar: Das Human Kapital der Unternehmen, Bonn (17-19 September 1974): Human Resource Accounting Seminar, European Institute for Advanced Studies in Management, Brussels (28-29 November 1974).
- <sup>2</sup> There are a number of specific events that come to mind which evidence an increased theoretical and practical interest in accounting for human resources. First, the Organisation for Economic Co-operation and Development (1996) published a report of the findings of an investigation into the investment nature of further education and training. In this report they encouraged further research into the development of new measurement and accounting practices intended to reveal and recognise the stocks and flows of human capital. Second, the production by several Swedish public companies of a separate report on the human capital in their organisations. Third, the Personnel Economics Institute at Stockholm University commenced publication of the *Journal of Human Resource Costing and Accounting* in 1996 and fourth, at the 20th European Accounting Congress held in Graz, Austria (23-26 April 1997) there was a symposium specifically addressing issues relating to the accounting for human resources.
- <sup>3</sup> In the preface of *The human organization: its management and value*, Likert acknowledges the advice on accounting matters received from Brummett.
- <sup>4</sup> Accounting is often referred to as 'the language of business'. This is an appropriate description because accounting plays an important role within organisations. The output from an organisation's accounting system, particularly internal management and external financial reports, form the basis on which the performance of that organisation is communicated and judged.
- <sup>5</sup> In this context scientific means the construction and testing of hypotheses.
- <sup>6</sup> See, for example, Edwards and Bell (1961), Chambers (1966) and Sterling (1970).
- <sup>7</sup> The editors of *Management Accounting Research* (1990, p.3) "encourage the innovative use of case studies and fieldwork in management accounting research ... [papers] might, for instance, use existing theories to explain/understand a particular case; or use fieldwork to develop new theoretical propositions or to demonstrate the application/limitation of a particular theory".

Chapter

# 2

## *The development of human resource accounting*

But rebellion, in man, is the refusal to be treated as an object and to be reduced to simple historical terms. It is the affirmation of nature common to all men, which eludes the world of power.

*Albert Camus*  
The Rebel  
1971, p. 216

### **Introduction**

One of the uses of accounting information is to support decision-making either by managers or investors. The concept of human resource accounting provides a foundation for enhancing the usefulness of existing financial information either to managers in their effort to “manage human resources effectively and efficiently” (Flamholtz, 1985, p.18) or to investors who “evaluate management as part of their decision-making process” (Sackmann *et al.*, 1989, p.236). Human resource accounting may be thought of as the process of identifying, measuring and communicating the information necessary to quantify the effects of human resource management strategies<sup>1</sup> on the cost and value of people as organisational resources. In so doing, it will help management identify and evaluate human resource attributes that will underpin the sustainable development of an organisation. Planning the use of an organisation’s intellectual and manual abilities will make a significant contribution to the organisation’s sustainability - a contribution that is in the best interests of all the organisation’s stakeholders.

Conceived in the early 1960s, the development of this concept has been hampered by three issues: the trilogy of excuses. First, most organisations are reluctant to account publicly for the management of their employees (Mirvis and Lawler, 1983). Second, there is a widely held view that human resources could not possibly be assets because they are not owned by the organisation as are other assets (Newell, 1972). Third, the accounting profession seems unable to determine an acceptable methodology for calculating an objective and meaningful value of the human resource (Ferguson and Berger, 1985).

This chapter reviews the history of accounting for human resources and provides support for the continuing development and adoption of the paradigm. Along the way the excuses of an earlier era are examined and ideas put forward that, with further evolution, may legitimise human resource accounting in the next epoch.

### **Accounting for human resources**

Accounting for human resources is not a modern day phenomenon. For example, in the fifteenth century ownership of slaves was recorded in the ledgers of traders (Pergallo, 1981). In this instance, the humans - in the form of slaves - were part of the owner's trading stock and their value was included in the balance sheet as were all other commodities that were for sale.

Of more relevance to the current debate is the evidence that the value of humans, still in the form of slaves although not necessarily for sale, was included in statements of wealth of their owners. Roman accounting recorded the ownership of slaves (Glautier and Underdown, 1973) and more than one hundred years ago in the United States of America "pre civil war accounting records reveal an account entitled 'Negroes, Carts, Mules, etc'" (Flesher and Flesher, 1980, p.124). In both eras slavery abounded and most business organisations really did own humans who were, in organisational terms, rightly classified as long term or non-current assets. These examples are more akin to the present conundrum where researchers are evaluating the need to account for human resources that are part of the total resource pool available to generate organisational wealth.

With the abandonment of legal slavery, the concept of accounting for human resources became moribund until Rensis Likert, the psychologist, insisted that managers were able to deceive owners about the true income of their enterprise by purging human assets. Indeed, it was his view that “omitting 50 to 75 percent of the income producing assets from the balance sheet encourages decisions which yield spurious short range gains at substantial long range costs” (Likert, 1967, p.103). He expounded the need for organisations to treat investments in human resources as an asset that pays dividends over a period of time.

The concept of human resource accounting is deeply rooted in the history of economic thought. Economists who have explored the notion of human capital<sup>2</sup> include Petty (1691), Farr (1853), Engel (1883), Walras (1872) and Fisher (1897)<sup>3</sup>. Most of the proposed measurement methods that emerged may be classified into two categories: *cost-of-production* and *capitalised earnings*. The earliest known, truly scientific approach to placing a money value on humans was developed by William Farr. By calculating the present value of an individual’s net future earnings, Farr would determine a capital value and planned to tax the individual on that value thereby substituting a form of property tax for income tax. Engel adopted a cost-of-production approach for placing a value on human beings. He applied a method similar to the contemporary replacement cost valuation methodology by stating that the cost of training an individual to their present state of expertise was the value of an individual to society (Engel, 1883). In all instances, the economists were concerned with the value of an individual to the individual, and consequently society in general, rather than the value of an individual to his or her employer.

Much of the contemporary research in the field of human resource accounting has followed the two paths established in the last century. Attempts to apply the cost-of-production approach have resulted in the development of a number of different concepts and measurement models<sup>4</sup>. While a number of researchers have been directing their efforts toward the development of measurement concepts, others have concentrated their investigations into the determinants of the value of human resources to an organisation. Not surprisingly, this group has also proposed a number of alternatives<sup>5</sup>.

There is no question the current interest in human resource accounting represents the rebirth of a long and frequently dormant debate rather than a contemporary issue. As we move through the 1990s toward the third millennium, what factors are there that will enable the debate surrounding human resource accounting to resurge, thrive and produce positive, practical applications? Hermanson, Ivancevich and Hermanson (1992) believe the continuing resistance to the recognition of human resources as assets is largely due to the two factors put forward by those who argued against the concept two or more decades ago. First, human resources are not owned by an organisation as are other assets and, second, it is difficult to place a value on the human resources of an organisation at any given point in time. These old arguments continue to provide excuses for the conservative accounting profession to pretend there is no legitimacy in any proposal to account for human resources.

Recognition of human resources as an asset in a traditional accounting statement of financial position remains an unattainable dream because of the difficulty in satisfying the definition and recognition criteria of an asset contained in accounting standards. Finding a way to provide a report, even if it is just within an organisation, on the performance and management of human resources remains the key to a wider acceptance of the concept of human resource accounting. This presupposes a suitable methodology may be established to determine the value of an organisation's human resources at any given point in time. Such a model needs to be developed, subjected to scrutiny, not only in the profession but also in the wider community, and accepted by them before it may be considered that the concept of human resource accounting is a truly useful paradigm.

While there will be ongoing difficulties in gaining acceptance within the accounting profession, the most intense communal enemy of the debate is morality. The issue that matters most and the issue that may ultimately determine the fate of human resource accounting is the one so eloquently advocated in the opening quotation by Albert Camus - the dignity of labour. Human resource accounting is viewed as a way of publicly treating human beings "on the same level as the whole complex of the material means of production, as an instrument and not in accordance with the true dignity of his work"<sup>6</sup>. If this view continues then, even though the professional difficulties may be overcome, human resource accounting will be restricted to

management accounting uses and internal performance reporting (Spiceland and Zaunbrecher, 1976).

Proponents of human resource accounting, especially Hekimian and Jones (1967), Brummett (1970), Pyle (1970), Wright (1970) and Flamholtz (1971), have embraced the almost universal acceptance that human resources are an asset to the beneficiary of the resource and believe that accounting should find a way to incorporate that asset in financial information provided to users. Economists have also long recognised that the most valuable asset of a country is its human capital<sup>7</sup> (Roll, 1995). In one microcosm of this environment, the business enterprise, chief executives continue to profess in their annual reports that an organisation's employees are their greatest assets and that they could not afford to lose that skill base because people "were all we had"<sup>8</sup>. Even Nicholls (1975), in his critique of human asset accounting, acknowledged the most valuable assets of an organisation are its people. Without them, he believed, there was no organisation.

A number of studies have established that all users of financial information would gain some benefit from an accounting for human resources (Unruh and Mathews, 1992). In summary human resource accounting is intended to provide:

- methods of measuring costs and effectiveness of human resource policies
- information about the cost and value of personnel to an enterprise
- information facilitating corporate social accountability
- information for investors about an enterprise's human assets

If accounting for human resources is considered by so many to be a beneficial and necessary process, are there further reasons, in addition to the excuses already alluded to, that are hindering its introduction into mainstream accounting? One might conclude, although there appears to be very little evidence to support this, the lack of progress is due to proponents of human resource accounting being a minority in the accounting profession. Certainly there are many, such as Newell (1972), Jauch and Skigen (1974), Nicholls (1975) and Mee (1982) who are clearly opposed to its introduction and they support their position with the second and third excuses.

Unquestionably, if accounting for human resources is to be universally accepted, the excuses or myths of the past must be exorcised and a framework provided to deliver the identified benefits not only in an efficient and effective manner but also in a manner acceptable to employees. Once the viability of the concept has been demonstrated, recognition and subsequent acceptance of the paradigm will only be achieved if it supports the “management of scarce human resources in the post-industrial age” (Roslender and Dyson, 1992, p.327). Human resource accounting will then be confirmed as a wisdom rather than a whim.

### **The first excuse**

Managements' reluctance to account publicly for their actions represented one of the more distasteful practices that emerged when individualism, free enterprise and technological anarchy permeated the business environment of the 1970s and 1980s. During this time, the corporate elites in Western style market based economies sat on top of mighty agglomerations of irresponsible power. They were able to grab an unfair share of the productivity gains demanded from their employees because they did not consider themselves under any obligation to respect the claims of others with stakes in the organisations they controlled (Perkin, 1996). If they continue to behave this way, those over-rewarded and socially irresponsible corporate elites will sacrifice the future to the present.

Ostensibly society in the 1990s, in an attempt to stem the tide, is determined that organisations encompass ethical business practices in their daily activities by emphasising relationships within and about the organisation as much as the size of profit margins. Practices that a decade or so ago would have been regarded as unquestionable are now subject to much greater scrutiny. This metamorphosis does, however, require more than paying lip-service to the organisation's responsibilities to all its stakeholders - *inter alia* the community in which it operates, its employees, its customers and its shareholders and financial backers. It requires management to serve, in the widest sense, the society of which its organisation is a part.

Specifically addressing human resource professionals, Schuler and Huber (1993) insist that managers must never overlook the importance of the personal interests,

welfare and dignity of employees and maintain a high regard and respect for the public interest. In adopting this 'respect for individuals' as the basis of their policies, organisations may prove to be ethical in their relationships with stakeholders. They will also demonstrate acceptance of the notion of 'public interest' that may be defined as social responsibility or accountability on the part of organisations towards society or the community at large. This will be amplified only by organisations that communicate with their different stakeholders responsibly, accurately and effectively. By ensuring that their stakeholders are informed on all relevant matters concerning the organisation's present and future policies and operations, management will enhance its reputation and build confidence and trust in its organisation. While some believe such a change to be purely illusory (Macken, 1992), others are convinced that if managements fail to exercise social responsibility in the reporting of their performance, their organisations will suffer in the longer term (Jones, 1995).

Assuming the latter philosophy to be true, the advancement of human resource accounting is reliant upon organisations embracing the concept, developing a relevant measurement methodology and communicating the relevant information to their stakeholders. Even though there are several examples of public reporting by organisations on their management of human resources<sup>9</sup>, Western style, market based economies currently do not have a popular benchmark for human resource accounting that organisations may adapt for their own use. A proactive approach by the public sector and a few influential organisations to the establishment of useful and reliable reporting benchmarks may encourage others to follow if they wish to be perceived as socially responsible organisations.

### **The second excuse**

Considering the degree of academic support for human resource accounting throughout the 1960s and 1970s, it is pertinent to examine why the development and integration of this concept into mainstream accounting theory and practice has progressed at something less than a snail's pace.

During and since those decades, the accounting profession embarked on the extensive development of accounting standards and statements of accounting concepts<sup>10</sup>. These regulations are designed to cover five kinds of requirements: scope, definition, presentation, disclosure and measurement. The last two of these directly address the issue of public accountability and are particularly relevant to establishing the legitimacy of human resource accounting. The outcome is a significant increase in the amount of financial data made available to users. In true political fashion, the stronger the lobby group, the more likely a new concept would be successfully introduced. The human resource accounting lobby, if it ever existed, was fragmented and therefore not strong enough to elevate the status of the paradigm<sup>11</sup>.

During the era of the initial debate on human resource accounting, assets were defined as “property rights owned by the business” (Alford, 1940, p.171). Jauch and Skigen (1974), and other writers who were critical of human resource accounting, rejected the paradigm primarily on the basis that humans were no longer owned by the organisation and therefore did not qualify as assets. This is taking a rather narrow view of 'property rights'. Indeed, in the late nineteenth century, American courts extended the meaning of property rights to include not only “the use-value of physical things” but also the “exchange-values of anything” (Commons, 1924, p.21). This extension was used extensively at the time and through the first half of the twentieth century to protect workers and their rights to perform those tasks as outlined in their terms of employment (Gramm, 1981). This connection has not been recognised in accounting practice. While some researchers have acknowledged the need for assets to possess the property of exchangeability (MacNeal, 1939; Chambers, 1966), accountants have generally considered people, in the shape of the physical being, to be the human resource asset rather than looking deeper to understand the nature of the good being exchanged.

Morality aside, no proponent of the paradigm would suggest that employees are owned by an organisation. A practical view, however, is that employees, through their contract of employment - where the common law principles of contract law apply - provide, in addition to their time and cooperation, their specific intellectual and manual abilities to an organisation in exchange for remuneration in either cash or kind. This constitutes the granting by the employee of property rights over those

particular abilities to the organisation for which they are currently working<sup>12</sup>. While it may be too presumptive to suggest this alone negates the arguments of those opposed to human resource accounting on the basis of ownership, it certainly blunts them.

Contemporary thought, as evidenced by the definition of assets contained in clause 49 of the *Framework for the Preparation and Presentation of Financial Statements* (the Framework) issued by the International Accounting Standards Committee, suggests that, as long as human resources are capable of providing future economic benefits to an organisation, they qualify to be treated as assets. This clause requires the resource to be controlled by an organisation thereby providing an avenue for disputing the rationale for including human resources as an asset on the basis that people are not controlled by their employer. That is not the essence of the debate for it is not people, *per se*, that are an asset to an organisation but their particular intellectual and manual abilities that are required by the organisation. Contracts of employment, whether specific or implied, uphold the view held by Gröjer and Johanson (1991) that, while employees are at work and being reimbursed for their efforts, these abilities do belong to the organisation. It is these abilities that have the “potential to contribute, directly or indirectly, to the flow of cash and cash equivalents to the enterprise” (IASC Framework: clause 53). This is an issue which, depending on one’s social and political persuasion, could be debated at length. Ultimately, it will be an issue of substance over form that Parker, Ferris and Otley (1989) suggest is indisputable and the Framework (clause 35) insists should prevail.

The Framework also provides other reasons why it is appropriate to include a value for human resources in the statement of financial position of an organisation. Clause 12 of the Framework requires financial statements to “provide information about the financial position, performance and changes in financial position of an enterprise that is useful to a wide range of users in making economic decisions”. Inclusion of the capital value of human resources as an asset will enable interested users to decide whether or not an organisation has generated an acceptable return on the total value of assets engaged in the operations of the organisation. By showing the changes in the value of human resources from one accounting period to another, financial statements will also meet the requirements of clause 14 of the Framework, that is,

“to assess the stewardship or accountability of management”, particularly in relation to all the resources entrusted to it.

The inclusion of the value of these abilities as an asset is not without precedent in the modern accounting literature. IAS17 - Accounting for leases - requires physical assets attracting all the rewards and risks of ownership but not legally owned by an organisation to be included in their financial statements. It is argued that, unless they are included, the financial statements will not truly reflect all the economic resources available to an organisation and all the outstanding obligations of that organisation. Exclusion of both the asset and liability will distort financial performance and position information and devalue the usefulness of an organisation’s financial statements. Surely a similar argument may be applied to the debate on accounting for human resources. It is Covey’s (1990) view that managers will continue to make uninformed decisions until such time as an organisation’s information system accounts for all available resources, including the abilities of employees.

There are two other clauses in the Framework that may temper any enthusiasm for rushing to include a value for the human resource in an organisation’s balance sheet. Clauses 26 (Relevance) and 83 (Recognition) must also be considered. First, the issue of relevance requires that inclusion of an asset must influence the economic decisions of users or, at the very least, cause them to re-evaluate a past decision. Second, having established that human resource assets provide future economic benefits to the organisation, recognition requires the value of the asset be established with reliability before it may be included in the financial statements.

In addressing the first of these issues it is recognised that, in the post-industrial age, the value of the human resource asset would, in many instances, be significant in relation to the value of total assets. Stewart (1994) has already indicated that financial analysts and investors consider this information relevant and a key component in their decision making process. However, past experiences make them wary of being duped by socially irresponsible corporate elites and therefore they consider it important to pursue the development of clear reporting standards for human resource accounting. While the current conceptual framework and existing

accounting standards appear to accommodate the concept as it currently stands, there are other contentious issues that must be resolved.

This approach alienated many because it created a “widespread erroneous impression that human resource accounting was concerned only with treating people as financial objects” (Flamholtz, 1985, p.2). The moral dilemma created by this impression<sup>13</sup> has continued to restrict the development of an acceptable framework to account for the human element in an organisation.

The renaissance of human resource accounting attempts to rebut this impression and provide a suitable model for use in a business environment that is at the dawn of a new era; the post-industrial age. The dynamics of change associated with this new era will produce a state of affairs where organisations will consider themselves a “collection of evolving capabilities” (Hayes and Pisano, 1994, p.86) and realise that one of the paths to sustainability is through investment in human resources (Ozaki, 1992). This will subject the management of human resources to greater scrutiny from both within and without the organisation. It is the predicament created by the second issue that underlies the third excuse.

### **The third excuse**

Much of the development of human resource accounting in the 1960s and 1970s focused on the inclusion of a value for the organisation’s human resources in the balance sheet (Hermanson, 1964). Support for this objective is provided by clause 100 of the Framework that allows for assets to be measured using one of historical cost, current cost, realisable value or present value.

Use of historical cost is generally perceived to be the most appropriate of the four methods. It is, according to Cascio (1991), objective, directly comparable with the accounting treatment of most other assets and allows for the fair allocation of costs incurred over the useful life of the asset. It does not, however, recognise the value of the human resource to the organisation; it only measures historical costs incurred in acquiring and developing the abilities of employees.

Each of the other three potential recording methods requires a degree of subjectivity which, according to Gray, Owen and Maunders (1987), will continue to limit the

opportunity to incorporate human resources in the financial statements of an organisation. Current cost does little more than update historic cost to its present day equivalent and hence also fails to recognise the value of the resource. Realisable value is not a viable method of measuring the human resource asset in most organisations because the human resource cannot be sold as a separable commodity<sup>14</sup> and therefore has no realisable value. This leaves the present value option as the only plausible alternative to consider if an acceptable way of calculating a reliable value attributable to the human resource asset is to be established.

A number of the proposed measurement models suggest a valuation method using the present value of future wages and salaries. While this is reasonably objective in that it is intended to use actual wages and salaries paid as the numerator for discounting purposes, there remains a degree of subjectivity in the calculation depending on the discount rate used. Lev and Schwartz (1971) recommended the use of an organisation's cost of capital. This seems reasonable since it represents the opportunity cost of the organisation's resources. The major defect in their model is the use of employee earnings as a basis for determining the value of the human resource asset. By discounting employee earnings, the value of the asset would be the same as the present value of expected future cost and, if the latter were also taken into consideration, the outcome would be a zero net value attributable to the human resource (Baker, 1974).

In the development of a socially responsible financial reporting system where human resources are recognised as an asset, the expected future outgoings must also be considered. These take the form of employee salaries and benefits and the costs associated with the normal turnover of staff, and their potential recognition as a liability in the balance sheet of an organisation.

IAS17 has been offered as a precedent for the inclusion of an appropriate asset and should now be examined to understand its position on the recognition of any liabilities. Clause 6 of the standard explicitly recognises the existence of an obligation when acquiring economic benefits from the asset. When considered in tandem with clause 60 of the Framework, it is probable that the outgoings have the essential characteristics of a liability. Clarity is obtained by examining clause 49 of

the Framework that defines a liability as “a present obligation of the enterprise arising from past events, the settlement of which is expected to result in an outflow from the enterprise of resources embodying economic benefits”.

A liability exists - the only question remaining is when to recognise it in the statement of financial position. This is answered by clause 91 of the Framework that requires a liability to be recognised “when it is probable that an outflow of resources embodying economic benefits will result from the settlement of a present obligation and the amount at which the settlement will take place can be measured reliably”.

For employee salaries and benefits there is an obligation arising from past events, the hiring of the employees, that will be satisfied by an outflow of resources in the form of cash. Therefore a recognisable liability exists. The position is not so clear when considering the costs associated with the normal turnover of staff. For the organisation, a charge will only be incurred when employees terminate their employment. In other words, it is a future rather than a past event.

Based on experience, however, employers expect a turnover of staff on a more or less regular basis. Cascio (1994) asserts that people work for an average of seven organisations during their working life of approximately 45 years (age 18 to age 63). This equates to an average period of employment for all employees of 6.4 years or an annual turnover rate of 15.6%. Cultural behaviour, management practices and general economic events will cause this generalisation to be different from country to country and from organisation to organisation. Given the degree of certainty attached to a regular turnover of staff and adopting the doctrine of conservatism, it seems appropriate to recognise turnover costs as a present obligation. Gröjer and Johanson (1991) have identified sixteen points, highlighted in figure 2.1, to be considered when establishing the cost of staff turnover. Their applicability and cost will be individual to any organisation but the establishment of a relevant standard cost for staff turnover will enable this obligation to be recognised in the statement of financial position.

Financial statements are normally prepared on a 'going concern' basis. This presumes the organisation has “neither the intention nor the need to liquidate or curtail materially the scale of its operations” (Framework, clause 23). In short, an

organisation expects to continue to employ essentially the same workforce in the foreseeable future. Under these circumstances, it is worth comparing accounting for human resources to Newton's Third Law of Motion: "To every action there is an equal and opposite reaction". Put simply, if the wealth-creating asset is to be recognised in the statement of financial position, the liability associated with the continuing commitment to maintaining that asset must also be recognised.

*Figure 2.1: Elements considered in determining the cost of staff turnover*

- 
1. An employee gives notice of leaving an employment (termination costs)
  2. Discussions about replacement: personnel officer and manager, manager and senior manager, senior manager and divisional manager, trade union representative
  3. Recruitment order from manager to personnel officer
  4. Personnel officer draws up press advertisement; advertisement in "Appointments Vacant"; external advertisement; conversations about advertisement
  5. Administration of applications received
  6. Selection of interviewees, checking references
  7. Interviews with applicants (including expenses)
  8. Selection process (test)
  9. Offer of appointment
  10. Appointment; entry of data into computer; photographing; removal expenses
  11. Rejection letters to other applicants
  12. Arrangements of place of work
  13. Introduction to work and place of work
  14. Introduction to division
  15. Follow-up
  16. Acclimatization
- 

*Source:* Gröjer & Johanson 1991, pp. 42-43

It is necessary to continue the dialogue on human resource accounting for even the inclusion of an asset and liability of equal value in the balance sheet of an organisation will not only alter certain performance measures but also provide a way of recognising employees as stakeholders with an investment in the organisation. The inclusion of this information in a balance sheet acknowledges that the human resources made available to an organisation are invested by their owners, the employees, in exactly the same way as shareholders and lenders invest their financial resources. Consequently, they should also be entitled to share in any surplus

generated by the organisation in excess of an acceptable return on equity and debt capital.

### **The role of accounting**

An organisation's day-to-day activities are structured in such a way as to facilitate their strategic objectives. It has long been the domain of accountants to measure actual performance relative to those objectives. However, the accounting orientation is often considered 'static' as it relies heavily on formal financial systems comprised of reports generated by rigid rules. The use of accounting information prepared in this way for performance measurement fails to recognise that each organisation, and indeed each business unit within an organisation, may follow quite different strategies. Given this situation, it seems inconceivable that the use of standard financial reporting is appropriate across a wide range of organisations. Despite this, accounting remains the principal resource available to express, usually in monetary terms, the achievement of, or failure to attain, strategic objectives (Jones, 1995). It is the dominant medium of organisational information and, as a consequence, what it does, and indeed does not, report is of crucial importance particularly since, as Hines (1988, p.257) put it, "[accountants] create a picture of an organisation...and on the basis of that picture...people think and act".

Before a suitable role in the assessment of human resource performance can be established for accounting, it is essential to understand the nature of accounting practice and its use to society. The evolution of accounting practice has been dominated by the need for continuous improvement of financial reporting practices (Littleton, 1966), generally for external audiences. Although Kaplan (1982, p.1) once claimed that "management accounting is a relatively recent phenomenon, especially when compared to the long historical development of financial reporting for external parties such as owners, creditors, regulators and tax authorities", it is the discipline within the profession that has proven to be more flexible and adaptable to change. Even so, in many organisations the dominant features of their accounting process continue to be the procedures and cycle of the financial reporting system (Johnson and Kaplan, 1987; Drury *et. al.*, 1993). Management accounting should not be a meek reflection of financial accounting. Being subject to no laws or standards<sup>15</sup>,

management accounting is capable of adopting different procedures and methods from financial accounting. It is, therefore, more likely to accommodate the requirements of accounting for human resources.

Despite a continuing broadening in the dimension of modern accounting, particularly in the management accounting discipline, a major component of its base remains the double-entry bookkeeping system developed in Italy at the time of the Renaissance (Littleton, 1966). In light of the significant societal and industrial changes that have taken place since then, it is not surprising that there were some who advocated the urgent introduction of innovation into accounting (Kaplan, 1986; Primrose, 1991) and set about putting their new ideas into practice. Since Western societies are not renowned for a consensual approach, there will always be others who are quite firm in their belief that “no radical reforms are recommended at this stage” (Bromwich and Bhimani, 1989, p.3). Much of the progress and development of accounting has been dominated by practitioners amongst those ascribing to the latter school of thought. Within this cohort there are some who, more often than not, view accounting as a factual and objective form of knowledge untainted by social values or ideology. This collection of professionals is imprisoned in a technical approach that leaves non-accountants floundering in the mystique of technicality and jargon (Jones, 1995) and believing accountants to be a unique form of modern day *brujo*.

It has been argued that accounting, even in its present form, is capable of addressing the issue of human resource accounting. Despite this, there is a degree of support for a completely fresh approach by moving away from the traditional<sup>16</sup> to a more integrated approach. This alternative approach discounts “the narrow economic-accounting emphasis of previous efforts to a more holistic approach which embraces a broader range of social scientific thinking” (Roslender and Dyson, 1992, p.312). But is this far enough? There is certainly more genuine support among decision makers in organisations and the accounting profession for changing reporting practices although the way ahead is fraught with difficulties both from outside and within the profession (Jones, 1995).

Practically every writer on management argues that measurement is critical to the success of organisations (Fitz-Enz, 1995). Without measurement, managers are

unable to exercise control<sup>17</sup> because their attention is not focused on the appropriate facts (Cherns, 1978). In the post-industrial age these facts are generally associated with managing change and, as intellectual capital continues to overtake physical capital as the key asset of an organisation, this task is quintessentially about people. With the evolution of the networked organisation, there will be a need to convert the human resource base from the old 'white-collar/blue-collar' model to a new model founded on knowledge workers (Elliott, 1992). This will require a greater focus on the integration of the complex dimension of human resources into conventional models of business performance. Mee (1982) argues that the accounting system, as the source of many current key indicators of business performance, should provide the information required for these new human resources performance measures.

Even though some think it unnecessary (Myddelton, 1995) and others an unrealistic task (Tsay, 1977), it is important accountants continue to work towards the development of a relevant and reliable measurement methodology for human resource accounting. Users of accounting information would prefer the evolution of a universal method of measurement as it would deter the reopening of the creative accounting floodgates. With this in mind, it must be remembered that the accounting system, particularly in the financial accounting discipline, has evolved and grown in all directions like a 'poison ivy' in its attempt to satisfy, in a unique way, all the users of the information it generates. It is time to prune the unwieldy growth and forge an accounting system particularly suited to the post-industrial age. It is time to expunge society's over-reliance on traditional financial information and create an information system that has its foundation in the measurement of the value created by an organisation for its stakeholders rather than on revenue earned and costs incurred. This new system should focus on measuring the rate of change in organisational resources and develop disclosure criteria which, while continuing to be useful for stakeholder decision-making, are not entirely based on quantifiable factors, either financial or statistical, and provide relevant information in a more inclusive, socially responsible way.

## **Pathways to the future**

Organisations survive and prosper because they have a sustainable competitive advantage. Indeed, many organisations are relying more heavily on information and decision-making systems to improve their acquisition and use of resources to achieve that competitive advantage (OECD, 1996). These systems must provide a range of performance indicators, both financial and non-financial, relative to an organisation's particular form of output and its chosen strategy for gaining and retaining a competitive advantage (Peters and Waterman, 1982). Historically, performance indicators fall into conceptually different categories. There are those that examine the 'ends' or 'results' of a particular objective and others that measure management of the 'means' or 'determinants' to competitive success. The mix of factors used to gain a competitive advantage will vary, often significantly, among organisations. As a consequence, while indicators of 'results' may be similar, those of 'determinants' almost certainly will not which makes it impossible to design a completely generic system for measuring the performance of an organisation's human resources. What may be done, however, is to develop a coherent and comprehensive framework for collecting and analysing a broad range of data on the human resources of an organisation. This framework should not be confined to the human resources function but integrate completely with the physical and financial operations of an organisation in a unified whole.

The need for the development of key performance indicators in the management of human resources is indisputable. The outstanding question, what are they, remains to be answered and "should begin with an investigation on the decision making frameworks [they] inform" (Roslender and Dyson, 1992, p.319). Fitz-enz (1995, p.261-263) suggests there are five key underlying principles that should form the basis of developing a measurement system relating to an organisation's human resources. First, the productivity and effectiveness of any function can be measured by some combination of cost, time, quantity, quality or human reaction indices. Second, a measurement system promotes productivity by focusing attention on the important issues, tasks and objectives. Third, performance should be measured at both individual and team levels. Fourth, managers must be measured by the

efficiency and effectiveness of the units they manage, and fifth, the ultimate measurement is not efficiency, but effectiveness. The last of these is probably the most important in so far as it should ensure that all the resources of an organisation, i.e. human, physical and financial, are directed toward achieving its strategic objectives.

To develop unique measurement criteria, Gröjer and Johanson (1991) suggested the use of 'added value'. In calculating added value<sup>18</sup>, the accounting profession is able to show how wealth has been created by the operations of an organisation and how that wealth has been allocated. Wealth is created by an organisation as a result of the collective efforts of capital, employees and management. Some may be of the opinion that this 'collective' view will negate the use of this measure in determining the value of the human resource. This opinion could only be based on a perceived need to apportion the value added between physical capital and human resources. Even in this highly technological, post-industrial age, it is difficult to support that position. Human input, either intellectual or manual is necessary for any organisation to function and, as a consequence, generate wealth - a view supported by Nicholls (1975).

The primary aim of human resource accounting must be to develop ways that measure, evaluate and report on changes in processes, outcomes and value added as a result of the management of human resources. Ultimately the sustainability of an organisation lies in its ability to add value. This may be best achieved by reference to what Porter (1985) has called the 'value chain'. If this measurement system is created by referring to the simple *input*  $\Rightarrow$  *process*  $\Rightarrow$  *output* model, users of the information will better understand and appreciate the contribution of human resources to the overall success of the organisation. The ultimate goal is to develop a foundation set of generic key performance indicators, some of which are financial in nature, for use in the assessment of human resource performance, evaluation of human resource management and achievement of organisational objectives.

In general, there must be minimal use of the more traditional accounting measures of performance, such as profit, residual income and return on investment. This is not only because of a perception that these measures are of questionable accuracy over

short periods of time but also because the concepts of profit and investment are particularly emotive in employer/employee relationships. Added value, besides being an important factor in the success of an organisation, is a more realistic measure because it represents the true net output of an organisation<sup>19</sup>.

The added value is the only sum of money available for running an organisation. It represents the fund from which the human resources must be paid and the other stakeholders serviced. As such, it represents one of the better measures of an organisation's output for three reasons. First, the sustainability of an organisation depends to a large extent on how successfully the human and capital resources are utilised to produce added value. Second, it is the best available financial measure of work performed within an organisation because it excludes all bought-in materials and services. Third, the added value concept neutralises the distinction between labour and capital by focusing on the collective creation of wealth and its distribution between the participants. It must, therefore, be the key financial measure contained in the human resource performance indicators developed by organisations.

Despite the very obvious failure to develop an appropriate financial reporting system, some progress has been made in the development of performance indicators. Several organisations have developed performance indicators<sup>20</sup> for human resource management that are capable of being used in most organisations. These performance indicators are generally grouped under six major headings: organisational effectiveness, absence and turnover, recruitment and wastage, training and development, occupational health and safety and industrial relations. Most of these performance indicators, which may be supplemented with others to suit specific organisational requirements, tend to be operational in nature. While these are better than nothing, what are really needed are other key performance indicators that are more closely aligned to strategy rather than operations. These organisation specific key performance indicators will need to cover the three dimensions of productivity, process and people (Ulrich, 1997).

These key performance indicators, which must be capable of highlighting the efficiency and effectiveness of an organisation's human resources, will best be established by those who have an intimate knowledge of the organisation,

particularly its strategic objectives and the plans developed to achieve those objectives.

## **Conclusion**

Beaver (1981) believes that frequent additional reporting requirements and continuing changes to existing requirements will be a permanent feature of the future financial reporting environment. Indeed, the number of new accounting standards issued in the last twenty years and the International Accounting Standard Committee's current work program<sup>21</sup> are evidence of this. There will be a greater emphasis placed on disclosure, the complexity of these disclosures will increase and changes to financial reporting will enhance existing or provide additional decision-useful information. Accounting for human resources can only be part of these changes if the information generated actually becomes part of the incentives and disincentives that motivate decision making in organisations and the labour and capital markets (OECD, 1996).

Human resources make a significant contribution to the success or failure of an organisation in achieving its strategic objectives, not only in the manner in which they carry out their activities but also in their attitude to the organisation itself. The importance of the contribution of an organisation's human resources must be considered when developing strategic objectives. In evaluating performance against objectives, the organisation must also recognise the importance of having effective forms of measurement. Organisations that are unwilling to develop appropriate reporting systems are likely to suffer from lower productivity growth and a reduced ability to compete because they will be less effective and efficient in acquiring and using human resources (OECD, 1996). Human resource accounting is not just an interesting concept (Scarpello and Theeke, 1989), it also has the potential to enhance management and other stakeholder decision making (Edmonds and Rogow, 1986). In this changing environment there is a place for human resource accounting.

It remains to develop appropriate measurement mechanisms that support human resource management specifically and, more generally, enhance the overall accountability of organisations to society at large. There can be no unique complete

measurement system for all organisations. It is important to create a universal financial reporting system that has the virtue of simplicity and that will acquire a sheen of relevance. This will be supplemented by a framework of key performance indicators to assist individual organisations in developing appropriate performance measures in accordance with their strategic objectives.

With whom should the responsibility for the development of these measures lie? Traditionally the accounting profession has been charged with that responsibility. However, that profession's myopic approach to its responsibilities is inappropriate in the context of current societal expectations. Surely, to paraphrase Sandy Gall<sup>22</sup>, accountants have a contract with the users of their information to tell the truth. Accounting, of course, is an imperfect craft in an imperfect world and few accountants would claim that they deliver the truth, the whole truth and nothing but the truth. Still, some part of the truth is what they should be after.

It is time for the profession to look forward and deliver on those responsibilities particularly in relation to accounting for human resources. They must develop reporting mechanisms that allow resource allocation decisions to be made in a way that benefits all stakeholders.

## Notes

- <sup>1</sup> This includes, among other things, strategies relating to the recruitment and training of employees.
- <sup>2</sup> The term 'human capital' is more appropriate here because the economists' dialogue was primarily related to the value of individuals as individuals and not as employees of an organisation.
- <sup>3</sup> Source: Kiker B.F. (1966), 'The historical roots of the concept of human capital', *The Journal of Political Economy*, October.
- <sup>4</sup> See for example Hekimian and Jones (1967), Pyle (1970), Flamholtz (1973) and Sangeladji (1977).
- <sup>5</sup> See for example Hermanson (1964), Flamholtz (1971), Lev and Schwartz (1971), Friedman and Lev (1974), Jaggi and Lau (1974), Sadan and Auerbach (1974), and Robinson (1975).

## Notes ... continued

- <sup>6</sup> *Laborem Exercens*, Encyclical letter of Pope John Paul II on human work, Catholic Truth Society, Publishers to the Holy See, London, September 1981.
- <sup>7</sup> See the earlier comments in note 2.
- <sup>8</sup> The address by John Goodman, Chairman, Baulderstone Hornibrook Limited at the annual general meeting of shareholders, July 1994: source, *The Advertiser*, Adelaide, South Australia, 22<sup>nd</sup> July 1994.
- <sup>9</sup> See, for example, the 'Statement of Human Resources' published by Telia AB (Sweden) and notes provided in the financial statements of several large Indian companies (Kolay, 1986).
- <sup>10</sup> Since 1975 the International Accounting Standards Committee has issued 30 Accounting Standards, a Framework for the Preparation and Presentation of Financial Statements and currently has four exposure drafts on issue, two of which will, if accepted, result in additional standards.
- <sup>11</sup> The most conspicuous example of this situation occurred in paragraphs 6.12 - 6.21 in the publication, *The Corporate Report* (ASSC, 1975), where human resource accounting was rejected as being impracticable and 'The Employment Report' was offered as an alternative.
- <sup>12</sup> There is implicit evidence of this in the comments by Dixon J, *Victoria Park Racing and Recreational Grounds Co. Ltd. v Taylor* (1937) 58 CLR 479 at 509, when he said "...all the intangible elements of value, that is value in exchange, which may flow from the exercise by an individual of his powers or resources whether in the organisation of a business and undertaking or the use of ingenuity, knowledge, skill or labour".
- <sup>13</sup> An issue publicly canvassed by Pope John Paul II (*Laborem Exercens*, 14 September 1981) when he considered employees were being treated "on the same level as the whole complex of the material means of production, as an instrument".
- <sup>14</sup> An exception occurs in professional sporting organisations where individual players, or more accurately those players registration documents, are traded from one club to another.
- <sup>15</sup> Except to the extent that organisations persist in using fully integrated financial and management accounting systems rather than taking advantage of modern computing capabilities that allow data to be extracted easily from the same database in completely different ways for different purposes.
- <sup>16</sup> Traditional, in this instance, is referring to the balance sheet, financial accounting emphasis of human resource accounting.

## Notes ... *continued*

- <sup>17</sup> The use of the word 'control' at this point is not intended to imply authoritarian or domineering leadership. It is used in the context of control systems developed and operated jointly by management and employees.
- <sup>18</sup> To avoid any confusion, added value is defined as the sum of the employee share (wages, salaries and benefits), the capital share (depreciation, rent and interest), the community share (sponsorship and donations), the government share (all Federal, State and Local government charges) and the owners' share (dividends and retentions).
- <sup>19</sup> While acknowledging that value added is, on balance, a more useful measure of output, Morley (1978) suggests there are risks associated with its use. He believes that in their desire to maximise added value, managers may make inefficient decisions that result in one stakeholder group subsidising another.
- <sup>20</sup> See, for example, the 'Statement of Human Resources' issued by Telia AB (Sweden); the thirty odd measures developed by the Society for Human Resource Management in conjunction with the Saratoga Institute (USA); or, the base of 124 performance indicators developed from 69 elements to form the Australian Human Resource Benchmark program developed by HRM Consulting Pty Ltd (Australia).
- <sup>21</sup> The IASC's current work program proposes the issue of five new standards and the revision of three existing standards: source, IASC Insight, September 1995.
- <sup>22</sup> The exact quotation that appeared in the Evening Standard (London) on 14th November 1995 was "After all, the reporter has a contract with his viewers, or readers, to tell the truth. Journalism, of course, is an imperfect craft in an imperfect world, and few reporters would claim that they deliver the truth, the whole truth and nothing but the truth. Still, some part of the truth is what they should be after".

Chapter

# 3

## *The path of human resource management*

Managing is the art of getting things done through and with people in formally organized groups. It is the art of creating an environment in which people can perform as individuals and yet co-operate towards the attainment of group goals. It is the art of removing blocks to such performance.

*Harold Koontz*  
Harvard Business Review  
Vol. 40, no. 4, 1962

### **Introduction**

If the success of an organisation lies in its people, who is responsible for maintaining their performance? The concept of the changing nature of work and employment is an accepted reality. In an environment of change, the responsibility of organisations to provide lifetime employment has been transformed into a responsibility on the part of employees and individuals to maintain their own employability<sup>1</sup> over a working life. However, with the recognition of the value of organisations and individuals working together to create a knowledge-based economy comes the recognition that sustaining and growing this new economy is also a partnership.

Organisations must work in partnership with individuals to maintain and nourish the valuable assets of human resources. Retention of the best people and the continued development of their knowledge and skills is the key. Maximising the knowledge value of all contributors to the organisation must become a recognised function of management. Responsibility for this seems to rest firmly with human resource

managers but the question that will be asked is are they capable? An examination of the development of human resource management will likely provide the answer.

During the 1980s the term 'human resource management' came increasingly to be used by both practitioners and academics. In the space of a few years, human resource management challenged and largely replaced terms such as 'employee relations', 'personnel management' and 'industrial relations'. Accounts of the emergence of the concept of human resource management tend to stress its American origins and initial diffusion to culturally proximal nations such as Australia and the United Kingdom. Later it spread to more culturally distant nations such as Brazil and France (Hendry, 1991; Beaumont, 1992; Beardwell and Holden, 1994). As a result there is a perception that the global development of human resource management is just another example, following divisionalised organisations, management by objectives, scientific management and strategic planning among others, of an American ideology which has gradually permeated the consciousness and activities of organisations worldwide.

In practice, following the introduction of this new business paradigm, many organisations simply renamed Personnel Management departments to include Human Resources Management as well as personnel management. Mabey and Iles (1996) question whether this paradigm shift really was a fundamental change in the way people and employee relations are now managed or whether it was merely a change in label to keep up with fashion or to advantage professional interests.

As a result of this uncertainty, this chapter will first revisit the past, not for its own sake, but to observe changing practices over time and to consider what may be learnt from the past that will enable decision-makers to act with more humanity and effectiveness in the future. Second, the current role of the human resource management function will be examined to ensure proposals for the future will provide a valuable contribution to the evolving organisations in our society and to society itself<sup>2</sup>.

## **Management of human resources through time**

It could be argued that the profession of human resource management was conceived during the Renaissance. In this era, research and experimentation were encouraged resulting in the development and application of new concepts, technologies and processes. Of particular reference are the developments that occurred in agriculture. These developments radically altered not only a system of production but also a way of life. The open-field system disappeared and the dispossessed peasants sank into proletarian status or even pauperism on the land or, displaced from the land altogether, became a reserve of labour at the disposal of the industrialists (Mantoux, 1967). Many, without formal education, became labourers working long hours in the strict regimen of the *dark satanic mills*<sup>3</sup> that were an icon of the industrial revolution. It was in this unforgiving climate, where people were subjected to the grim discipline of the machine, that the processes of management of employees became codified.

In any discussion of the development of human resource management it is useful to focus on the five major periods of its evolution (Torrington and Hall, 1987; Berridge, 1992). In this thesis the first three periods, namely the welfarist period, the industrial efficiency period and the personnel administration period will be combined.

Well before the emergence of a specialist role in the organisation, the roots of human resource management lay in the activities of the mid-19th century social reformers, such as Shaftsbury and Owen, who sought, in legislation on hours and conditions, to ameliorate the lot of factory workers (Torrington, 1989). Their example influenced a select band of non-conformist employers to introduce welfare officers into their factories to dispense benefits such as canteens, medical provision and sick pay to deserving employees. Although the motivation was largely the Christian charity of paternalistic employers, there was clearly another agenda. Indeed, in 1912 Edward Cadbury<sup>4</sup> made the vital connection between welfare and efficiency by acknowledging that each were different sides of the same problem. This connection became fully explicit during the First World War and paved the way for what might be seen as a transitional role for personnel management, that of the humane bureaucrat (Legge, 1995). In the inter-war years the connection between welfare and efficiency was being broadened to not only include the physical environment of

work, but also activities aimed at getting a good fit between the individual worker and a particular job. Previously personnel management functions were largely fragmented and often conducted by line managers as part of their overall management responsibilities. Now, with the change in activity, specialists became engaged in role specification, recruitment, training and keeping records for the monitoring and investigation of absence, labour turnover and dismissals. As Torrington (1989, p.58) puts it: “The personnel manager was learning to operate within bureaucracy, serving organisational rather than paternalist employer objectives”.

It was during this era that the more innovative of these administrators began to look to the early management theorists<sup>5</sup> for ideas which would later be incorporated into personnel management theory and practice. Scientific management, through job design, structured reward systems and ‘scientific’ selection techniques, helped to refine personnel management practice in the recruitment and placement of employees. Behavioural science added psychological testing and motivational systems, while management science contributed to performance management programs. Even so, the extensive methods, procedures and techniques which were developed in this period for the administration of the personnel function were far from universally accepted and as a consequence not standardised in any way (Alford, 1940).

The fourth, or industrial relations period, covered the three decades from 1950 - 1980. This period marked the beginning of a specialist and professional approach to personnel management. The Second World War and its aftermath of relatively full employment saw employers, spurred on by government initiatives and their own post-war requirements for skilled employees in an expanding economy, begin to focus on the importance of a wider range of personnel functions. Indeed, many organisations began to employ specialists to conduct recruitment, training and welfare activities, taking these functions away from line managers. The resurgence of unionism during these decades must not, of course, be overlooked. Unions, in a buoyant economy, focused on pay and work conditions issues, forcing further expansion of personnel activities into industrial relations considerations.

*Figure 3.1: Storey's dimensions of personnel/IR and HRM*

DIMENSION	PERSONNEL AND IR	HRM
<b>Beliefs and assumptions</b>		
1 Contract	Careful delineation of written contracts	Aim to go 'beyond contract'
2 Rules	Importance of devising clear rules/mutuality	'Can-do' outlook: impatience with 'rule'
3 Guide to management action	Procedures	'Business-need'
4 Behaviour referent	Norms/custom and practice	Values/mission
5 Managerial task <i>vis à vis</i> labour	Monitoring	Nurturing
6 Nature of relations	Pluralist	Unitarist
7 Conflict	Institutionalised	De-emphasised
<b>Strategic aspects</b>		
8 Key relations	Labour-management	Customer
9 Initiatives	Piecemeal	Integrated
10 Corporate plan	Marginal to	Central to
11 Speed of decision	Slow	Fast
<b>Line management</b>		
12 Management role	Transactional	Transformational leadership
13 Key managers	Personnel/IR specialists	General/business/line managers
14 Communication	Indirect	Direct
15 Standardisation	High (e.g. 'parity' an issue)	Low (e.g. 'parity' not seen as relevant)
16 Prized management skills	Negotiation	Facilitation
<b>Key levers</b>		
17 Selection	Separate, marginal task	Integrated, key task
18 Pay	Job evaluation (fixed grades)	Performance-related
19 Conditions	Separately negotiated	Harmonisation
20 Labour-management	Collective bargaining contracts	Towards individual contracts
21 Thrust of relations with stewards	Regularised through facilities and training	Marginalised (with exception of some bargaining for change models)
22 Job categories and grades	Many	Few
23 Communication	Restrict flow	Increased flow
24 Job design	Division of labour	Teamwork
25 Conflict handling	Reach temporary truces	Manage climate and culture
26 Training and development	Controlled access to courses	Learning companies
27 Foci of attention for interventions	Personnel procedures	Wide ranging cultural, structural and personnel strategies

Source: Storey (1992, p.35)

In the United Kingdom, the Donovan Commission (1968) concluded that collective bargaining could address and reconcile the inevitable differences of interest that arose between employers and their employees. Formal systems of worker representation expanded as managers and a growing body of shop stewards engaged in local bargaining over a wider range of workplace issues (Parker, 1975; Clegg, 1979; Brown, 1981; Daniel and Millward, 1983). Public policy in many countries (e.g. the establishment in Britain in 1975 of the Advisory Conciliation and Arbitration Service) actively supported these developments. Despite this, collective bargaining failed to promote long-term business success or to genuinely integrate the aspirations of employees with the objectives of management<sup>6</sup> (Jackson-Cox, McQueeney and Thirkell, 1987; Scott, 1994). The result was not more orderly procedures for agreeing terms and conditions of work but an increasing lack of interest in securing change through agreement (Purcell, 1982). This confrontational mindset required specialist attention. The number of personnel specialists expanded greatly during this period often conducting their activities in isolation from one another and generally without any consideration of their impact on overall organisational effectiveness. Personnel management activities such as health and safety, recruitment and payroll administration were largely separated from those concerned with other aspects of industrial relations such as collective bargaining and dispute management, and a clear professional philosophy did not exist.

Rising inflation and oscillating government policy continued to raise issues about the costs and benefits of substituting capital intensive new technology for labour<sup>7</sup> and vigorous concern for short-term efficiency. Consequently, a major personnel management responsibility came to be seen as achieving the closest possible fit between numbers and skills required and those achieved. Workforce planning was seen as a potentially prestigious role where the 'architect' (Tyson and Fell, 1986) could take a more proactive, innovative, strategic, integrative and planning-oriented stance. As such, this person focused on the organisation's learning and capabilities in a role that clearly presages many of the characteristics associated with human resource management.

The evolution of personnel management in the 1980s is distinctly different from earlier conceptions and from past models (Mabey and Iles, 1996) and represents the

fifth and final period in the development of human resource management. The movement towards human resource management was precipitated by a number of inter-related developments. These included the influence of American and Japanese employment practices, the economic and political policies pursued by government, recession, changing patterns of product and labour markets, the influence of new technology and the impact of influential academic thinking<sup>8</sup> (Berridge, 1992; Beaumont, 1993; Mabey and Salaman, 1995). At the same time, the professional associations and training institutions were becoming more sophisticated in their approaches incorporating the ideas of the 'excellence', 'total quality' and 'cultural change' movements. Personnel management was becoming human resource management, representing a shift towards the integration of personnel functions and becoming strategically focused on overall organisational effectiveness. This placed employees at the heart of an organisation and made them central to line managers and top management rather than merely the responsibility of personnel professionals.

As with the development of any new management paradigm, there are critics of human resource management. Of particular concern is the problem of identifying clear differences between personnel management and human resource management (Armstrong, 1987; Fowler, 1987). Guest (1987) has even suggested that, founded on little more than a wish to revitalise the jaded image of personnel management and create the impression that something new was happening, a number of 'personnel departments' became 'human resource departments' overnight without any obvious change in their roles. Scepticism about there being little substantive difference between human resource management and traditional personnel management is further reinforced by the practice of using the former as a generic term and one interchangeable with the latter (Legge, 1995).

One might be tempted to say there is little difference between normative models of human resource management and personnel management especially when comparing Torrington and Hall's (1987) model of personnel management<sup>9</sup> with Walton's (1985) human resource management model<sup>10</sup>. In both concepts, the underlying ideas are based on the notion that people have a right to proper treatment as dignified human beings while at work and they are only effective as employees when their job-related personal needs are met. Storey's (1992) comparison of the two models, see figure

3.1, presents a contrasting view. In practice, however, neither personnel management nor human resource management is a singular model (Legge, 1995). Each takes on a different complexion depending on the type of organisation and the cultural and economic environments in which it operates.

Human resource management reflects an attempt to redefine both the meaning of work and the way individual employers and their employees relate to each other and the organisation. The activities that it promotes are inextricably related to practices and systems that define, develop, reward and empower the individual. Its aim is to occupy a more central place among the organisation's decision-making elite.

### **Roles, functions and strategies**

The roles, functions and strategies of human resource management are many and varied, and depend heavily on the nature of organisations, the vision and skills of practitioners, and the environment external to the organisation. Features such as organisational size, history and ownership, government legislation and political factors have a significant impact on the ways in which practitioners carry out their roles. These influences may be seen either as opportunities and challenges or as pressures and constraints depending on the vision and skills of practitioners.

The principal responsibility of human resource management is to ensure that organisations have the right numbers, types and skill mixes of employees at an appropriate time and cost to meet present and future organisational requirements. As such, practitioners need to be aware of the future direction of their organisation, the nature of internal and external labour markets and the relevant strategies to pursue and match labour demand and supply most effectively. The modern human resource manager must be an effective business partner with a solid understanding of the organisation's goals and objectives, an outstanding adviser on people management issues and an influential change agent. To put it more succinctly, they need to operate at three distinct levels - strategic, operational and functional.

At the strategic level a human resource practitioner takes on many roles. There is the role of consultant where help is provided to all levels of the organisation with specific issues. The assessor, who analyses the internal and external environment,

contributes facts and figures about the workforce. The diagnostic role that uses research methods to distinguish symptoms from causes. The innovator, or change agent, who analyses problems to anticipate external trends and fluctuations, and the catalyst proposing policies to be implemented by line managers.

The operational roles of human resource management include the analyst who looks to past experience for trends that may be used to formulate plans to take the organisation into the future and the 'fire-fighter' who reacts to the demands and actions of others. Other roles include the policy implementer who ensures consistent policies are implemented throughout the organisation and the employee advocate seeking to act as the corporate conscience (Wiley, 1992).

The functional level incorporates many of the activities that are generally associated with the earlier role of personnel management. These include recruiting and selecting qualified individuals, training them and motivating them through performance appraisal and pay systems, negotiating enterprise agreements, and ensuring that all of these activities are performed within the requirements of the applicable legal system (Wright and Ferris, 1996).

While effective performance by human resource managers at both the operational and functional levels is important to organisational well being, it is the strategic activities that provide purpose to the direction the organisation wishes to pursue in achieving its objectives through people. This being the case, the human resource management function needs to be planned, organised and evaluated on the basis of its contribution to the organisation. Indeed, there will be increased emphasis on developing policies that facilitate organisational performance such that it creates and sustains the competitive advantage of the organisation (Wright and Rudolph, 1994).

Galbraith and Nathanson (1978) were among the first organisational theorists to recognise the need to fit human resources into the strategy implementation process<sup>11</sup>. In their discussion of the role of human resources management in the implementation of organisational strategy, they outlined four basic, interdependent functions: selection, appraisal, rewards and development. More recently, Baird and Meshoulam (1988) professed the need for human resources management to recognise both the external fit (relating to the direction of the organisation) and the internal fit

(managing the varied components of the discipline to support each other) of their programs. For Zedeck and Cascio (1984), the notion of fit is central to understanding the role of human resource management in organisations. Creating this strategic impact very likely requires a system focus and a degree of attention to the relationships between human resources and line managers. Wright and Snell (1991), who developed an open systems model of human resource management, continued this work. Their inputs are the knowledge, skills, abilities and other characteristics of the individuals that make up the organisation. The throughput component is represented by individual behaviours and the dual outputs are affective outcomes and performance outcomes. Affective outcomes are generally representative of the feelings of people within the organisation about being part of the organisation itself. Performance outcomes contribute to the products or services that the organisation produces. From this model the authors determined there was a dual role for human resource management. First, manage the competencies of people and second, manage the behaviours of people.

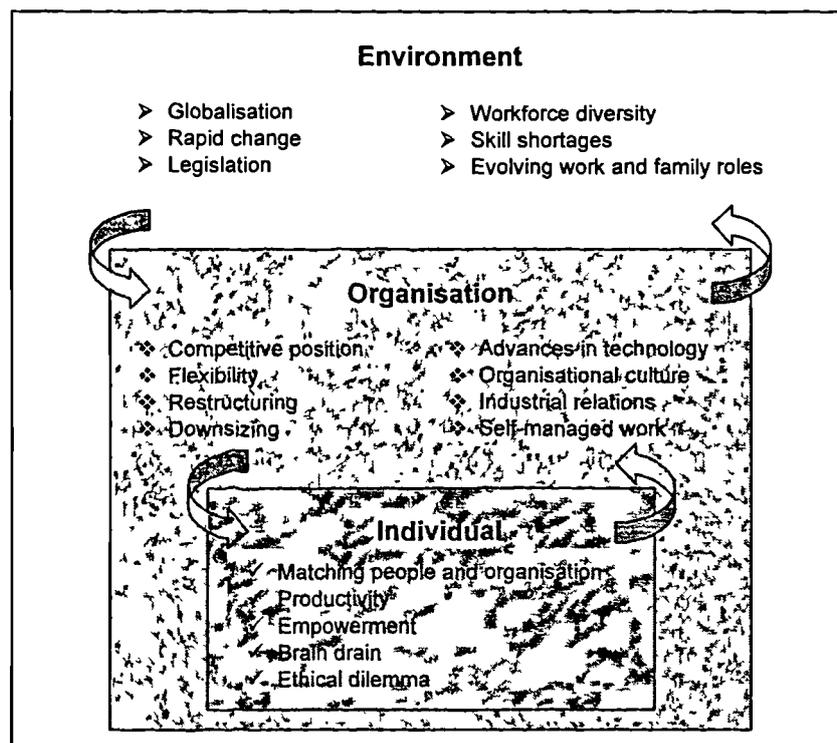
Expanding on this open systems concept, Snell (1992) proposed a control theory model of human resource management. In such a model, organisations seek to control the inputs, throughputs and outputs of human resources. They do this utilising the functions proposed by Galbraith and Nathanson (1978) more than a decade earlier. Inputs are controlled through rigorous selection, training and socialisation. Throughputs are controlled by specifying, appraising and rewarding individuals' behaviours. Outputs are controlled by specifying, appraising and rewarding the objective results attributable to people, both as individuals and collectively.

The continuing development of new techniques will enable evaluation of human resource management performance and promote the discipline to a status equal to that of other disciplines within the organisation. Indeed, this should lead to a recognition that the human resource management function truly contributes to the effective management of an organisation's most important asset<sup>12</sup>: people.

## The changing role of human resource management

The environment in which organisations operate is changing. The twentieth century industrial organisational model is rapidly becoming obsolete. Organisations are looking for products and services that will help them adopt the informational model that will very probably dominate the twenty-first century. As a result the immediate future will present challenges to the management of human resources which have not been encountered since productivity became a prominent issue within organisations in the late 1970s (Fitz-enz, 1990). These challenges, depicted in figure 3.2, may be divided into three categories: environmental challenges, organisational challenges and individual challenges.

*Figure 3.2: Key human resource issues for the future*



A cursory examination of the challenges reveals that the human resource management role is not an easy one. So much is expected from a variety of customers that conflict and tension appear inevitable companions. Much of this arises because change is as much about personal values as the substance of change itself (McWhinney, 1992). In human resource management terms this may mean providing a clear timetable of events, sharing the 'big picture' with details about the new state,

breaking this down into smaller, more manageable and familiar actions, and letting people take the first step. It will also mean being honest about the less palatable aspects of change (Marris, 1974).

In this environment, the role of human resource management professionals is to support, rather than supplant, managers' <sup>13</sup> human resource responsibilities. Schuler and Youngblood (1986) identified at least five roles for effective human resource management. Two roles, policy formulation and provider of personnel services, resemble the traditional activities of the discipline. The other three roles are delegator, technical expert and innovator. This last role, of innovator, will become an increasingly important aspect of human resource management in the future. More and more, human resource professionals will be called upon to serve in a proactive capacity, assisting senior management formulate and implement business strategy. This will be best achieved by designing specific policies and programs and having managers put them into practice. The consequence of this approach is that every manager becomes a human resource manager.

These changes will require a transformation in the mindset and skills of managers and in the policies and systems of the organisation. It will involve fundamental shifts in the way people are managed as well as change in the organisation's culture. For Kilcourse (1994), the direction is towards leadership that recognises the social nature and interdependence of people. This creates organisations with a philosophy that is anti-ideology, which favour principle over rules and judgement over blind obedience, and where senior managers demonstrate the ethics they espouse.

Transforming the way an organisation operates requires a systematic, planned approach to change. Resistance and the difficult process of individual transition also hamper change. Resistance is quite natural. The process used to plan and manage change will either minimise or increase resistance. Individual transitions are also difficult and take time. Moving from previous ways of doing things to new ones involves letting go of the old, going through a transitional period and beginning the new (Bridges, 1988). Therefore, the success of change will be enhanced when the transition processes are planned for and well managed. In this quest, organisations need managers who can rise above the horizons of their personal power interests or

of the interests of their department or discipline and act in accordance with the interests of the organisation as a whole.

For the profession of human resource management, this period of change has created the perception of a crisis that stems from one or more of three uncertainties: confidence, identity and direction (Torrington, 1998). There is a crisis of confidence among human resource management professionals, as there always has been. Central to this deprecatory assessment is the view that their results are almost impossible to measure and their successes and failures are largely the successes and failures of other people. Furthermore, they operate in a domain – how people behave – in which everyone else is an expert with a personal point of view from which they will not depart. Yet it is only the human resource professionals who fully appreciate how intractable some of the people problems really are. There is then a crisis of identity because the door has not yet been firmly shut on the transition from personnel management to human resource management. Many practitioners recall Drucker's (1955) description of the personnel job – filing, housekeeping, firefighting and social work – and reflect on the fact that these activities remain today. For them, the promise by the human resource management disciples of greener pastures is a mirage (Sisson, 1995). Finally, there is a crisis of direction because of the preoccupation with strategy at the expense of operational personnel activities. Yet this is surely just a mirage. Human resource professionals have a clear role in strategy development and implementation. What must be remembered is that their expertise and their authority in strategic discussions derive from their activity at the operational level (Mintzberg, 1994). The Japanese word for crisis also means 'opportunity'. In that sense, the crisis for human resource professionals entering the next millennium is to establish and promote a new image.

There is widespread consensus that this requires a thorough understanding of their organisation's business; not only in terms of people but also in terms of the economic, environmental, financial, and technological forces affecting it<sup>14</sup>. Rather than playing a staff role, they should become internal consultants known for their expertise and ability to help solve the human resources problems faced by line managers. Indeed, Gómez-Mejía (1994) believes their paramount role is to merge human resources activities effectively with the organisation's business needs. This is

achieved by adopting guidelines such as; take a long-term view, monitor the competitive environment, view organisational performance as a key variable in the design and implementation of all human resources programs, mould human resources systems around the unique conditions relative to the organisation, secure the commitment of executive management to the direction of human resources management, openly discuss the strategic implication of human resources programs on operations, and develop a general business orientation. This is an ideal: a desired future state.

Walker (1992) believes the appropriate role for human resource management in this desired future state is that of a strategic partner. This role typically has four aspects. First, human resource managers cooperate with their line counterparts in formulating and reviewing broad human resource strategies appropriate to their organisations. Second, human resource executives fully participate in all business strategy meetings as equals to subsidiary chief executives, chief financial officers and company secretaries (Levine, 1986). At the next level of the organisational hierarchy, human resource managers operate in a similar fashion with divisional and functional managements. Routine participation in this manner provides early warning of future human resource issues, permits early evaluation of business proposals in terms of their feasibility and desirability from a human resources perspective and provides access to discussions on other than human resource issues (McLaughlin, 1986). Third, human resource executives, managers and specialists work closely with line managers, on an ongoing basis, to ensure that all components of an organisation's business strategies are adequately implemented. Fourth, the human resource function itself is managed strategically and has its own strategy that lays out priorities, directs the allocation of resources and guides the work of various specialists.

Schuler and Jackson (1988) provide evidence that organisations follow different human resource management practices under certain strategies. There are clearly different human resource policy choices for popular business strategies such as quality enhancement, innovation, or cost reduction. In some organisations the focus has been narrower with only specific human resource management practices, such as staffing or compensation, being linked to these strategies (Olian and Rynes, 1984). Elsewhere, human resource management practices have been linked to stages in the

product life cycle (Kerr, 1982) or organisational positioning strategies such as 'defender' or 'prospector'<sup>15</sup> (Miles and Snow, 1984). Whichever strategy is chosen, there are implications for an organisation's selection, training, performance appraisal and compensation systems.

The evidence from other research concerning the impact of a strategic approach to human resource management on organisational performance is neither consistent nor conclusive. Guest and Hogue (1994) suggest that organisations with human resource strategies, formally endorsed and actively supported by senior management, are better placed to weather a recession and are more successful in terms of quality, productivity, absenteeism and labour turnover. Brewster (1993), on the other hand, believes that performance has been better where there was less emphasis on human resource management. Whipp (1992) takes a similar view by suggesting that linking human resource management to the competitive performance of organisations is an illusion. In myopic circumstances, it is difficult to argue with this view since, by themselves, human resource management strategies do not lead to improved organisational performance. There are so many other factors involved. Notwithstanding these alternative views, an integrated approach to human resource management, one that focuses on the key levers for performance improvement and that develops mutually supportive programs for this purpose, is expected to contribute positively to organisational performance.

These contrasting views support a contingency theory of management that indicates that no particular human resource management system will suit all conditions. Rather, the system must complement what is needed to implement a certain strategy or to meet various demands imposed on an organisation by its environment (Galbraith and Kazanjian, 1986). From the organisations they studied<sup>16</sup>, Armstrong and Long (1994, p.128) concluded that the content of human resource strategy is "largely concerned with overall issues related to the values and culture of the organisation and its people-management philosophies, organisational performance, individual competence, quality, participation, empowerment and flexibility". If human resource management follows this strategic path, there are two fundamentals of the whole strategy management cycle that should be noted. First, conceiving strategies is not enough. They must be capable of being translated into daily activities

and work efforts directly and clearly linked to accomplishing the strategies. Second, appropriate measures, either direct or implicit, need to be established to ensure that people, whether individuals or teams, are accountable for making the activities work.

### **Accountability**

When translating strategy into operations, human resource professionals need to compare current procedures, systems and practices with those that are necessary to implement the strategic objectives. The process of implementation must take into account current day realities such as the economic environment, existing enterprise agreements and the legal framework. The systems that should be analysed are primarily human resource management systems and those that are used to run the organisation such as communication, information, planning, and decision-making systems. The on-going, day-to-day practices of managers should also be reviewed to ensure they are relevant to the desired work culture. For these actions, human resource managers must accept responsibility.

It follows then that human resource managers also have a duty to provide an account, or reckoning, of those actions (Gray, Owen and Adams, 1996). This will require the evaluation and reporting of the outcomes of their activities. The fundamentals of the evaluation process include determining what outcomes to look for, what indicators (both quantitative and qualitative) are appropriate and which elements are capable of being monitored, measured and observed. These performance measures may be objective numbers or subjective perceptions. Some will be generic; others will be unique to an individual organisation. Measurements are central to organisational performance. If it is not possible to measure something, then it is not possible to control<sup>17</sup> it. If it is not possible to control something, then it is not possible to manage it. If it is not possible to manage something, then no one may be brought to account. Whatever measures are chosen, they must be capable of discharging the human resource manager's accountability.

There are two directions to be considered in this respect. First, how does an organisation determine whether it is effectively utilising its pool of human resources? Second, how does it assess the extent to which the human resource management

function is contributing to this objective? The first question focuses on the effectiveness of the organisation's overall human resources, which is affected by the efforts of both operational managers and those in the human resource management function. The second question examines the effectiveness of the human resource management function<sup>18</sup>, which hinges on the efforts of that function's staff members themselves. The distinction between these two questions is important although often obscured in practice.

For more than forty years there have been many advocates (for example; French, 1954; Merrihue and Katzell, 1955; Dimick and Murray, 1978; Mahler, 1979; Fitz-enz, 1980; Biles and Schuler, 1986; Odiome, 1986) of periodic evaluations of human resource management through a systematic, formal process similar to a financial audit which examines the discipline with the same rigour accorded to other disciplines within the organisation<sup>19</sup>. Potential benefits from such an evaluation include raising the profile of the human resource management function, promoting change, providing accountability and assessing financial impact. The focus of this thesis is on the last two of these perceived benefits.

An evaluation of the human resource management function will help to ensure the discipline meets both immediate and long-term objectives. It will also provide information to plan, implement and monitor human resource management activities by comparing actual with expected performance levels. Some measures will facilitate assessment of the relative financial advantages or disadvantages of various human resource programs. Not only will these measures allow the organisation to make rational decisions when choosing among alternative courses of action but they will also force human resource professionals to analyse the return on the organisation's personnel investment. In Fitz-enz's (1980, p.41) words, it teaches them to act "like entrepreneurs whose business happens to be people". Therefore, a systematic evaluation, the detail of which will be discussed in a later chapter, serves as an important accountability tool to provide answers to the two questions posed earlier.

A number of authors (for example; Gordon, 1972; Peterson and Malone, 1975; Mahler, 1979; Dyer, 1984; Biles, 1986) have identified a void between prescription and practice. This chasm is attributed to fear of evaluation, unclear purposes of

evaluation, measurement problems, unclear focus of evaluation and the lack of a meaningful framework to guide evaluation. It is apparent that the subsequent development of an evaluation model needs to start with a conceptual framework, based on a systems perspective, that takes into consideration the mooted concerns. There is clearly a degree of scepticism about the value of human resource management evaluations that may be attributed to a natural resistance to change. In these circumstances, the introduction of relevant accountability measures needs to take place in small enough steps to create what Tichy (1983) has called 'the boiled frog phenomenon'.

The pursuit of accountability through an appropriate evaluation process should hold no fear for human resource professionals. The aim is to ensure the human resources function supplies the organisation with people that provide value, are rare and cannot be easily imitated by others; in other words, provide a source of competitive advantage. This approach will confirm an effective strategic partnership between executive and human resource managements.

## **Conclusion**

As organisations become increasingly aware that people are among their most valuable strategic assets, they will be forced to re-evaluate the way in which they manage their human resources (Handy et al., 1989). This will create a fundamental change to established practice and outlook; a change that results in a paradigm shift from the traditional personnel management approach to a more strategic involvement. Progress toward thinking about the human side of business will require an operationally useful framework within which a broader range of data concerning the human resources of an organisation may be collected and analysed. Ideally, information will be gathered in a consistent manner such that it may be replicated across organisations as well as within an individual organisation. In keeping with the notion of a strategic involvement, this effort should not be confined to the human resources department but should be fully articulated with the financial and operational functions of the organisation in a unified whole. This epitomises the fundamental touchstone of strategic human resource management in that it will integrate human resource issues into the business plan (Keenoy, 1990).

There is no organisation that has a clear view of its direction and its future without fully taking into account the impact of such strategic vision on its employees and the potential impact, in turn, of employees on any strategic vision. In this regard, Sparrow and Marchington (1998) have suggested that the discipline of human resource management has arrived at a *significant juncture*. If they want to play a central role in the management of their organisations, human resource professionals need to demonstrate the linkages between the core business processes, the resultant human resource management choices and policies, and the impact on performance. This may be achieved by demonstrating that their people management strategies really do support the overall organisational strategy. Furthermore, in the present social and economic climate it is important, more than ever, that decisions involving the employment of people are seen to be right.

Human resource professionals must show that they care about people and profitability. This may be best achieved by moving from vague, subjective terms to the more specific, objective language of numbers. Using consistent, relevant data that is quantified where appropriate and compared with benchmarks and historical data, human resource professionals will be able to reinforce their accountability to both constituencies. Human resource management needs a new, vibrant model to account for human resources. In chapter two, it was suggested that the accounting profession was the one best able to provide this. Working in partnership, both disciplines should be able to build a human resource accounting model that will not only meet human resource management's accountability obligations but also foster the development of the potential of people. Since the long-term success of organisations requires developing the long-term success of individuals, such a model will also develop the potential of an organisation.

## Notes

- <sup>1</sup> In essence, this requires individuals to accept responsibility for their own career-long learning. This requires them to have a cyclical programme of assessment, upgrading and implementation of appropriate knowledge and skills.
- <sup>2</sup> Dunphy and Mills (1982) suggest that, for long-term success of organisations, human resource management departments need to have knowledge in areas such as training, remuneration,

## Notes ... *continued*

organisational design, manpower planning, organisational development, industrial relations, community relations and employee relations. The underlying theme here is the need for organisations to develop a new strategic function giving an important place to a holistic form of human resource management.

- <sup>3</sup> From the preface to *Milton* by William Blake (1804).
- <sup>4</sup> Niven (1967, p.24) cites a quotation from Edward Cadbury's book entitled *Experiments in Industrial Organisation*.
- <sup>5</sup> Such as Taylor (1911) for scientific management, Mayo (1933) for human relations and Fayol (1949) for administrative management.
- <sup>6</sup> Jackson-Cox, McQueeney and Thirkell (1987) identified situations where management succeeded in creating employee identification with organisational objectives through their industrial relations strategy but, in the longer term this relationship was destroyed by the underlying conflict between the parties.
- <sup>7</sup> The introduction of electronic data processing during this period is the standout example of replacing labour with capital.
- <sup>8</sup> Particularly out of the business schools at Harvard and Michigan.
- <sup>9</sup> Underpinning personnel management are the twin ideas that people have a right to proper treatment as dignified human beings while at work and that they are only effective as employees when their job-related personal needs are met.
- <sup>10</sup> The new human resource management model is composed of policies that promote mutuality – mutual goals, mutual influence, mutual respect, mutual rewards, mutual responsibility. The theory is that policies of mutuality will elicit commitment that in turn will yield both better economic performance and greater human development.
- <sup>11</sup> In more recent times Wright and McMahan (1992), Lado and Wilson (1994), Pfeffer (1994), Cascio and Bailey (1995), Becker and Gerhart (1996), and Gilbert (1997) have made similar observations.
- <sup>12</sup> In the accounting language 'asset' refers to the property and claims against debtors that an organisation may apply to discharge its liabilities. While it is often said that accounting is the language of business, this meaning should not be used when discussing the human side of an organisation. Instead, the more general interpretation of 'asset', that is something valuable or useful, is intended.

## Notes ... *continued*

- <sup>13</sup> It is important to recognise that all managers, regardless of their functional area, their position in the hierarchy and the size of the organisation, must effectively deal with human resources issues as part of their charter.
- <sup>14</sup> See, for example, Fombrun, Tichy and Devanna (1984); Carroll (1987); Schuler and Jackson (1987); Schuler and Walker (1990); Wright and Snell (1991); Jones and Wright (1992).
- <sup>15</sup> 'Defenders' are organisations that desire stability and wish to protect their market share. These organisations tend to use human resource strategies to build their own workforce competencies. 'Prospectors', on the other hand, pursue an aggressive business strategy and tend to meet their human resource needs by acquiring them from outside the organisation
- <sup>16</sup> The organisations preferred to remain anonymous but were identified as being involved in food distribution, publishing, banking, local government, retailing, medical services and utilities.
- <sup>17</sup> 'Control' is used here in the context of examination and verification.
- <sup>18</sup> This relates not only to providing a workforce capable of doing a good job in the present environment but also to creating an adaptable workforce able to cope with change. If the latter is not considered when developing the measurement criteria there is a danger of creating the same sort of short-termism for which traditional accounting systems are notorious.
- <sup>19</sup> It is worth noting at this juncture that the concept of a human resource audit is promoted in the literature on social and ethical accounting, auditing and reporting as a useful tool for management, and provides stakeholders with a basis to challenge and influence corporate practices (Zadek, Pruzan and Evans, 1997).

Chapter

# 4

## *Decision support systems for human resource management*

The capacity...to secure relevant information, to judge reliability of its authenticity, and to use it intelligently in further enquiry, is essential to the right use of reason in human affairs.

*A.E. Murphy*  
The Uses of Reason  
1943, p. 25

### **Introduction**

In the previous chapter an assertion was made that effective human resources management does not exist in a vacuum but must be integrated into the overall strategy of the organisation. Consequently, human resource managers are being asked to play a more proactive role than ever before in their organisation's planning and monitoring activities. As both business and technology become increasingly sophisticated, more and more organisations are recognising the necessity of having an effective human resource management system in place to facilitate the processing of vital and complex information.

This system must provide relevant information to assist organisations in their continual quest to improve the quality of their workforce and the manner in which they use its talents. Many organisations are unsure how to explore these issues because human resources, both as labour and as a business function, have traditionally been viewed as a cost to be minimised and a potential source of efficiency gains. Very seldom have human resource decisions, and by inference the

supporting information systems, been considered a source of value creation. The difficulty, it seems, is to identify appropriate measures of people management: objective, quantifiable standards that have clear financial relevance or act as reliable pointers to success (Gilbert, 1997).

This chapter will seek to overcome this perceived difficulty without losing sight of the fact that cultures and priorities differ between organisations. *First, it is useful to provide a synopsis of information systems. Second, a comprehensive model of a human resource management system will be deduced based on the current expectations of the discipline. Third, the source of that information either within or outside the organisation will be established. Fourth, the current uses of a human resource information system will be discussed. Finally, the information system will be related to the role of human resource management, expounded in the previous chapter, to determine whether there is currently a valid decision support system.*

### **The essence of information systems**

Technological developments have altered the scale of things so that much more is now achievable from information systems. Of course, just because things are technically possible does not make them humanly necessary or desirable. This is very much the case in any discussion on the design of a human resource information system. In this search for an extensive model of a human resource information system care will be taken to ensure the resource is available to and useful for both the organisation and its people<sup>1</sup>.

An unavoidable fact of life is that information is needed to make decisions. That information, invariably, is unusable in its original state. The purpose of an information system is to present the original data in a manner which is useable by many people both internal and external to the organisation. Prior to discussing the human resource information system, it is appropriate to understand what information is and what it is used for. Information has several properties. Of particular importance to organisations are those of form and accuracy.

Information comes in a variety of forms but of particular importance is the numeric variety. Numeric information is important for two reasons. First, accountants use

numbers as the primary method of conveying information concerning how well the organisation is performing. Measurable performance and financial criteria often predominate when making business decisions (Globerson, Globerson and Frampton 1991). Second, numbers are important because they are the door through which computers, and hence by definition, information technology slipped into organisational life (Davis, 1973). Because of this underswell of numbers, it is sometimes thought that computers and information technology in general are concerned solely with numbers. The truth, of course, could hardly be more different. The machines of information technology are indifferent as to whether they are handling numbers or letters, and the letters could just as easily be English or Chinese<sup>2</sup>. It is also important to realise that much of the information we use in numeric form is simply quantified opinion. This is clearly true for statements that relate to the future<sup>3</sup>. Similarly, many statements about the past are also quantified opinions<sup>4</sup>. This practice of quantifying opinions and treating them as if they were objective facts is perfectly satisfactory as long as both the algorithms used to translate the opinion and the difference between the two are recognised.

In relation to information, accuracy is not the same as precision. Precision relates to the amount of detail provided. A lot of detail corresponds to high precision, but high precision does not necessarily, in information terms, correspond to high accuracy. The achievement of accuracy and precision consumes resources. Information, therefore, should not be provided either more accurately or more precisely than is needed. Unfortunately, when information is transmitted, especially through the various levels of organisational hierarchy, it is possible for corruption to creep in and destroy the original accuracy. Usually more information than is actually necessary is provided in an attempt to negate corruption of this nature.

An information system performs six operations on data: capture, generation, storage, retrieval, reproduction and transmission. These six operations are carried out on data: they are not part of information itself. Nowhere in an organisation are these operations more apparent than in the managerial and administrative information systems of the organisation itself. The development of management information systems was intended to provide managers with all the information they needed to run their business. The introduction of computers, and the rapid improvement in their

processing capacity, created an environment where these information systems are capable of delivering more historical or projected data of greater accuracy and in a more timely fashion direct to the manager for use in managing (Vyssotsky, 1980).

To a significant degree management information systems have failed. Information technology has struggled to meet the needs of managers in three significant areas. First, computing power has outstripped information systems analysis techniques (White and Marajian, 1982). Second, until recently<sup>5</sup> it had not been economically feasible to input external information into a management information system and correlate this with internally generated information. Third, it is difficult to design systems that will let managers, at various levels, obtain the answers they need in a world that feels no compunction to mould itself to the design of a standard information system (Vyssotsky, 1980). The perceived failure of management information systems appears to stem from an inability on the part of the system developer to understand what it is that users are trying to do with information. The result is that information technology has been applied to business systems on a piecemeal, pragmatic basis. Particular applications are being dealt with one at a time with the more difficult being left until the last.

Against this background, management faces many challenges. The biggest challenge of all is management of the human resource. With continuing regulatory and legislative changes, the dynamic nature of human resource management, the emphasis of increased productivity and reduced expenditure, and expanding computer literacy, no organisation is capable of meeting their challenges without timely and accurate information. That is the predominant reason for human resource information systems to exist.

### **Human resource information systems**

The term 'human resource information system' is cumbersome in daily use. For convenience an acronym that has widespread acceptance, in this case *HRIS*, is used. Alternative nomenclature for systems of this nature are 'human resource management system', 'personnel data system', or 'employee information system'. Whichever term is used, all refer not only to employee related record keeping and reporting but also

to management decision making. Accepting the general organisational requirement to provide managers with more relevant information more quickly, human resource professionals must look to maximise the use of information technology in their management process through the medium of a HRIS.

As with any other computerised information system, a HRIS is more than a high technology black box. A competent HRIS, depicted in figure 4.1, is a combination of two components, the computer system and the management process. Each component contains four elements that are described below.

### *The computer system*

<u>Hardware:</u>	the electronic and mechanical equipment, including peripheral equipment and consumables, that perform the ordered functions.
<u>Software:</u>	programmed instructions that order and control data storage and manipulation plus the documentation, training and procedural support to use the system properly.
<u>Employee data:</u>	data on employees organised into a set of files known as the employee master database.
<u>Supporting data:</u>	other databases and files that provide human resource related information such as pay rates, departments and job classifications.

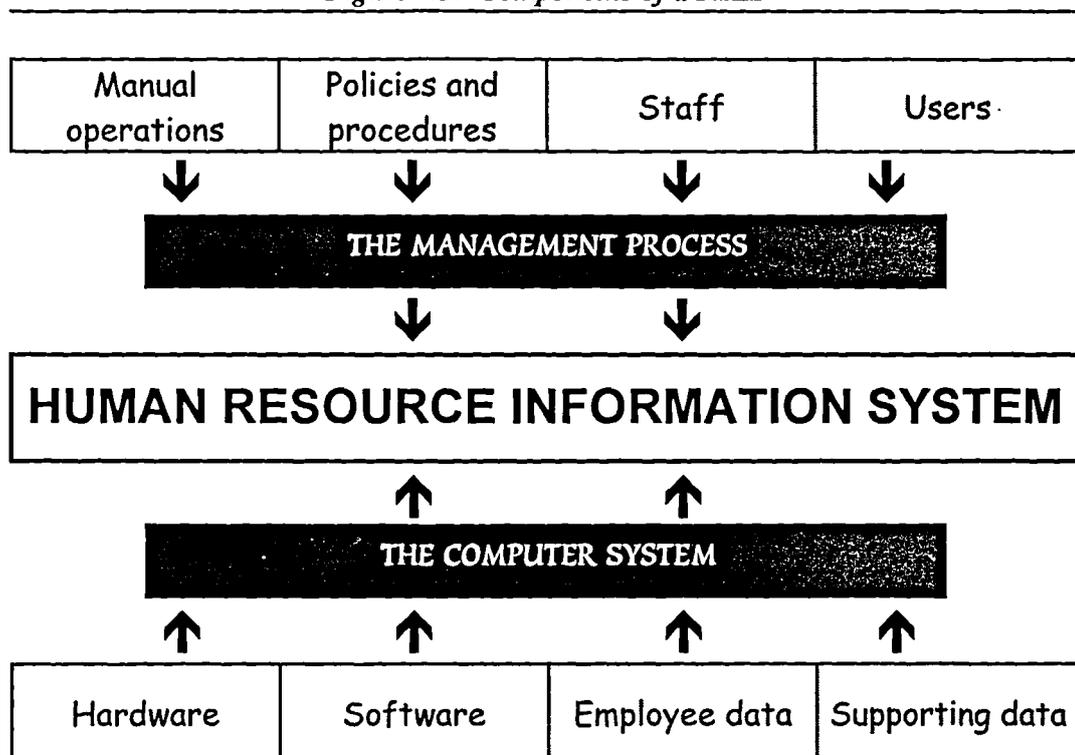
### *The management process*

<u>Manual operations:</u>	generally, activities that support the computerised information system but also operations in which security, privacy or technological limitations mandate activity that does not involve the computer.
<u>Procedures:</u>	standards for automated and manual processes that may describe how to handle specific data entry, transaction updates, report generation, system maintenance and related activities.
<u>Staff:</u>	managers, programmers, analysts, technical support, database administrators, security experts and legal, auditing and procurement people.
<u>Users:</u>	the values, needs, abilities, experience and skills of both users and designers; includes all users from novices to experts, both within the human resource department and outside.

The absence of any of these elements will make the HRIS incomplete and unresponsive.

A common perception is that a HRIS is a simple and easy method of personnel record keeping. A well-designed and carefully implemented system is much more than that. The establishment of a considered, comprehensive employee database makes it practical to provide many types of analyses at a reasonable cost. In one form or another, a HRIS should be capable of supporting every functional area of human resource management.

*Figure 4.1: Components of a HRIS*



Almost without exception, every HRIS is different. Some are small enough to run on a personal computer with an off-the-shelf software package that is difficult to modify. Others require a mainframe, a network of remote or distributed terminals and a staff of computer programmers and analysts. Some human resource departments try to integrate all software applications into one computer system. Others maintain separate systems for specific human resource functions, creating interfaces for electronic data transfer or for linking with other systems. The scope of a HRIS

depends on an organisation's financial resources, growth pattern, staffing availability and experience<sup>6</sup>, organisational needs and productivity of current procedures.

Basic record-keeping and reporting systems are most likely to meet the needs of start-up organisations, small organisations with a stable workforce or little prospect of rapid growth, and organisations with limited, predictable and traditional human resource needs. Large organisations usually have a sizeable, often highly compartmentalised, HRIS that is a microcosm of the organisation. Such a system includes software for numerous human resource applications and serves users who are specialists in areas such as strategic human resource planning, pay and benefits, occupational health and safety, training and development, and so forth (Gallagher, 1986; Windsor, 1986; Ceriello, 1980).

*Figure 4.2: Inputs and outputs of a HRIS*

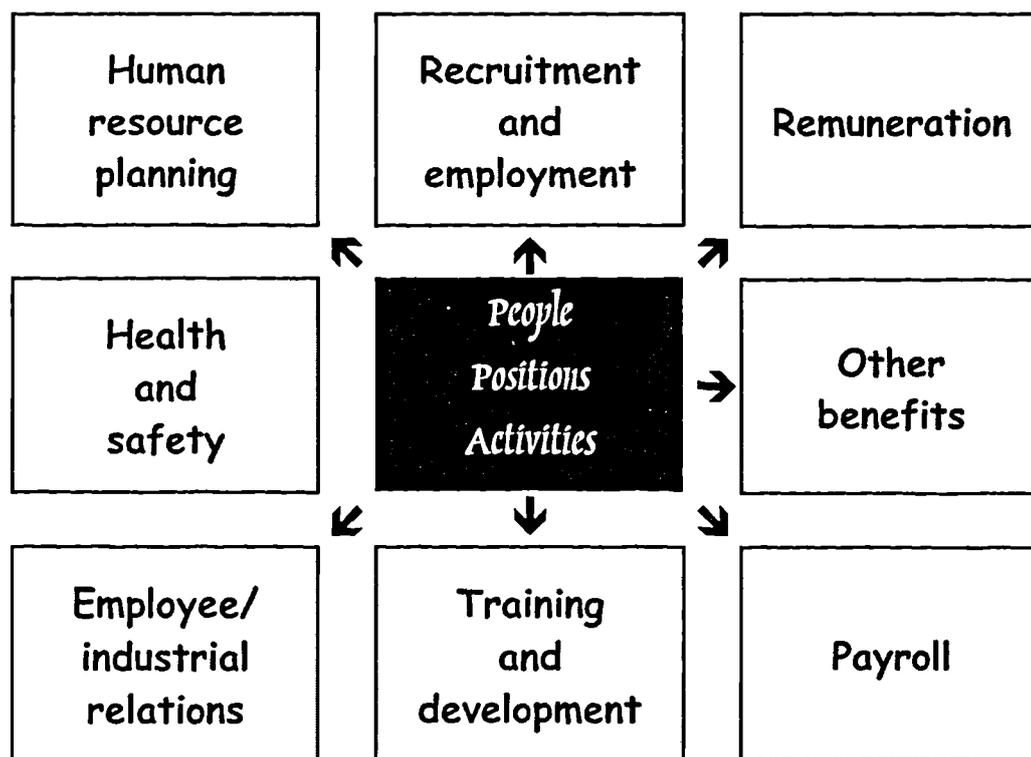


Figure 4.2 represents a more complex HRIS where the three basic types of data – people, positions and activities – provide most of the information needed by the wide variety of possible HRIS users. To perform more sophisticated analyses, human resource professionals also need access to corporate data provided by the finance, marketing and operations functions. HRIS should allow for flexible reporting

structures as well as full integration with a variety of processes such as word processing, graphics, electronic mail and importation of external databases. The complete integration of systems means that the same data may be viewed in great detail at an operational level or appear as a hidden element in a graphical forecast seen by the Board of Directors.

There is now evidence that technology is beginning to deliver a HRIS that will be universally accepted within organisations (McNerney, 1996). Newer systems, an example of which is provided in appendix 1, take advantage of client-server technology and company intranets to involve all line managers, and in some instances all employees, in the daily running of a HRIS. In situations such as this, line managers and employees are given appropriate access to the HRIS not only to manage their own personal data but also to generate the information needed to help them make decisions. A contemporary example of this approach is evidenced by the objectives of *HORACE*, the new HRIS of the Curtin University of Technology<sup>7</sup>, that are depicted in figure 4.3.

---

***Figure 4.3: Objectives of HORACE***

---

Empowering Heads of Schools, Divisional and Area administrative staff in managing and effecting decisions regarding their staff.

Giving employees access to their own information and responsibility for appropriate maintenance.

Streamlining human resource administrative processes to reduce the number of steps and data processing effort.

Support the further devolution of human resource management practices.

Support users' information needs.

Enable the central Human Resources area to function as a modern consultancy service.

To support the University in advancing its human resource potential.

---

*Source:* World Wide Web: Curtin University of Technology, October 1997

In establishing a HRIS with these objectives, it provides an avenue to improve the functioning of an organisation. With integration in, or interfacing with, other computer systems in the organisation, the HRIS becomes less a human resource department owned commodity and more a corporate asset for all. Naturally, this does

not mean that all information is available to everyone, but it does encourage greater communication generally and, through acceptance of open access to information, promotes changes in corporate culture that may lead to a more inclusive organisation.

### **Source of information**

Managing the data of employees, applicants and former employees is the foundation of a HRIS. Determining the content of and then creating the databases of a HRIS is one of the fundamental responsibilities of the human resource department. The databases are the core elements of any HRIS because if it is not possible to put required data into the system then it will not be possible for either employees or managers to extract the information needed to take decisions.

Traditionally, HRIS only utilised employee data provided by human resources staff and employees themselves. The previous chapter clearly identified significant changes in the world of human resource management such that a HRIS must now collect data on many more topics. These may include the organisation itself, demographics, dependents, applicants, surveys, retirees, external databases and other human resources programmes. Some of the sources of data for building a HRIS database include not only applicants, employees and human resources staff but also bureaux of statistics, government agencies, insurance companies, payroll processing organisations, actuaries, pension funds and financial institutions. For human resources staff to manage the employment function effectively, a typical organisation needs to collect and track hundreds of data elements on each employee. The core of a HRIS, or its master database, focuses on the three elements at the centre of figure 4.2 – people, positions and activities.

First, in respect of people, the core will always contain information relating to current and terminated employees but it may also include applicants and retired employees. Using a unique number as the key, an individual's record would normally contain the person's name, any former name(s), tax file number<sup>8</sup>, home address, home telephone number, birth date, sex, education, skills and qualifications, organisation<sup>9</sup>, location, job title, start date, salary, other benefits, and record change date. In essence, the people module of the core provides all the basic data about the organisation's people

in one consolidated database that serves as a solid, well-organised foundation for the HRIS.

Second, the position module of the core identifies the type of work performed in an organisation, how many incumbents of specific positions and at what levels or ranges of pay. At any point in time, each position may have multiple incumbents, a single incumbent or no incumbent. Each position record has certain additional characteristics such as organisation, location, knowledge requirements (education, credentials, experience, skills), responsibilities (level of required effort, supervision, equipment operation and time management) and working conditions. By carefully defining each position, a HRIS will assist an organisation define its internal structure and establish criteria for appointments or promotions. More importantly, it will enable the human resources department to discharge its responsibilities well by ensuring the organisation has the best possible people with whom to work and it will also facilitate the development of realistic human resource budgets.

Third, the core has an activities module that profiles the work to be performed by each position incumbent. By identifying all of the tasks to be performed, it is possible to utilise this module for assessing employee performance. Also, utilising one of the available external point-factor systems<sup>10</sup>, a value is placed on each of the position activities. The sum of the allocated points may then be used to assist in determining remuneration.

There are other tables of data that play important and useful roles in a HRIS. These tables usually contain information supporting a specific human resources function or activity. These may include organisation codes, wage and salary scales, income tax scales, injury and accident codes, education and training programmes, and so forth. In some instances this data will have a source external to the organisation that may be used for benchmarking<sup>11</sup>. This generally involves obtaining information on 'best practice' that, when compared with an organisation's information, highlights areas for development or improvement<sup>12</sup>.

In any discussion on the source of data, there are two important aspects that must also be considered. First, the integrity of the database must be impeccable. A good system includes several types of procedures that maximise the accuracy of the data it

contains. Most errors occur in the data entry process through miscoding or operator carelessness. Edit and validation routines limit the types of data accepted in a particular field<sup>13</sup>. Clear, descriptive on-screen error messages also help users identify, avoid and correct problems. Editing and validating data input will only catch some errors. Having data input by those closest to the source will help as will a desire on the part of users to keep the database accurate.

Second, since a HRIS maintains identifiable data regarding individuals, as well as other sensitive organisational information, proper safeguarding of the information is imperative. The HRIS must prevent access to unauthorised users both inside and outside the organisation. Access granted to individual users should be limited in terms of scope, time and function. Subject to stringent controls, access rights must be reviewed regularly (Bland-Acosta, 1988). There are three objectives of implementing suitable data access measures; to create mutual respect between an individual and the organisation in relation to the use of information disclosed by the individual to the organisation; to open up data collection activities in ways that minimise the extent to which recorded information about individuals is itself a source of unfairness in any decision about them; and, to limit and control the uses and disclosures that will be made of recorded information about an individual (Ceriello and Freeman, 1991). Actions such as these assist in allaying the privacy concerns of individuals. Allowing individual employees access to their own records to change any incorrect or disputed data<sup>14</sup>, subject to agreement, should encourage acceptance of the HRIS. Furthermore, organisations must only collect and retain information that serves valid business or legal purposes<sup>15</sup>. Any proposal to collect sensitive information should receive careful scrutiny and, if collected, must not be used for purposes other than the original intent. It is the responsibility of human resource managers to establish policies and procedures about data control and regulation.

### **Using the human resource information system**

The outer boxes in figure 4.2 represent some of the applications that use the information in the master database. Sometimes these applications operate independently, borrowing data for specific uses. On other occasions they add new

information to the master database. Staff and financial limitations may exclude some of these applications from a HRIS.

### *Human resource planning*

The primary function of the human resource department is to identify, analyse, forecast and plan for changes and needs in human resources. This is referred to as human resource planning. The purpose of this function, as part of strategic planning and corporate development, is to enable the organisation to retain desired employees longer and keep them functioning productively at reasonable cost. As the management of human resources evolved to include issues such as organisation design and restructuring, turnover and replacement analysis, equal opportunity and career path planning, human resource planning became correspondingly more complex. Contemporary human resource planning issues involve many variables and numerous mathematical calculations on large amounts of data (Walker, 1980): an ideal application for a HRIS with a reliable master database. Using a variety of approaches to modelling<sup>16</sup>, human resource planning will determine trends for virtually any type of data that the HRIS tracks. While these activities principally use information from the database, the results of their analyses may be added to the database<sup>17</sup>.

### *Recruitment and employment*

An applicant tracking and recruitment module provides information regarding open positions and the candidates for those positions. It may track not only individuals but also both filled and open positions. Based on the data stored in the master database, the module will match candidates on file, both internal and external to the organisation, to the prerequisites for vacancies and provide information on potentially qualified applicants. Using the historical data contained in the HRIS, not only may human resource management contribute to management planning on employee movement, transfers, promotions and career development, but also provide a self-monitoring and evaluation process for their own department.

### *Remuneration*

In the remuneration function, a HRIS manages several major applications: administering salary plans, tracking and controlling various incentive plans, participating in outside salary surveys, and dealing with employee share purchase plans. The foundation of many an organisation's remuneration programme is the salary plan. This utilises the positions and activities modules of the master database. Each position record typically contains a salary range. The use of salary ranges allows base salaries to be varied according to performance and/or length of time in the position. The salary values in the ranges are adjusted periodically depending on market conditions and the objectives of the salary plan.

Bonuses, commissions and other incentive plans have become more popular in recent years as organisations seek to increase the effectiveness of their salary plans and put more remuneration 'at risk'. A HRIS is capable of setting aside pools of money for a group of people and distributing the funds based on individual performance, group performance, sales or other factors. All or some of these payments may also be counted as remuneration in certain benefit programmes so the database must be able to recognise which payments are to be included in which plan and under what conditions.

Organisations participate in external salary surveys to compare their salaries and remuneration programmes with those of other organisations. A HRIS facilitates such comparisons by using the information stored in the positions module and linking it with the remuneration package for the incumbent(s) of that position.

### *Other benefits*

Benefits play an important role in the attitudes of employees toward the organisation for which they work. An attractive benefits package helps attract and retain worthwhile employees. What may still be reluctantly called 'fringe benefits' may no longer be considered fringe as they may represent up to 50 per cent of the remuneration package<sup>18</sup>. In these circumstances benefits issues are central to human resource management. The benefits module should not only

provide informative statements to individual employees, and ex-employees, but also information to outside parties such as insurance companies, claims processors, actuaries and pension funds.

### *Payroll*

This application is the logical end of human resources record keeping and the end of the reward management process. It is the most visible application of the HRIS. It converts gross remuneration to a bank deposit based on organisation policies and procedures, taxes and other deductions. The module is simply required to process data and generate accurate, complete and timely reports that are largely mandated by government regulations, management policies, banking procedures, standard accounting practices and benefits contracts (Salam and Price, 1988). All users of the HRIS need to understand the source of the data on which the payroll calculations are based and acknowledge that the final payment to employees will only be as accurate as the quality of the data received.

### *Training and development*

The training and development module compares an individual's needs with the options available. Training, like remuneration, has employee retention as its primary mission. Human resource management's strategic contributions to this objective include new employee orientation, diagnosis and correction of skills problems, remedial training and long-term career development. Apart from providing details on the costs and outcomes of particular training programmes<sup>19</sup>, the prized output is a skills inventory. This information may be extracted in relation to an individual or to the overall population of the organisation and allows managers to identify which employees might handle new responsibilities most efficiently or effectively. Furthermore, a well structured HRIS containing data, such as the date of attainment and the duration of each programme, regarding employees' level of education would provide a useful source of information that may be used in a contemporary human resource accounting model.

### *Employee/industrial relations*

The objective of employee relations in its most generic sense is to provide a supportive work environment for employees. Human resource management generally only becomes involved in specific situations at the request of individual employees, their trade union representatives, supervisors or managers. In seeking to resolve issues that may involve almost any human resource function, access is required to a broad spectrum of personal and work-related information in an individual's HRIS record. This module provides very little information to a HRIS because the data that it develops is somewhat less quantitative in nature than that obtained elsewhere in the human resources department. For individuals the main entries contain information such as dates and results of interviews, incidents, counselling sessions, disputes, attendance problems, warnings and so forth. Furthermore, this module of the HRIS should contain details of all collective procedural agreements, whether negotiated at national, company or site level and, more importantly, the standards that emerge through custom and practice.

### *Health and safety*

Apart from being good business practice, every organisation has a legal responsibility to provide a safe, secure workplace. The human resource department generally maintains an occupational health and safety function to promote these goals. The specific role of health and safety in a HRIS depends greatly on the type of business or service the organisation provides. Even so, all HRIS should ideally contain information, for each position, about the standards and procedures that are needed to maintain a working environment that may prevent accidents from occurring. Using the technology that is now available, it is a simple matter to provide employees with access to this information thereby enhancing their awareness of potential health hazards and how to avoid them. Typically, though, the HRIS information on health and safety that is most used is directed towards meeting government regulatory reporting requirements and providing reports to management and line managers that rarely contain more

than information relating to workplace incidents and the costs associated with them.

From the applications described above it is not difficult to appreciate that a large component of human resource management activity is data handling. The HRIS is ideally suited to that task providing users with many varied reports using the information accumulated in the various databases. Depending on the capability of the individual application, a report may come in any of several forms - text, tables, graphics, or a combination of these. Common reports include information such as profiles and listings of individual employees, summary reports on groups of employees or the entire population, person-position comparisons, individualised employee communications, reports required by external agencies, historical trends in work-related information, and trend analysis and time series comparisons.

As readability of information has become increasingly important, graphics have become an integral part of reports emanating from the HRIS. Tabular reports are used to present information, either in summary or in detail, in a row and column format. This form of reporting, if used to excess, may result in information overload. Text reports are also useful. Their main use is to provide background, explanation and clarification of graphic and tabular material. Text also helps to focus a reader's attention on the most important facts or conclusions that will result in a deeper understanding of the material presented.

Far too few HRIS use graphics to their full capacity. Bar charts, pie charts, line graphs and other computer graphics provide visual and intellectually powerful summaries of information. At a glance, a reader can grasp patterns, trends, comparisons and variances. Graphics, however, do not allow for the presentation of the detailed information required for decision making. This is often overcome by combining several formats in the one report. Most reports still take printed form but, increasingly, systems are capable of producing more and more electronic reports for both internal use and external distribution. This feature allows a HRIS to exchange information with other systems using output that may be a formal report, an entire database, or selected updated information.

All reports have two purposes: they both inform and persuade. Whether or not they achieve either purpose depends on the skill of the reporter as much as on the information presented and the manner of presentation. Every report has a purpose and an audience. If both of these are not clearly defined before the information is assembled, the chances of a meaningful document are lessened. HRIS reports should not be simply sterile presentations of a series of facts. They describe, or should describe, the results of human beings who are contributing their knowledge and abilities to achieve predetermined objectives. As such, they deserve a spark of life and a hint of personality. They should be interesting as well as informative and display characteristics such as clarity, conciseness, and accuracy. Reports should also be relevant. There is a difference between the needs of people at lower levels of the organisation and those of people at the highest levels. Reports should be constructed with this in mind. Within the constraints of both personal and organisational confidentiality, they should tell people what they want to know and what is important for them to know.

One criticism frequently laid at the door of human resource management is that a HRIS is purchased and implemented at great expense, then used as little more than an automated filing cabinet for personnel records (Kinnie and Arthurs, 1996). Although the HRIS is and should be involved in personnel record keeping, it is capable of much more. Through expert systems and data integration, the HRIS and related technologies are capable of not only automating records but also handling much of the current policy interpretation, human resource programme delivery, and communication with employees and management (Liebowitz, 1998). As such, Kossek *et. al.* (1994) believe the HRIS should be at the core of all planning and designed to support strategic decision-making.

### **Supporting human resource management**

Some organisations have gone far beyond basic human resource record-keeping and reporting. Their HRISs have been developed to include features such as succession planning, workforce forecasting and career planning. Sadly, the step of converting the data contained in the master database into strategic and tactical management tools remains unaddressed in the vast majority of HRISs (Fitz-enz, 1995).

Adoption of a strategic approach by human resource management will enforce a shift from the current, data-oriented HRIS activities to information management responsibilities. This involves working with collections of data elements to meet the needs of the system's users. These users are less likely to be human resource professionals and, more and more, a cross-section of corporate managers and senior executives who need, among other things, data on the demographics and costs related to employees and potential employees in order to make sound business decisions (Miller and Heller, 1988). Effective information management will enhance the contribution of human resource management to strategic planning. As a result, the HRIS will gain greater acceptance from users and allow human resource managers to increase their presence as internal consultants to operational management (Witkin, 1988). In many ways, the scope of human resource management and human resource information systems are co-evolving. Changes in the field of human resource management affect the focus of the future development of a HRIS and progress in computerisation influences how human resource management performs.

The previous chapter highlighted how human resource management should now play a critical role in the strategic activities of an organisation. In support of strategic decision-making, human resource managers should be able to use the HRIS to track high-potential employees, monitor long-term trends and generate models of possible future scenarios. There are increasing expectations of a HRIS. It is expected to make more accurate and comprehensive information available to a much wider range of human resource management functions at both planning and operational levels.

Regulatory and operational changes within human resource management inevitably lead to changes in a HRIS. In response to pressing business issues and increased competitiveness, human resource management functions are becoming more complex. This, in turn, increases the data management and computational capabilities that an effective HRIS must have. Flexibility is the key and this trend will continue. For instance, to retain valuable employees, many organisations are incorporating flexitime, job sharing, telecommuting, and improved personal leave and vacation policies. In response, employee time and attendance systems must become more flexible and responsive yet remain friendly to the typical user (Hawkins, 1988). Legislative and regulatory changes in areas such as equal employment opportunities,

sexual harassment, wrongful termination, and employee and industrial relations have necessitated the accumulation of new information in the HRIS database. These mandated changes are expected to continue prompting many organisations to maintain HRIS records as completely and accurately as possible.

Although changes in human resource management programmes and functionality have driven the development of a HRIS, information technology in the broadest sense is an even more rapidly evolving field. Computers, database management systems, operating systems and telecommunications have evolved so quickly in recent years that many a HRIS is working well below the capacity of the available technologies (Chorafas, 1986).

It is often the case that the day-to-day administration and fire-fighting incumbent upon human resource professionals in maintaining the employee database create a distraction from focussing on critical business issues. Administration and low-value activities are the bane of human resource managers from whom newer, higher value outputs are expected. It is, according to Sharp (1999), a case of the business and purpose changing but not the systems and processes that are required to support the change in direction. This obstacle may be overcome by using the most modern technology.

The ability of human resource managers to make a successful transition from administrator to strategic partner will depend, in part, on the tools they use. This role change for human resource managers also means procedural changes for operations managers. It may be that the latter value the ability to pass over routine personnel administration to the human resources function and may worry that the changes will increase their own workload. Organisations must, therefore, carefully evaluate both the roles they want human resource managers to play and the potential obstacles to achieving this. Moving the administrative functions to the owners of the data, with strong security and validation rules, will help to reduce some of the potential workload of the operations manager and at the same time empower employees. Along with this need, the implementation of appropriate technology for utilising the World Wide Web is now crucial for success in the pathway that lies ahead.

The use of an organisational intranet is capable of directly providing information about human resource policies, recruitment, benefits and news on developments within the organisation. Employees can access and update their own personal information including address, bank account details, time sheets, leave requests, training programmes and the like. In this way the HRIS is available to and useful for both the organisation and its people. The actual return on investment in this technology will only be derived when employees embrace the new media and cease to use the paper alternative. This will only be achieved by making the technological option easy to use, easy to understand and an interactive experience. Employees must have a reason to return to the website on a regular basis. This may be simply achieved by ensuring that when information concerning new training courses (internal, external, conferences, etc.) is entered into the HRIS database, the system should recommend the new courses or events to the employees who match the profile when they next visit the site. Furthermore, employees should be able to profile-match themselves to other positions within the organisation. This allows them to determine what training programmes they should aim for so that, one-day, they might move into their chosen role. Web technology has the capability to allow employees to feel more in control. As a result, there is a greater chance of operating a timely and reliable HRIS than with paper driven systems.

Using this technology both assists in the development of a decentralised human resource management model and helps human resource managers to become strategic consultants. First, managers are able to access the vital human resource information needed to help them manage their operations better. Second, operational and human resource managers may become business partners by jointly analysing the data provided by the HRIS and information concerning the business environment to provide a human resource solution to a business problem. The key to it all is information management – providing the right information, in the right format, to the right person, at the right time.

## **Conclusion**

Not all HRIS are successful. Indeed many do not live up to expectations and others fail outright. For long-term success, a HRIS must meet three conditions: it must be

technically sound, it must be administered well, and it must support the strategies of both human resource management and the organisation (Beutell and Walker, 1991). In reflecting on the last of these conditions, it is very clear that a HRIS, inwardly focused on the human resource management user rather than outwardly focused on the operations manager or employee, is inadequate. It will need to be realigned to provide better support of corporate strategies.

As part of the realignment process, human resource management should seek ways of helping the organisation by adding competitive advantage and value to its operations. It will do this by giving top priority to the needs of operational management through relevant human resource reporting and using the HRIS database to assist with internal projects, develop output models and supply other information which will improve operational management and product costs. Furthermore, an effective HRIS will save time in obtaining human resources, eliminate redundant operations, deliver relevant information more quickly and easily, and provide data for regular benchmarking exercises.

In this age of continuous change, new people skills and capabilities are needed. A competent HRIS enables an organisation to obtain these skills while automating many of the administrative personnel functions. The selection and implementation of a highly flexible, portable and largely automated HRIS is critical to achieving greater efficiencies. This will enable senior management and human resource professionals to determine the organisation's strategic direction and how best to use its ever-changing workforce.

## Notes

- <sup>1</sup> Some licence is taken here with the question posed by Marquès (1976, p.178) – “Are people a resource for the enterprise or is the enterprise a resource for people?” – to ensure that the development of an information system recognises the personal and proprietary nature of the basic data and the associated confidentiality expected of its use.

## Notes ... *continued*

- <sup>2</sup> There may seem to be undue concentration on computers when discussing information systems but the reality of life in the 1990s and in the foreseeable future is that computers will be used in organisations to store, reproduce and transmit data.
- <sup>3</sup> For example, an organisation's budget is just a collection of opinions no matter how sophisticated the techniques for constructing them.
- <sup>4</sup> The balance sheet of an organisation expresses many opinions, generally decided according to some convention, but none the less opinions rather than objective facts.
- <sup>5</sup> Other than manual entry of data into a computer system this was not a realistic option until the introduction of the Internet. Now it is possible to download data from external sites to merge with an organisation's own data.
- <sup>6</sup> Although, in the information age, many of the programming and system support functions are outsourced to organisations that specialise in these fields.
- <sup>7</sup> See <http://www.curtin.edu.au/curtin/dept/hr/horace/objectivs.html> [accessed 12/2/99].
- <sup>8</sup> This is an Australian requirement. Other countries use alternatives such as social security number, National Health number and the like to meet legislated reporting requirements.
- <sup>9</sup> In an enterprise comprising more than one legal entity there may only be a single human resources department at head office. Often, in situations such as this, a single HRIS is used across all the separate organisations.
- <sup>10</sup> See, for example, the Hay Points system created by the consulting group, Hay Associates Inc.
- <sup>11</sup> Salary surveys conducted by various parties are an obvious example. It is also possible to benchmark other human resource performance measures such as organisational effectiveness, absence and turnover, recruitment, training and development, and occupational health and safety.
- <sup>12</sup> Armstrong and Long (1994) identified Pilkington Optics, Rover Group and Megastores as three organisations that were adopting this approach to assist them in achieving world class levels of performance.
- <sup>13</sup> For example: a date field may only accept numeric data and the month portion of that field may accept only the numbers 01 through 12.

## Notes ... *continued*

- <sup>14</sup> This will comply with the EC General Data Protection Directive (1995) that took effect on 24th October 1998. The Directive introduced high standards of data privacy to ensure the free flow of data throughout the 15 member States. It gives the individual the right to review personal data, correct it and limit its use.
- <sup>15</sup> The UK Government has now issued the 1998 Data Protection Bill that incorporates the 1995 EC Data Protection Directive into domestic law. This Act creates new access rights for employees including a right to object to processing data about them and new rights to information about the purposes for holding data.
- <sup>16</sup> Such as network flow model, renewal model, Markov model and cohort analysis.
- <sup>17</sup> For example: an index of attrition may be added to a job classification or a position code to indicate the relative likelihood that an employee in this position will leave the organisation. This information will be useful not only to human resources management but also to line managers and employees during career counselling (Grinold and Marshall, 1977).
- <sup>18</sup> The applicability of benefits and the percentage of the remuneration package vary significantly from country to country depending on the revenue laws.
- <sup>19</sup> This should not be limited to formal training programmes. Wherever possible, data in relation to on-the-job training should also be included.

Chapter **5** *Accounting's role in the  
supply of information*

accounting is a branch of statistics and statistics a branch of information. Our task is communication and our objective should be to make that communication as clear and as useful as possible.

*A.M. Cannon*  
The Journal of Accountancy  
February 1962

## **Introduction**

Accounting is the system an organisation uses to measure its financial performance by recording and classifying transactions of value. Accounting also provides ways to present this information that make it possible to evaluate an organisation's past performance, present condition and future prospects. Interested external readers may use this information in an attempt to evaluate the organisation while managers may try to use it to plan and control the organisation's operations. Because these two audiences use accounting information in different ways, accounting has two distinct facets, both of which embrace an extensive range of practical techniques which may be used at various times in the course of managing any organisation.

Financial accounting is concerned with preparing information for the outside world. Those interested parties, external to the organisation, use this accounting information to satisfy a variety of interests. Suppliers, banks and other lenders want to know whether the organisation is creditworthy. Investors and owners are concerned with the organisation's profitability and growth. Government agencies are mainly

interested in regulating the organisation and collecting taxes. These users need information that is objective, consistent over time and comparable to information supplied by other organisations. Because of this, financial accounting statements generally conform to certain standard formats and are prepared in accordance with generally accepted accounting principles.

Management accounting is concerned with preparing information for internal use. In contrast to financial accounting, this information may be tailored to the needs of a particular organisation. Its overall purpose is to help managers evaluate results and make informed decisions. In a typical organisation, the management accounting function covers a wide range of activities such as recording financial transactions, financial planning, and providing management with evaluations of expenditure on property, plant and people.

Accounting is not, as Morgan (1965) appears to have believed, an exact science. Using exactly the same financial data, accountants may legitimately derive a wide variety of results depending on the assumptions they make and the way they interpret the accounting rules. As long ago as 1970, the American Accounting Association set up a committee to look into the behavioural science content of the accounting curriculum. This committee reported as follows:

"To state the matter concisely, the principle purpose of accounting reports is to influence action, i.e. behavior. Additionally it can be hypothesized that the very process of accumulating information, as well as the behavior of those who do the accumulating, will affect the behavior of others. In short, by its very nature, accounting is a behavioral process." (American Accounting Association, 1971, p.56)

To some extent then, accounting numbers represent human judgement. They do indeed provide a picture of the organisation as Hines (1988) suggested, but that picture has been constructed with the artist's concept of reality. The users of the information generated in this way think and act on the basis of that picture, "and by responding to that picture of reality, they make it so" (Hines, 1988, p.257). This is a concern shared by Miller (1994, p.1) who suggests that accounting is "an attempt to intervene, to act upon individuals, entities and processes to transform them and to achieve specific ends".

From the quotation opening this chapter and the preceding comments, it is clear that the role of accounting involves communication. What is not clear at this juncture is what it is that accountants are communicating and to whom. Within the facet of management accounting, this chapter will attempt to resolve this uncertainty, particularly as it applies in support of human resource management. Furthermore, the chapter will look at steps already taken and examine additional concepts that seek to emphasise the 'management' in the discipline of management accounting.

### **The nature of management accounting**

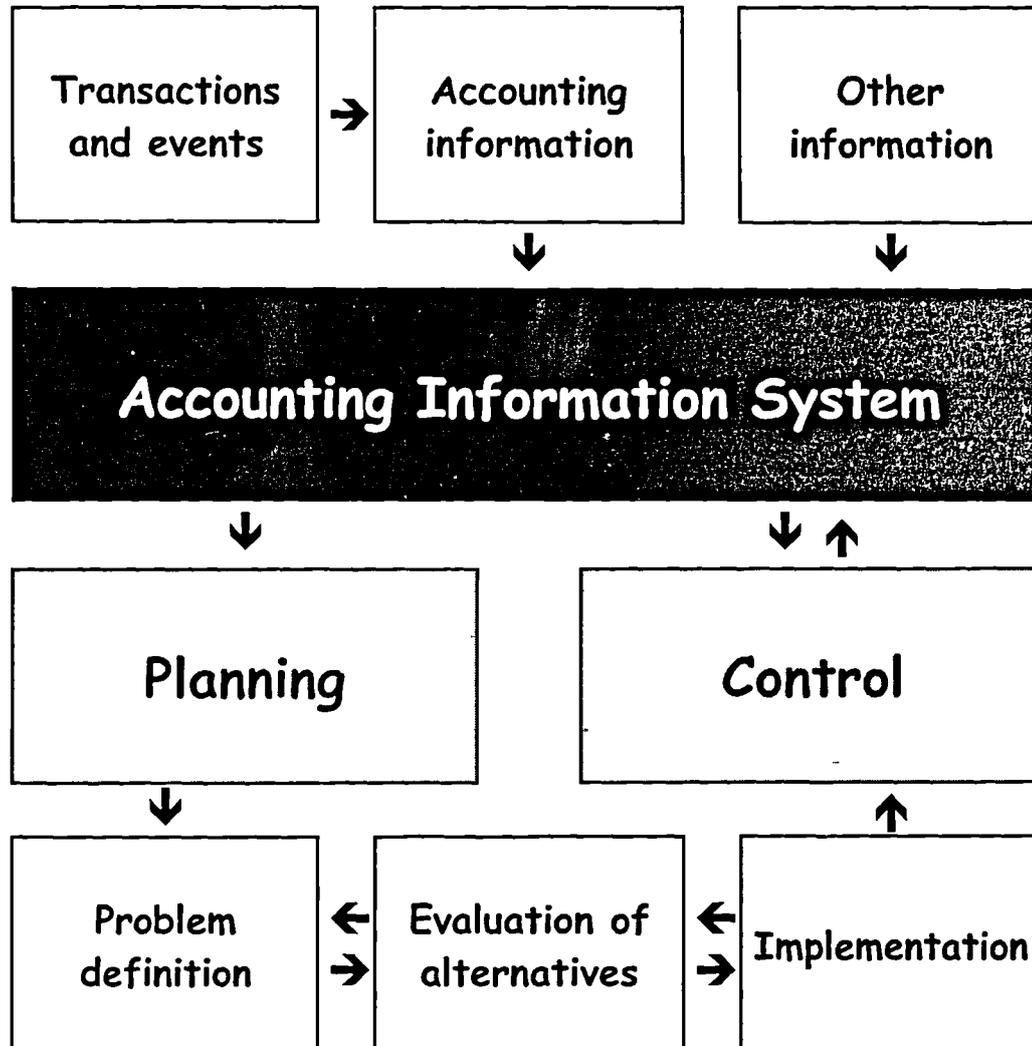
Accounting is often presented as a rational activity, central to all organisations, that is directed towards the production of information useful for making informed judgements. There are two principal types of informed judgements that users of accounting information may wish to make.

The first is concerned with decisions about the ways in which an organisation's resources should be allocated. Decision-making entails making choices between alternative, competing courses of action. Much discussion about accounting's role in the decision-making process assumes that the relationship between action and consequence is unproblematic (Jones, 1995). This is centred on the belief that decision-making is based solely on rational criteria with little recognition given to the possibility that decisions may be influenced by unconscious scripts and intuition. In this regard, accounting is influential in setting the agenda for decision-making because it creates "mechanisms around which interests are negotiated, counter-claims articulated, and political processes explicated" (Burchell *et. al.*, 1980, p.17). While it is unlikely that any decision-maker could fully capture accounting for their own purposes, it may certainly be mobilised by particular individuals or groups to promote their own interests.

The second judgement relates to the assessment of accountability. This requires an understanding by the decision-maker of who is accountable, to whom, by what means and for what. In each of these situations, the role of the accountant is to identify information that is relevant to the decision-maker. The process of achieving

this task is to measure and convert raw data into information and then communicate this information to the decision-maker.

*Figure 5.1: Management accounting and the decision making process*



Management, or managerial, accounting is that branch of accounting thought and practice concerned with providing information that is useful to decision makers within the organisation. Figure 5.1 provides an illustration of the role of management accounting in the decision making process. At this point it should be emphasised that the boundaries of management accounting are not rigid. Management accounting has, in common with financial accounting, a focus on the organisation and its activities. The two facets of accounting diverge in the sense that management accounting serves a class of decision-makers whose decision interests are generally different from those of the decision-makers served by financial accounting alone. In addition, many of the

decision models that have evolved for management use and for which accountants supply the necessary information inputs utilise both financial and non-financial information.

Furthermore, in the internal decision-making process, the accountant enjoys a closer relationship with the decision-maker than is the case in financial accounting. Consequently, the decision maker and the accountant are able to engage in continuing dialogue until the accountant has a better understanding of the decision maker's decision model and information wants. The outcome is that information provided by management accounting ought to be in fairly adequate final form for making "better decisions and thereby achieve organizational control and enhance organizational effectiveness" (Wilson and Chua, 1993, p.16).

### **A control system**

As all organisational plans are implemented and executed, periodic review is necessary to monitor progress and detect results that are significantly different from the expectations on which initial adoption of the plans was based. Furthermore, if necessary, alterations to the plans should be made on a timely basis. Accordingly, monitoring and evaluation of organisational plans are formalised as part of the periodic cycle of management decisions. This implies that there is usually a pattern that is repeated continuously. The pattern is a cycle composed of two major phases. These are a planning phase and a control phase. The cyclical aspect of management decisions results from the interrelationship of planning and control activities. Performance evaluation is implied in the control phase and is dependent on having a recognised plan with which to compare the results of actual activities. On the other hand, as one period's actual results are materialising and being evaluated, plans are made for the coming period's operations. To be as realistic as possible, all new plans must incorporate the experience gained from current control activities. This results in a sequencing of activities with one period's control efforts based on the prior planning phase and leading to the next planning phase.

The control process is concerned with the establishment and maintenance of a system that will identify actual deviations from plans, the causes of the deviations and the

appropriate actions to remedy the situation. This system will measure current performance and guide the organisation toward the achievement of objectives. To do this effectively the system will contain several essential elements. In his cybernetic model of control<sup>1</sup>, Tocher (1970; 1976) identifies four necessary conditions that must be satisfied before a process may be said to be controlled. These elements of control are a predetermined set of targets, a means of measuring current activity, a means of comparing current activity with each target, and a means of correcting deviations from the targets.

The targets may be official or operative objectives, plans, policies, standards, decision rules or rules-of-thumb. Whatever form they take, they represent an attempt to predetermine objectives and so provide a basis for interpreting the meaning of events as they actually occur. The predetermined criteria may be scientifically calculated or set arbitrarily, based on reasonable or totally unreasonable expectations, good or bad. The control system merely provides a means by which activity is directed toward their achievement. In general, the predetermined criteria should be stated explicitly and for this reason quantitative statements are preferred.

Measurement of actual performance is the second essential element of the system and usually it requires the greatest effort and incurs the highest cost. Records and reports must be devised to present relevant information in units identical to those used in the setting of the targets. The faster the reporting of actual performance to the decision-maker, the greater the value of the control system. The degree of accuracy of the reports will depend on the needs of the specific application. All measurement is accurate only to some limited degree and generally speed of reporting is more important than concern over small possible errors. The ability of a decision-maker to act quickly and effectively after interpreting the meaning of measures of past performance is an essential factor in successful management. The activating of a control device in relation to the timing of the performance it is designed to monitor is a decision of considerable importance. If the time interval is too long and performance is unsatisfactory, unnecessary waste and inefficiency will occur.

Comparison of a target with actual performance indicates variations in activity. Variations may be caused by many factors and may range in size from the very small

to the very large. The key decision is the determination of what size of variation is significant and worthy of attention. Clearly this will depend on the nature of the activity being measured and on its relative importance to the decision-maker's area of responsibility. Without the use of predetermined acceptable limits of variation, the decision-maker may waste time on minor problems and fail to spend sufficient time on major problems. The use of simple, direct methods of comparison not only assists the decision-maker to understand and interpret performance problems but should also assist in the prediction of future problems.

Corrective action, if necessary, needs to be fast and effective to minimise the adverse consequences of deviations from planned targets. There are four main forms of corrective action. Changes may be made to the inputs to the system, the targets, the predictive model of the process to be controlled, or the nature of the process itself. In addition, there are two types of basic error facing the decision-maker when taking corrective action. First, they may take action where no such action is needed. Second, they may fail to take action where it is needed. The control system should provide some basis for determining the appropriate changes to be made and assisting the decision-maker to estimate the risks involved.

In addition to the essential elements, there are several principles that should be followed when designing and implementing a control system. First, the control system must be designed to convey the relevant information about the operations and activities of the organisation to the responsible decision-maker. Second, controls should be focused on the critical points in the organisation to achieve optimal performance. Third, as circumstances change and operations are adjusted, the control system should be capable of adaptation. Fourth, controls should be easily understood for it would be futile to expect managers and employees to observe complicated and incomprehensible controls. Indeed, unless they understand the nature and measures of the controls, they are unlikely to respond positively to them. Finally, the control system should recognise the importance of the human variable and encourage participation, understanding and involvement.

The control system within an organisation has many elements. The number and diversity of such controls may lead to the control system itself becoming out of

control. The system should ensure the coordination and efficient performance of all operations within an organisation. However, control is a means to an end, not an end in itself. The end to which the system should contribute is the effective achievement of objectives and plans. Any portion of the system that fails to do this is redundant and, if continued, is likely to cause negative reactions in the managers and employees affected by it. Considering that even necessary controls frequently arouse strong emotional reactions, the designers of a control system need to be *sensitive to the* relevance and effects of all control devices and techniques. Indeed, the more participation by those directly affected by the control system, the less resistance will be encountered (Lawler, 1992; Trice and Beyer, 1993). Even so, no system with a human element will work effectively unless the individuals concerned want it to work, least of all a control system. Generally the concept of control is repugnant to most people as it indicates limited freedom of action and a compulsion to act in ways not always in accord with individual preferences. Nevertheless, most people readily accept the necessity for controls as part of normal, everyday living<sup>2</sup>.

In this cybernetic model, management accounting techniques play a role in each of the elements of control. They are used to define targets and feasible regions of activity, measure outputs, and identify the effects of alternative organisational objectives. Control through the use of management accounting systems is easiest to achieve when targets are clear, outputs are relatively easy to measure, the activity to be controlled is repetitive and the organisation is operating in a very stable environment in which targets remain valid for long periods of time. In situations such as this, management accounting systems are used to detect and correct deviations from the intended course of action. When the error detected and corrected permits the organisation to carry on its present policies or achieve its present objectives, then the process decision-makers are undertaking is single-loop learning (Argyris and Schön, 1978).

Traditional management accounting systems are less helpful in situations where there are unclear and conflicting targets, outputs are difficult to measure, there is a poorly defined predictive model, the activity to be controlled is non-repetitive and the organisation has little or no control over the external environment. Wilson and Chua (1988) believe the latter situation is commonplace in larger, more complex

organisations and as such management accountants need to be aware of other forms of control that require a deeper understanding of individuals and of people in interaction. In such constantly changing environments, new courses of action may emerge from capitalising on opportunities or countering threats that were not envisaged when the initial objectives were set. This requires a system that goes beyond the detection and correction process. Organisations need the capacity for double-loop learning. Double-loop learning occurs when decision-makers question their underlying assumptions and reflect on whether the conception under which they were operating remains consistent with current evidence, observations and experience (Argyris and Schön, 1978). This would suggest that it is the behavioural response, rather than the structure and mechanics of the control system, that is critically important.

### **Accountability**

In any organisation every position has, or should have, specified tasks and the responsibility for carrying them out. For an organisation to make efficient use of its resources, responsibility for specified tasks is assigned to the lowest organisational level at which there exists sufficient ability and information to carry them out competently. A corollary of this statement is that for individuals in an organisation to perform their assigned tasks effectively, they must be delegated sufficient authority to do so. A necessary part of the delegation of responsibility and authority is accountability. Gray, Owen and Adams (1996, p.38) define accountability as “the duty to provide an account (by no means necessarily a **financial** account) or reckoning of those actions for which one is held responsible”. Management accounting systems usually provide the foundation for that statement of account.

For the organisation as a whole, the focus is on management who is considered accountable for the sustainability of the organisation. If management is to achieve this fundamental objective, it is imperative that strategy and action are consistent with economic and financial reality. Importantly, management must be realistic and dispassionate in choosing objectives and means that are consistent with the organisational environment as it is. There has been much discussion about the objectives management pursues in their quest for sustainability (Guth and Tagiuri,

1965; McMillan, 1978). At one extreme are those who maintain their only objective is the pursuit of profit to maximise shareholders' wealth. At the other are those who see themselves as good corporate citizens, reconciling public and private interests for the common good. Unfortunately it is difficult, if not impossible, to separate sincere convictions from empty rhetoric in the documents managements use to convey their message<sup>3</sup>. Whether management is appealing to shareholders (via the Board of Directors), financial analysts, customers, employees or the public at large, their own self-interest and those of their audience necessarily colour those public or semi-public statements.

Management's financial planning records, however, provide a more reliable source of evidence of real intent. In essence, these documents provide an insight into the private discussions of trusted colleagues as they deliberate upon one of the most sensitive elements of organisational achievement – the management of scarce resources. Explicit and detailed, these documents reveal management's objectives clearly, while the figures and projections they contain establish a firm link between the organisation's objectives and its strategic decisions. Concerned with the sustainability of organisations, managements cannot afford to be parochial in their views. Instead, they must balance the demands made on them by four competing constituencies whose cooperation is vital for their organisations' success. The first of these is the capital market constituency, which includes both the owners and the providers of the organisation's debt capital. The second is the product market constituency composed of the organisation's customers and suppliers. Third is the organisational constituency which consists of all the employees, including senior management, and the unions that represent them. Fourth and last is the community, or communities, in which the organisation operates.

Each of these constituencies has its own perspective on the organisation as well as its own set of priorities. Because management responds to these competing priorities as they plan, their true objectives are considerably more complex and comprehensive than might be expected. In addition, these objectives constitute a hierarchy of sorts, because at any given time management assigns a higher priority to some constituent's interests than they do to others. These hierarchies reflect the economic and financial constraints within which management operates as well as the

psychological constraints of their belief systems (Donaldson and Lorsch, 1983). In any event, these objectives, not all of which may be quantified, must be specific, clearly understood and widely shared among key decision-makers. They must persist over time and become embedded in the organisation's planning and decision-making process. They must be constantly monitored so that management's behaviour is seen to be consistent with their stated objectives; achievement is suitably rewarded and persistent failure results in deliberate action.

Having identified management as the principal group accountable for organisational performance, the question is accountable to whom? Traditionally, accountability is a legal concept derived from the laws governing private property and private enterprise. As a result, the logical, as well as customary, answer would seem to be the owner. In the post-industrial era, or 'Third Wave' civilisation (Toffler, 1980), accountability is expanding to include all stakeholders in an organisation who play an integral part in its activities and who have a legitimate claim on organisational performance (Plender, 1997). Under this broader definition, such claims may be enforced by economic, social or political means as well as by legal ones. They derive from the power of a particular party to withhold the participation that management deems essential to the future success of the organisation. This power to withhold stimulates management to ensure that organisational objectives and planning documents clearly reflect management's recognition of its responsibilities to a range of constituencies. In addition to the usual references to owners, statements of organisational objectives often specifically cite the organisation's obligations to its customers, employees and the community in which it operates<sup>4</sup>. All of these parties, comprising the four separate constituencies, are directly involved in every organisation's operations.

Traditionally, the means of discharging the duty of accountability has been to provide financial information. Originally this was only provided to owners but in more recent times the same, or an abridged version of, financial information has been provided to all of management's constituencies. Unfortunately, the provision of copious useful financial information is an expensive business and the current legislated reporting requirements fall short of desirable standards in many ways. Factors which make this so include the diversity of accounting principles adopted,

the increasing mix of businesses undertaken by organisations and the fact that many lay readers find financial statements, prepared in accordance with generally accepted accounting principles, somewhat incomprehensible (Lee and Tweedie, 1978). Although some reporting is eminently desirable, the cost of providing truly adequate information to constituents with diverse needs is prohibitive and alternative means of discharging the obligation of accountability should be sought.

Within the organisational constituency, accountability is bidirectional. The reason for management's accountability to its employees will be elucidated later. Employees, through the various levels of the organisation's hierarchy, are accountable to management consequent to the delegation of responsibility and authority. Earlier, it was stated that management accounting is the vehicle for providing information that is useful to decision makers within the organisation. This discipline encompasses techniques and processes that provide financial and non-financial information that ensures the organisation is pursuing courses of action that will enable it to achieve its objectives (Otley and Berry, 1980). Management accounting satisfies this bidirectional nature of accountability through feedforward and feedback systems. Bhaskar and Housden (1985, p.199) define the feedforward system as "a measurement and prediction system which assesses the system and predicts the output of the system at some future date". By providing information generated by this system (e.g. standard setting, monitoring process inputs, monitoring operations, predicting process outputs) to employees, management is able to go some way to meeting its accountability obligation. In the complementary feedback system, the functions that management accounting carry out are monitoring standards, performance measurement and reporting of results thereby meeting the employees accountability obligations to management.

Each of the four constituencies expects management to satisfy an objective unique to its special interests. It would be misleading to suggest that these broad constituency groups have uniform needs and expectations. Even among subgroups, such as the owners, this is not so. The capital market constituency, which currently dominates management thinking, has a perspective on the organisation that differs in significant respects from those of the other constituencies. This leads to a potential conflict of constituency interest.

Expressed in its most fundamental form, the capital market constituency expects management to preserve and enhance the private wealth that it has placed, at risk, under their use and control. The expectations of the product market constituency are more difficult to define as they are not a coherent interest group. Apart from the small, but growing, cohort who also evince ethical considerations<sup>5</sup>, customers demand quality products and services, at a fair price, from a reliable source. Suppliers look for assured customers willing to pay the highest sustainable price. The organisational constituency's principal objective is the preservation of a secure, dynamic, stimulating and rewarding employment environment. Normally this means the continuity of the existing organisational power structure and chain of command as well as freedom from outside interference or control. This requirement implies continuing growth to improve job security, the best possible working conditions and remuneration package, and the provision of upward mobility and/or job satisfaction for all employees who seek it. Host communities are looking for long-term employers who will provide jobs and tax revenues with minimal demands for public services and minimal environmental damage.

The success of any organisation depends on the active cooperation of all four constituencies. Therefore, the ultimate disciplinary power of any constituency lies in the threatened or actual withdrawal of its cooperation. To obviate this management responds to the demands of these four constituencies. Since it is impossible to satisfy all of the constituencies all of the time, they must make choices among the competing demands. These choices, and their associated priorities, are inclined to be reflected in the organisation's objectives that form an integral part of the financial planning and resource allocation process. In the future, as management strives to achieve the organisational sustainability it desires, its perspective will encompass far more than the bottom line. None of its objectives may be addressed in isolation because the variety of constituency claims stimulates and reinforces each. Consequently, these objectives constitute a system or discipline within which management must operate as it makes its choices and establishes operational strategies. To this end, management regards the discipline of management accounting as the provider of relevant information to assist in determining strategy and ultimately providing the account expected by the constituencies.

## **Limitations of traditional management accounting**

Management accounting is intended to help organisations control and improve their activities. Unfortunately the traditional processes of management accounting fail to meet the expectations of management as they reposition their organisations to compete in the 'Third Wave' environment. The time-honoured management accounting methods were developed in the late nineteenth and early twentieth centuries to meet the dynamic needs of expanding industries in Europe and the United States of America. New accounting methods were developed because entrepreneurs were beginning to hire people on a long-term basis, make long-range capital investments, establish hierarchical organisational structures and introduce more complex production technologies. The new decision making within these organisations required new internal financial information systems.

Early management accounting systems were devoted to product costing. They concentrated on accumulating costs for the calculation of cost-per-unit for straightforward manufacturing processes. These costs included labour, materials and, occasionally, the application of a little overhead. As communication and transportation improved during the nineteenth century, new management techniques were required to control more geographically widespread organisations such as railways, retail stores and services. These needs brought the development of cost and profit centres and new performance measures for individual operations. The influence of the scientific management movement, with its emphasis on a standard method for each production task, led to the introduction of standard costs for manufactured products (Taylor, 1911). The evolution of diversified organisations required the use of additional techniques for budgeting, capital investment analysis, divisionalised accounting and performance measurement criteria.

All the essential elements of traditional management accounting had been established and codified by the 1930s. These elements included financial forecasting, budgeting, standard costing, overhead absorption, variance analysis, transfer pricing, return-on-investment calculations and cost-volume-profit analysis. The techniques of management accounting became established practice. In the same era, the integration

of the cost accounts with the financial accounts had become commonplace at the direction of the auditors (Loft, 1991).

Since then, there have not been many significant changes in the rudimentary techniques of management accounting. A number of refinements have been introduced but, on the whole, the fundamental principles have changed very little<sup>6</sup>. In contrast to this stability, organisations have changed enormously. Products have changed dramatically and services comprise a much larger share of national economies. Manufacturing technology has been transformed and automation has changed cost distributions. Research and development cycles in some industries are much longer and infinitely more costly<sup>7</sup> and employee needs and aspirations are very different (Callus, 1999). In short, a revolution has taken place in organisations and the rate of change is increasing every year. Clearly, the methods that provide the foundation of traditional management accounting had not kept pace with these dynamic organisational changes (Johnson and Kaplan, 1987). This is particularly relevant in the manufacturing sector<sup>8</sup> where a well-developed manufacturing strategy is becoming increasingly important to many organisations. A major feature of such a strategy is the definition of an infrastructure that is consistent with how products compete in selected markets. The management accounting system is a key component of this infrastructure. Fry, Steele and Saladin (1995) have found that many organisations use an accounting system that appears to be inappropriate in that it is often ill suited to their marketplace and inconsistent with the organisation's strategy.

The perceived problems with management accounting are lack of relevance, cost distortion, inflexibility, incompatibility with modern operational methods and inappropriate links to financial accounts. Each of these problems need to be understood to ensure the systems developed and enhanced in subsequent chapters are not tainted with the same faults.

#### *Lack of relevance*

Management accounting systems, by their nature, are primarily financial in the way they collect and report information. By comparison, many of the strategic objectives of organisations are non-financial. Strategies will often make

reference to financial objectives that are reported, together with non-financial objectives, as part of the management accounting system. The non-financial objectives relate to such issues as products, markets, quality, reliability, flexibility, innovation, time-to-market, lead times, customer satisfaction, employee involvement and social issues. None of these are addressed by traditional management accounting (Kaplan, 1984). If management accounting does not address the strategic issues of the organisation then it is, by definition, irrelevant.

In a similar vein, financial measures are not always meaningful for the management of operations. Most operational employees do not think in terms of the financial aspects of their work. They concentrate on such issues as output rates, yield, quantities, on-time deliveries, reject rates, schedule changes and stock-outs. These are the real issues of operations; not contrived financial analogues which provide little of use or value to anyone in operations (Mackay, 1987).

Furthermore, the application of cost accounting to pricing is often misleading and irrelevant. Management accounting analysis has become less significant to pricing decisions in recent years because global competition has made product pricing market-driven and not cost-driven (Bourne, 1999). The new requirement is to set the price according to the needs of the market while at the same time giving the organisation a competitive edge. While, for the majority of organisations, prices are established by marketing decision rather than by an analysis of costs, there remains a need to analyse production costs in comparison to prices so that management may fully understand product and customer profitability. The techniques of target costing, life-cycle costing and value analysis are the accounting tools required in this environment and not the traditional product cost and profitability analysis.

### *Cost distortion*

Traditional management accounting is concerned with cost elements. The pattern of cost elements has changed in recent years and this detailed analysis is less important. When cost accounting was first developed labour was by far

the biggest cost element for most products, materials coming next and overheads were relatively small. This is no longer the case and so to continue to break down product costs into elements is, at best, irrelevant and often harmfully misleading (Kaplan, 1984; 1988).

Also, there used to be a clear distinction between direct and indirect costs. Direct costs were those directly associated with making the product and indirect costs were other organisational activities that contributed cost but did not contribute to making the product. Those indirect costs were relatively low in comparison to direct costs. Today this is no longer the case and the old ideas associated with differentiating between direct and indirect costs, particularly in relation to people costs, do not apply. Similarly, the use of fixed and variable overhead costs is not as clear-cut as it used to be because the majority of overhead costs have mixed fixed/variable characteristics. Both concepts are now unhelpful in analysing and understanding product costs and how to improve operations (Finnie, 1986; Kaplan, 1988).

Furthermore, these problems extend to the traditional method of allocating overhead costs using labour hours or labour costs. For the reasons alluded to in the previous paragraph, organisations that continue to apply overheads using labour as the driver are misleading themselves, often with very serious consequences. This issue goes deeper than the potential distortion of product costs. The real issue is how should overheads be applied to product costs? Some organisations take the approach that the application of overheads to products is always misleading and make their management decisions based on marginal and direct costs only. Others have adopted the concept of activity-based costing (Cooper, 1988; Kaplan, 1988) oblivious to the fact that it differs little from the principles of overhead apportionment and absorption introduced in the 1950s (Allen, 1999) and ignorant of the very strict conditions that must be observed for the concept to be successful (Bromwich and Hong, 1999).

### *Inflexibility*

One of the charms of traditional management accounting is that the reports are consistent across the organisation and each of its divisions and departments. A

single set of numbers controls the whole organisation. While this has aesthetic merit and facilitates comparison by management, it does not make sense in that each division or department is usually different. They have different products, different processes, different strengths, different weaknesses, different problems and different people. For management reporting to be of value it must take account of these differences. Similarly, divisions and departments change over time and their management reporting must also change with them. Continuous improvement, a cornerstone of employee involvement, creates rapid and widespread change throughout the organisation. Far greater flexibility and understanding is required in performance reporting to ensure appropriate decisions are made (Cooper and Kaplan, 1991).

Feedback reporting needs to be up-to-date, accurate and provided in a timely fashion. Traditional management accounting systems are usually driven by the financial reporting calendar and the majority of reports are produced monthly. Even then the reports are often not available until several days, or even weeks, after the month has closed. This is not timely and in these circumstances the reports are not used to monitor operational performance (Smith, 1990).

### *Incompatibility*

A common notion holds that accountants are conservative by nature, reluctant to innovate and therefore obstruct progress. Such is not necessarily the case but it has been established that, in many organisations, accounting systems have not changed as quickly as operational techniques and have become a hindrance to the progress of improvement. Often this is because the cost and management accounting systems are complex and thorough and it is not easy to modify or dismantle them (McNair, Musconi and Norris, 1988). These inappropriate management accounting systems, which carefully measure labour efficiencies, machine utilisation and overhead variances, encourage overproduction to minimise any potential negative reaction to poor performance reports.

### *Links to financial accounts*

The original purpose of management accounting was to provide decision-making tools for management that used whatever data was considered relevant. Regrettably, the requirements of financial accounting and external reporting have effected a retrograde change of emphasis. Too often the management accounts are regarded as a subsidiary ledger of the financial accounts. Management accounts should not be a meek reflection of the financial accounts divided into divisions, departments or jobs. To be of value, management accounting systems should reflect the purposes for which the information is required and will usually be based on different methods and assumptions than the financial accounts. This is particularly relevant to such issues as inventory valuation, overhead absorption and accounting periods (Smith, 1997). It is, however, still the case that whatever information is used for management accounting purposes, organisational performance will continue to be judged externally by reference to the financial accounts. This makes it very difficult to overcome the short-termism intrinsic to financial accounting measures. Clearly, some reform of financial accounting is also needed. The answer may, however, lie in the move towards social reporting (Zadek, Pruzan and Evans, 1997).

Clearly traditional management accounting suffers from a technical orientation within a closed system which is the organisation (Puxty, 1993). Much of the information it generates is seen to be irrelevant and incompatible with modern organisations. This is not a global phenomenon. In Japan there is a direct link between management accounting practices and an organisation's strategy. While the financial accounting constraints of inventory valuation and external reporting exist, they are not allowed to overwhelm the efficient measurement of organisational performance (Hiromoto, 1988). Perhaps this is why the loudest call for change has emanated from western societies and, in particular, the United States of America.

### **Management accounting in crisis**

Johnson and Kaplan (1987) created the perception of a crisis when they opened their definitive volume with the following paragraph:

Today's management accounting information, driven by the procedures and cycle of the organization's financial reporting system, is too late, too aggregated, and too distorted to be relevant for managers' planning and control decisions. With increased emphasis on meeting quarterly or annual earnings targets, internal accounting systems focus narrowly on producing a monthly earnings report. And despite the considerable resources devoted to computing a monthly or quarterly income figure, the figure does not measure the actual increase or decrease in economic value that has occurred during the period. (p.1)

Agreement with this position by a number of other commentators (see for example; Goldratt and Cox, 1984; Neumann and Jaouen, 1986; Howell and Soucy, 1987a; Lammert and Ehram, 1987; McNair, Mosconi and Norris, 1988) reinforces the view, held in the United States of America, that there is a crisis that needs to be addressed. This view developed as a result of the study, jointly sponsored by the National Association of Accountants and Computer Aided Manufacturing – International, on the state of the art in management accounting in automated factory environments<sup>9</sup> (Howell and Soucy, 1987b). The study encompassed an examination of current practices in the areas of investment justification, cost accounting and performance measurement. The study revealed the deficiencies in management accounting practices discussed earlier and cited management policies, short-term orientation, habit and the lack of understanding of alternative methods as barriers to improved management accounting practices. Subsequent to the publication of the results of this study, a number of organisations took steps to improve their management, or more particularly cost, accounting systems (Cooper and Turney, 1990; Gosse, 1993) to accommodate the changing organisational environment, altering market conditions and emerging philosophies.

In Britain the perception is different. While it is recognised that transformations in technology need to dictate a revision of traditional management accounting approaches, the discipline is not experiencing a crisis (Lyall, Okoh and Puxty, 1990). Indeed, there is no evidence that, where management accountants have progressed from being scorekeepers of past performance to being "value-adding members of management teams, creating information vital for enhancing operational excellence" (Kaplan and Atkinson, 1998, p.xv), there have been any significant changes made to

the organisation's primary financial information system (Drury *et. al.*, 1993). The exhortations favouring alterations to accounting techniques are, in many cases, falling on deaf ears. There is, however, a small, but not negligible, cohort of organisations that have taken note of the normative calls for reforms in management accounting practices. These organisations, such as British Airports Authority, Scottish Power, SmithKline Beecham and Zeneca (Foundation for Performance Measurement, 1999) have clearly found the rhetoric of advocates for change persuasive (Littler and Sweeting, 1989; Bromwich and Bhimani, 1994).

To remain relevant management accounting appears to have a need to become embedded within operational activities. For this to take place, the management accountant needs to develop a language which reduces the distance between the contribution they make in the form of attention-directing information for operational managers and decision-making information for executive managers and what is understood by the recipients. With greater emphasis being put on quality, customer mandated delivery requirements, customer satisfaction etc., the development of qualitative and quantitative measures to account for such factors appears to be desirable (Burns, Ezzamel and Scapens, 1999). In addition, management accounting practice needs to become increasingly integrated with the strategic components of organisational activities. This is emphasised by key performance indicators that measure the fundamental characteristics of the organisation over the long term (Burns, Scapens and Turley, 1996).

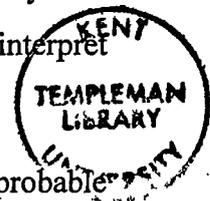
That change is required is not at question. It is the approach that is in trans-Atlantic dispute. In the USA, the belief is that the crisis will only evaporate with a change in management accounting practices. In the UK, it is change in the way management accounting is used, rather than a change in management accounting systems and techniques. Change is the only constant variable in organisations today (Senge, 1990). As is the case with all forms of change, calls for change in management accounting systems and techniques are confronted with significant contextual differences associated with culture, management style, product and process technologies and so forth. General panaceas have little effect (Davies and Sweeting, 1993). As a consequence management accounting, both as an organisational practice and discipline, appears to be in rapid and sometimes discontinuous change. In these

circumstances it is often the provider of information, in this instance the management accountant, who is the recipient of widespread condemnation.

Advances in information technology, especially database systems, have major implications for management accounting. Information is now widely dispersed around the organisation. Operational managers now have real-time access rather than relying on management accountants to provide it. This has resulted in the devolution of accounting information with operational managers performing tasks, such as preparing budgets, analysing performance and calculating variances, that were previously the domain of management accountants (Scapens *et. al.*, 1996). Perhaps, then, it is not the discipline but the disciples who are facing a crisis.

Management accountants are the investigative journalists of the financial world. They spend their working lives analysing, interpreting and reporting numerical information. In modern organisations they are required to place these numbers into a broader context and relate them to key non-financial measures. The role of the management accountant broadens to integrate the different perceptions of the organisation indicated by the financial and non-financial measures, managers' understandings of their operating performance, the financial results and the strategic directions of the organisation (Burns, Ezzamel and Scapens, 1999). This change in demand will be supported by emerging improvements in computer technology which will revolutionise the design of management accounting systems (Cahill, 1993). Concurrently, management accountants will need to broaden their personal skills and commercial capabilities in addition to developing their financial skills. They will need to have a broad understanding of the organisation and an ability to interpret financial information in a strategic context.

Given the unstructured and long-term nature of strategic decisions, it is very probable that the design of strategic management accounting systems will involve close interaction between the managers who will use such systems and the accountants who will design them. They will have to work together in individual organisations to develop the kind of decision support system that is appropriate to the specific circumstances. What is required is a willingness and ability on the part of management accountants to work with operational managers to develop whatever



measurement systems these managers are most likely to find helpful for decision support. By becoming involved in the development and implementation of decision support systems, management accountants will improve the quality of their own work and increase their relative importance to management. In future the ultimate users of decision support systems will develop their own systems for performance measurement and analysis supported by technically competent personnel. By contrast, in conventional management accounting systems the analysis of information is normally centralised within the organisation's accounting department and only the results of the analysis are communicated to managers.

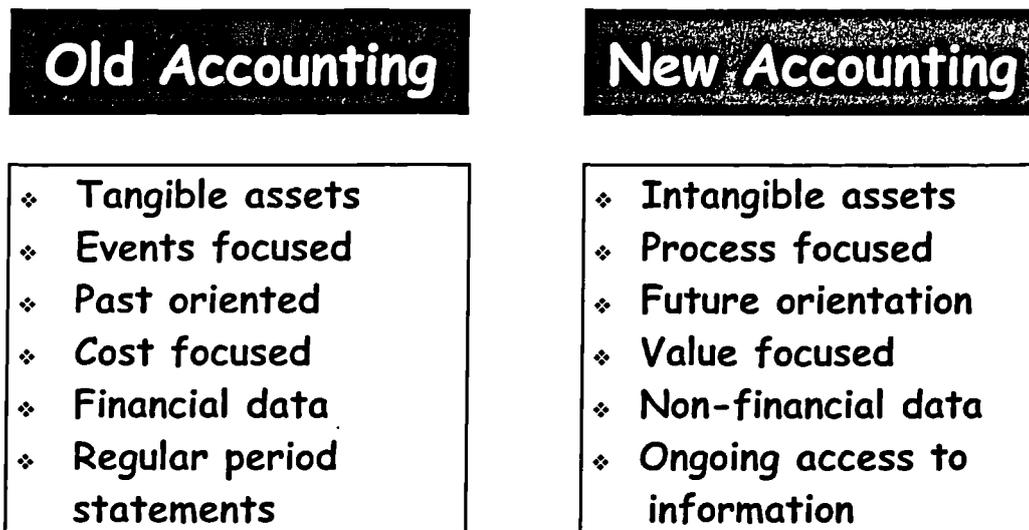
Those management accountants who adapt to the continually changing requirements of management will be highly valued within their organisations. Those who persist with routine reporting of structured information using traditional control techniques are destined to suffer a decline in their importance.

### **Beyond the tangible**

The discussion so far in this chapter has revolved around the role of management accounting in manufacturing organisations. This reflects the fact that most of the argument surrounding the deficiencies in management accounting has been debated in the sunset of the industrial age where 'Second Wave'<sup>10</sup> organisations were predominant. The development of 'Third Wave' organisations in the knowledge age presents an accounting paradox. The more that is invested in knowledge upgrading and information technology, the less is the reported value of the organisation.

With current accounting systems and reporting, investments in human capital and information technology lead to a short-term deterioration in profits that reduces the value of the balance sheet thereby diminishing the accounting value of an organisation. Current financial tools and reporting are more suited to the information needs of machine intensive industries that have dominated wealth creation this century. If investment decisions and management focus continue to be based on traditional financial reporting, serious distortions in the efficient operation and value of 'Third Wave' organisations will result. A new way of accounting is needed featuring the characteristics depicted in figure 5.2.

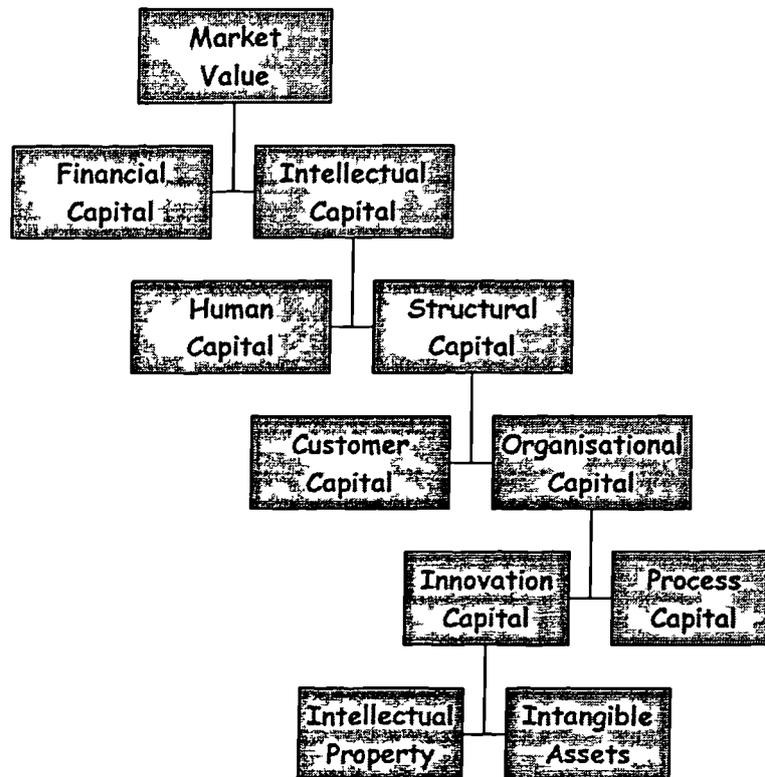
*Figure 5.2: Change in accounting characteristics*



In the knowledge era, the creation of organisational value results from the acceleration of organisational learning and the generation of intellectual capital. Skandia (1996) interprets intellectual capital as the sum of human, customer and organisational capital (see, figure 5.3). Human capital is defined as the competence and capabilities of its employees. The value of Skandia's relationships with its customers is its customer capital, and the combined value of protected commercial rights, intellectual property, other intangible assets and value-creating processes represents its organisational capital.

This phenomenon has no legacy, few researchers and a limited publication trajectory to follow. The academic state of this field is in its embryonic stage. It is being pursued by relatively few academics who have a very strong managerial focus and a strong appetite for a field devoid of shape or direction<sup>11</sup> (Stewart, 1991; 1994; 1997). The real problem lies in its measurement: a problem exacerbated because intellectual capital is conceptualised from numerous disciplines creating a mosaic of perspectives. In this thesis, interest is limited to the view of accountants, information technologists and human resource managers. Accountants are interested in how to measure it in financial statements, information technologists want to codify it in systems and human resource managers want to make sure they can build it and calculate a return on investment on it (Bontis, 1996).

Figure 5.3: The Skandia value scheme



Source: Supplement to Skandia's 1996 Interim Report

In our present economy, more and more organisations are evolving whose value is not based on their tangible resources but on their intangible resources (Itami, 1987). Tangible resources are those typically found on the balance sheet of an organisation such as cash, property and plant. The other category comprises intangible resources: people and their expertise, business processes and market assets such as customer loyalty, repeat business, reputation and the like. The annual reports of organisations like Skandia (see appendix 2) are working towards a new set of financial statements that make more sense in today's economy. These new financial statements highlight the difference between visible, or explicit, accounting and invisible, or implicit, accounting. Traditional financial statements have concentrated on reporting what may be explicitly calculated such as revenue, expenditure, receivables, payables, fixed assets and so forth. Skandia has made an effort to report on their invisible assets, such as intellectual capital, which provide the company with much of its added value.

Although intangible assets may represent competitive advantage, many organisations do not understand their nature and value (Collis, 1996). Management does not know the value of their organisation's intellectual capital. They do not know if they have the people, resources or business processes in place to make a success of their strategy. They do not understand what know-how, management potential or creativity they have access to with their employees. Because they are devoid of such information, they are rightsizing, downsizing and re-engineering in a vacuum.

That organisations are operating in a vacuum is not surprising, as they do not have any methods or tools to use that would enable them to analyse their intellectual capital stocks and organisational learning flows. To that end, a methodology and valuation system is required which will enable management to identify, document and value their knowledge management. This will enable them to make information-rich decisions when they are planning to invest in the protection of their various intellectual properties.

Organisations are typically well versed in assessing and valuing tangible assets but such measures do not include the value of the workforce, their knowledge, the way they use their computer systems and so on. The traditional financial measures worked well in the industrial age but they are out of step with the skills and competencies organisations are trying to master in the dawning of the knowledge age (Kaplan and Norton, 1992). Many of the ways in which organisations structure their management planning and control systems lack relevance for the knowledge age. To accommodate the vast changes that have taken place in the world economy, management accounting has been redefining itself to provide valuable decision support to management (Smith, 1994).

## **Conclusion**

Many organisations are still philosophically wedded to outmoded, inward looking management planning and control systems that use wealth measures based on physical assets and evaluation of performance linked to these. Rather than just physical assets, the 'Third Wave' organisation, considered to be creators of value, will require a valuation of all their assets which includes intellectual assets. Hence, to

be relevant, organisations need to develop planning, control and performance measurement systems that account for (i.e. predict, measure and evaluate) these intellectual assets.

The knowledge age is one where many of the traditional practices of accounting with which we are familiar and comfortable will be replaced. More flexible data access and manipulation, together with greater use of non-financial and external information, will be required in the future. Management accounting needs to continue to reassess the ways in which it collects, communicates and utilises data in order to cope more effectively with the changes taking place not only within, but also in the nature of organisations. The challenge is to adopt an approach which is flexible and responsive to changing management requirements rather than travel down the same road as financial accounting with promulgated management accounting standards as proposed by Ivison (1999).

The philosophy of doing business for 'Third Wave' organisations will undergo a profound shift as they focus more on serving the needs of their various stakeholders than on the pursuit of profit. Strategic thinking will be reoriented to anticipate future needs independent of the organisation and business will be increasingly regarded as a vehicle through which people are able to grow and serve others (Toffler, 1980). These organisations will aim to be socially responsible as well as financially viable and rewarding. Zadek, Pruzan and Evans (1997) suggest that travelling this road will require organisations to engage in the process of social and ethical accounting, reporting and auditing as a practical demonstration of their commitment to improved social and ethical accountability (see, for example, the corporate social reporting efforts of Coop Italia, Municipality of Århus, Sbn Bank, Shell International, The Body Shop International, Traidcraft plc, Vancouver City Savings & Credit Union and Wøyen Mølle<sup>12</sup>).

With change pre-eminent in organisational life and financial accounting shackled by legislated methods and reporting requirements, the opportunity exists for management accountants to take the initiative and lead the development of new approaches to measuring organisational performance and reporting management

accountability. Management accounting has, as Puxty (1993, p.150) concluded, “such a long road to travel in its search for truth and method”.

Management accountants, with their unique blend of information and analytical skills, are in the ideal position to ensure that the organisation deals with these changes effectively.

## Notes

- <sup>1</sup> Tocher’s model provides a useful starting point when discussing organisational control. It should be recognised, however, that his model was designed for simple systems and does not transport readily to more complex organisations.
- <sup>2</sup> Some support for this contention may be found in the general acceptance by most people of traffic controls, age restrictions (in respect to cinema attendance and drinking in public houses for example) and other legislative restrictions.
- <sup>3</sup> Externally, these may be annual reports, press statements or electronic media interviews. Internally, it is generally the mission statement and statement of key objectives.
- <sup>4</sup> The Royal Dutch/Shell Group has now produced a new type of report that displaces financial results and discussion of its commercial and investment activities from their usual pre-eminent position and ranks them alongside environmental and social measures. The position of shareholders has also been downgraded, probably in contravention of corporate law. The Shell report recognises five areas of responsibility: shareholders, customers, employees, those with whom it does business, and society. None is recognised as paramount and the emphasis in the report is placed on responsibilities to the environment and society rather than to the owners of the business.
- <sup>5</sup> These issues include such things as products that are not tested on animals, not genetically modified, not produced by child or slave labour, etc.
- <sup>6</sup> Comparing the content of introductory cost/management accounting textbooks published during the last 50 years may evidence this.
- <sup>7</sup> Probably the standout example of this aspect of change is the aerospace industry (Mason, 1998).
- <sup>8</sup> In no way should the importance of management accounting in the service sector be discounted. Many organisations in this sector link strategy and operations through their management accounting systems (Fitzgerald and Moon, 1996).

## **Notes...continued**

- <sup>9</sup> At the time of the report the manufacturing environment still dominated management accounting theory and practice with very limited application to the embryonic service environment.
- <sup>10</sup> The use of the 'Second Wave' and 'Third Wave' terminologies has been based on Toffler's (1980) understanding of the change in nature of organisations.
- <sup>11</sup> This is perhaps being critical of academics by suggesting that the majority, pressed by the need to deliver a defined quantity of research output, concentrate their research on positive accounting theories to the exclusion of normative accounting theories.
- <sup>12</sup> All of these examples, apart from Shell International, are considered in Zadek, Pruzan and Evans (1997).

Chapter **6**

# *Human resource accounting - whim or wisdom?*

As a branch of mathematical and classificatory science, the principles of accountancy may be determined by *a priori* reasoning, and do not depend upon the customs and traditions which surround the art.

*Charles Sprague*  
The philosophy of accounts  
1907, p. ix

## **Introduction**

Despite a promising outlook in the 1970s, development of an acceptable model to account for human resources has progressed at something less than a snail's pace in the past two decades. This is largely due to difficulties encountered in the application of the concept which reflects, to some degree, the ambivalence of management and the existence of corporate cultures which restrict the openness to new ideas (Johanson, 1999).

There have, however, been many studies (see, for example, Schwan, 1976; Tomassini, 1977; Harrell and Klick, 1980; Gul, 1984; Ogan, 1988) dealing with the influence of human resource accounting on decision-making processes. All these studies concluded that provision of human resource accounting information would have an affect on the decisions of stakeholders. Human resource accounting<sup>1</sup> may be applied from different perspectives: from a capital market, management control, accountability or persuasion perspective. The deliberation in this chapter will be

confined to the accountability and management control<sup>2</sup> perspectives aiming to supplant the empty rhetoric of Chief Executives who proclaim employees to be their organisation's most important asset. This approach is in concert with the direction of earlier chapters and will position human resource accounting as an important component in the activities of an organisation.

This aim is supported by the OECD (1996) which has reported that improvement in the information and decision-making systems that shape human capital<sup>3</sup> acquisition and utilisation is a key factor in enhancing an organisation's competitiveness. Indeed, Roslender and Dyson (1992) argue that sustainable organisations will be those that are best able to marry the pursuit of commercial success with the fulfilment of employees. They believe the provision of accounting information on employee wealth will be critical to effective human resource management for "without such information effective human resource decision-making is likely to be the exception and not the rule" (p.321). This accounting information, they say, will not be of the traditional kind but one that is congruous with a more strategic emphasis. The implications are unequivocal. Useable models for human resource accounting and the measurement of the value of employees' knowledge and skills must be developed to provide an acceptable and useful decision support system for human resource management.

### **The renaissance of human resource accounting**

The previous chapters have examined both human resource accounting and human resource management. The conclusions drawn were that human resource management is facing an identity crisis and human resource accounting is looking for a reason to exist. Indeed, without a change in focus and presentation, both concepts appear destined for extinction. Desperate situations require desperate actions that often produce strange bedfellows. In this instance, a relationship between human resource management and human resource accounting should not be considered that strange because both concepts are centred on people.

Human resource management is striving to establish a discipline equal to other professions, such as engineering and accountancy, in status and importance. It is

struggling because the very foundation on which its case is built is being eroded by changing values (greater self-management and control), technology and financial imperatives (Wittingslow, 1997). If future work practices continue to change from those designed for hierarchically based organisations to those appropriate for flatter, more horizontally based ones, the placement of human resource management in the context of organisations and their environment will have to be rethought. Jackson and Schuler (1995, p.238) have advanced three options:

- specific human resource practices such as recruitment, selection and appraisal
- formal human resource policies that direct, or partially constrain, the development of specific practices
- overarching human resource philosophies that specify the values which inform an organisation's policies and practices

The choice will revolve around whether human resource management is a predominantly conservative controlling function (the first option) or more a dynamic, change-oriented one (the third option). Wittingslow (1997) argues that human resource management is traditionally the former and as such is one of the most at risk functions as organisations reform themselves to survive in the third wave. Many of its current functions will be transferred to work-groups in the organisation of the future. To survive, human resource managers will need to hone their consulting skills as their activity shifts toward the third option.

Implementation of the third option will require the development of resource-based outcome models if the human resources of an organisation are to be managed effectively (Barney, 1991; Conner, 1991). People will be considered a very critical organisational resource. In this situation, remuneration and other rewards need to be managed to keep people's knowledge and experience within the organisation. Other initiatives such as self-directed work teams, total quality management, best practice and continuous improvement will be introduced to provide a framework to tap the full potential of all employees and so gain the maximum return from the organisation's human resources. In third wave organisations operational managers, tapping into a proficient HRIS and obtaining advice from the human resource

professionals, will perform most of today's human resource management activities. To fulfil this consulting role, human resource management needs to develop appropriate measures that clearly demonstrate its strategic relevance within the organisation, firmly establish its status as a strategic business partner and substantially contribute to business success.

Employee knowledge represents the human factor in the organisation: the combined intelligence, skills and expertise that give the organisation its distinctive character. The human elements of the organisation are those that are capable of learning, changing, innovating and providing the creative thrust which, if properly motivated, will ensure the sustainability of an organisation. Since Hermanson's (1964) classic study, the topic of how to and whether to value human assets has been debated by accountants and human resource theorists.

According to Sackmann, Flamholtz and Bullen (1989) the objective of human resource accounting is to "quantify the economic value of people to the organization" (p.235) as an input to management and financial decisions. Researchers have proposed three types of measurement models:

- COST MODELS – historical or acquisition cost (Brummett, Flamholtz and Pyle, 1968), replacement cost (Flamholtz, 1973) and opportunity cost (Hekimian and Jones, 1967)
- RESOURCE VALUE MODELS – a non-monetary behavioural emphasis model (Likert, 1967) and combined non-monetary behavioural and monetary economic value models (Likert and Bowers, 1973; Gambling, 1974)
- MONETARY MODELS – discounted earnings or wages approach (Morse, 1973; Friedman and Lev, 1974)

Sackmann, Flamholtz and Bullen (1989) discuss these models extensively and also summarise the numerous attempts to apply the models in various types of organisations. While none of the experiments have proven to be successful, it is interesting to note that the majority of systems were developed in service

organisations where employee knowledge and skills comprise a significant proportion of organisational value.

The concept of human resource accounting has always has its critics. Moreover, in addition to the trilogy of excuses examined in chapter two, these critics have also attacked any proposed measures for being too easily manipulated<sup>4</sup>. It can not be denied that all of the models do suffer from subjectivity and uncertainty, and lack reliability in that they cannot be audited with any assurance, but these are measurement, rather than conceptual, problems. The question arises: is it necessary to audit, in the conventional sense, valuations of the knowledge and skills of an organisation's people? There are three answers to this question. If these valuations were to be included in statutory financial statements, the answer is most definitely yes. When used for management purposes and as a means of organisational learning, the answer is almost certainly no. However, if the information were included in other accountability reports to stakeholders, most recipients would expect the document to include an external verification statement of some kind<sup>5</sup>

As human resource managers strive to develop outcome models for the effective management of the human resources of an organisation, they need a business partner who is capable of developing the appropriate performance indicators. Accountants have the technical and analytical skills to be that business partner. By working together to create a relevant accounting model, the two disciplines should develop a strong alliance. Human resource management and human resource accounting will clearly have a mutually supportive relationship.

### **Whim or wisdom?**

The lack of success in developing an acceptable model for human resource accounting may be attributed to two important constraints. First, the earlier research was directed towards modification of income statements and balance sheets to reflect the impact on financial results of an organisation's investment in human resources. Given the almost universal need for an audit of an organisation's financial statements and the inability to develop a model that would meet the accounting profession's requirement that an audit is "based on an official examination of accounts with

verification by reference to witnesses and vouchers" (Perks, 1993, p.46), it is not surprising that human resource accounting has become moribund. Second, accounting control methods in second wave organisations are based on a set of assumptions that embrace a narrow and pessimistic view of the contribution of labour to organisational functioning. Employees are generally considered to be lazy, ignorant and wasteful, only entering into the scope of accounting concerns when their reactions threatened to jeopardise the successful managerial accomplishment of organisational objectives (Caplan, 1966). With attitudes such as this, there was little practical interest from management in the human resource accounting propositions.

The accounting profession has tended to be blinkered by orthodoxy. The majority of accountants have been trained in a reactive accounting environment. In the analysis of the development of human resource accounting in chapter two, it was suggested that much of the information they currently produce is geared to external regulatory reporting requirements. This infers that the accounting system is usually constrained by the rules associated with generally accepted accounting principles. These systems are inadequate for innovative organisations that need to measure the broad range of factors that drive competitive advantage. Traditional accounting systems used for management reporting are limited in several ways including:

- measurement expressed in monetary terms
- categories included in the chart of accounts
- a high level of aggregation of information
- a low degree of integration with other functional information sources

Despite these weaknesses in traditional management accounting systems and performance reporting, there is resistance to substantive change<sup>6</sup>. Most organisations report non-financial measures of operational performance in areas such as customer satisfaction, quality, operational effectiveness, market share and human resources. However, these measures tend to be subordinated to financial accounting requirements (Drury *et. al.*, 1993) that are underpinned by tools and reporting more suited to the information needs of machine intensive industries of the second wave. If investment decisions and management focus continue to be based on this type of information, human resource accounting must surely be considered a whim.

Many researchers have analysed the changing status of knowledge as a factor of organisational output and concluded that it is qualitatively and quantitatively more significant now than in the past (see, for example, Reich, 1992; Drucker, 1993; World Bank, 1993). The OECD (1988) promoted much of this new thinking by recommending changes to the organisational reporting mechanisms that direct investment in human resources. Brennan (1992) supports this recommendation and suggests that accounting could make an important contribution by giving formal recognition to the knowledge capital that resides in organisations. Apart from some isolated cases, see appendix 3 (Telia, 1997), little has been done to accommodate the measurement and reporting of the knowledge and skills embodied in an organisation's human resources.

If organisations continue to treat human resource investments as a current expense, there will be little incentive to incur costs today that will only be recovered tomorrow. Human resource accounting is intended to provide a mechanism to overcome that inadequacy. It aims systematically to identify, measure and present information about the human resources of an organisation where this will be of value. This is essential for organisations that, faced with new competitive pressures, are exploring not only technology and product innovations but also the information and decision-making systems capable of improving the acquisition and use of resources for strategic advantage.

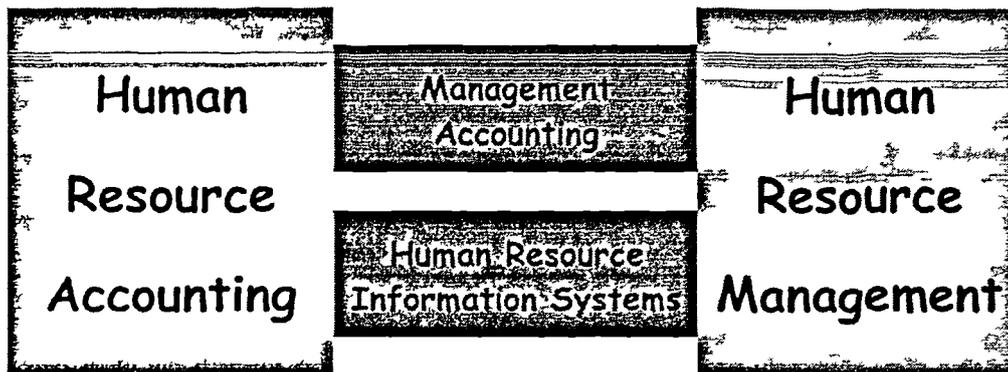
To meet the challenge, innovation is required from the discipline meant to provide useful information about the financial status and prospects of an organisation. Innovations in accounting definitions, conventions and systems are required to support management practices in the third wave. This opens up new possibilities for human resource accounting with the potential to create a wisdom out of a whim.

### **Linking the concepts**

It was suggested earlier that, by working together to create a relevant accounting model, human resource accounting and human resource management would develop a strong, mutually supportive alliance. Such an alliance may only be forged if there are cogent links between the concepts (see figure 6.1). What is more, the key to the

survival of this alliance in the long run is information. First, it is necessary to understand what information is required. Second, there must be a way of gathering the underlying data, storing it, transforming it into information and communicating that information to interested parties. Together, the two organisational functions that link the concepts are capable of providing this key.

*Figure 6.1: Linking the concepts*



Management accounting is one of the two functions that link human resource accounting and human resource management. In the previous chapter it was suggested that management accounting is a discipline conceived and established in the second wave and, unless it devises new ways of collecting, communicating and using data, it is destined for a premature demise. As one of the chief protagonists in the management accounting 'crisis' debate, Johnson (1992; 1995) takes a limited view of the way forward. He proposes that organisations should remove accounting information from their operational control systems and relieve their accounting departments of responsibility for providing information to control operations. Limited, perhaps, only in the sense that he rarely considers situations other than operations. Beyond that sphere of an organisation's activities, he makes little comment other than to suggest that financial and accounting information will continue to be compiled by organisations for external reporting and internal decision-making long into the future.

Burns, Ezzamel and Scapens (1999) indicate that change is occurring much in the manner suggested by Johnson. It is being driven by various factors both internal and external to the organisation. There are general economic factors, significant technological change and organisational changes, incorporating changes in

management structure. These changes have resulted in operating managers performing tasks previously in the management accountant's domain (such as budgets, analysing performance and calculating variances), using direct, real-time access to all types of information that they believe is now widely dispersed throughout the organisation. The outcome is a growing emphasis on non-financial measures because more focus is placed on the underlying factors rather than the financial outcomes. This growth in the use of non-financial measures provides a clear indication that financial information only paints part of the picture. This metamorphosis is the foundation for management accounting change and, with it, the role of the management accountant.

Performance indicators are an important element in the control and accountability functions of management. With operational managers now accepting responsibility for maintenance measures, management accountants must focus on the design and development of strategic performance indicators. In the third wave, knowledge and information are the most important sources of competitive advantage and success an organisation can have. Employee know-how, innovative capabilities and skills play a predominant role in defining the productive power of an organisation (Quinn, 1992) and account for an increasing proportion of an organisation's capital, even in traditional industries (Sveiby, 1997). This suggests a role for management accountants in applying their skills to enhancing and integrating knowledge within an organisation.

Under the banner of human resource accounting, they must search for ways to assist in directing and controlling the knowledge transformation process, and evaluate and report on the results of these processes on an ongoing basis. The accounting for and reporting of employee knowledge and skills pose three principal challenges for human resource accounting. First, there is a need for better tools to manage an organisation's investment in people skills. Second, there is a need for some form of indicator that is capable of differentiating between organisations in which the value of their human resources is appreciating and those in which it is depreciating. Third, there is a need to measure, over the long-term, an organisation's return on its investment in people. To meet these challenges, the management accountant requires an understanding of how the knowledge and skills embodied in human resources are

linked to the overall strategic objectives of the organisation, how they contribute to the success of the organisation and how they compare to the knowledge and skill base of other organisations.

In a similar fashion to management accounting, the positioning of the human resource management function within an organisation is changing. Management of human resources is being decentralised to the operational manager and human resource managers are becoming business focused and taking on an internal consulting role at a strategic level. As operational managers respond to managing their human resources as well as the financial and physical resources, the requirement to disseminate information about people poses a new challenge for human resource managers.

Incumbent in moving to a decentralised model of human resource management is the provision of 'just-in-time' information that adds value to the decision making process. In many cases where this model has been implemented HRIS have struggled to keep up with the change (Sharp, 1999). Traditional HRIS were designed around a centralised data input and reporting model administered by the human resources and payroll departments. With human resource information being analysed and decisions being made and implemented locally by operational managers, this centralised model of most HRIS has become antiquated.

Existing HRIS usually provide accessible reporting utilities that are used for standard reports such as turnover, leave, headcount, salary history, etc. However, with the key to the reporting function of a HRIS being held centrally by the human resources department, both employees and operational managers often encounter delays or are unable to obtain the right information required to make informed decisions. Indeed, it is unlikely that many operational managers are aware of the extent or type of information stored within the organisation's HRIS. At the same time, human resource managers are trying to establish themselves as internal consultants acting in partnership with senior management to provide tactical and strategic value. With a traditional HRIS, it is often the case that the data entry and reporting activities incumbent in maintaining employees distracts the human resource management function from the critical organisational issues.

Such administrative and low-value activities are representative of personnel administration systems of the past and neutralise the strategic role of human resource managers. The organisation is expecting newer, higher value outputs but the usual processes and administration need to be performed. It would be unfair to suggest that human resource management is reluctant to provide information to operational managers, or has wanted to continue administering paperwork processes. It is more an illustration of the systems and processes that are required to support the change in direction not being available.

The HRIS needs to be upgraded so that it supports both the decentralised human resource management model and the strategic consultancy that the human resource management function must become. There are two objectives in the upgrade of a HRIS. First, operational managers must be able to access the vital human resource information they need to help them manage their business better. Second, the database must be flexible and accessible to allow human resource managers to perform their strategic function as opposed to being merely the information gatherer and provider.

The success of many traditional second wave organisations would suggest that the pathways between human resource accounting and human resource management are robust enough for their short-term needs. However, for those aspiring to third wave status, changes need to be made. The key to the transition is information and its management. The pathways need to be transformed to provide the right information, to the right person, at the right time.

### **Strengthening the links**

Transformation to the third wave requires organisations to recognise that enterprise information is their lifeblood. The quality, volume and accessibility of that information determine their ability to gain, among other things, competitive advantage. Information underpins knowledge. Good information management is the essential foundation to good knowledge management. As such, information is a significant asset that, if shared across the organisation, will enhance organisational knowledge resulting in an increase in the value of organisations. The traditional

management accounting and human resource information systems fail to do this and therefore need improvement.

Earlier it was suggested that a strategic direction was the imperative of human resource accounting and human resource management. This implies an involvement in the design and implementation of an organisation's strategy. The fundamentals for successfully implementing strategy include a sound strategy, strong management and appropriate measurement systems. The opportunity to achieve true competitive advantage is realised when these three areas are integrated to maximise performance. When considering strategies relative to an organisation's human resources, human resource management must accept responsibility for developing the first of these fundamentals and human resource accounting for the third. Development of appropriate measurement systems is an important aspect for tying measurement to management accountability across the organisation and, by linking measurements back to strategy, ensures that objectives are measurable.

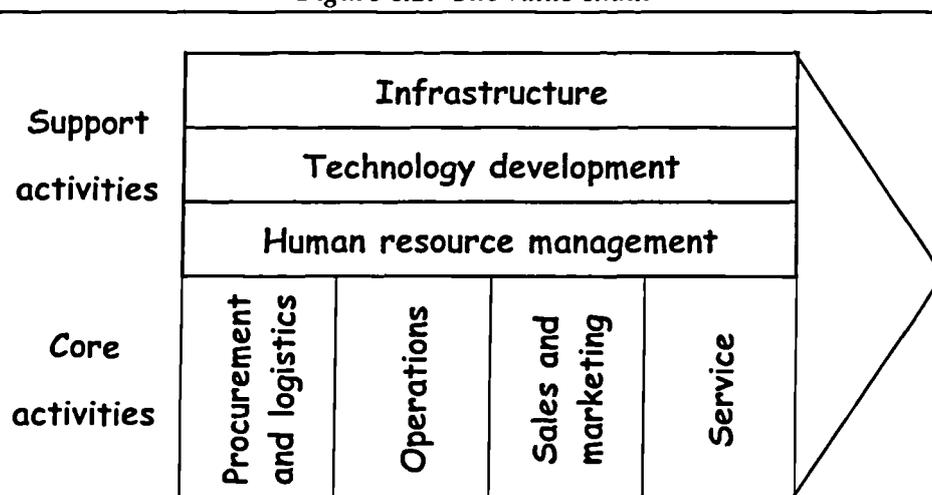
Organisations need strategic management solutions that link objectives throughout the organisation, emphasise both individual and team driven assessments that show cause and effect across key performance indicators, monitor and track initiatives, and communicate the outcomes to all. These solutions require integrated access to information<sup>7</sup> captured across the organisation, the ability to tie these data together and relate enterprise performance back to the organisation's strategic aims and objectives. Management accounting has, in recent times, developed two new methodologies, the value chain (Porter, 1985) and the balanced scorecard<sup>8</sup> (Kaplan and Norton, 1992), for implementing and monitoring strategy across an organisation.

### *The value chain*

Porter (1981; 1985) steered the attention of managers to the determinants of competition and showed how to gain a decisive advantage over their competitors by strict application of certain strategic directives: cost-leadership, differentiation and focusing on market segments. This competitive approach produced actual models of the structure of an industry and led to the better understanding of the dynamics within certain industries. According to this concept special emphasis is placed on the value chain of the organisation.

The value chain, see figure 6.2, divides up an organisation into its strategically relevant activities. Support activities are separated from operational activity that is usually further divided along functional lines. Traditionally, for each core activity link in the value chain, a strength/weakness profile is constructed. The objective of this analysis is to highlight the activities that contribute most significantly to the total value added by the organisation. Generally, the value chain has viewed employees and other support activities under the internal control of management. By focusing on the supplier⇒organisation⇒customer chain, support activities are subsumed under 'organisation'. Traditional views of the value chain divide up the operations of an organisation into functions where the employees' work is directly attached to a particular part of the chain. This view sees employees as important instrumentally and that misses the whole point of the value creation process. Employees and other support activities are a vital part of the value creation process and must be afforded the same value chain priority as core activities.

*Figure 6.2: The value chain*



*Source:* Adapted from Porter (1985)

Strategies are developed, where appropriate, for each point identified in the profile to improve or defend the organisation's added value. It is at this point that indicators need to be developed to ensure performance may be evaluated in relation to the strategy. This is important for without feedback organisations have no way to test and learn about their strategy. In many cases a form of direct measurement may be established. In others, however, this is not possible

and a suitable metric - a proxy or subjective measure<sup>9</sup> that provides an indication of performance - must be devised. Each methodology has a time and a place. In the case of the value chain it is at the time of establishing an organisation's strategies.

### *The balanced scorecard*

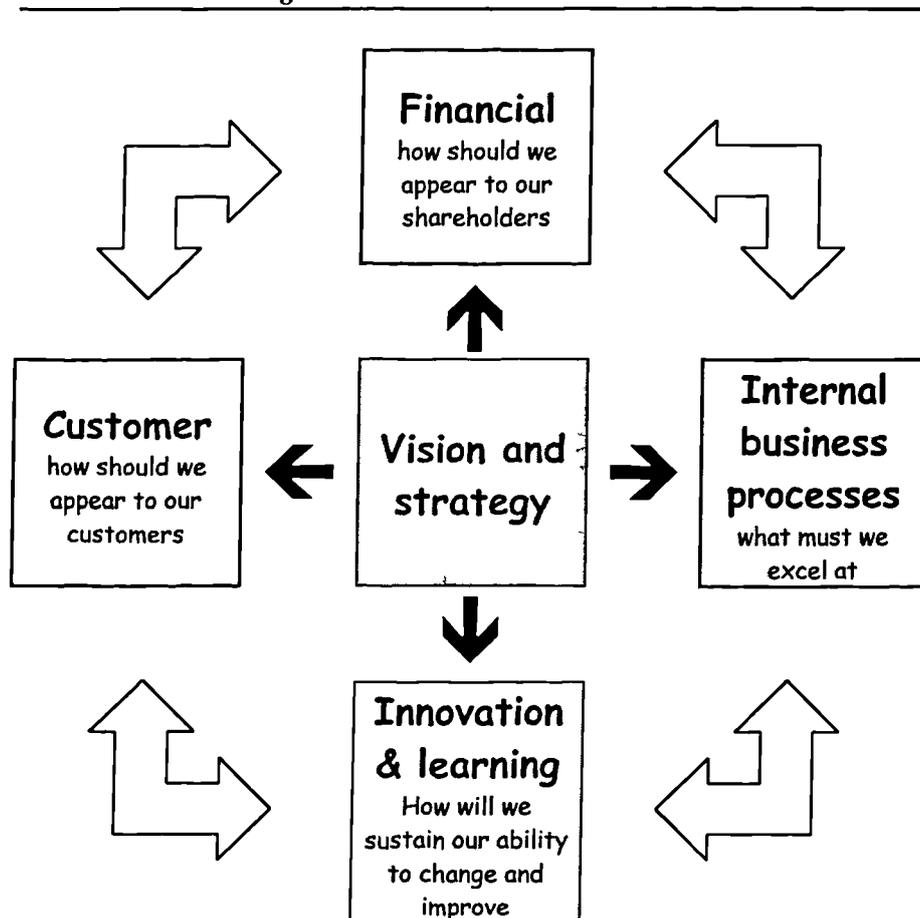
A well-designed performance measurement system is essential to achieving strategic objectives. Using traditional financially oriented reporting has shortcomings that may be overcome using the balanced scorecard (see figure 6.3). This methodology complements traditional financial measures with non-financial measures that, if used effectively, can help an organisation craft a fuller strategy than bare financial figures ever could. Using this approach, which groups measures according to the direction and focus they indicate, augments the value chain in an organisation's strategic management cycle. Thus, an explicit vision and strategy underlie all four perspectives and for each perspective, an organisation formulates strategic aims, measures, specific goals and action plans.

A continuous, cyclical process combines the four perspectives. In this process, the role of the balanced scorecard is to highlight what should be the focal points of an organisation's efforts. Through its use, an organisation's vision is made explicit and is shared. The vision is communicated in terms of goals and incentives. These are used to focus effort, allocate resources and set targets. Analysis and interpretation of the measures results in learning, which leads an organisation, in turn, to re-examine its vision. At every step, the balanced scorecard serves as the means of communication (Kaplan and Norton, 1996).

In viewing an organisation from the four vital perspectives, the balanced scorecard is intended to link short-term operational control to the long-term vision and strategy of the organisation. By focusing on a few critical key performance indicators in meaningful target areas, an organisation is forced to monitor day-to-day operations as they affect development tomorrow. Therefore, the balanced scorecard concept is based on three dimensions in time: yesterday, today and tomorrow. Furthermore, it is a system of integrating

and complementing the more traditional financial measures of performance with non-financial measures that relate to customers, employees and other dimensions of performance. While the former are usually feedback measures generally oriented towards the short-term, the latter are performance criteria that help achieve the long-term objectives of an organisation and that will drive future performance. This broad set of performance indicators supports management initiatives with respect to customers, quality, profit, innovation, flexibility and, of particular relevance to this thesis, human resources and learning.

*Figure 6.3: The balanced scorecard*



*Source:* Adapted from Kaplan and Norton (1996)

As Coff (1997) observed, the knowledge and skills embodied in the employees of an organisation are often viewed as strategic assets. Knowledge and skills have advantageous attributes distinct from the attributes of other assets. The first is that they grow with use. The learning and application of new knowledge leads to even greater knowledge, as well as to a motivation to acquire more

(Becker and Gerhart, 1996). Knowledge may be shared without being depleted. In fact, sharing results in increased feedback, acquisition of new knowledge, and modifications and adjustments to current knowledge. However, the perceived problems associated with formally valuing employee knowledge and skills are complex and often intractable.

The balanced scorecard has several advantages over traditional management reporting. Some of these advantages include greater flexibility, stakeholder-based reporting, evaluation of innovation and learning, and most importantly an ability to communicate key factors that drive performance. In addition, many of the dysfunctional, short-term decisions encouraged by traditional financial-only performance indicators are avoided due to the broad range of performance indicators generated by using the balanced scorecard (Kaplan and Norton, 1993). Using all of the four perspectives providing the framework for the balanced scorecard, organisations can now measure how they create value for customers, how they can enhance internal competencies and how they must invest in people, systems and procedures to improve future performance.

Learning and growth in an organisation come from three principal sources: people, systems and organisational procedures. The other perspectives of the balanced scorecard will reveal the extent of deficiencies in the desired capabilities of people, systems and procedures. To eliminate these deficiencies, organisations have to invest in reskilling employees or attract the best people and provide the necessary tools. These people also need organisational infrastructure and relationships, as well as conversations with other people to fruitfully apply their knowledge and skills. This is why it is necessary to articulate not only the knowledge, skills and attitudes of employees, but also the infrastructure, relationships and processes available to benefit from these, in the learning and growth perspective of the balanced scorecard.

To have a balanced scorecard requires the measures used to have strong ties with strategic objectives. The measures, that must capture drivers as well as outcomes, will tend to fortify the links between each perspective of the balanced scorecard. Each of the four perspectives should contain measures of

performance that force management to recognise explicitly those activities that contribute to the sustainability of the organisation. The balanced scorecard is a strategic measurement system that must be modified as and when an organisation changes strategy as a result of continuous value chain analysis.

There are, of course, other tools available in the management accountant's tool kit and these should not necessarily be discarded in the quest to develop relevant performance indicators for third wave organisations. Added value and benchmarking, for example, will remain useful tools in the development of human resource accounting.

Just as the management accounting link needs some transformation, the organisation's information systems, of which HRIS is a part, must take advantage of new technologies as they become available. Organisational performance depends on information access and the resulting knowledge that information generates. Currently large amounts of data are being collected and stored in an organisation's relational database. Organisations need integrated access to tie these data together and relate performance back to the organisation's strategy and objectives. Increasingly, organisations are turning to analytical applications that generate conclusive, fact-based, actionable information to help them manage their investments in people, plant and property. Analytical applications represent next-generation decision support technology, surpassing the capabilities of traditional solutions such as data warehouses. These applications complement and extend operational systems, such as online transactional processing systems and data warehouse infrastructures, by analysing the data in these systems and driving closed-loop decision-making (Gaiss, 1998). The future of performance measurement will be found in using an organisation's information technology infrastructure to conduct ongoing, real-time reporting of both qualitative and quantitative measures. These systems must be strongly linked to the organisation's strategic objectives (Forson, 1997).

To specifically address business performance, a special class of analytical solution, called enterprise performance management (EPM), has emerged. EPM solutions provide the ability to measure and analyse operating results enabling organisations to align strategy and objectives with the overall performance of the enterprise. They

continuously monitor operational data in the context of key performance indicators incorporating organisation-wide data acquisition that includes interface to business applications, including HRIS, and data warehouses. EPM solutions employ comprehensive analysis capabilities, including online analytical processing and relational analysis, data mining and ad-hoc analysis to facilitate continuous improvement in business performance with closed-loop decision systems. A sophisticated EPM solution would be capable of creating an automated balanced scorecard (Gaiss, 1998). This development will facilitate the expansion of knowledge within the organisation.

Another information technology innovation that would improve the functionality of an organisation's HRIS is the World Wide Web. The ability of human resource managers to make the transition from administrator to strategic partner will depend in part on the tools they use. Moving the administrative tasks to the owners of the data, with strong security and validation rules, will help to reduce some of the workload on the operations manager and at the same time empower employees. Why the Web and not the general system? The expansion of personal computers into the home has introduced many new first time users to the World Wide Web who are learning to appreciate the ease of access and its information providing capability. Web technology is user friendly and is accessible from work, home, aircraft or remote sites. Web technology has the capability to allow employees to feel more in control and, because of that, there is a greater chance of success than with paper-driven systems. Empowerment of all employees, irrespective of their position in the organisation, is perceived as a knowledge enhancing strategy (Johnson, 1992). World Wide Web technology, incorporated into HRIS and other business applications, is an important element in transforming the information pathway in the quest for improved internal business processes.

The value chain, the balanced scorecard, enterprise performance management solutions and World Wide Web technology are suitable internal business processes that contribute to an organisation's ability to change and improve. Their relevant and effective use by human resource accounting and human resource management may be expected to enhance the value of an organisation's human resources.

## **Decision support system**

Traditionally human resource managers would talk arbitrarily and conceptually about employee morale, turnover and commitment. To fulfil the business partner role, concepts need to be replaced with evidence, ideas with results and perceptions with assessments. The interest in quantifying the impact of human resource management practices on financial performance has led to a number of studies<sup>10</sup> which linked the impact of these practices to specific organisational outcomes. These issues are now being woven into business measures around a balanced scorecard (Ulrich, 1997).

Performance measurement for human resource management is complex, difficult and at times confusing but it can and must be done. When human resource managers start with a clear understanding of the organisation's objectives, they are able to turn them into measurable practices. This is needed to focus attention on what human resource management practices, professionals and departments must deliver to the organisation to maintain relevance. Human resource management is less prepared<sup>11</sup> than many other functions to quantify its impact on organisational performance (Yeung and Berman, 1997). Management accountants, through their training and expertise, are ideally positioned to assist with conceptualising, defining and operationalising these deliverables. They will, however, need to eschew the traditional accounting praxis with respect to human resources (Greene and Barrett, 1994). These are important, critical steps in the formation of an appropriate model for human resource accounting.

Historically, a variety of performance indicators have been used to demonstrate the productivity of human resource management. Much of the information gained from these performance indicators has been tracked because it is readily available and may be easily quantified. Generally they track the activity, cost and quality level of human resource management services. When organisations conceptualise human resource management as a cost centre, these performance indicators make perfect sense (Wintermantel and Mattimore, 1997). As the function is transformed to be more business oriented (Yeung, Brockbank and Ulrich, 1994) these traditional performance indicators will no longer be appropriate or relevant. Indeed, Wintermantel and Mattimore (1997) suggest that operational managers should now

be responsible for performance indicators associated with employee motivation or morale, employee retention and employee absence because it is their actions that directly influence these measures.

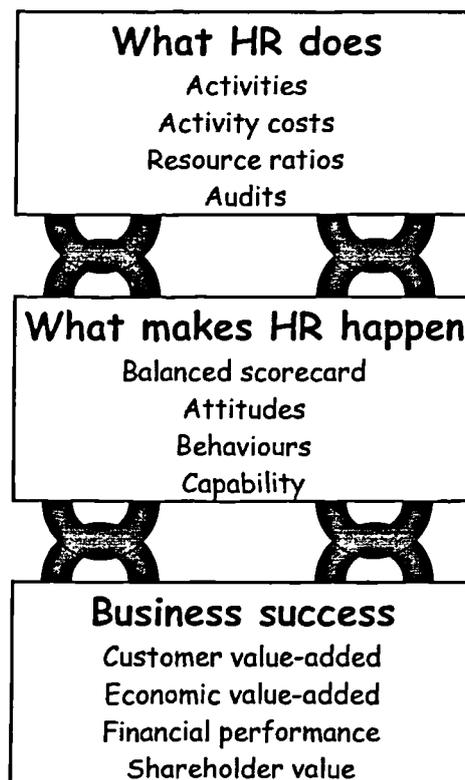
As use of the balanced scorecard becomes more pervasive, it is becoming apparent that employee indicators are the most difficult to specify. They are often less accepted and less rigorous than for the other perspectives of the balanced scorecard. As a result, much experimentation is occurring in the integration of employee indicators. Generally, this experimentation may be categorised into three efforts which measure productivity, process and people (Ulrich, 1997).

In the role of *business partner*, *human resource management leads the creation, preservation and utilisation of employee knowledge and skills*. It develops people strategies and designs systems that are directly linked to the strategic direction of the organisation and that allow the organisation to maximise the benefits that may be obtained from its human resources. In these circumstances, the relevant performance measures would emphasise human resource management's impact on organisational strategy. This, more compelling, measurement model would gather evidence to show how human resource management activities lead to immediate effects on people and then how these immediate outcomes combine to produce financial results. Such a system will provide management with continuous indicators to determine how employee knowledge and skills are being improved by human resource management activities and how these improvements will lead to organisational success. Boudreau and Ramstad (1997) propose articulating links, see figure 6.4, between what happens with the organisation's people and the operational and financial outcomes produced as a method of determining the human resource management strategies and subsequently the relevant performance indicators.

Every performance indicator, whether it is used explicitly to influence behaviour, to evaluate future strategies, or simply to clarify the current position, will affect actions and decisions. Choosing the right performance indicators is critical to success but the road to good performance indicators is fraught with pitfalls. Many performance indicators seem right and are easy to measure but have subtle, counterproductive consequences. Other performance indicators are more difficult to measure but focus

the organisation on those decisions and actions that are critical to success. In developing human resource management performance indicators, it is worth recognising that Hauser and Katz (1998) believe that employees take pride in the fact they provide value to the organisation. Publishing relevant performance indicators encourages employees to make decisions and to take actions they believe are the best decisions and most appropriate actions to enhance the value of the organisation.

*Figure 6.4: Linkages between levels of HR measurement*



*Source:* Boudreau and Ramstad (1997, p.346)

One human resource accounting system will not fit all situations. There do, however, need to be guidelines to ensure that, at the end of the day, human resource management will serve the important role of providing an alternative perspective on the organisation and its management. It needs to be one that provides a different point of view from that traditionally advanced by, for instance, finance, which sees the organisation as a portfolio of assets to be bought and sold (Pfeffer, 1997).

Despite the cynical, but regrettably often true, view of Pfeffer, organisations are becoming increasingly dependent on knowledge – patents, processes, skills, technologies, information and experience – and it has become a fundamental

ingredient of what organisations make, do, buy and sell (Stewart, 1997). As a result, managing knowledge has become the most important economic task of many organisations. For management accountants, the elevation in importance of knowledge has raised the thorny issue of how to account for the value of intellectual capital. Intellectual capital comprises both structural capital and human capital (see figure 5.3, p.104). Although both are intangible and collectively represent the knowledge assets of an organisation, they may be measured individually and targeted for investment. More importantly, each represents something that managers understand. In this thesis it is only the latter that is of interest.

Human capital represents the knowledge, skills and capability of employees, whether individually or in teams, to provide solutions to organisational issues. In this way, human resources become important to organisations in the context of a strategy or purpose. It matters because their knowledge and skills are the source of innovation and renewal (Stewart, 1997). Organisations need to establish a set of indicators to assess their performance in nurturing their human resources. There are three steps in this process. First, organisations need to consider their own sources and uses of the knowledge and skills embodied in their human resources. Second, they should experiment with alternative performance indicators and third, choose those that make most sense in terms of their strategic direction. Three principles should guide an organisation in deciding what to measure (Stewart, 1997):

- keep it simple
- measure what is strategically important
- measure activities that produce intellectual wealth

Human resource managers should resist the temptation to focus only on what is easily measurable, such as activities and costs (Pfeffer, 1997). Rather, they should focus on measuring things that meet real organisational needs such as measures of innovation, measures of employee attitudes and measures of tenure, turnover, experience and learning<sup>12</sup>. Finally, the value of the organisation is linked to its success. A performance indicator needs to be developed that will represent the value of an organisation's human resources and relate that to the growth in the overall wealth of the organisation.

While numerous performance indicators may be developed, each is only useful if it allows management to evaluate ongoing performance. This enables them to assess progress towards the achievement of strategic objectives. There is also some merit in establishing performance indicators that permit organisation-to-organisation comparisons. Admittedly this may prove to be difficult because strategy is concerned with developing competitive advantage. However, the indicators used for this purpose could focus on outcomes rather than process. In other words, organisations are usually prepared to disclose how they are performing but more reluctant to disclose how they achieved a particular result. Nonetheless, if such comparative information were available, it would allow management to benchmark their performance against their peers. Armed with a set of performance indicators such as these, it becomes possible to refocus management decisions on investments in human resources.

## **Conclusion**

Roslender and Dyson (1992) were adamant that accounting information on employee wealth was an important ingredient of effective human resource management. With the development of a suitable model, human resource accounting will not only meet that requirement but also fulfil a role in management control and accountability. Applying Flamholtz's (1996) understanding of management control, the model must provide information about the results of performance and operations that will allow management to take actions consistent with operational objectives. It must also provide the opportunity to motivate people by providing information on changes in the value of knowledge and skills within the organisation, what employees think of the organisation, how they reinforce those thoughts by staying or leaving, and how long they stay.

Using the concepts of the value chain, human resource professionals are able to develop and articulate appropriate strategies and processes that ensure the organisation employs its human resources effectively while fostering well being among them. Then working together, management accountants and human resource professionals will be able to develop pertinent indicators of performance to evaluate progress toward achieving the predetermined objectives. With improvement in

information systems and by providing greater access to them, the development of these indicators is achievable using the management accounting techniques discussed and presenting the outcomes in a balanced scorecard. This approach provides the wherewithal to evaluate performance consistently on an ongoing basis and, if widely accepted, permit organisation-to-organisation comparisons.

One of the main purposes of a balanced scorecard is to develop a learning organisation – an organisation that is constantly developing and changing in a way that will keep the organisation competitive in the future. The balanced scorecard provides the structure for describing an organisation's vision and strategy in tangible, understandable terms. It serves as a language for debate within the organisation and acts as an interface between people who are independently developing a view of the organisation in which they have a common interest. A properly constructed balanced scorecard contains a unity of purpose because all of its measures are directed toward achieving an integrated strategy. Kaplan and Norton (1996) believe that the measures included in the innovation and learning perspective are less developed than those of the other three perspectives of the balanced scorecard and this detracts from the idea of *balance* in the concept. This provides an opportunity for the development of indicators that can be more closely linked to an organisation's strategy. The moment is right for the evolution of a new human resource accounting model.

Furthermore, using new and better human resource accounting measures in the innovation and learning perspective of a balanced scorecard, management will be able to provide an account of its management of human resources not only to employees but also, if management chooses, to the wider organisational constituency. It remains to be seen whether managements are prepared to recognise their accountability obligations by not only adopting a pertinent human resource accounting model but also making the outcomes available to a wider audience. If they are, then human resource management will join the 'Round Table' (Smith, 1995) and human resource accounting will truly be a wisdom rather than a whim.

## Notes

- <sup>1</sup> This is the mechanism through which human resource management can and should talk explicitly about how both human resource managers and human resources add value to the organisation.
- <sup>2</sup> Flamholtz (1996) defines management control as measures to motivate people, to take actions consistent with organisational objectives, coordinate the efforts of different parts of an organisation, and provide information about the results of performance and operations.
- <sup>3</sup> Becker, in the 3<sup>rd</sup> edition of his book (1993), recognises that when the 1<sup>st</sup> edition was published (1964) many people were criticising this term and the underlying analysis because they believed it treated people like slaves or machines. Now, he suggests, the name and analysis are readily accepted by most people not only in all the social sciences but even in the media. He goes on to acknowledge that “the concept of human capital remains suspect within academic circles that organize their thinking about social problems around a belief in the exploitation of labour by capital” (p.16). This must be a phobia in Western society for he indicates that, even before the recent reforms, economists and planners in Communist countries had no difficulty with the concept of investing capital in people and, indeed, his and other authors' books on human capital were extensively used in those countries.
- <sup>4</sup> Is there a suggestion here that other, quite acceptable, accounting measures are not!
- <sup>5</sup> There are several examples where this has occurred. The New Economics Foundation audited Traidcraft plc's 1995 Social Accounts (Zadek, Pruzan and Evans, 1997, p.99). Also, PricewaterhouseCoopers, London and KPMG Accountants NV, The Hague jointly issued a Verification Statement that was included in the Shell Report (1999). On the other hand, the Scandinavian view is that to even think of cheating when presenting an ethical accounting statement is an absurdity and therefore verification should not be necessary (Zadek, Pruzan and Evans, 1997, p.77).
- <sup>6</sup> Despite the eloquence of the profession in promoting apparently new concepts, there are many who believe that some are nothing more than a different style and cut from the same cloth. For example, in his examination of activity based costing and theory of constraints, Tollington (1998) suggests they are simply modern day versions of absorption costing and marginal costing respectively.
- <sup>7</sup> This is generally provided by data that are stored and summarised in a multidimensional data source for slicing and dicing, charting and graphing, what-if analyses, and so on.

## **Notes...continued**

- <sup>8</sup> A number of other models, similar to that of Kaplan and Norton (1992), may be found in the literature. Maisel's (1992) balanced scorecard not only has the same name but also defines four perspectives from which an organisation should be measured. McNair, Lynch and Cross (1990) present a model that they call the performance pyramid, and Adams and Roberts (1993) offer another model that they call EP<sup>2</sup>M (effective progress and performance measurement). All of them are designed to measure organisational performance and to link the indicators used to the organisation's overall strategy.
- <sup>9</sup> An indicator of employee satisfaction is a relevant example. There is no direct way of measuring employee satisfaction. One way of assessing this is to devise a questionnaire that allows people to indicate how satisfied they are on a scale, of say 1 to 5, and then analyse the responses. While the analysis may have questionable validity, it is better than ignoring the situation because there is no reliable way of measuring it.
- <sup>10</sup> Investment in various human resource management practices, such as training (Russell, Terborg and Powers, 1985), selection and staffing (Terpstra and Rozell, 1993), appraisals (Borman, 1991) and compensation (Gerhart and Milkovich, 1992), have been linked to organisational financial performance.
- <sup>11</sup> Not in the sense of willingness, perhaps, but more due to a lack of ability and a failure to fully understand the role and nature of accounting – the language of business.
- <sup>12</sup> Learning in this context means more than individual knowledge and learning. It also encompasses the collective knowledge that derives from co-operation and teamwork in the organisational setting.

## *Development of a model*

A fool...is a man who never tried an experiment in his life.

*Erasmus Darwin*

In a letter to Sophy Ruxton

9 March 1792

### **Introduction**

The model that is to be developed in this chapter must contribute to the creation and progress of a learning organisation. According to Garvin (1993, p.80) a learning organisation is one that is, among other things, "skilled at creating, acquiring, and transferring knowledge". This requires management to focus on knowledge and competence, not only in respect of individual employees but also in respect of the organisation as a whole. While individual learning is important as a foundation for collective learning, it is of limited value to the organisation in the long run. What is learned should also be accessible to others within the organisation and preferably tied to it in a more lasting manner. The learning organisation needs practices and mechanisms that, among other things, will measure the organisation's rate and level of learning in order to ensure that gains have in fact been made. Furthermore, there is a need for people to document both information and analysis so that it is available to others in the organisation both present and future.

This, according to Manville and Foote (1996), is part of 'knowledge management' which they suggest is a systematic process for the purpose of collecting and managing human resources and abilities in much the same way as an organisation

manages its inventories, raw materials and other physical resources. They term this approach 'post-modern re-engineering', in which technology plays an important part in improving processes and the quality of organisational learning. This is representative of one of the two tracks of knowledge management discussed by Sveiby (1997). The other track, which is more relevant to this thesis, views knowledge management as managing people. Here knowledge is presented as processes embodying complex and dynamic human capabilities and behaviour, all of which are constantly changing. It is in these processes that the role of knowledge in organisational effectiveness will best be demonstrated and justified using a pragmatic approach to accounting for human resources.

The working model for human resource accounting in the next epoch will centre on performance measures that may be included in the innovation and learning perspective of the balanced scorecard. This form of presentation will provide the means by which managements will be able to discharge their accountability obligations in respect of their human resources. Furthermore, by providing measures in each of Ulrich's (1997) three categories of productivity, process and people, human resource accounting will not only provide an acceptable and useful decision support system for human resource management but also contribute to the development of a learning organisation.

### **Measuring knowledge**

The innovation and learning perspective of the balanced scorecard will remain incomplete unless suitable indicators are established to measure the knowledge embodied in an organisation in addition to the determination of suitable performance measures for each of the categories of productivity, process and people. Not only will this satisfy Garvin's (1993) conviction that it is necessary to understand how knowledge is created, acquired and transferred by organisations but it will also provide the information on employee wealth that Roslender and Dyson (1992) conclude is a vital ingredient of effective human resource management.

At this juncture, it is necessary to consider the most appropriate measurement base to be used in the valuation of knowledge embodied in an organisation. This will

essentially be a choice from two - market based or cost based measures. It is generally accepted that the price of anything that is established in an open market represents its true value at any given point in time. For those organisations whose shares are traded on any of the multitude of bourses around the world it is possible to establish the market value of the organisation as a whole. To disaggregate that value into its component parts, of which organisational knowledge is but one, is not a simple task. Furthermore, disaggregation of value is particularly fraught with danger. This is because the overall market value of an organisation will generally be greater than the sum of the value of its component parts due to various synergies. Even if a reliable method could be used to extract the value of organisational knowledge from the market value of the organisation as a whole, its use would be limited to those publicly listed organisations. Alternative methods would still need to be developed that will allow the wide variety of other organisations to establish the value of their knowledge base.

The alternative is to use a cost based measurement system. This option is preferred for two reasons. First, the value of something is normally at least equal to the amount one is prepared to pay for it<sup>1</sup>. This amount will change from time to time and the basis of valuation should reflect these changes. Second, once the required cost amounts have been established, they may be applied to all organisations irrespective of their structure, size and nature of operations. Since the intention of this thesis is to develop a generic model to value organisational knowledge, it seems more appropriate to proceed with a model that uses cost based measures as its foundation.

Despite individuals being significant sources, conduits and generators of knowledge, an organisation's knowledge base is not just simply the sum of its individual employees' explicit, or domain, knowledge bases (Howells, 1996). Knowledge creation within an organisation centres on the crucial presumption that human knowledge is created and enlarged by means of social interaction. This interaction converts the domain knowledge of individuals into collective structural and procedural, or tacit, knowledge within the organisation (Nonaka and Takeuchi, 1995). From an organisational perspective, this form of knowledge has a more permanent dimension and the organisation may build on it a sustainable competitive advantage.

The first step in measuring the wealth of knowledge embodied in an organisation is to understand the composition of domain knowledge for each employee and then calculate its value. These individual employee values may then be aggregated to ascertain the total value of domain knowledge within the organisation. The second step is to assess the value of tacit knowledge for the organisation as a whole. Combining the values determined in each of these steps will provide a value, to the organisation, of its knowledge base which is representative of the value of its human capital. Furthermore, it will also be possible to understand how the value of organisational knowledge is created, grown and even lost.

Since there is no way of knowing what the true value of knowledge is, either to an individual or to an organisation, the model devised here can provide no more than a rough approximation of the value of knowledge. As mentioned in chapter four, it is important to bear in mind that the more sophisticated the model the more expensive it will be to apply and attempting to achieve a greater degree of precision may not prove cost effective. The aim is, therefore, to provide a practical measure, for which the required inputs may be obtained at a reasonable cost, in order to ensure that the value of knowledge will not be neglected in management's decision-making processes.

#### *Domain knowledge*

Domain knowledge comprises three elements – formal education, post-secondary education and formal training. While it is acknowledged that it is not possible to have a post-secondary education without having first had a general education, each will be considered exclusive of the other. A similar situation generally prevails with each level of post-secondary education and a consistent approach will be taken there. This is not dissimilar to valuing other assets that rely on the existence of something else but are acquired separately.

Since a cost based measurement system has been proposed as the basis of the valuation of organisational knowledge, Dobija (1998) provides a useful starting point for attempting to value each of these elements of domain knowledge. He proposes using the costs associated with attaining a particular level of education as the basis for establishing a pragmatic value of knowledge. One of the difficulties associated

with valuing education is that it may only be acquired over a period of years. Estimating the value of each level of education must therefore take into account the opportunity cost of capital invested in that education over its duration. Accordingly, the capitalised value of costs is proposed as a surrogate measure for the value of the knowledge acquired from a particular level of education. This may be calculated using the formula:

$$K = c \left( \frac{(1+r)^n - 1}{r} \right)$$

where: K = the value of knowledge

c = cost of acquiring knowledge in each time period

r = a long-run rate of return on investment

n = the number of years of education

The cost of acquiring knowledge<sup>2</sup> varies depending on whether formal education, post-secondary education or subsequent formal training is being considered. In each case it is appropriate to take into account both the visible costs, irrespective of who pays them, and the opportunity costs. An annual standard cost for formal education and post-secondary education of \$9,230<sup>3</sup> and \$27,544<sup>4</sup> respectively is assumed. For many organisations, a specialist provider conducts most additional formal training for employees outside the workplace. In addition to the payment of a fee to the course provider<sup>5</sup>, the organisation will continue to pay the salary or wages of the employee during the period of training. Taking both of these elements into account, a daily standard cost of \$704<sup>6</sup> is assumed.

The French have a saying: '*plus ça change, plus c'est la même chose*' – 'the more things change, the more they stay the same'. By carefully scrutinising the past and the changes it has brought, it may be possible to anticipate the future. In that sense, a key to the development of a valuation model is a long-run rate of return on an investment over time. The question that arises is which of either a nominal rate of interest or a real rate of interest should be used in any calculation. The solution lies in the nature of the costs being used as the basis for determining the value of knowledge. If the valuation is based on historical costs, then it is appropriate to use the nominal rate of interest for it includes a premium to reflect the effects of inflation. However, if the valuation is based on current costs then a real rate of interest is more relevant. Since

the model is based on standard costs and these are easier to determine using current data, a real long-run rate of return will be used in all calculations.

*Table 7.1: Calculation of a real long-run interest rate*

YEAR	AVERAGE TEN YEAR BOND RATE	ANNUAL INFLATION RATE	REAL VALUE OF ONE DOLLAR
1979/80	12.40%	7.69%	1.0437
1980/81	13.15%	9.52%	1.0783
1981/82	16.40%	9.68%	1.1444
1982/83	14.85%	10.27%	1.1919
1983/84	13.75%	6.86%	1.2688
1984/85	13.50%	5.66%	1.3629
1985/86	12.95%	8.97%	1.4127
1986/87	12.80%	9.30%	1.4579
1987/88	11.95%	7.41%	1.5195
1988/89	13.50%	6.79%	1.6150
1989/90	13.40%	5.93%	1.7289
1990/91	11.15%	4.90%	1.8319
1991/92	9.95%	3.15%	1.9527
1992/93	8.34%	2.03%	2.0735
1993/94	7.21%	2.08%	2.1777
1994/95	9.81%	2.13%	2.3415
1995/96	8.66%	3.21%	2.4651
1996/97	7.68%	2.02%	2.6019
1997/98	6.03%	1.49%	2.7183
1998/99	5.40%	1.22%	2.8306
<i>Long-run real interest rate:</i>			5.34%

A nominal long-run rate of return may be obtained by reference to the actual Commonwealth of Australia 10-year bond rate over a substantial period of time. The definition of long run is fairly arbitrary with periods ranging between 10 and 30 years having some acceptance in differing circumstances. In this case, a period of twenty years has been chosen due to the ready availability of the data. Since a real long-run rate of return is required, it is necessary to adjust the nominal rate for the effects of inflation. Here, the annual change in the consumer price index has been used to determine the annual inflation rate. Table 7.1 shows how the real value of one dollar at the beginning of July 1979 has changed over the 20 years to the end of June 1999. For example, by adding interest for one year at 12.40% and dividing the result by 1.0769 the real value of one dollar at the end of the first year, that is \$1.0437, is

determined. At the end of 20 years, the real value of the original dollar is \$2.8306. Using this amount as the future value and \$1 as the present value, the rate of return over the 20-year period, namely 5.34%, has been determined. This real long-run rate of return will be used in all relevant calculations.

*Table 7.2: Attributed value of domain knowledge*

LEVEL OF EDUCATION	YEARS IN EACH CATEGORY OF EDUCATION	VALUE OF DOMAIN KNOWLEDGE <sup>7</sup>
<b>FORMAL EDUCATION</b>		
School leaver pre matriculation	11	\$133,482
School leaver at matriculation	12	\$149,840
<b>POST-SECONDARY EDUCATION</b>		
Apprentice	3	\$87,123
Diploma	2	\$56,559
Undergraduate degree	3	\$87,123
Honours degree	4	\$119,319
Masters degree	2	\$56,559
Doctorate	5	\$153,235
<b>FORMAL TRAINING</b>		
Additional per day of formal training		\$704

Using these parameters in the equation on p.138, the value, on completion of each level, attributable to formal education and post-secondary education may be calculated. For example, to calculate the value of a formal education to a school leaver just prior to entering university, the following data is entered in the equation:  $c = \$9,230$ ,  $r = 5.34\%$  and  $n = 12$ . The value of this level of knowledge, that is  $K$ , is calculated to be \$149,840. Similarly, the value of a full-time honours degree, at its successful conclusion, is determined by entering the following data into the equation:  $c = \$27,544$ ,  $r = 5.34\%$  and  $n = 4$ . The value of this level of knowledge, that is  $K$ , is calculated to be \$119,319. Similar calculations are conducted for each level of knowledge and the results are provided in table 7.2.

The value of domain knowledge acquired through subsequent formal training must be treated somewhat differently. The knowledge acquired from the attendance at a training programme lasting one day may be put into use immediately upon returning

to the workplace the following day. Moreover, training that has been provided over a period of years could, theoretically, be replaced in a few weeks as long as the volume of such training is normally in the region of a few days per annum. So, it would not be unreasonable to assume in this case that there is no accumulation of cost over time. Dobija's (1998) proposal, to use the future value of education costs incurred over time as the basis for valuing the knowledge acquired, may therefore be deemed irrelevant in the case of formal training programmes. What does remain relevant, however, is the notion that the value of something is at least equivalent to the amount one is prepared to pay. Accordingly, the knowledge value of each day of formal training, both to the recipient and the organisation, is equivalent to its cost, which was earlier established to be \$704.

#### *Depletion of domain knowledge*

Like most other assets, the value of domain knowledge diminishes over time though the nature and rate of depletion may be expected to vary for different types of knowledge (Becker, 1993). Since a formal education is intended to provide the recipient with lifetime skills, its benefits may reasonably be expected to remain with an individual forever. From an organisation's point of view, the value of knowledge acquired from that formal education, though not diminishing in what it provides year on year, has less potential value where, for example, it is only available to the organisation for a maximum of 45 years rather than 48 years.

In the case of a post-matriculation school leaver who joins an organisation immediately on leaving school, the organisation could look forward to the possibility of benefiting from the knowledge acquired from that education for a maximum period of 47 years. Since the value of knowledge attributable to a person of that standing, see table 7.2, is expected to be of equal benefit to the organisation in each of those 47 years, it may be considered equivalent to the organisation acquiring an annuity of \$8,761 for 47 years. This is calculated using the predetermined real long-run rate of return of 5.34% as the discount rate<sup>8</sup>. After a year's employment, and assuming there has been no change in the current annual cost of a formal education, the value of that employee's knowledge to the organisation would be the present value of that annuity for 46 years at 5.34%, that is \$149,076. The first year's

depletion would therefore be \$764. In other words, as the years pass, so the period of the annuity is reduced and what is lost is the present value of the final year of the previous annuity. That is, the depletion for the first year is the present value of \$8,761 receivable in 47 years time. Should the employee leave the organisation, without having received any additional training, after two years then the value of knowledge lost to the organisation is the present value of an annuity of \$8,761 for 45 years at 5.34% – \$148,276 (Baxter, 1971, pp.81-87). Naturally, if there has been inflation, the original annual cost of education must be changed to the new current cost. The value of each employee's domain knowledge attributable to a formal education would then have to be recalculated to discover the effect of inflation.

This is different from the more professionally oriented post-secondary education and training received before or after joining an organisation. For this form of knowledge there is, in addition to the above, an element of obsolescence. Instead of simply depleting the value of knowledge acquired by the organisation over the potential period of employment, it ought to be depleted over the length of time it is expected to provide a benefit to the organisation. This will vary depending on the nature of the education and training received. Some forms of knowledge may indeed provide a benefit over the potential period of employment. Others may only provide a benefit during the time a person occupies a certain position in the organisation while the benefit period of specific training programmes may be a function of the expected state of technology. Clearly, because of the diversity of knowledge gained in this way, the most appropriate number of years over which to write off these types of knowledge might differ not only for different types of programmes but also for different organisations and different jobs within organisations.

What is required is a model, as simple as is reasonably consistent with reality, that takes into account the shorter period that an organisation will benefit from this form of knowledge and the value of money over time. In a study conducted by Flamholtz (1985, pp.285-288), a useful life of approximately fourteen years was established for a group of employees within a single organisation. This supports a contention that some part of any knowledge that is acquired by an individual is retained by them and is of use to them and their organisation over many years. It does not seem inappropriate then, from an organisation's perspective, to deplete the value of

employee domain knowledge acquired from professionally oriented education over a fifteen-year period. Training programmes are somewhat different in that they are generally tailored to specific issues that are likely to become obsolete much sooner. For that reason, a shorter period of five years has been chosen as the period of depletion.

This may be done in a similar manner to that proposed earlier for depletion of an employee's domain knowledge attributable to a formal education. For example, to an organisation, the value of knowledge attributable to a person who has just completed an undergraduate degree, see table 7.2, would be the equivalent of acquiring an annuity of \$8,588 for fifteen years using the predetermined real long-run rate of return of 5.34% as the discount rate. One year after completing the degree, and assuming there has been no change in the current annual cost of that education, the value of that element of the employee's knowledge to the organisation would be the present value of that annuity for fourteen years at 5.34%, that is \$83,188. The first year's depletion would therefore be \$3,935. Similarly, in the fifth year the amount of depletion would be \$4,846 and in the tenth year, \$6,285. The same rationale may be applied to the depletion of the investment in ongoing formal training programmes.

### *Tacit knowledge*

Tacit and domain knowledge are complementary to each other. Earlier, it was stated that tacit knowledge is created and enlarged by converting the domain knowledge of individuals by means of social interaction within the organisation. This was identified as a crucial process in the quest to achieve a sustainable competitive advantage. As such, it is important that some form of measurement is developed to facilitate an assessment of an organisation's performance in growing its tacit knowledge.

This form of synergy is difficult to measure. Dodd (1955), however, has developed a model, the *diffusion* or *contagion* model, which may be of use. He proposed that the rate at which rumours or messages spread through a population is congruous with the frequency of contact between those who have received the message and those who have not. Since this may be likened to the process by which tacit knowledge is disseminated throughout an organisation, his model is applied in the search for an

acceptable method of determining the value of an organisation's tacit knowledge. In its simplest form, Dodd assumes that the instantaneous spread of rumours or messages is proportional to both the number of people who have received the message and to the number who have not. The adaptation of his model is represented by the following equation where  $dy/dt$  is the derivative of the function of the acquisition of organisational tacit knowledge held by an individual employee at the point  $t$  in its domain and  $\alpha$  is a positive constant:

$$\frac{dy}{dt} = \alpha y(1 - y)$$

where:  $t$  = expected years of service

$\alpha$  = an activity coefficient

$y$  = proportion of organisational tacit knowledge held by an individual employee by time  $t$

$(1 - y)$  = expected organisational tacit knowledge yet to be acquired

Bishir and Drewes (1970, p.436) expanded the model so that it facilitates the calculation of a value for the constant  $\alpha$ . The expanded equation is:

$$\alpha t = \ln y_t - \ln (1-y_t) - \ln y_0 + \ln (1-y_0)$$

If it is assumed that at the end of the available years of employment<sup>9</sup> the maximum amount of organisational tacit knowledge has been absorbed by an employee, it is possible to substitute values for  $y_t$ ,  $(1-y_t)$ ,  $y_0$  and  $(1-y_0)$ . The preferred situation is for there to be a value of one for  $y_{48}$  and zero for  $(1-y_{48})$ . Since it is not possible to calculate a value for  $\ln(0)$ , a slightly lower exit value of 0.98, for  $y_{48}$ , has been chosen resulting in a value for  $(1-y_{48})$  of 0.02. Furthermore, this is congruent with the view that a new starter acquires a small amount of organisational tacit knowledge during the course of employment interviews and induction training received immediately on joining the organisation. Therefore the value of  $y_0$  would be minimal rather than zero. Consequently, a starting point of 0.02 has been assumed for the purpose of developing the model. Solving the equation, the value of the activity coefficient constant is 0.16216.

*Table 7.3: Selected rates of acquisition*

Years of service	Cumulative rate of acquisition
1	0.02344
2	0.02745
3	0.03213
4	0.03757
5	0.04390
10	0.09362
15	0.18856
20	0.34330
25	0.54046
30	0.72571
35	0.85616
40	0.93051
45	0.96787
46	0.97255
47	0.97656
48	0.98000

A further rationalisation provides the basis for calculating a rate ( $\psi$ ), based on the efflux of time, for the acquisition of organisational tacit knowledge by each employee in the organisation. This is represented by the following equation:

$$\psi = \frac{y_0 e^{\alpha t}}{1 - y_0(1 - e^{\alpha t})}$$

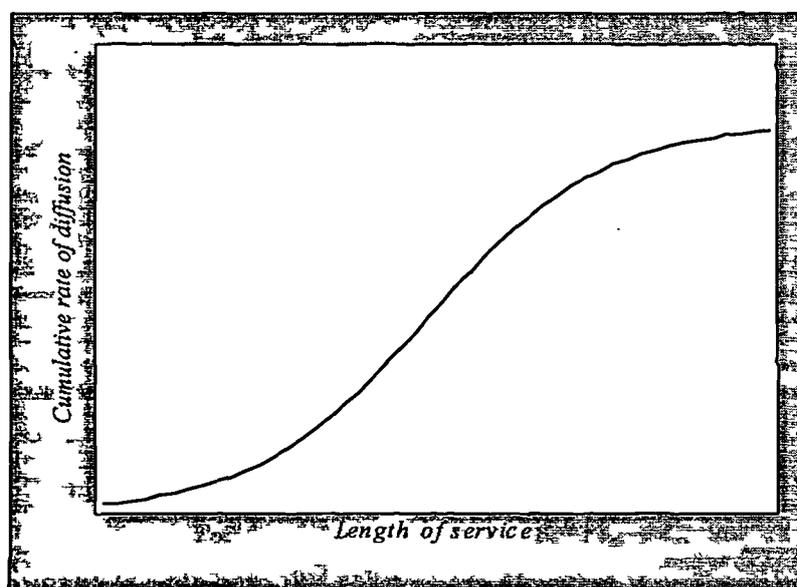
- where:  $t$  = actual years of service for an employee  
 $\alpha$  = the activity coefficient already calculated  
 $y_0$  = proportion of organisational tacit knowledge held by an employee at time  $0$

Using the Bishir and Drewes' (1970) extension of Dodd's (1955) model incorporating the previously calculated activity coefficient, it is possible to calculate the cumulative rate of acquisition of organisational tacit knowledge held by an individual employee after each year of service (see table 7.3 for a selection of rates).

Even though employees may spend a regular amount of time throughout their working lives sharing knowledge, the acquisition of tacit knowledge does not have to follow the same path. During the first few years of employment tacit knowledge would accrue at a slower rate than normal. It is also likely that in the latter years of an employee's working life, the acquisition of tacit knowledge would also slow<sup>10</sup>.

Using an analogy, when putting together a jigsaw puzzle, the initial pieces are difficult to place. As the assembly progresses the ability to place other pieces improves until there are only a small number of pieces remaining. These do not always fall into place quite so readily. The acquisition of tacit knowledge may be considered in the same light. Figure 7.1 shows that the calculated cumulative rate of acquisition of organisational tacit knowledge by an individual employee exhibits similar tendencies and may therefore be considered a *reliable formula* for establishing the rate at which tacit knowledge is acquired.

*Figure 7.1: Cumulative rate of diffusion*



All that remains is to determine the basis of valuing the tacit knowledge in the workforce. Previously it was decided that cost based measures should be used as the basis for establishing a pragmatic value of knowledge. Since this form of organisational knowledge is acquired through social interaction, or the sharing of employee experience, the only cost relevant to the organisation is the cost of labour for the time spent by its employees on this activity.

To start, it is necessary to consider how much time is spent during the working day in sharing knowledge within the organisation. It is unlikely that any records will exist to provide concrete evidence of the time spent by employees on this activity. This being the case, securing an answer requires a rational assessment that will centre on the question of what may be considered reasonable – 10%, 15%, 20%? Undoubtedly it

will vary from one organisation to another but, more importantly, it will almost certainly differ for different job specifications within an organisation. While in a real situation this is an important element that needs careful consideration, at this point in the development of the model any reasonable assumption will suffice. 12½%, or the equivalent of one hour out of each eight-hour day, will be assumed.

*Table 7.4: Selected values of tacit knowledge per employee*

Years of service	Cumulative rate of diffusion	Value of tacit knowledge (\$)
1	0.02344	2,310
2	0.02745	2,705
3	0.03213	3,166
4	0.03757	3,702
5	0.04390	4,326
10	0.09362	9,225
15	0.18856	18,581
20	0.34330	33,828
25	0.54046	53,256
30	0.72571	71,511
35	0.85616	84,365
40	0.93051	91,692
45	0.96787	95,373
46	0.97255	95,834
47	0.97656	96,229
48	0.98000	96,568

Previously, the average annual cost to the organisation for each employee was determined to be \$45,872. If 12½% of each employee's time is spent growing the tacit knowledge of an organisation, the cost to the organisation each year is \$5,734 per employee. Earlier, acquisition of organisational tacit knowledge by each employee was assumed to occur over a maximum period of employment of 48 years. Therefore, for each employee, the maximum value to an organisation of tacit knowledge is equivalent to the present value of \$5,734 for each of 48 years. Using the same real long-run rate of return of 5.34% that was incorporated, where appropriate, in all other calculations, the present value of a working lifetime's tacit knowledge is estimated to be \$98,539. The value of an organisation's tacit knowledge may be determined in three steps. First, multiply this amount by the cumulative rate of acquisition of organisational tacit knowledge for each year of service (see table 7.4 for some selected calculations). Second, multiply the product by the number of

employees with that length of service. Third, aggregate all of the values determined in the second step. The result should, in most cases, provide a reasonable indication of the value of tacit knowledge resident within the organisation.

### *Using the HRIS*

The models developed in this chapter require access to a wide range of data that is acquired from several sources. Extensive use of *current rather than historical data* implies that it must be updated on a regular basis. Furthermore, the frequent use of a number of formulae, although not unduly complex, would suggest that electronic processing is the best way to convert the data into useable information.

All of the employee data, such as level of education, time spent on training, length of service and remaining years of service, that are necessary to determine the value of organisational knowledge should be contained in the HRIS database. The common data, such as average weekly earnings, current education and training costs, average ten year bond interest rates, annual inflation rates and expected maximum length of service, should be regularly imported into the section of the HRIS database reserved for organisational data.

**Figure 7.2: Employee's human capital value**

<b><u>THE VALUE OF YOUR KNOWLEDGE TO THE ORGANISATION</u></b>	
Name:	Middle Age
Date of birth:	10 <sup>th</sup> January 1954
Years of service:	15 years
Qualifications:	BSc, MBA
	<b>\$</b>
<b><u>Formal knowledge (education and training)</u></b>	
Knowledge value at 1 <sup>st</sup> January, 1998	165,971
Adjustment to convert this amount its current value	7,000
	172,971
Increases in knowledge value in the year:	
Formal qualifications	—
Training programs	3,520
	176,491
Decrease due to the efflux of time	14,226
Knowledge value at 31 <sup>st</sup> December, 1998	158,745
<b><u>Knowledge from being part of the team</u></b>	
Knowledge value at 31 <sup>st</sup> December, 1998	18,581

The HRIS, having been provided with the appropriate algorithms, will then be capable of automatically updating the value to the organisation of employees' knowledge every time there is a change to the relevant data in either the employee database or the common database. A further advantage in using the HRIS, instead of an independent database or spreadsheet, is that, on each occasion there is a change in the underlying data, the HRIS is capable of providing an immediate analysis by each of the causal elements – new employees, departing employees, increase in formal qualifications, formal training programs, inflation, depletion and continuity of employment – of the variation in the value of organisational knowledge.

Toffler (1980) believes that, in the future, people will come to see the organisation that provides their livelihood as a vehicle through which they are able to grow. An important part of this growing process is the continual acquisition of new knowledge. At the same time, organisations are increasingly seeking to become learning organisations. Since these goals complement each other, it is in an organisation's best interests to encourage the aspirations of their employees. Hauser and Katz (1998) believe a valuable way of achieving this is to show their employees how they provide knowledge value to the organisation. A simple way of doing this is to furnish each employee with an annual statement in a form similar to that shown in figure 7.2.

### **Compiling the scorecard**

Construction of the innovation and learning perspective of the balanced scorecard is centred on the conclusions reached in the previous chapter. Indicators will be developed that provide information about the results of performance and operations as well as those necessary to motivate people. In addition, some of the indicators must satisfy Garvin's (1993) conviction that it is necessary to understand how knowledge is created, acquired and transferred by organisations. With this in mind, the basic categorisation of productivity, process and people (Ulrich, 1997), is retained in the development of the ensuing performance indicators for the innovation and learning perspective of the balanced scorecard.

The data used in developing these performance indicators was supplied by an organisation that wishes to remain anonymous. The organisation is an original

equipment manufacturer in the automotive industry. It has a mission statement that simply reflects its desire to be a quality manufacturer. The strategies that support the mission statement relate, in the main, to cost and quality. It has no strategic objectives in relation to its people, either on the shop floor or in management, positioning it firmly as a second wave organisation<sup>11</sup>. Table 7.5 contains a summary of the data, both raw and calculated, that have been used in the development of the ensuing performance indicators.

*Table 7.5: Selected data*

	1996	1997	1998
<b>Raw data</b>			
Added value (\$'000)	11,155	11,847	11,850
Total labour cost (\$'000)	8,690	8,937	9,250
All other assets (\$'000)	12,425	11,950	10,950
Hours of structured training	1,576	1,768	1,992
Annual training cost (\$'000)	176	146	148
New employees	10	21	5
Terminated employees	12	23	9
No. of employees at year end	220	218	214
<b>Calculated data</b>			
Domain knowledge (\$'000)	26,597	26,496	26,124
Tacit knowledge (\$'000)	4,660	4,512	4,443

Each of the indicators suggested here is not immutable. They are simply suggestions that should help to meet the fundamental requirements of the innovation and learning perspective of a balanced scorecard. Furthermore, they are capable of communicating the key factors that drive performance in the creation, acquisition and transfer of knowledge within an organisation as well as providing an evaluation of strategic objectives relating to the human element of an organisation.

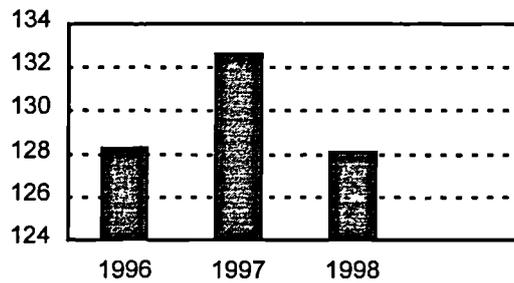
### *Productivity*

ADDED VALUE AS A PERCENTAGE OF LABOUR COST<sup>12</sup> (figure 7.3): this indicator is especially useful for explaining company results to employees as they are likely to find the concept of 'creating wealth' or 'adding value' more acceptable than the emotive concept of 'profit'. Furthermore, the indicator

provides a true representation of an organisation's productivity because it reflects the relationship between the employees' contribution to the organisation and the benefits they receive. At the same time, it will provide an indication over the long run of the success or failure in transferring and sharing knowledge within an organisation.

**Figure 7.3: Productivity indicator #1**

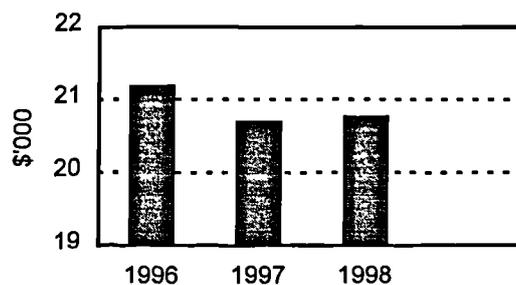
**Added value as a percentage of labour cost**



VALUE OF TACIT KNOWLEDGE PER EMPLOYEE (figure 7.4): tacit knowledge has been identified as the form of knowledge upon which an organisation may build a sustainable competitive advantage. The total value of tacit knowledge resident within the organisation was calculated in the manner indicated on page 147 with the resulting value being divided by the number of employees. This indicator shows how, as employees' average length of service increases, the increased social interaction between them increases the collective structural and procedural knowledge within an organisation.

**Figure 7.4: Productivity indicator #2**

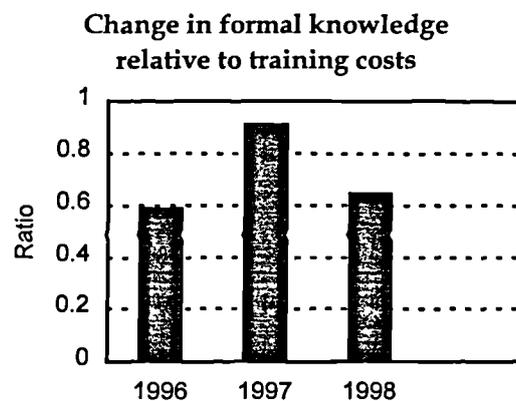
**Value of tacit knowledge per employee**



It also provides an indication of the success or failure of incorporating knowledge into the fabric of an organisation. A sudden reduction in the indicator, such as that exhibited from the first to the second year in this example, is often caused by the retirement of several long-serving employees. They take a wealth of organisational knowledge with them that their replacements will take some time to acquire.

GROWTH IN DOMAIN KNOWLEDGE RELATIVE TO TRAINING COSTS (figure 7.5): this reflects the strategic intent of human resource management to maintain the stock of formal knowledge through continuing education and training programs. In second wave, or smokestack, organisations this is perhaps less important but in the third wave, or knowledge, organisations this will be critical. Furthermore, it may also be used to assess both the knowledge creation process and the knowledge embedding process within an organisation.

*Figure 7.5: Productivity indicator #3*



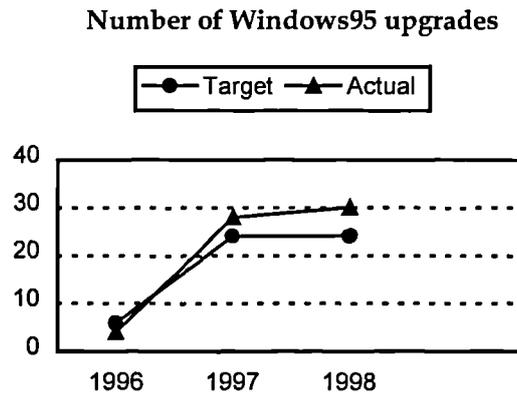
The value of each element of domain knowledge resident in all employees was determined by applying the methodologies developed earlier in this chapter. The numerator in this ratio is the change in domain knowledge per employee from one year to the next. The denominator, which represents the average cost of training per employee, was derived by taking the total expenditure on training for the current year and dividing it by the average number of employees in the year.

## *Process*

PERCENTAGE OF EMPLOYEE DATA RECORD CHANGES PROCESSED MANUALLY: many organisations require their employees to manually record data concerning their attendance, the time spent on their productive tasks as well as their non-productive activities, the time they are on either paid or unpaid leave, and changes to their personal information. Invariably, this data has to be reviewed and authorised by a supervisor and then manually entered by another employee into the HRIS or the general management information system. In total, this is a non-value-added process. The introduction of new technology that will allow the data to be entered directly into the organisation's databases will eliminate many of the non-value-added process, and promote trust and a feeling of responsibility and empowerment in employees. An indicator such as this provides a way of measuring the take-up of new technology that, in itself, provides an indication of its acceptability to the workforce. In the pilot organisation, much of its data, particularly in relation to human resources, is collected manually for the required technology is not available and no records are kept in relation to the volume of transactions processed.

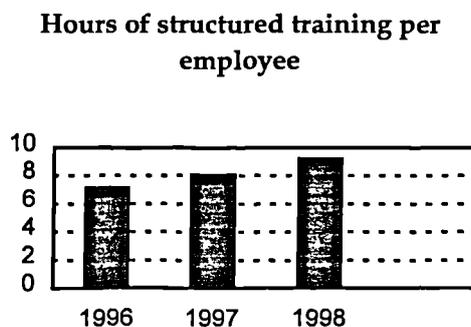
STRATEGIC INFORMATION COVERAGE (figure 7.6): this is intended to measure the take-up of advances in data processing and information access adopted by the organisation. The measure will change from time to time depending on the projects currently being implemented to meet the observed strategic needs. At the pilot site, the organisation was transitioning systems from an MS-DOS base to a Windows95 base with the long-term intent to automate much of the data gathering process. The initial phase involved the upgrading of computer hardware, complete with new operating software, to facilitate the introduction of new or modified application software in later years.

*Figure 7.6: Process indicator #2*



STRUCTURED TRAINING (figure 7.7): one way for organisations to maintain their stock of domain knowledge is through formal professional and technical training programs. Employee participation in these programs reflects their commitment to upgrade, or at least maintain, their professional or trade knowledge. Indeed, the quantum of time spent on these activities provides a clear indication of the commitment of both the employees and the organisation to the protection of the value of knowledge and the transfer and sharing of knowledge.

*Figure 7.7: Process indicator #3*

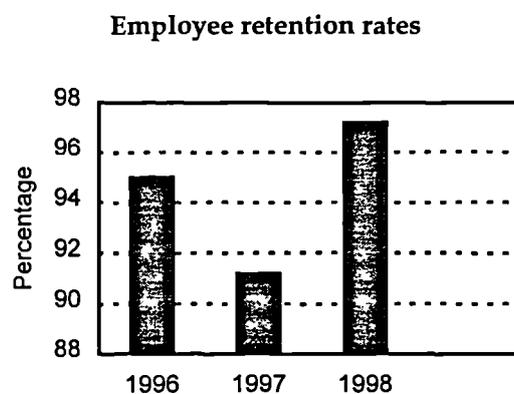


### *People*

EMPLOYEE RETENTION (figure 7.8): many organisations measure labour turnover. That may be considered a negative measure. To foster a positive attitude about and within an organisation, it is more appropriate to report on the percentage of employees who remain with the organisation. While a 100 percent retention rate is not desirable in the sense that new employees bring

new ideas to an organisation, a high retention rate may reflect a working environment that employees find amenable. This, in itself, encourages the transfer and sharing of knowledge and so may act as an indicator of the potential success or failure in this process. The majority of the leavers in 1997 were employees with less than five years service. This has limited impact on the knowledge value of the organisation as the tacit knowledge acquired by them was still relatively small when compared with the growth in that category attributable to longer serving employees more than offset the reduction.

*Figure 7.8: People indicator #1*



**EMPLOYEE SATISFACTION:** while many and varied inferences may be drawn from the analysis of various people measures, nothing gives a truer picture of the satisfaction of employees than an honestly answered survey. There must be an atmosphere of trust within the organisation otherwise there is a risk that the employee responses will reflect what they think management wants to hear. Elements in an employee satisfaction survey might include:

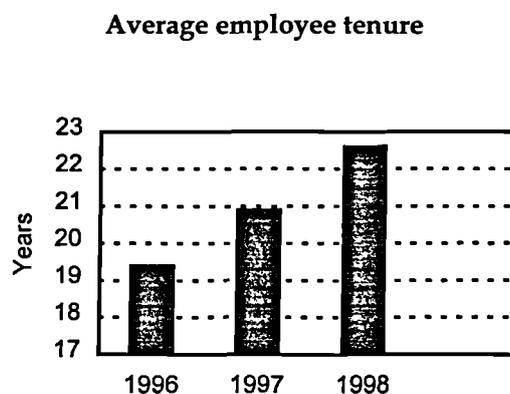
- involvement with decisions
- recognition for doing a good job
- access to sufficient information to do the job well
- active encouragement to be creative and to use initiative
- assistance from support services
- overall satisfaction with the organisation

Employees would be asked to score their feelings on a scale of 1 to 5, anchored at the low end with *Discontented* and at the high end with *Very satisfied*. A

suitable index of employee satisfaction may then be calculated with the ability to extract results by a choice of subgroups. By conducting such a survey on a regular basis, the results may be plotted on a graph in a similar fashion to the other indicators and this will provide an indication of the trend over time. In this instance it was not possible to conduct a longitudinal study of this nature.

**AVERAGE TENURE OF CURRENT EMPLOYEES** (figure 7.9): the theory underlying the use of this indicator is that an organisation is making long-term investments in its employees, so any unwanted departure represents a loss in the knowledge capital of the organisation. Long-term employees carry the values of the organisation and knowledge of organisational processes essential for the sustainability of the organisation (Kaplan and Atkinson, 1998). This indicator may be used in conjunction with the first people indicator, employee retention, to determine whether the loss of employees is having a detrimental effect on the ability of the organisation to enhance the value of its tacit knowledge.

*Figure 7.9: People indicator #3*

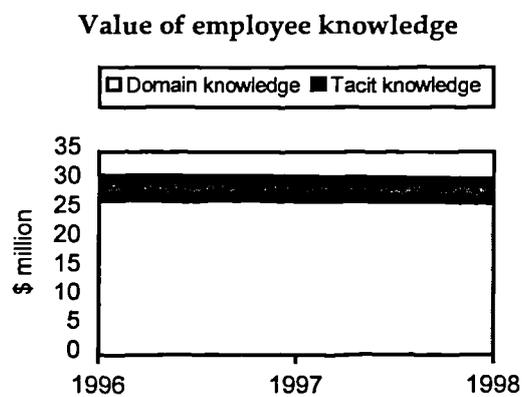


In addition to the preceding indicators in the categories of productivity, process and people, the innovation and learning perspective of the organisation's balanced scorecard requires some indicators to provide the information on employee wealth that Roslender and Dyson (1992) conclude is a vital ingredient of effective human resource management. As a result of the development of financial measures for the knowledge embedded in an organisation's employees, the following are offered as examples of the type of indicator that may be appropriate.

## Financial

VALUE OF EMPLOYEE KNOWLEDGE (figure 7.10): this is especially important for knowledge-based organisations. It provides information on the overall value of knowledge resident in an organisation's employees, in other words the value of an organisation's human capital. Furthermore, the manner in which these aggregate values are calculated will allow an organisation to fully understand the particular elements – such as new employees, terminating employees, further education and training etc. – that comprise the change from one period to another.

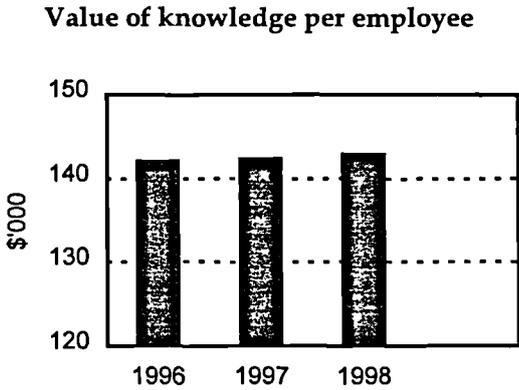
**Figure 7.10: Financial indicator #1**



KNOWLEDGE PER EMPLOYEE (figure 7.11): provides a financial measure that may be explained by changes in tenure and retention rates. As the average length of tenure increases, the value of domain knowledge to an organisation will decrease and the value of tacit knowledge will increase. It appears that, when tenure reaches the average period of 22 years, the increase in tacit knowledge of around \$3,800 per person more than offsets the decrease in the domain knowledge of around \$2,000. In the case of retention rates the impact on the value of knowledge per employee will depend on both the age and length of service of the employee leaving and the level of education attained by his or her replacement. On the evidence of this case, the value of knowledge per employee has increased, albeit marginally, when there was a significant fall in retention rates. A closer examination of the data indicated that resignations of employees with less than five years service were a large contributor to the

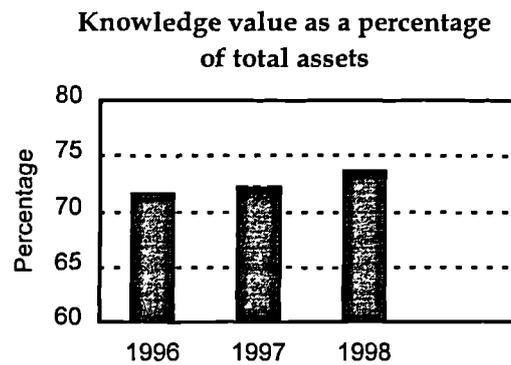
fall in retention rates. Replacing these employees has little impact on this indicator. On the other hand, replacing a generally long-serving employee, of age 55, with a younger person having a better education will add about \$58,000 to the knowledge value of the organisation. If the reliability of these measures were accepted, they would appear to vindicate the ageist policies adopted by so many organisations. On the other hand, organisations that encourage employees with several years of service to acquire additional qualifications or undertake substantial formal training in preparation for a future promotion, rather than appointing someone from outside the organisation, will see an improvement in this indicator. Overall, this indicator seems to provide a reasonable indication of the commitment to knowledge growth in an organisation and the strength of its human resource management strategies and implementation policies.

*Figure 7.11: Financial indicator #2*



EMPLOYEE KNOWLEDGE AS A PERCENTAGE OF TOTAL ASSETS (figure 7.12): this indicator will really reinforce or destroy the Chief Executives' rhetoric that employees are an organisation's most valuable asset. It provides an indication of how much employees represent of the total resource pool available to the organisation.

*Figure 7.12: Financial indicator #3*



## Conclusion

Within the knowledge management field it is accepted that processes, people and technology tend to come together to increase organisational effectiveness through learning. Processes and knowledge are either incorporated into existing business processes or form new processes. These are processes by which knowledge is created, captured and codified, shared and transferred, embedded and used, measured and valued. The knowledge management processes that have the greatest effect on operational processes are those for the creation of knowledge, transfer and sharing of knowledge, and the embedding and use of knowledge (Kim and Mauborgne, 1997).

In the context of organisational effectiveness the knowledge creation process should be purposeful. The process of creation requires the input of innovative individuals. Outputs from knowledge creation are in the problem-solving domain, such as improvements in operational processes. Measures of the success of knowledge creation may include an assessment of the reliability of the knowledge, the extent to which it solves a problem, acceptability within the organisation and readiness to exploit it should it lead to new opportunities, the cost of exploitation and the potential value.

The knowledge transfer process has some of the aspects of creation in the sense of input being sources of existing knowledge. Outputs are related to the improvement of organisational effectiveness, particularly in the field of best practice. Measures of success for the transfer and sharing of knowledge are concerned with the reliability of knowledge, its completeness and its accessibility.

The knowledge embedding process is concerned with organisational effectiveness through the incorporation of knowledge into the fabric of the organisation. Measures for the embedding process are concerned with learning at the individual and organisational level, protection of the value of knowledge and the potential for knowledge productivity (Drucker, 1993).

Each of these knowledge management processes play an important role in increasing the value of knowledge and skills embodied in an organisation. Measures, or performance indicators, that are developed to assess the progress of organisations in this compelling activity need to be aligned with one or another of these processes. The proposals contained in this chapter aim to do just that and are only the beginning of Puxty's (1993) long road in search of a planning, control and performance measurement system that accounts for the human element of an organisation's intellectual assets.

The model developed in this chapter embraces one of the newer concepts in accounting, the balanced scorecard, as it seeks to present something more than the short-term monetary reports so prevalent up to now. These traditional reports are probably not enough if the mission of an organisation is more than simply creating profits and return on investment. Wise managers know that their organisation must develop the capabilities that it will need to prosper in the future but doing so is not likely to produce profits in the current year, only costs. This is the fundamental reason why organisations need a balanced scorecard. The need is even clearer for many organisations, such as charitable institutions and government agencies, that do not have a profit motive. The balanced scorecard does more to describe what is expected of an organisation and how well those expectations are met. As the term implies, the scorecard is an aid in creating a *balance* among the various factors that need to be considered when determining the strategy for an organisation's future development. The balance adopted reflects the strategic choices of the organisation.

In the quest to develop a learning organisation – a prerequisite for survival in the long-run – the model has concentrated on seeking to fill the void of performance indicators that usually exists in the innovation and learning perspective of a balanced scorecard. At the same time, the need to provide information on employee wealth has

also been recognised and articulated in the model. Unfortunately, all measures can be manipulated. Those proposed in this model are no different in that respect. The value of knowledge may be increased by providing more training or taking on more employees. Since, in this model, that value is based on the cost of acquisition rather than use-value, an organisation may acquire inappropriate knowledge and skills. Such acquisitions are likely to have an adverse effect on some other area of organisational performance. For reasons such as this, the model uses the balanced scorecard concept because it facilitates an understanding of cause-and-effect relationships.

In concert with the description and justification of principles in the earlier chapters of this thesis, the model is intended to provide a practical framework for providing information on an organisation's knowledge and skills: how they are valued, how they are nurtured and how they contribute to organisational sustainability. It is doubtful whether anyone could be an authority on all the concepts and issues addressed in this chapter, and some of the proposals may well be challenged.

The proposed measures are seen as complementary to traditional financial measures and provide a way of reducing the danger of a harmful short-term approach to the management of human resources. Furthermore, they provide the means by which employees of an organisation may become more aware of the significance of their work and of their value to the organisation. At the same time, use of the model is related to economy<sup>13</sup>. Good economy means good resource management. Today's organisations are so much more than simply an investment in monetary capital. For many, how they manage talent and accumulated knowledge is just as important.

The proposals contained in this chapter represent, in many respects, a theory. If this particular theory is right, then the model should be adopted in a practical environment. For an evolving theory, proof does not precede the event but follows it. The task now is to compare what may happen with what is expected to happen. As a result of that comparison, there may be changes to existing or future reporting practices or the model may need to be amended.

## Notes

- <sup>1</sup> Even if a market based measure were to be used to value organisational knowledge, it is worth remembering that the market value of an organisation as a whole is determined by the amount that a purchaser will pay for its shares.
- <sup>2</sup> In all cases no distinction is made between the quality of graduands. While some will always be better than others, the granting of an award assumes a certain level of knowledge common to all.
- <sup>3</sup> This is the annual amount of the Australian Government 'Parenting Allowance' payment to low income families.
- <sup>4</sup> Annual direct costs of education totalling \$5,585 (higher education charge of \$4,855, books and stationery of \$480 and student union fees of \$250) are added to the opportunity cost of post-secondary education to derive the total annual cost. The opportunity cost is represented by foregone annual earnings of \$28,911 (the duration of tertiary education, usually 39 weeks, multiplied by average weekly earnings of \$741.30) less the annual living allowance of \$6,952 paid by the Australian Government.
- <sup>5</sup> Where the training is conducted within the organisation the cost, per participant, of running the programme should be substituted for the external provider's fee.
- <sup>6</sup> The Centre for Professional Development, Melbourne regularly charges \$495 for training courses of a single day duration. To this must be added the cost to the organisation for the lost labour for the day. This amount is calculated by multiplying average weekly earnings (see note 3) by 52 and adding a premium of 19% to cover labour related costs such as superannuation (9%), employment taxes (6%) and workers compensation insurance (4%). This equates to an annual amount of \$45,872. There are 260 (52 x 5) weekdays in a year. It is normal for employees to take four weeks of holidays (4 x 5 = 20 days) and possibly ten days sick leave each year. As well, there are ten days of public holidays leaving 220 working days in a year. The average annual employee cost is then divided by 220 to arrive at a daily cost of labour of \$209.
- <sup>7</sup> All dollar values appearing in this chapter of the thesis, unless otherwise stated, are Australian Dollars.
- <sup>8</sup> The real long-run rate of return continues to be used because the amount of the annuity will be recalculated at least annually or, more appropriately, each time there is a change in the cost base. It may be argued that a different discount rate, perhaps one that is determined by reference to the organisation's weighted average cost of capital (WACC), should be used. There are two reasons why this rate has been chosen. First, because all the calculations are based on current costs, no

## **Notes...continued**

allowance need be made in the discount rate for the effects of inflation. The WACC inevitably does this. Second, the organisation only benefits from the use of the knowledge and skills of its employees. It does not, and will never, own them as it owns other assets.

- <sup>9</sup> The available years of employment are 48 if calculated from leaving school at age 17 to retirement at age 65.
- <sup>10</sup> Becker (1993), referring to on-the-job training, suggests this is the case.
- <sup>11</sup> Their willingness to provide data relevant to the development of some generic human resource accounting concepts is appreciated.
- <sup>12</sup> As indicated in note 5, labour cost is calculated by adding a premium of 19%, to cover labour related costs, to the actual wages and salaries paid to employees. Understandably, the amount of the premium will vary between organisations in relation to the benefits they provide.
- <sup>13</sup> Use of the word 'economy' here reflects a deeper meaning than the one carelessly used in everyday parlance.

## *Establishing the credibility*

there is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things. For the reformer has enemies in all those who profit by the old order, and only lukewarm defenders in all those who would profit by the new order, this lukewarmness arising partly from fear of their adversaries, who have the laws in their favor; and partly from the incredulity of mankind, who do not truly believe in anything new until they have had actual experience of it.

*Machiavelli*  
The Prince  
c1519, p. 55

### **Introduction**

The preceding chapter developed a model for human resource accounting centred on the concept of the balanced scorecard. To satisfy the dictum of Tinker and Puxty (1995) that theoretical concepts are inconsequential and worthless unless they spawn useful, practical applications, it is necessary to evaluate the propositions in organisations to determine whether they may be converted into credible, practical applications. Ideally, these should be organisations that are dependent on the knowledge and skills of their human resources for a sustainable future. Regrettably, there was considerable disinterest in industries such as banking and insurance or professional services. This may indicate that the first excuse (see chapter 2, p.17) remains very much part of management culture<sup>1</sup>. Challenging the principles that underlie culture is like tilting at windmills. Yet, advocates of change have been heard in the past and will continue to be in the future.

In New Zealand, the Crown Company Monitoring Advisory Unit (CCMAU) was concerned that currently accepted accounting practice did not cater for the degree of

accountability required by legislation for the Government-owned Crown Research Institutes (CRIs). The view was held that, in these organisations, the knowledge and skills of their employees far outweighed physical capital as the key asset in the organisation. Yet, there did not appear to be any available mechanism that allowed for the integration of the complex dimension of the human resource into conventional models of organisational accountability (CCMAU, 1997). They needed a new model that would meet the accountability tests of relevance and reasonable measurement and, at the same time, provide more meaningful information to stakeholders. As a result of earlier research (Turner, 1996), the then senior advisor in CCMAU contacted me<sup>2</sup> to seek advice on the current state of research in the field of human resource accounting. There followed a sequence of correspondence between us which culminated in the preparation of an information paper (CCMAU, 1997) for one of the shareholding Ministers. This paper was very well received, and the Minister instigated a program of work to investigate the adoption of human resource accounting principles and practices in the CRIs.

As a result, an initial semi-structured meeting<sup>3</sup>, attended by accounting and human resource professionals from most of the CRIs as well as representatives of the CCMAU, was subsequently convened by CCMAU. During the course of that meeting it became very noticeable that the concept of accounting for human resources was an anathema to some of the participants. For others, the proposition that they become more visibly accountable for the management of their human resources represented a huge leap forward into an unknown realm, the benefits of which were not immediately transparent to them. Yet, there were a few participants, mainly from those CRIs that were not as advanced in the commercialisation of their organisations, who were more prepared to experiment with the proposed model. With those participants either adverse or indifferent to the proposal to account for human resources, it appeared there would be little support to proceed with the introduction of a useful model that was intended to enhance their organisational accountability. After further discussion, during which the CCMAU representatives expressed a keen desire to explore the model further, it was agreed that, in the context of the CRI model, it was necessary for any new human resource accounting model to:

- consider the relevance of and the information value to be gained from the adoption of human resource accounting;
- determine the most suitable methodology for human resource accounting practices in CRIs;
- determine appropriate reporting mechanisms for human resource accounting to shareholding Ministries; and
- define a consultative process to enable CRIs to adopt human resource accounting

Initially, information was gathered from existing internal management reports, such as strategic planning documents and *quarterly performance reports*, and published financial statements. Subsequently, any further data needed to apply the model developed in the previous chapter was specifically requested from the CCMAU or the CRIs themselves. Finally, to understand the degree of acceptance of the model proposed in this chapter, an informal review meeting was held with the CCMAU<sup>4</sup> as well as telephone discussions with individual accounting and human resource professionals at selected CRIs<sup>5</sup>.

This chapter examines how the CRIs currently provide an account of the management of their human resources that meets their statutory obligations and the objectives of the CCMAU. However, it is germane to prelude this with an understanding of the role played by the CCMAU and the legislated obligations of the CRIs for by comprehending the environment in which they are required to operate, it is easier to appreciate why their current reporting practices may need some improvement. Then, by examining both the feasibility of and the benefits to be gained from using the model developed in the previous chapter, it will be possible to assess whether the new model would provide the improvement that is required. The chapter concludes with a comparison of the additional costs and benefits associated with the adoption of the new model and an assessment of the progress in adopting a human resource accounting model in the CRIs.

### **Crown Company Monitoring Advisory Unit**

During the 1980s, the New Zealand Government (NZG) began using the company model as part of its broader state sector reforms. Prior to this, activities now vested in

these companies were undertaken by government departments or trading operations. Among the reasons why the company model was chosen, were to:

- encourage efficiency, transparency and innovation;
- foster competition with the objective of ensuring New Zealanders receive better service at competitive prices;
- limit spending, or to free up resources for the Government to apply to higher priority areas; and
- relieve Ministers of day-to-day involvement in operational matters

NZG has a significant amount invested in these companies. Like any investor, it wants to ensure that its investments are performing to the best of their ability. To assess this it needs accurate, up-to-date information on the performance of NZG companies, together with a consistent stream of high quality advice on how to maximise the benefit from owning these companies. In 1993, the CCMAU was established to fulfil these objectives.

The CCMAU is an independent unit administratively attached to the New Zealand Treasury. Both the CCMAU and the Treasury advise shareholding Ministries on the organisational and business performance of NZG companies. They provide independent, contestable advice but each focuses on different aspects. The CCMAU's approach is to maximise the performance of the individual companies in which NZG has an ownership interest. To meet this objective from a company-level perspective, the CCMAU focuses on:

- the formation, structure, investment and continued ownership of individual companies;
- business strategy and the associated risks and opportunities;
- ensuring the most qualified directors are recommended for appointment;
- performance, in absolute terms, against objectives and relative performance against benchmarked organisations;
- the impact of NZG policy and regulation on individual companies or groups of companies; and
- innovation, best practice and continuity of essential services

The Treasury's approach is to optimise the NZG's balance sheet. By using these two different approaches, the NZG is able to make balanced decisions on its investment in these companies.

The NZG companies monitored by the CCMAU fit into one of four areas: health, state-owned enterprises, partly owned commercial companies and CRIs. NZG companies are limited liability companies established under, and subject to, the New Zealand Companies Act 1993. Each company also operates under a statute which is either specific to that company or to a certain type of company. This statute typically addresses certain ownership, governance and public accountability arrangements for the company.

The CCMAU's core objective is to provide advice that protects and enhances the value of NZG companies. To achieve this a core of expertise, as well as a focus on adding value, has been developed. Like any company, NZG companies move through several stages in the corporatisation and development process. These stages are not uniform. Instead of taking a universal approach, the CCMAU takes the time to fully understand the companies it monitors. Understanding the opportunities and threats facing them helps the CCMAU advise the NZG on how to maximise the benefits of owning these companies. Adding value is also about challenging the status quo. Continually thinking about and debating alternative approaches is a crucial part of the CCMAU's culture.

Crucial to providing well-rounded and accurate advice is an understanding of each company's business and business environment. While formal processes such as business planning and financial reporting provide one channel for gathering information, equally important are the ongoing relationships with each company that allow the CCMAU to be proactive in providing advice to the NZG. With this background it is easy to see why the CCMAU was keen to develop a human resource accounting model to assess the performance of and the management of the knowledge and skills of employees in the CRIs.

## **Crown Research Institutes**

CRI in New Zealand are commercially focused science and technology companies undertaking significant research, first for the public good through contracts with the Foundation for Research, Science and Technology (FRST) and, second for a diversity of commercial clients. The main objective of this activity is to benefit New Zealand through the development and transfer of a range of technologies that add value to their respective industries. This is achieved through the activities of a skilled and dedicated scientific workforce that is ably supported with appropriate infrastructure, both human and physical in nature.

The formation of CRIs commenced in 1992 by incorporating the scientific research operations of NZG departments. There are nine CRIs: NZ Pastoral Agriculture Research Institute Ltd. (ARI), NZ Institute for Crop and Food Research Ltd. (CFR), Institute of Environmental Science and Research Ltd. (ESR), NZ Forest Research Institute Ltd. (FRI), Institute of Geological and Nuclear Sciences Ltd. (GNS), The Horticulture and Food Research Institute of NZ Ltd. (HFR), Industrial Research Ltd. (IRL), Landcare Research NZ Ltd. (LRL), and National Institute of Water and Atmospheric Research Ltd. (NWA). Each CRI has a distinct focus on providing research in relation to particular sectors of the economy or environment. The general objectives of the reforms were to:

- separate science policy development, science funding and the actual provision of science;
- adopt a longer-term strategic view of science as an investment by focusing on its contribution and benefit to New Zealand; and
- establish science priorities and science purchasing processes.

As for all companies, the CRIs are subject to the New Zealand Companies Act 1993 which sets out the basic accountabilities and responsibilities of directors. The CRIs, however, are also subject to the Crown Research Institutes Act 1992 (New Zealand Government, 1992) which sets out their purpose along with the governance relationship and certain specific accountabilities of directors to the NZG. Primarily, each CRI is required by the Crown Research Institutes Act to operate in accordance with a number of principles that include undertaking research principally for the

benefit of New Zealand, being a good employer<sup>6</sup>, compliance with relevant ethical standards, exhibiting a sense of social responsibility, and most importantly, the pursuit of excellence in all its activities (Clause 5(1)). These obligations imply that each CRI must manage the full range of economic, social, ethical and environmental points of view associated with its activities. Of particular relevance to this thesis is Elkington's (1999) assertion that this includes the need to account for knowledge and skills developed or lost. Furthermore, the Crown Research Institutes Act requires each CRI to operate in a "financially responsible manner" (Clause 5(2)), to generate an adequate rate of return and maintain its financial viability. The Act defines financial viability as:

Regardless of whether or not it is required to pay dividends to the Crown, the activities of the Crown Research Institute generate, on the basis of generally accepted accounting principles, an adequate rate of return on shareholders' funds; and the Crown Research Institute is operating as a successful going concern (Clause 5(3), p.3)

A Board of Directors appointed by NZG runs each company. These Boards are accountable to the NZG for the performance of the company against a set of parameters and targets contained in a Statement of Corporate Intent (SCI)<sup>7</sup>. Performance against SCI targets is outlined in each company's annual report. The SCI and annual report, both of which are tabled in the Parliament, provide a framework for Parliamentary and public accountability of NZG companies. Underlying the SCIs are business plans containing detailed information about each company, its operating environment and projected performance. Together with regular updates on performance, they provide a basis for the CCMAU to evaluate individual company performance and provide appropriate advice to the NZG.

The CCMAU has decided that, if they are to assist in maximising the performance of the CRIs within the spirit of the Act, the current reporting practices of the CRIs need to be improved (CCMAU, 1997). They believe that use of the simple but flexible reporting model developed in chapter seven, which focuses on measuring and reporting on the performance and management of a CRI's human resources, should provide the required improvement. This innovative and perhaps controversial proposal may be anathema to those who have an indefatigable devotion to

conventional accounting practice but the CCMAU believes that acceptance should allow the CRIs to provide a better account for the acquisition and use of the knowledge and skills of their employees. Indeed, the CCMAU sees the use of a balanced scorecard model as a way of meeting two aims. First, it will provide an account of the CRIs' management of human resources. Second, it will provide the opportunity to motivate people by providing information on the growth of knowledge within the CRIs, what people think of the CRIs, how they reinforce those thoughts by staying or leaving, and how long they stay.

In looking for a way forward, the CCMAU accepts that no system of measurement should be so bureaucratic or restrictive that it stifles innovation and entrepreneurship. The human resource accounting model, developed using the balanced scorecard concept, is intended to improve and not impede performance, for enterprise, particularly at the leading edge, needs to be dynamic and progressive. On the other hand, all stakeholders need to be confident that those who manage and direct the CRIs do so within an acceptable behavioural environment: an environment of integrity, openness and accountability. The way of the future is not about restrictions: it is about ensuring good corporate behaviour and providing direction to enhance wealth, create knowledge, empower people and inspire confidence in the CRIs. It is about providing stakeholders with useful information on the basis of which they are able to make important, informed decisions about the integrity of their investments. With this in mind, the CCMAU is keen for the CRIs to develop their own set of performance indicators centred around the model developed in chapter six.

Each CRI has a unique strategy<sup>8</sup> that represents the aspirations of its people. Once strategy is determined, detailed policies and objectives are established aimed at transforming aspirations into occurrences. It is then necessary to understand whether those things that are expected to happen are happening and if they are, whether they are happening in an appropriate manner. This requires the identification and definition of relevant criteria for the evaluation of performance. It is then necessary to measure actual performance for each of the established criteria, not only for the single-loop learning process of problem identification and correction, but also to practice deutero-learning and modify policies and objectives where necessary. In the

CRIs, measurement is doubly important for they must also consider the accountability obligations of the Crown Research Institutes Act.

In chapter six, a balanced scorecard approach to human resource accounting was proposed. Four CRIs have been examined in some depth to understand how they currently measure performance in relation to their human resource objectives and determine whether the suggested model will enhance their scope and effectiveness in any way.

## **New Zealand Institute for Crop and Food Research**

### *The organisation*

The New Zealand Institute for Crop and Food Research (CFR) supplies research and consultancy services that provide vertically integrated research and technology support along the value chain of the arable, vegetable, floriculture and seafood processing sectors of the food industry. Scientific operations are divided into three areas. These are crop production systems, plant improvement and food science and technology.

CFR recognises the importance of coherent industry strategies that enhance international competitiveness. Working in partnership with its clients, CFR provides market-focused research in plant breeding and molecular biology, agronomy, physiology, soil science, genetics, chemistry and biochemistry, biotechnology, pathology, entomology, weed control, aquaculture, seafood processing, food science and technology, food engineering, sensory science, microbiology, postharvest physiology, and production and market economics (New Zealand Institute for Crop and Food Research, 1997b).

### *Human resources policies*

The success of the institute is dependent on the professional skill and innovation of its employees. CFR is committed to providing a working environment that will encourage the professional growth of staff and ensure the development and enhancement of core competencies to meet the future research and related services needs of New Zealand. This is to be achieved by enhancing and targeting staff

training and development programs, instituting changes in management process and practice as a result of the 1995 climate survey, and developing consistency of human resource activities throughout the Institute.

Furthermore, in recognising and accepting its responsibility to maintain and develop its bicultural commitments, CFR will, from the human resources perspective, offer two scholarships for Maori students from New Zealand universities. The scholarships will enable students in food science and technology, plant science, agriculture, horticulture or resource management to gain practical skills by working alongside CFR scientists (New Zealand Institute for Crop and Food Research, 1997b).

*Performance indicators*

CFR has established a limited range of financial and non-financial performance indicators to facilitate the measurement of its performance against the objectives contained in its SCI. Of particular relevance to this thesis are those indicators, directly related to the management of human resources, that are shown in figure 8.1. The absence of a human resource professional on CFR's management team may explain the paucity of objectives and the poor quality of the corresponding performance indicators. On the other hand there may be, as Fitz-Enz (1995) suggests, a belief that business-type measures can not be applied to the human resource management function.

**Figure 8.1: CFR human resource performance indicators**

OBJECTIVE	INDICATOR
Meet the statutory requirements of being a good employer	Conduct a survey and evaluate the results.
Advance the technical and management skills of staff.	Number of peer reviewed publications per NZ\$1m of pure research funding. Percentage of personnel costs invested in training and development.
Maintain and develop bicultural commitments	Provision of scholarships for Maori tertiary students.

Clearly, there needs to be more thought given to the human side of the operations of CFR. This will centre on the linkages, described by Sparrow and Marchington (1998), between core business processes, human resource management policies and

their impact on performance. To move forward in this way requires the collection and analysis of a broader range of data concerning the human resources of CFR. Indeed, this may be a symptom of the failure of CFR to provide an adequate accounting for human resource management, especially for an organisation that is so heavily dependent on its employees' knowledge and skills for sustainability. As with many other CRIs, CFR inherited an antiquated HRIS that was essentially a payroll and cost analysis system. Data that has been identified as needed for the implementation of the human resource accounting model, proposed in chapter seven of this thesis, was just not readily accessible. Financial resources have now been made available for improvements in administration infrastructure. Among other things, an enhanced performance management system has been implemented at CFR and training provided for its people (New Zealand Institute for Crop and Food Research, 1997a). As understanding of the capabilities of the new system improves and experience is gained in its use, the opportunity to improve human resource performance measurement and accountability will ensue.

While limited public accountability for the management of human resources currently exists (see appendix 4), the objectives of human resource accounting articulated in chapter six and the concept of the balanced scorecard as an accountability statement will be considered for the future<sup>9</sup>. The aim of CFR will be to generate improved accountability and provide key performance indicators that are closely aligned with Ulrich's (1997) categorisation of productivity, process and people.

## **Institute of Environmental Science and Research**

### *The organisation*

The Institute of Environmental Science and Research Limited (ESR) is a provider of professional scientific services in public health, environmental health and forensic services. It delivers analytical, consulting and research services to meet the varied needs of government, industry and commerce. ESR has three core competencies – assessing impacts of environmental exposures on people, applying science within legislative and regulatory frameworks, and responding quickly and effectively to

important emerging issues in forensic science – each consisting in a set of capabilities combined in a way that gives ESR a strategic competitive advantage (Institute of Environmental Science and Research, 1997b).

#### *Human resource policies*

As with CFR, the institute aims to pursue scientific and technical excellence in its developmental research and contractual scientific research services. ESR recognises its responsibility to create an environment where employees are rewarded for making a positive contribution and developing their capabilities. This will only be achieved by engaging and retaining the services of people who best match ESR's skill and expertise requirements. ESR intends to meet this objective by implementing remuneration policies that encourage and reward employees for high performance and by encouraging and supporting programs covering career development, training and organisational development. Health and safety requirements, equal employment opportunities and internationally recognised quality practices are integrated into all human resource policies (Institute of Environmental Science and Research, 1997b). Reflecting the Institute's commitment to effective human resources management, the human resource manager is a member of the senior management team.

#### *Performance indicators*

ESR has established a number of financial and non-financial performance indicators to match the principles of The Crown Research Institutes Act 1992 with the strategic direction outlined in their SCI. Of particular relevance to this thesis are those indicators, directly related to the management of human resources, that are shown in figure 8.2. Each of these indicators provides a reliable assessment of performance in meeting the institute's objectives. However, they need to be more closely aligned with Ulrich's (1997) categorisation of productivity, process and people to be completely effective.

None of the performance indicators address 'productivity' in that they do not compare output with input. Although one of the indicators, the number of publications in refereed journals, is considered a 'process' measure when expressed in absolute terms, it may be included in the productivity category if it was expressed as the number per

employee. The remaining indicators address 'people' objectives in that they all, in one form or another, provide an assessment of what people do, how they feel, or what they know. The most significant for this knowledge based organisation is the measure of investment in staff training and development for it provides an assessment of the effort expended by ESR in maintaining its stock of domain knowledge.

***Figure 8.2: ESR human resource performance indicators***

OBJECTIVE	INDICATOR
Provide a safe, healthy and secure workplace.	Number of workdays lost due through workplace accidents.
Engaging and retaining the highest quality people.	Number of publications in refereed journals.
	Invitations to address conferences, act as referees, participate on scientific boards and committees.
	Expenditure on training and development as a percentage of revenue.
	Percentage of staff turnover.

Reflecting on the objectives of human resource accounting articulated in chapter six and the concept of the balanced scorecard as an accountability statement, the measures currently used provide only a limited, albeit public, accounting (see appendix 5) of ESR's achievements in implementing their human resource policies.

The single, most important contributor to the deficiency in performance indicators was the lack of readily accessible data. ESR's information technology infrastructure project is now complete and they now have a robust platform for developing new applications to improve information for decision making (Institute of Environmental Science and Research, 1997a). As this task continues and a database of reliable human resource information is constructed, the opportunity to improve human resource performance measurement and provide greater accountability to stakeholders will be taken.

## **Industrial Research Limited**

### *The organisation*

Industrial Research Limited (IRL) is a commercially focused scientific research and technology company based on science. Its aim is to make a successful impact on New Zealand industry by generating new economic turnover through the development and application of science and technology directed primarily to the processing, manufacturing and energy industries. IRL undertakes and facilitates the commercialisation of activities based on applied physical sciences and engineering research, development and technology through three business units – manufacturing technologies and products, natural products processing and storage, and energy research and development – each possessing a set of capabilities combined in a way that gives IRL a strategic competitive advantage (Industrial Research Limited, 1997b).

### *Human resource policies*

The principal activity of each of the business units is the creation and subsequent development of intellectual property and technical capability as a result of their scientific research and development. IRL recognises that staff is its most significant asset and it has a responsibility to create an environment where employees are rewarded for making a positive contribution and developing their capabilities. This will only be achieved by engaging and retaining the services of people who best match IRL's skill and expertise requirements. IRL intends to meet this objective by implementing remuneration policies that encourage and reward employees for high performance and by implementing programs that support not only their scientific activities but also provide a wide range of experiences and opportunities for personal growth. Health and safety requirements, equal employment opportunities and internationally recognised quality practices are key elements integrated into all human resource policies (Industrial Research Limited, 1997b). Reflecting the Institute's commitment to effective human resources management, the human resource manager is a member of the senior management team.

### *Performance indicators*

In recognising the obligations imposed by The Crown Research Institutes Act 1992, IRL has established a number of financial and non-financial performance indicators to continually measure their performance against targets outlined in their SCI. These indicators will also monitor other organisational policies and collectively they will be used to assess the efficiency and effectiveness with which management discharges its duties. Of particular relevance to this thesis are those indicators, directly related to the management of human resources, that are shown in figure 8.3. Each of these indicators provides a useful assessment of performance in meeting the institute's objectives and embodies each of Ulrich's (1997) categories of productivity, process and people.

Revenue per employee (this is not the absolute number of employees but the number of full-time equivalents) addresses 'productivity'. The number of papers submitted to peer-reviewed scientific journals is considered a 'process' measure. The remaining indicators address 'people' objectives in that they all, in one form or another, provide an assessment of what people do, how they feel, or what they know. The most significant for this knowledge based organisation is the measure of investment in staff training for it provides an assessment of the effort expended by IRL in maintaining its stock of domain knowledge.

***Figure 8.3: IRL human resource performance indicators***

---

<b>OBJECTIVE</b>	<b>INDICATOR</b>
Productivity of people.	Revenue per full-time equivalent employee.
Engaging and retaining the highest quality people.	Papers submitted to peer reviewed scientific journals.
	Invitations to scientists to speak at conferences.
	Training for staff of at least one-day duration.
	Permanent staff turnover.

---

As with most other CRIs, the measures currently used provide only a limited, albeit public, accounting (see appendix 6) of IRL's achievements in implementing its human resource policies. Furthermore, IRL was unable to develop more progressive

performance indicators because, like most other CRIs, it was disadvantaged by the lack of readily accessible and relevant data. Over the last five years, IRL has invested more than NZ\$4.6 million in computer related assets (Industrial Research Limited, 1997a). From a human resource management perspective, this will facilitate the construction of a reliable database of human resource information. IRL will then be well positioned to meet the challenges that lie ahead and is keen to examine models, such as that proposed in chapter six, that will provide greater accountability to stakeholders.

## **Landcare Research New Zealand**

### *The organisation*

Landcare Research New Zealand Limited (LRL) is an environmental research institute that focuses on sustainable management of land-based natural resources. Through four operating groups and two wholly-owned subsidiary companies, LRL undertakes issue-oriented and basic research, consultancy, technical services and technology development to evolve and transfer ecologically and socially sustainable policies, management strategies and systems for land-based natural resources (Landcare Research New Zealand, 1997b).

### *Human resource policies*

Service, research skill and scientific knowledge are LRL's most important assets. LRL is committed to operating personnel policies that meet the requirements of The Crown Research Institutes Act 1992 and, more importantly, that contribute to the well-being of individual staff (Landcare Research New Zealand, 1997a). In addition to providing a healthy, safe and secure work environment, LRL recruits and promotes the most suitable and highest calibre staff through open merit selection processes that concurrently facilitate attainment of their equal employment opportunity objectives. This is achieved by remunerating its people on the basis of performance through a combination of base salary, merit-based individual payments and profit-linked universal payments. Furthermore, LRL invests substantially in advancing the technical and management skills of its people to improve capability, to provide for career progression and to allow for retraining into new career or

professional directions (Landcare Research New Zealand, 1997b). Reflecting LRL's commitment to effective human resources management, the human resource manager is a member of the senior management team.

*Performance indicators*

LRL has established a number of financial and non-financial performance indicators to match the principles of The Crown Research Institutes Act 1992 with the strategic direction outlined in their SCI. Of particular relevance to this thesis are those indicators, directly related to the management of human resources, that are shown in figure 8.4. Each of these indicators provides a reliable assessment of performance in meeting LRL's objectives embodies each of Ulrich's (1997) categories of productivity, process and people. Even so, LRL recognises that continuous improvement is necessary. It continues to enhance its competency-based appraisal system and to develop objective performance output measures for scientific staff that may be applied to assess both individual and team performance.

**Figure 8.4: LRL human resource performance indicators**

OBJECTIVE	INDICATOR
Productivity of people.	Revenue per full-time equivalent employee.
Provide a healthy, safe and secure work environment.	Days lost to injuries.
Engaging and retaining the highest quality people.	Number of publications in refereed journals.
	Expenditure on training as a percentage of salary costs.
	Percentage of staff turnover.

Revenue per employee (this is not the absolute number of employees but the number of full-time equivalents) addresses 'productivity'. The number of papers published in peer reviewed, scientific journals is considered a 'process' measure. The remaining indicators address 'people' objectives in that they all, in one form or another, provide an assessment of what people do, how they feel, or what they know. The most significant for this knowledge based organisation is the measure of investment in staff training for it provides an assessment of the effort expended by LRL in maintaining its stock of domain knowledge.

The measures currently used provide only a limited, albeit public, accounting (see appendix 7) of LRL's achievements in implementing their human resource policies. However, its annual report contains supporting narrative in those areas where indicators have yet to be established.

The single, most important contributor to the deficiency in performance indicators was the lack of readily accessible data. LRL continues to invest in information technology infrastructure to facilitate the introduction of a more powerful HRIS in the future. In the meantime, the database continues to be enhanced with the inclusion of data from the previous two years competency assessments of staff (Landcare Research New Zealand, 1997a). This task will continue as LRL recognises the need to maintain and develop its human resources and to report on any areas where retention or recruitment difficulties have been experienced, why, and any remedial actions taken or proposed (Landcare Research New Zealand, 1997b). The inclusion of further data will provide an opportunity to improve human resource performance measurement and provide greater accountability to stakeholders.

### **Using the model for comparative analysis**

Among other things, the CCMAU focuses on individual CRI performance, both in absolute terms against their objectives, and in relative terms against benchmarked organisations. Initially, the most logical choice of organisations against which a CRI may be benchmarked are the other CRIs. Benchmarking is a process of comparing performance, procedures and practices to those of comparable organisations to identify ways in which an organisation may make improvements. Through this process, new objectives may be set that, in turn, will better satisfy the NZG's requirements. Benchmarking brings many advantages to an organisation, not the least of which being that it allows the senior management of the organisation to focus on the external environment and improve process efficiency. The number, extent and pace of changes in the external environment mean that no organisation can afford to be complacent. The increasing sophistication of marketplaces and rise in competition mean that an organisation's competitive advantage is constantly being eroded as barriers to entry decrease.

*Figure 8.5: Recommended generic CRI performance indicators*

INDICATOR	REASON FOR INDICATOR	HOW MEASURED
<u>Productivity:</u>		
Added value as a percentage of people cost.	Added value is a pertinent measure of the success of past decisions. It is more relevant than revenue because it eliminates the effects of services provided by outside organisations. By relating it to people cost it provides a measure of productivity.	Value added - is calculated by deducting the cost of bought out goods and services from the CRIs total operating revenue.  People costs - this includes not only the actual salaries paid to employees but also any additional costs, such as superannuation contributions, employment levies and insurance premiums, that are directly related to the employment of people.  N.B. While not included in the original recommendation, it should also include other people related costs such as occupational health and safety, the cost of the human resources department etc.
<u>Process:</u>		
Number of peer reviewed publications.	This is a clear indicator that significant, measurable scientific and technological activity is occurring.	The number of publications ideally should be reported according to standard categories (for example, books, chapters in books, refereed journals, professional journals, conference papers etc.).
<u>People:</u>		
Tacit knowledge per employee.	A CRI is making long-term investments in its people and its success depends on the dissemination of knowledge. The absolute value of tacit knowledge in a CRI depends not only on the length of tenure but also the number of employees in the CRI. Use of the value per employee allows the measure to be used for comparative purposes.	Tacit knowledge is acquired progressively during the period of employment as shown in table 7.3 (p.145). The basis of valuation is provided in chapter seven, pp.143-148. The total value of tacit knowledge in the CRI is then divided by the number of employees included in the tacit knowledge calculation.
<u>Financial:</u>		
Value of knowledge per employee.	The CRIs are vitally dependent on the knowledge and skills of their employees for their long-term success. This measure provides an indication of how well the CRIs are performing in the acquisition and nurturing of their knowledge base.	Total knowledge comprises both domain and tacit knowledge. The methodology used in attributing a value to both forms of knowledge is provided in chapter seven, pp.136-148. The total value of knowledge in the CRI is then divided by the number of employees at year-end to provide this measure.

Nowhere is this more prevalent than in knowledge based organisations like the CRIs. For them, benchmarking is a useful vehicle for learning. It causes individuals to

assess their own performance and that of the CRI while, at the same time, encouraging involvement and creativity. Benchmarking will also be found to be an extremely powerful agent in the empowerment process as it encourages individuals to take responsibility for improvements. In that sense, the practice should be adopted enthusiastically by each CRI but the process needs to be focused. This is where the CCMAU has the opportunity to take the lead. While acting as the catalyst for the benchmarking process, they are also able to use the activity to gather relevant information that addresses legislative requirements and allows them to fulfil their own objectives.

As a result of the development of financial measures for the knowledge embedded in an organisation's employees, a single indicator relating to the value of employees' knowledge and skills has also been proposed. Naturally, each of the measures should be prepared in a consistent manner by every CRI to enable realistic comparisons of performance to be made by the CCMAU. Over time the number of measures may be increased as the CRIs become more adept at the process, or the measures may be varied as circumstances dictate. Figure 8.5 summarises the reason for choosing each of these measures and how they should be calculated.

Earlier it was suggested that the introduction of a performance reporting model such as this would encounter some scepticism (see chapter 3, p.53). Applying Tichy's (1983) 'boiled frog phenomenon', initially only a single generic indicator has been chosen for each of the productivity, process and people elements for inclusion in the innovation and learning perspective of a balanced scorecard.

The CRIs are expected to operate principally for the benefit of New Zealand. As public organisations, this may be ably demonstrated by the amount of financial or economic value added by each CRI. Their objective must be to spend funds in ways that will generate the best return on investment. Since a CRI's funds are invested in people, or in equipment that helps people become more productive, their value will be added through greater human efficiency and effectiveness. The use of the proposed productivity ratio will provide evidence of each CRI's progress in meeting that obligation.

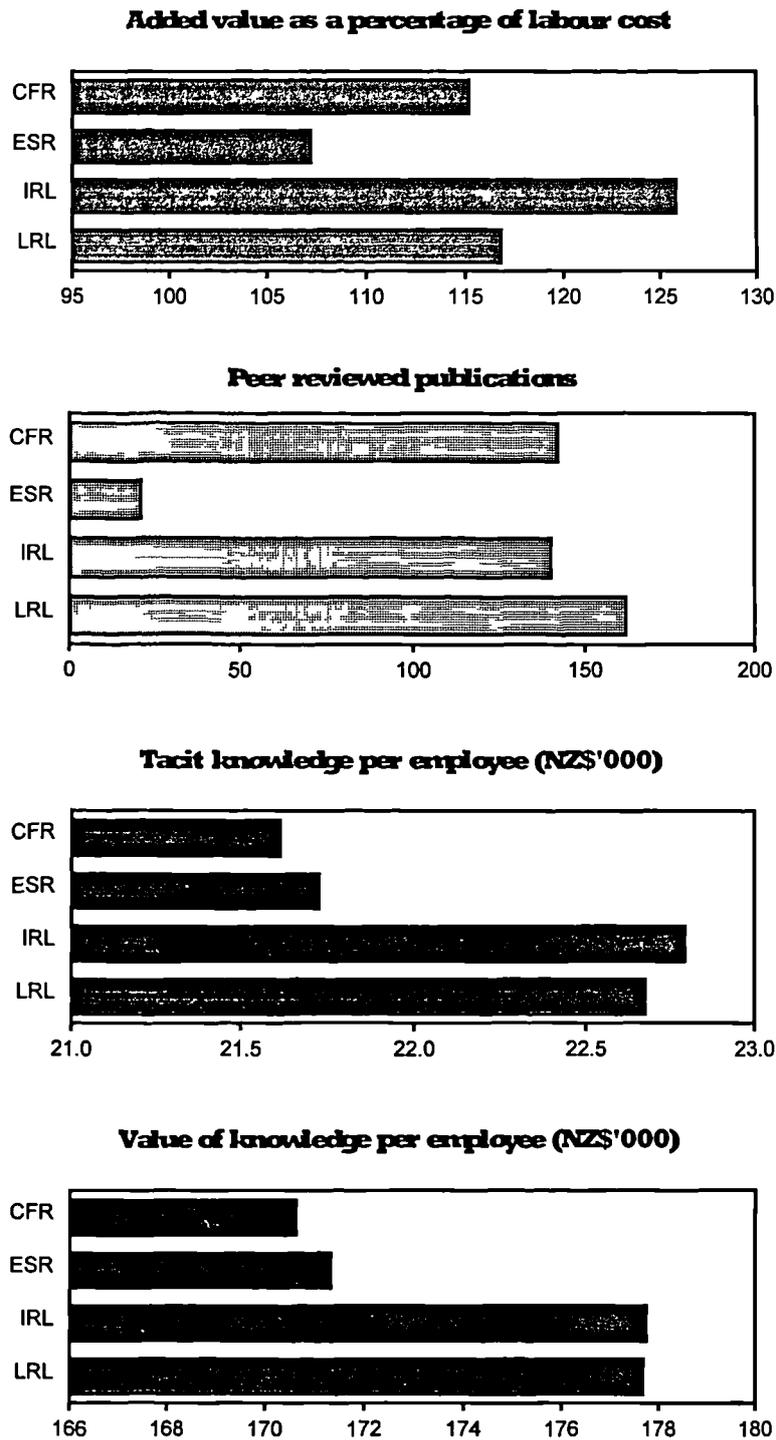
Each of these key performance indicators has been determined for the four CRIs and is presented in figure 8.6. In addition to their use in benchmarking the CRIs, each of these performance indicators should provide the necessary information to assess the CRIs' performance in the acquisition, growth and use of the knowledge and skills of their employees. Furthermore, use of these measures should improve the quality of accountability that is required by the Crown Research Institutes Act.

### **Effect of the research**

A number of reasons account for the lack of objectivity in human resource management. Fitz-Enz (1995) suggests the most prevalent is that human resource professionals simply do not know how to quantify their activity. Therefore, it is not surprising that many of them rely on subjectivity. Furthermore, he argues that the myth of subjectivity has been perpetuated over many years because senior management had little interest in personnel matters. The logical extension of this comment is that the tradition of non-measurability went unchallenged. The responsibility to enforce the change that is required in today's environment rests with senior management who must demand that a more objective reporting system be created.

In the case of the CRIs, the shareholder's monitoring agent, the CCMAU, are driving the need for change (CCMAU, 1998). The NZG, through the responsible Ministers, needs to not only defend its continued ownership in terms of The Crown Research Institutes Act 1992, but also reassure the public that its investment in CRIs is at least being maintained and preferably is increasing. Coupled with this is a need to evaluate the contribution of CRIs to New Zealand's socio-economic wellbeing. CRIs communicate strategies and intended future actions in their strategic plans and publicly state their objectives, performance targets and other measures by which their performance may be judged in their SCIs. Subsequently, annual reports generally provide an historical summary of the operations of the CRIs, their financial performance and other information to enable an informed assessment of the operations of the CRIs including a comparison with the relevant SCI.

Figure 8.6: Benchmarking CRI performance indicators



Shareholding Ministries are interested in having a simple, yet robust set of performance indicators by which each CRI's performance may be easily and effectively monitored and reported. These indicators will assist the shareholding Ministries discharge their accountability to Parliament. To this end, the CCMAU is

now looking to improve the reporting of each CRI through the development of a suite of financial and non-financial performance indicators that may be used for this purpose. The CCMAU believes that all of the financial indicators and, as suggested earlier in this thesis, some of the non-financial indicators will be generic to all CRIs. In addition, each CRI will also have some agreed non-financial indicators that will be specific to its business. The selection of any performance indicator, financial or non-financial, is expected to be based on the following criteria (CCMAU, 1998):

- be meaningful to the CRIs' business and The Crown Research Institutes Act 1992;
- involve reasonable transaction costs;
- be measurable without ambiguity;
- be capable of auditing;
- be within the CRIs' responsibility or their power to control;
- influence, but not unprofitably interfere with, the CRIs' purpose, principles of operation or business, or lead to dysfunctional behaviour;
- respect commercial sensitivity where appropriate; and
- encourage 'best practice'.

A number of potential financial and non-financial performance indicators have been identified as a result of feedback from the CRIs, the research conducted in this thesis and a study of relevant international 'best practice'. Of particular interest in this thesis are those measures that take a human focus and are intended to reflect the value of human resources to the CRIs and the renewal and development of those resources. Figure 8.7 provides details of the key performance indicators that have a human focus and were recommended by the CCMAU to be reported on by all CRIs. Furthermore, their recommendation suggested that the CRIs' independent auditors should audit these particular performance indicators (CCMAU, 1998).

As suggested by Ulrich (1997), there is at least one performance indicator that addresses each of the three categories of 'productivity', 'process' and 'people'. They include calculated measures of employee competency, measures of the elan and potential creativity of the workforce, as well as indicators of the rate of knowledge dissemination and the value of employees' knowledge and skills to the CRIs.

*Figure 8.7: Description of the CCMAU's generic performance indicators*

INDICATOR	REASON FOR INDICATOR	HOW MEASURED
<u>Productivity:</u>		
Added value as a ratio of people cost.	Added value is a pertinent measure of the success of past decisions. It is more relevant than revenue because it eliminates the effects of services provided by outside organisations. By relating it to people cost it provides a measure of productivity.	Value added is calculated by deducting the cost of bought out goods and services from the revenue received.  People costs - the total paid for the services of people inclusive of fringe benefits, employment levies and the like.
<u>Process:</u>		
Research output.	These are standard measures of output used internationally. Important in demonstrating that significant, measurable scientific and technological activity is occurring.	The number of publications should be reported according to standard categories (see appendix 8 for definitions).
<u>People:</u>		
Staff composition.	Critical asset for ensuring the long-term success of CRIs. Key measure for calculating effectiveness; revenue producing staff ratio; public interest (i.e. growing or shrinking scientist resource).	All CRIs should measure staff FTEs in the following categories: scientists and science technicians; science support; marketing, promotion and liaison; and management (see appendix 8 for definitions).  Ideally, turnover and age composition for each of the above categories should be reported.
Core research competencies and groupings of competencies.	Most important long-term investment in the CRIs future. Changes in the basic skills and orientation of these groupings are the only ways a CRI may redirect its business. A high turnover in staff with specialised competencies and/or a high rate of change in groupings may provide a warning of possible difficulties in maintaining the viability of the core business.	CRIs should identify the key research competencies and groupings of competencies that are essential to achieving the CRIs' core business. A mix of objective and subjective criteria may be used to define the group against the core business definition. Size, quality and relevance of the groupings, strategies to address any skill shortages in the groupings and turnover within the groupings should be recorded.
Good employer.	Of concern to Parliament and the public is that good employer provisions are met in NZG owned organisations.	CRIs should detail the number of accidents and days lost as a measure of 'good and safe working conditions'.  Furthermore, an indication of the share of the workforce occupied by Maori, women and people with disabilities should be provided.

Some important CRI operations do not lend themselves to generic reporting. They may generally be characterised as either actions or reviews, including benchmarking. Nevertheless, these actions or reviews should be reported on and assurances given that they are being effectively carried out. *Individual targets may be set for some facets of the operations that would not necessarily be appropriate for comparison with other CRIs.* These performance indicators will normally form part of the 'process' category. Indicators that take a 'process' focus usually emphasise the effective use of technology within the CRIs. They primarily include ratios of administrative costs; information technology use and spending per employee; efficiency measures based on time, workload, and error ratios; and effectiveness measures designed to monitor quality and quality management systems.

The action or review indicators that an individual CRI may include should provide a measure of how it is focused on achieving best practice in all aspects of its business with particular reference to enhancing the capabilities of its people. The process recommended for these indicators comprises four steps. First, CRI management identifies the need for a particular indicator, develops the indicator and then seeks Board support for its use. Second, CRI management submits the indicator to the responsible Minister, through the CCMAU, for approval. This will generally occur as part of the strategic planning process. Third, the responsible Minister will indicate acceptance, or otherwise, of the specific performance indicator. Fourth, the CRI will include targets for this indicator in its SCI. It will then measure actual performance, in line with the agreed methodology, and compare this against the target in its quarterly, six monthly and annual reports. For transparency reasons, it was recommended that these indicators be subject to an independent review.

At the time of writing, the CCMAU's recommendations were still being debated and considered by the CRIs. In general, the CCMAU believes that the model proposed in chapter seven would be relevant to the initial intention of seeking ways to integrate the complex dimension of the human resource into a new model of accountability. Overall, while the merit of all the recommended performance indicators was supported by most CRIs' management, several CRIs still do not have appropriate technological infrastructure to allow for collection of the data necessary for the full

and immediate implementation of the CCMAU's proposal. This creates a short-term problem in the cost-effective collection of the necessary data.

This is particularly so in relation to the inputs required for the 'people' and 'financial performance' indicators described in figure 8.5 and therefore, during the consultative process between the CCMAU and the CRIs, it was agreed that they need not be implemented at this time. However, as the infrastructure upgrade at the CRIs proceeds, this issue will diminish in relevance. Furthermore, the Treasury requested more time to evaluate the indicators and assess their utility to the accountability process. Indeed, the issue of utility will ultimately decide the fate of the model developed in this thesis. The way forward may easily become trapped in a never-ending spiral. Until the data is available, it is not possible to apply the model. Until the model is applied, it is not possible to assess its utility. Until its utility is demonstrated, many of the CRIs will not afford the project a sufficiently high priority in their infrastructure upgrade process. Dialogue continues with the CCMAU and one CRI in particular, Landcare Research New Zealand, to introduce the model into their reporting system. Unfortunately, this dialogue is further hampered by the impending general election (due in October/November 1999) where the success of the present Government is anything but certain. In this fickle environment the progress of change is slow. Even so, where information is available, or easily collected, CRI managements will progressively introduce new performance indicators if they are internally useful and perceived to be of benefit in improving their accountability to stakeholders<sup>10</sup>.

### **Future opportunities**

Annually, CRIs are required to assess the current commercial value of the NZG's investment in their organisation and provide "a statement of the manner in which that value was reassessed" (The Crown Research Institutes Act, Clause 16(3), p.9). With there being no public market in CRI shares this is not simple task. Despite the requirement of the Act, rarely is any assessment undertaken with most SCIs simply including an analysis of shareholders' funds. They may also indicate an intention to conduct a review every two to four years or whenever there is a material change in the value of the NZG's investment. While it is not impossible to determine a market

value for the CRIs' physical and financial assets, an inability to assess the value of their intellectual assets makes it difficult to comply with the legislated requirement without incurring the high cost of an external valuation that, in itself, is a subjective assessment.

However, something is better than nothing and the NZG, even with an independent, external valuation, would not expect accuracy at the 0.05 level of statistical significance. This may be difficult for the CRIs to accept as many operate in fields of research where precision is obviously critical. Results are often required to be statistically valid beyond the 0.001 level. That is measurement with a capital M, but it is not what is required in operational management. Certainly accuracy in reporting performance is necessary, but precision is naturally limited by internal and external conditions. Even though it is not possible to control the variables in the environment, it is possible to provide useful information.

The market value of any organisation is comprised of its financial capital and its intellectual capital (see figure 5.3, p.104). The net tangible assets constitute the financial capital of a CRI. The published statement of financial position provides a verified book value of the financial capital of a CRI. For many items – such as monetary assets, debtors and all liabilities – the book value also represents the market value. This leaves two items of contention: inventories and property, plant and equipment. The average value of inventories as a percentage of net tangible assets for all of the CRIs is only 1.7% of the total value of net tangible assets<sup>11</sup>. Consequently, if there is any difference between the book and market values of their inventories, the substitution of the book value of inventories for market value will not have a material effect on any assessment of the market value of the CRIs. All items of property, plant and equipment are recorded in an asset register. It would be a relatively simple matter to also record in that register the current replacement cost of the asset<sup>12</sup>. It would seem that determining the market value of financial assets is not an insurmountable problem.

To determine a market value for intellectual capital, on the other hand, is somewhat more difficult. It comprises the value of intellectual property, intangible assets, customer capital, process capital and the value of employees' knowledge and skills.

Each of these requires a unique solution to establishing its current market value. Putting aside all but the last of these for they are not particularly relevant to this thesis, the value to the organisation of employees' knowledge and skills is calculable using the model developed in the previous chapter. However, this particular model was intended for use in a balanced scorecard with the aim of concentrating management attention on the development of people as an essential part of organisational strategy. The measures were intended for benchmarking purposes and, because quantitative measures would carry more weight, help strengthen the innovation and learning perspective of the balanced scorecard. Use of the measures to determine the value of employees' knowledge and skills as part of the valuation of the organisation as a whole is likely to resurrect the old arguments, put forward in chapter two (pp.19-22) about putting people on the balance sheet.

The proposed measures of both domain and tacit knowledge are not intended to represent the current, absolute value of employees' knowledge and skills that form part of the NZG's investment in a CRI. Yet, they do provide a mechanism for approximating the value of the CRIs' human resources and this is an essential factor in assessing the value of any organisation. As the CRIs are required by legislation to annually assess the current commercial value of the NZG's investment in their organisation, the model presented here may provide some assistance in addressing that obligation. At the very least, it should provide the foundation upon which an expanding narrative may be built. This may provide an acceptable way of satisfying the reporting requirements of the Crown Research Institutes Act.

## **Conclusion**

Success is won by performance. Performance is more than activity. Each and every activity must be turned toward adding value. Most of those values must be measurable. Because what gets measured gets improved, performance measures are critical for an organisation's success. The CCMAU recognises this and is pursuing an effective performance measurement system that includes critical success factors, a mix of financial and non-financial data, and a balance between different views. Furthermore, they acknowledge that effective performance measures are dynamic and therefore subject to change at any time. At all times, however, they must be

congruent with organisational objectives, easily understood by all stakeholders, and promote intended behaviour within the organisation.

Although accuracy is important, precision is not for the CRIs operate in an uncontrollable environment. Dynamic and uncertain competitive forces demand dynamic and flexible measures. What is evident from the diversity and extent of human resources performance indicators, presently in use by the CRIs and proposed by the CCMAU, is that each CRI must decide for itself, within reason, which of these measures are most suited to their needs, budget constraints and management resources available.

Human resources performance indicators are worthwhile only if the users understand the nature and importance of what is being measured and their impact on the attitude and behaviour of all CRI stakeholders. From the direction being taken by the CCMAU, it is clear that the human resource accounting model envisaged in this thesis has a role to play in the performance measurement and accountability of New Zealand's CRIs.

## Notes

- <sup>1</sup> This may be considered a rather cynical view for, on the other hand, this could be more directly attributed to the development of things like telephone banking, which demands very limited skills from many of its employees, and internet banking and electronic commerce in general, which eliminates the need for human beings altogether for some previously labour intensive jobs.
- <sup>2</sup> The initial contact was an e-mail dated 29 May 1997 seeking commentary and a referral to other recent articles or research in the field of human resource accounting.
- <sup>3</sup> This meeting was held in the offices of the CCMAU, Wellington, New Zealand on 19 November 1997.
- <sup>4</sup> A general discussion was held with the Chief Advisor to the CRIs in Wellington, New Zealand on 25 February 1999 to fully understand the current status, in terms of acceptance and implementation, of the human resource accounting model proposed in this chapter.
- <sup>5</sup> Specifically the four CRIs that are discussed in this chapter.

## **Notes...continued**

- <sup>6</sup> Clause 5(4) of the Crown Research Institutes Act 1992 defines this to mean operating "a personnel policy containing provisions generally accepted as necessary for the fair and proper treatment of employees in all aspects of their employment".
- <sup>7</sup> Among other things, the Crown Research Institutes Act 1992 requires the Statement of Corporate Intent include the performance targets and other measures by which the performance of the CRI may be judged in relation to its objectives (Clause 16(2)(a)).
- <sup>8</sup> Strategy is defined as choosing the market and customer segments the CRIs intend to serve, identifying the critical internal processes that they must excel at to deliver the value propositions to customers in the targeted market segments, and selecting the individual and organisational capabilities required for the internal, customer and financial objectives (Porter, 1981; 1985).
- <sup>9</sup> This advice was received at the review meeting mentioned in note 3.
- <sup>10</sup> This overview of the current status was provided by the CCMAU's Chief Advisor to the CRIs at the February 1999 meeting in Wellington (see note 3).
- <sup>11</sup> This information was sourced from the published Annual Reports of all of the CRIs.
- <sup>12</sup> In any event, this information should be available to the CRIs for it is needed on an annual basis to establish the appropriate levels of insurance cover.

## *Into the next millennium*

Knowledge is about the past, but decision is about the future....  
Like all humans, the businessman is a prisoner of time. If the act of decision or choice contributes in any sense to the making of history, if it is an act of origination, then there can be no knowing for certain what will be the consequence of any course of action which he may now begin.

*George Shackle*  
Expectation, enterprise and profit  
1970, p.20

### **Introduction**

The challenge of today's management, of which human resource management and management accounting are but a small part, is the challenge of change. This is as true of ideas, theories and philosophies as it is about their expression in practice. Progressively, although far too slowly for some (O'Neil, 1993), theories and philosophies are being used in the quest to improve practice. Inevitably, this requires preparedness on the part of managers to refine their beliefs about how things could be better done as they go about the process of doing things better.

Unfortunately, experience shows that refining beliefs is not quite as easy as it sounds. Human beings become very comfortable with the particular set of beliefs that have got them where they are. In other words, they become very attached to the personal paradigms that have served them so well in the past. It is only a preparedness to ask the really difficult questions that allows people to confront the possibility that those paradigms typically have a use-by date. The certain truths of yesterday become the unquestioned myths of today.

The arguments presented in this thesis provide ample reason for accepting the need to critically challenge the currently prevailing myths concerning accounting for human resources, while providing the framework to help with the process of critique. The proposals require transformation of the performance measurement practices within an organisation. This may only be achieved by the transformation of those who comprise the organisation and such personal transformations are only ever achieved through a process of learning.

Most learning within organisations comprises a single feedback loop that connects detected outcomes of action to organisational strategies and assumptions. As a result of this learning process, these may be modified so as to keep performance within the range set by organisational norms. The norms themselves remain unchanged. Single-loop learning of this nature, which is a typical outcome of the majority of performance measurement practices in organisations, is sufficient where error correction may proceed within a constant framework of norms. In some instances, however, error correction requires an organisational learning cycle in which norms themselves are modified. This occurs when the requirement for change conflicts with another organisational norm. To resolve this conflict, the decision-maker must undertake a process of enquiry that is significantly different from the characteristic of single-loop learning. They must undertake an enquiry that resolves the conflicting requirements. The results will usually take the form of a restructuring of organisational norms and, very likely, a restructuring of strategies associated with those norms. In this sort of episode, a double feedback loop connects the detection of error not only to strategies but also to the underlying organisational norms. When resolving conflict arising from a solitary occurrence, this is considered double-loop learning (Argyris and Schön, 1978).

In a constantly evolving environment the requirements of learning, especially double-loop learning, are not one-off but continuing. This requires people to reflect on and enquire into previous episodes of learning, or failure to learn. This sort of learning to learn, or second-order learning, is called deutero-learning (Bateson, 1972). Good organisational dialectic depends on deutero-learning. When organisations engage in deutero-learning, they inquire into previous learning contexts and they evolve new ways of operating that enhance their capability for learning across a range of

situations. Deutero-learning is organisational when it is embedded in maps and images that guide decision, control and instruction (Argyris and Schön, 1978). The proposals in this thesis are intended to provide the maps and images that promote this type of learning; where managers recognise that they must not only respond to changes in the organisational environment but must also build organisational competence for responding continually to such changes, foreseeable and unforeseeable.

The millennium is only a statistical accident, but the close of a thousand years concentrates the mind, particularly when it seems to be coinciding with the disappearance of some things that have been taken for granted for the past few generations, such as the employment organisation. Through enhancements in technology and changes in process, there have been dramatic improvements in productivity. Along the way, managements have thought too little about those who would no longer be required to perform the old essential tasks. It seems they chose not to understand that, by eliminating human resources, they were, some to a larger extent than others, reducing their customer base. One could argue that managers were not embracing deutero-learning but it was a simple matter not to recognise this paradox because management was not being provided with adequate information on the consequences of their actions. Performance reporting has been dominated by financial reflections on the past. Little or no feed-forward reporting projecting the impact of improved productivity, and the downsizing that accompanied it, was presented for evaluation. Human resource managers did not actively work to preserve the knowledge and skill base of the organisation. They could not because they neither occupied a position of power nor had the tools to demonstrate the future impact in a manner acceptable in second wave organisational culture. This is a culture constrained by autocratic management and infused with a short-term financial focus dominated by the 'bottom line' (Marston and Craven, 1998). This culture led to the involuntary adoption, by many managements, of what has become known as the McNamara fallacy<sup>1</sup>:

The first step is to measure whatever can be easily measured. This is OK as far as it goes. The second step is to disregard that which can't be easily measured or to give it an arbitrary quantitative value. This is artificial and

misleading. The third step is to presume that what can't be measured easily really isn't important. This is blindness. The fourth step is to say that what can't be easily measured really doesn't exist. This is suicide.

What does not get counted does not count. The value of employees, people, human resources – call them what you will – could not be counted, therefore they did not count.

History is prologue to the future. It is in the shadow of this background that an attempt will be made to determine whether the proposals of this thesis have any relevance for the future. Now there are kings and there are prophets. The kings have the power and the prophets have the principles. Kings, or senior managers, are the people who make things happen but every king, and increasingly queen, needs a prophet to keep them informed amidst the confusion of change. Prophets, in spite of their name, do not foretell the future. What they can, and must, do is to tell the truth as they see it. They can advise about the road ahead. They can advise about things they believe are wrong, unjust or prejudiced. Most of all, they can clarify uncertainties and bring focus to the issues (Handy, 1994).

The aim of this chapter is to provide a road map for the organisation of the future. To do this, it is necessary to first understand the form and nature of organisations in the next millennium. Once the landscape has been constructed, the role and purpose of the prophets within, first human resource management and second management accounting, will be considered to ensure the tools proposed for the present are relevant to the future.

### **The nature of organisations**

Second wave organisations mostly are structured according to reductionist principles that are grounded in the perceived need to manage<sup>2</sup> an unskilled workforce in such a way as to assure productive output and increased efficiency. The mechanism used for coordinating such activity is a potent hierarchical system, where the organisation is dismembered into neatly functional segments, of authority and control. The nineteenth century models inevitably used as a basis for this system of organisation arose from the social stratification apparent in the church, the school and the army.

As Foucault (1973) points out, techniques used by such cherished institutions seemed particularly appropriate to the factory in that they effectively controlled the way people occupied their day. It was the natural way of doing things. Eventually the dehumanising and manipulative nature of this method of organising became evident and the logic of this widely accepted, if rudimentary, capitalist model of society began to be radically challenged.

Coinciding with fundamental structural changes in an organisation's environment, it is recognised that this hierarchical structure bears little relationship to the implicit informality of organisational reality. Further, the fundamental paradigm shifts in cultural values have undermined the basis of the customary psychological contract between an organisation and its people. Where once diligence and loyalty were rewarded with life-long employment, there is now a new class of highly skilled cooperative individuals emerging. Confident of their ability to exist outside an organisation, these people are willing to risk security of tenure for challenging, meaningful work over the limited timeframe of a specific project (Lawson, 1998). Independent, energetic and occasionally synthesising the most unlikely combinations of competencies, they invariably display personal attributes that deviate from the dominant corporate value system.

The rise of this class of 'knowledge networker' has diminished the relevance of traditional corporatist values in an age in which unpredictable, discontinuous, socio-economic change has become the norm. At the same time, values such as self-awareness and self-affirmation, equal opportunity, social justice, altruism, social obligation, divergent thinking, originality and difference are perceptibly on the increase (Albert, 1993). In moving forward to the third wave, these factors will give rise to a quantum change in the nature of organisations (see, figure 9.1). This change recognises, at the most fundamental level, that the organisation is a composite of the individual people within and appended to its structure. Individuals are unique. They are vital contributors in organisations that are coping with and adapting to the dysfunctional changes now characterising the increasingly competitive environment. It is within the individual that the substance, and ultimately the power, of an organisation resides. Drucker (1993) suggests that the 'means of production', the traditional basis of capitalism, are now owned by the workers because these means

are in their heads and at their fingertips. As such, individuals have the power to shape organisations and their policies<sup>3</sup>. During the existence of the second wave, the individual in an organisation has progressed from an interchangeable unit of production to the focal point of organisational performance and this trend will continue in the future. Change as fundamental as this requires managers to work harder than ever to understand and appreciate each individual who enters their sphere of influence.

*Figure 9.1: Features of organisational structure*

	<b>Second Wave</b>	<b>Third Wave</b>
<b>Structure</b>	Hierarchy, matrix, business unit	Team value
<b>Locus of control and authority</b>	Centralised, top-down	Democratic, participatory
<b>Role of management</b>	Decision-maker; serves higher levels of management and owners	Coach, servant, facilitator, advocate
<b>Atmosphere</b>	Fear, lack of trust, low morale, resistance to change and learning	Truth, open and direct communication; collaboration; learning a high priority

Where the need for cohesive teamwork once dominated their thinking, managers in the third wave must be more concerned with developing autonomous individuals. These are the people who will have the skills, capabilities and means to transform entire systems, as well as the capacity and maturity to collaborate with other highly focused individuals on a project by project basis. Organisations must change to accommodate this kind of worker. By taking different strategic views of how people and systems may be organised, managers will develop entirely distinctive organisational shapes and configurations. Indeed, it may be that many different forms will coexist successfully in the same organisation. Properly used, each helps the organisation attract, deploy, and make use of intellect for a quite different purpose (Quinn, Anderson and Finkelstein, 1996). These new, third wave structures will

eliminate entire strata of middle management as their myopic information focus is replaced by expert networks using ever more intelligent information technology. That the capacity of information technology is not yet fully understood or utilised in this way is because organisations fail to provide structures and processes that facilitate the use of information technology in ways that significantly add value.

In order to avoid technology creating more problems than it solves, the structure of an existing organisation should be expunged then created anew so that the available technology is fully integrated into the process of the new structure. These new structures will abound in small, itinerant teams of people meeting an organisation's changing needs by being connected and having access to global networks of peers. These people will have long ago discarded the notion of front-end education for a life-long career. They will be successful project managers with a commitment to a life-long learning culture based on Bateson's (1972) deuterio-learning principles. Success will be measured by how well people build networks, find ways to invest in learning and development, lead change initiatives and add intellectual value, in every way possible, to the organisational process. To a great extent, the organisations of the future will be much less concerned with the familiar tangible social structure and manifestations of the second wave workplace. The real work of the organisation – intelligence harvesting, data analysis, and the creation and transmission of new knowledge – will be carried out by individuals working in a multitude of different locations and time zones but collaboratively through access to the network.

Peters (1992) suggests that a 'virtual', or 'ephemeral', organisation such as this is likely to be more emergent, more continuous and more dynamic yet more difficult to manage than a traditional organisation. At this time the potential of network organisations is by no means clear as their evolution is only just beginning<sup>4</sup>. What is becoming evident, however, is that the enormous, numbing, top-heavy organisational bureaucracies of the second wave are self-destructing in today's volatile economy. The swift pace of technological change and the fragmentation of markets are eroding traditional economies of scale and forcing a global restructuring of capitalism. This is impacting quite fundamentally on the ways organisations are structured and managed<sup>5</sup>. The hierarchical organisation is giving way to broad-based organisations

of independent decision-makers, centrally planned by self-organising entities, able to adapt rapidly to changing circumstances<sup>6</sup>.

It is clear that times are changing. Once, organisation and management alike could be defined in terms of tangible, measurable activities fabricated through sanctioned ceremonies of action. The third wave is the genesis of a new worldview based on an ecology of appreciative systems (Mink, Schultz and Mink, 1991): a worldview defined in terms of relationships, of critical conversations, of information technology, of new wisdom, of focus, and of balance. The need for innovation, creativity, flexibility and responsiveness will create organisations that resemble a 'black box': that is, able to decipher and redesign appropriate responses each time there appears a new need. As organisations are re-engineered to take advantage of enhanced systems that better facilitate such qualities, the concept of 'managing' the organisation will blur into multi-faceted commitments undertaken by everyone within the organisation. This implies that organisations should make change be felt at all the organisational levels and within all activities, should possess a continuous and improved ability to predict the need for change and should be open learning systems (Srinidhi, 1998). These organisations are third wave organisations.

This prognostication requires new strategic mindsets to develop pertinent cognitive maps to deal adequately with discontinuous and volatile change. This will not be easy. Alien ideas challenge the very essence of beliefs: reality is what is now. Yet, once the challenge of developing new strategic mindsets and inventing alternative forms of organising is accepted, more appropriate ways of leading and coping with the new organisation will have to be created. But this leads into a paradox. If the third wave organisation is intended to emancipate the individual, how can these same liberated individuals be 'managed' in the traditional sense of that term?

### **The changing face of human resource management**

In a changing economic environment, human resource management is assuming much greater importance than ever before. Human resource management was conceived to be different from the traditional and conventional notion of personnel administration. However, ever since the term came into currency it has been often

and roundly criticised. This is because it is generally felt that to treat human beings like any other resource is derogatory, demeaning and out of line with sociological evolution (Casse, 1994). These criticisms aside, with the changing environment and increasing importance of knowledge and skills to organisations, it is time to reconsider the concept of human resource management.

In many organisations the role of human resource management is considered to be one of managing the utilisation of human resources to achieve organisational objectives. There is no examination of how people will be utilised which does not preclude the possibility of coercion. In this sense, utilisation may lead to demoralisation, thence to a lack of motivation and, ultimately, be counter-productive to organisational growth and development. This means that, in many instances, the concept of human resource management is still about treating people not only as a means to achieving organisational objectives but also as being peripheral to the organisation. Human resource management conveys the idea that people are employed in order to be used; that their *raison d'être* is not to enjoy but to serve. This is a second wave mindset that ensures employees are only considered to be cogs in a wheel.

This mindset is a paradox in the era of third wave, knowledge-based organisations. No longer should people be considered a resource to be consumed in the unyielding search for profit. To thrive in the future, an organisation must create mutual benefit for all its people. This means the fulfilment of each individual as well as the organisation. The question that needs to be asked is whether managers are capable of satisfying the desires and needs of individuals within the organisational environment while meeting the performance demands and expectations of the organisational entity? Possibly, but establishing and maintaining a balance between individual and collective well being will be difficult. To strike the right balance, managers should champion individuality and collective culture at the same time. This will be one of the most persuasive paradoxes of the next millennium. It will require a management attitude that evolves from three basic precepts. The first precept is that unifying principles are able to draw individuals with diverse points of view toward a common purpose. The second is that freedom to act, within the bounds of unifying principles, will empower individuals to work responsibly and effectively. The third is that the

genuine fulfilment of individual needs and desires, which leads to optimum performance, depends on strong relationships between each individual and all other organisational partners. As with so many other dimensions of the future, management of human beings depends more on a new mindset than on a specific set of skills or tools.

The term 'resource' creates a mindset that tends to reduce the value of people to that of assets around which the organisation is constructed. In that sense, it provides a blinkered view of human beings. To counteract this view, people need to have a central focus in organisations and should not be marginalised, even at the mindset level, because it is the mindset that can gradually change the whole focus. Labelling theory suggests that terminology play a vital role here. Casse (1994) makes the point that promoting the statement 'people are not resources' is more than just a semantic issue. It is a conceptual issue for if a senior manager defines the people who are working for the organisation as 'human resources', then there is a good chance they will be treated merely as 'resources'. The shift from personnel management to human resource management was a step in the right direction. It made progress away from the 'willing slaves' (Scott, 1994) view towards treating employees as human beings with their own needs, motivation and expectations. Despite this, employees were still treated as a means, or resource, that needed to be 'oiled' in the same way as any other tool or machine. It is time to move further forward to keep up with socio-economic reality: people are not resources and people are not always members of the organisation.

As the twenty-first century approaches, managers should consider no longer managing people. They should manage the environment in which people work. In this context, human resource management is probably dying. Personnel management and administration activities will be undertaken by operational managers and individuals themselves (Paauwe, 1995) and, fully appraised of the organisation's strategic direction, people will manage themselves. They are happier doing that. They retain a greater sense of dignity and a greater pride in their own work. For Hearne (1999), the way forward is not to control people, not to own them, but to create an environment around them that motivates them. It is the environment, the value system and the ambience that exerts the most telling influence on people. If the

environment is right, then management is inherent in the system and hierarchical structures and layers of management become less crucial in the structure of the organisation.

The key is not control, nor is it management. It is environmental manipulation. Strategies, that are people-focused, will contain the essential ingredients of employee empowerment, team building and an internal customer focus. To take the next step and encourage people to become creative problem-solvers committed to continuous improvement requires something else. One approach is the mini-company concept proposed by Suzaki (1993). He believes that if each individual in an organisation views the previous process as a supplier and the next process as a customer, then everyone in the organisation may be viewed as the owner, or at the very least the manager, of their own area of responsibility. Such an approach inverts the conventional view of employees and allows the relationship between the organisation and the employee to be redefined. The organisation may no longer be considered an employer. It will simply be acting as an umbrella organisation that is set up to bring together the requisite knowledge and skills required to complete the myriad of tasks at hand. The employee is no longer working for an organisation. People will be working within an organisation primarily for their own benefit. The mythical belief that organisations are doing individuals a favour by offering them employment will become extinct. Individuals will be contributing their abilities and capabilities to assist the coordinating organisation add value for the benefit of all stakeholders. This is the way of the third wave organisation.

Of course, hierarchical management should not be replaced with anarchical chaos. Strong management and decisive decision-making should not be replaced with indecisiveness and committee compromise. This environment can and should support a visionary leader who is capable of securing people's commitment and capacity to contribute at all levels in an organisation (Senge, 1990). Securing the potential will require more than slogans and exhortations. It will require creating an environment and culture where employees feel a sense of ownership. Creating this kind of culture is no easy task. Every individual must be aware of the aims of the organisation<sup>7</sup>, understand how they contribute to achieving them and, most importantly, feel some commitment to achieving them. Obviously the leaders must lead, but the leaders

must also be sensitive to the needs and aspirations of all those who have a contribution to make to the organisation. The leaders must understand that their role is to provide the direction, the resources and the coaching to help individuals satisfy the objectives of the organisation. It seems that human resource professionals have the appropriate attributes, particularly in coordinating individual knowledge and skills, to play a significant role toward achieving organisational objectives in third wave organisations.

As indicated earlier, the term 'resource', when used in the context of human beings, creates the wrong mindset and thus an inappropriate attitude and perception about people in organisations. As well, the notion of managing people was ostracised in favour of managing the environment in which they work. Yet human resource management, in the context of Storey's definition (see p.3), remains an important piece in the organisational jigsaw. What is needed is to create a new image or a new perception.

With ever increasing growth in the number of knowledge workers, individuals today are more likely to be inclined to develop and exploit their own potential unconditionally. This is reinforced by a recent study (Tampoe, 1993) that indicates the biggest motivational factor for knowledge workers is personal growth followed by operational autonomy and then task achievement. Conventional human resource management paradigms do not resolve the problem of focusing individual inputs toward organisational objectives while at the same time allowing creative and innovative autonomy.

Earlier it was suggested that success would be measured by how well individuals invest in learning and development, and add intellectual value to the organisation. This implies that organisations should create an environment that allows for the transmission and diffusion of knowledge. This shared milieu may be achieved by promoting an appropriate knowledge culture in the people within and appended to the organisation.

To enhance the development of a knowledge creating culture, organisations should pay attention to several characteristics of its internal environment. First, they must establish a strategic intent to acquire, create, accumulate, protect and exploit

knowledge (Davenport, De Long and Beers, 1998). Second, they need to encourage individual autonomy so people may express their opinions and share the knowledge they possess in a totally free environment. Third, they need to install communication infrastructure that supports and enhances the transfer of ideas. Fourth, organisations need to create a culture that aims for the assimilation of external knowledge with internal thoughts and experiences. These characteristics will increase the sharing of ideas and the tacit knowledge base, provoke a proactive search for solutions, provide a better understanding of the issues that an organisation has to contend with, and avoid the effects of the not-created-here syndrome (Allen, 1977).

Von Krogh (1998) stresses that knowledge nurturing and creating organisations should be caring organisations. They are characterised by having an attentive inquiry, knowledge accessibility, propensity to help, lenience or capacity to accept errors and for being reciprocal. Altogether these characteristics give rise to a trusting, empathetic and helpful organisational culture in which knowledge is the basic aspect. The importance of developing and fostering this culture in third wave organisations should not be underestimated. It is not something that managers undertake in addition to their existing responsibilities. It is a new position in the organisation that arises, phoenix-like, from the demise of human resource management.

What are the responsibilities of this new position? The primary responsibility is to act as a catalyst for the creation of knowledge within the organisation. This role implies performing two specific tasks. First, the appointee should move freely around the organisation, talking with all individuals with no regard for physical or organisational boundaries. Second, they should generate space for knowledge creation, or shared milieux, with the purpose of making participants in knowledge creation utilise their personal experience whilst relieving them of the heavy burden of their past experience (Von Krogh, Nonaka and Ichijo, 1997). Both activities will help to learn from failure and give support to a culture of knowledge search and accommodation. Further, the appointee will decide which investments should be made in communication infrastructure and which policies will be developed and enhanced to facilitate the creation and sharing of knowledge. In fact, they will need to support immediate access for the workforce to real and updated information about their organisation (Ulrich, 1998). Finally, the appointee will need to manage external

flows of information and lead the legal defence of the expropriated or leaked knowledge bases that should have remained private within the organisation as the main support of its strategic competitive advantage.

This new position is complementary to the ideal of third wave organisations. The appointee will be required to devise an agenda for the transformation from an organisation simply comprising knowledgeable individuals to a knowledge focused organisation that stewards the creation and sharing of knowledge within and across internal functions and that orchestrates the flow of knowledge to and from external organisations. The fabric of such an agenda comprises many threads – people, incentives, technology, processes and other elements – that need to be woven together carefully in a fashion commensurate with the organisation's strategy, culture, capabilities and resources (Klein, 1998). With these objectives in mind, the appointee will be required to facilitate the integration and dissemination of knowledge within a flexible organisation in which knowledge coordination will become the cornerstone of its competitiveness. There is life after death for human resource management. The people skills acquired in that role will continue to be of use in this new role. The question is what should be its nomenclature? Reverting to Storey's definition (see p.3) and expunging the undesirable words, resource and management, a new definition is proposed:

Knowledge coordination is a distinctive approach to the application of aptitudes, competencies and potential of people which seeks to acquire competitive advantage through the strategic deployment of highly committed and capable people, using an integrated array of cultural, structural and societal techniques.

The human resource manager becomes the organisation's KNOWLEDGE COORDINATOR with a seat at the 'Round Table'. To properly fulfil that role appropriate strategies need to be developed using value chain analysis and performance measured and reported by means of a balanced scorecard. In this way, the management accountant has the opportunity to play a vital role in the transformation of human resource management and the ongoing success of knowledge coordination.

## **Accounting in support**

The increase in knowledge-based third wave organisations and ongoing developments in information technology are impacting significantly on the role of management accountants. The importance of intellectual capital in positioning an organisation for growth requires management accountants to redefine their role in identifying, valuing, reporting and participating in the coordination of the intellectual capital of an organisation. Three specific challenges to management accountants are highlighted by IFAC (1998). First, there is a need for better tools to monitor an organisation's investment in people skills, information bases and technological capabilities. Second, some form of accounting measurement that is able to differentiate between organisations in which intellectual capital is appreciating and that in which it is depreciating is required. Third, organisations need to be able to measure return on investment in people skills, information bases and technological capabilities. In relation to the human component of intellectual capital, this thesis has provided new tools that will meet the needs identified by IFAC. This is just the start of the journey. The concepts are yet to be fully accepted and integrated into reporting practice, and will inevitably be refined in the future to accommodate the specific needs of organisations. For this to happen, however, the management accounting mindset needs an overhaul.

Third wave organisations epitomise a socio-technical system that was first proposed in the early postwar period by researchers at the Tavistock Institute of Human Relations in London. A socio-technical system may be described as a work system in which the social and technical components are jointly designed to produce a high-performance organisation with superior levels of job satisfaction and workplace participation (Emery, 1993). The vision of the future espoused in this chapter recognises this in the discussion of the expected relationship between people and their organisation. Empowered people are expected to take a holistic approach in creating an 'ownership' culture: a culture that would be nurtured by the knowledge coordinator. If it is expected that individuals take crucial decisions that affect an organisation in a 'moment of truth', then they should be made aware of not only the financial impact of their decisions but also the non-financial. In other words,

management accountants must paint the whole picture. They will only do this by providing past and future oriented information, both financial and non-financial information, and both numerical and textual information. This is only one half of the task. Management accountants also need to be educators: to train the recipients on analysing and interpreting such information. This other half of the task requires that they will not only need to hone their traditional skills to the highest level but also develop presentation skills based on multimedia technology. Management accountants will emerge from the back office and will need to be comfortable with a higher profile in the organisation.

This is a fresh beginning and, at the same time, a continuation of the past. Management accountants are now being asked to do more than keep score or perform other traditional accounting tasks to help their organisations meet the ever-increasing challenges of the competitive global village. They, like their human resource management counterparts, have been asked to become business partners, bringing to bear a broad understanding of not only accounting and finance matters but also a strategic-level knowledge of the organisation they support – its customers, competitors, products/services, people and technologies.

The mission of management accountants will change because the context of management is changing. The dismantling of organisational hierarchies, fuzzy organisational boundaries reflecting the partnership nature of relationships, globalisation and an increased emphasis on a knowledge culture underlie the extent of change. The role itself will, using the medium of technology, develop into an even broader strategic one where non-financial indicators will continue to increase in importance as philosophies such as knowledge management gain ground. The statistical and numeric skills management accountants possess will be utilised for statistical control and trend analysis, complex modelling and forecasting. The time horizons the management accountant is used to will no longer be applicable. Traditional accounting periods will disappear. They will be replaced by integrated real-time systems that allow information to be obtained as and when required. It is the cycle time of product and technological innovation that will define the time horizon and time will be sliced according to the phases of the life-cycle of all the projects that comprise the organisation (Lebas, 1994).

At the same time, there is a move toward self-service where managers and individuals want to be able to access information themselves and do so electronically. This implies that management accountants will need to be able to structure data and transform it into information that can then be translated into knowledge. They will become the 'gatekeeper': the person who maintains the store of information upon which others in the organisation will draw. At the same time they will continue to act as the measurement expert, working with others in the organisation, developing extensive operational, financial and qualitative measurements in support of organisational strategy. The management accountant will be a key member of the organisational team.

This change in emphasis will see management accountants accelerate the transformation from a reactive 'beancounter' to a proactive information specialist responsible for providing information vital for operating and strategic decisions and for motivating and evaluating organisational performance. No more will any management accountant be able to just deal in numbers. They will be dealing with people for people. Given the diversity of their responsibility, the retention of 'accountant' in their nomenclature might prove to be a liability in the transformation process<sup>8</sup>. Much of the identified new role is closer to that of an information manager than of a traditional management accountant. It seems appropriate to coin a new nomenclature that recognises this and incorporates the same philosophies used in the human resource management transformation. Whatever the name used to describe the function, the incumbents will need to retain one of the most important assets of the management accountant: the accountancy quality of information. Reproducibility, shared common definitions and consistency will be the qualities required of data contained in the information warehouse.

The use of information manager as a nomenclature invokes thoughts of an information traffic policeman. Simply making sure the data that flows through the system is in the correct form and does so in the correct manner is not the role envisaged for the management accountant. More likely they are seen as owners, users, designers and evaluators of decision support systems. Colleagues will expect them to offer systematic advice and information, draw from widespread information sources inside and outside organisations, exhibit understanding and flair in the design

of information systems, and contribute assessments of the value generated by systems relative to the resources they consume. At the same time, they will be preoccupied with ensuring information is the central, competitive resource of the organisation. Clearly they will coordinate information rather than information systems. They will identify needs, model information flows, sponsor development initiatives, assess existing types of provision and capitalise on system capabilities.

From the preceding description it is clear that this role, while retaining the practical application of traditional management accounting skills, is more akin to an internal consultant. For the management accountant the transition is complete when they assume the mantle of DECISION SYSTEMS SUPPORT COORDINATOR. The importance of this role in the sustainability of the organisation must not be underestimated and will almost certainly see the incumbent join the knowledge coordinator in securing a seat at the 'Round Table'.

### **Team effort?**

This thesis set out to develop a human resource accounting model that will support human resource management in demonstrating and justifying the role of knowledge in organisational effectiveness. In the context of organisations as they are presently seen, even as third wave knowledge-based organisations supplant them, it has been shown that this is possible.

It has been said before that history is the prologue to the future and this is never more relevant than in the case of human resource accounting and human resource management. The latter now has a new role in twenty-first century organisations – knowledge coordinator – but it remains singularly focused on the relationship between the organisation and the people within or appended to it. More particularly, it is concerned with the creation and maintenance of competitive advantage based on the knowledge and skills of people.

Critical to building capabilities for sustained organisational success is the knowledge and skills associated with the reshaping and renewing of the organisation. This involves codifying the collective experience in the organisation and systematically enhancing the skills of people. This is accomplished by building a relevant

organisational knowledge and skill base; adopting a strategic perspective; reinterpreting strategy to include collaboration as well as competition; fostering product diversity; building on human potential; creating communities of practice<sup>9</sup>; and developing the competencies for continuous organisational renewal.

One way of thinking about the building of organisational capabilities is to view it as dependent on a new organisational architecture that represents an overlay on the formal organisational structure. This architecture is designed to facilitate the ongoing development of the organisation's knowledge and skill base. The architecture consists of a constellation of communities of practice, each of which is associated with a knowledge domain. Together, the overall collection of knowledge domains represents the definition, at any given point in time, of the intellectual capital needed for the organisation to pursue its strategic objectives.

Within the organisation, and beyond it, success is not simply achieved through collaboration and competition but by establishing a supportive infrastructure of norms and values. These create a climate of trust and a volunteer rather than conscript mentality. Commitment is vital but it cannot be compelled or contrived (Lazonik, 1990). For decades, senior managers of organisations have proclaimed that 'people are our greatest asset' but then spread cynicism and disillusionment when, in the face of tougher economic conditions, they have cut people from the organisation before other resources. This behaviour does not inspire trust and commitment. In third wave organisations people are the prime source of organisational sustainability and slowly but surely this truth is being recognised (Turner and Crawford, 1998). What are these people seeking?

Principally, they assume that they will be well compensated and receive generous work conditions. Beyond this, they are seeking the opportunity to work at the leading edge of their profession both for the excitement of it and to maintain and extend their intellectual capital. In this way they ensure their future relevance, marketability and earning capacity. It will no longer be possible to lock these people into the organisation. They are highly mobile, have knowledge and skills, and will travel. They will only be retained in the organisation voluntarily and their commitment is won by the opportunities for learning offered by their work in the organisation and

by the challenge of continuing innovation. To attract and retain outstanding people, the organisation must develop and build on the knowledge potential of its workforce. A climate of continuous knowledge and skill development attracts high performers. Without these key people the organisation is relegated to a reactive role at best: at worst, to takeover or extinction.

Sustainable organisations will create systems that not only provide clear indicators of success or failure in meeting these needs and translating that into organisational performance but also are able to provide a leading indicator of future achievement. Further, these systems will incorporate the best knowledge available and will continue to operate without the input of those who contributed to them. It was suggested earlier in this chapter that third wave organisations would focus on the creation and transmission of new knowledge in an open learning environment. The strength of such organisations will lie in the extent, or value, of their intellectual assets. Codifying the collective experience in the organisation and systematically enhancing the skill base of individuals will contribute significantly to the enhancement of an organisation's intellectual asset value. Measures, or performance indicators, that assess the progress of third wave organisations in this compelling activity are provided in the human resource accounting model presented in chapter seven. This model provides the foundation on which knowledge coordinators in third wave organisations may evaluate the degree of success in achieving the objectives of their new role. The responsibility for developing models such as this, and for ensuring that the data needed to implement them resides in the organisation's database, rests firmly with the decision support systems coordinator (née management accountant). It follows that the knowledge coordinator and the decision support systems coordinator will work together as a team in a similar fashion to that envisaged for human resource accounting and human resource management. It is simply a case of discarding unwanted clothing and starting anew or, to purloin Gray's (1994) terminology, creating "silk purses from sows' ears".

## **Conclusion**

The challenge is issued. Organisational development strategies, however rational they appear, will make no sense unless they take full account of the significant role

knowledge plays within the organisation. With imagination, diversity, creativity, innovation and synergy (along with more formal skills such as computer literacy) increasingly central to success, the third wave organisation – ephemeral or otherwise – needs to consider how it may best acquire or create this indispensable commodity of new knowledge.

Entirely new forms of 'learning how to learn', based on deuterio-learning principles, need to be invented by the organisation together with the means of facilitating the sharing of this new knowledge. Capturing knowledge from elsewhere will undoubtedly also become necessary. This may occasionally take illicit forms<sup>10</sup> as well as more conventional approaches such as buying in highly skilled, peripatetic research teams to undertake particular projects or the use of artists, philosophers, scientists and social researchers to input novel ideas into on-line databases. Resourceful organisations will also encourage the growth of informal associations and alliances since such groups facilitate the transmission of economically useful information through newsletters, technology transfer, meetings, conferences, travel and the internet. Such ephemeral organisations are an important, often neglected, communications medium serving as conduits for the rapid exchange of information about what does, and does not, work in respective fields.

Organisations serious about sustainable economic development will also have to recognise a new significance in free expression. Failure to encourage a free intellectual market that permits the circulation of new ideas, even if unflattering to the organisation, is almost always prima facie evidence that the organisation is weak at its core, and that senior management regard retaining their power and status as more important than improving the knowledge of the people who work for the organisation. Senior managers need to be made aware that organisational leadership is itself an honourable, testing, imaginative and creative occupation. But it is not just about the creation of wealth, it is also about the empowering and growing of people as part of creating a better world for tomorrow.

Other organisations will form knowledge consortia to explore the cutting edge of their domains of experience. Instead of pandering to obsolete hierarchical notions, they will pursue their strategic interests passionately, intelligently and, above all,

ethically. These changes flow from a profound reshaping of society's expectations and consequently of the local and global markets in which organisations operate (Elkington, 1997). As a result, future organisational focus must not only be on changes in technology and information systems but also on values and mindsets. Clearly, the twentieth century functions of human resource management and management accounting, using the human resource accounting subset, have an influential role to play in twenty-first century organisations in their transformed capacities of knowledge coordinator and decision support systems coordinator.

## Notes

- <sup>1</sup> Quoted in Handy (1994, p.221)
- <sup>2</sup> Manage used to mean 'coping with' until it was purloined by organisations as a euphemism for 'planning and control'.
- <sup>3</sup> What Marx once dreamed of has become a reality, but in a way in which he could never have imagined.
- <sup>4</sup> Goffee and Hunt (1996) suggest that rhetoric outpaces reality in that the language of modern organisational analysis describes a world that they believe does not exist. This reflects a lack of vision and forward thinking that pervades many organisations with some notable exceptions such as Microsoft.
- <sup>5</sup> The story of the Brazilian industrialist, Ricardo Semler's (1993) efforts to create an idiosyncratic working environment – where there are no organisational charts or internal walls, where employees set their own strategy and salaries, work schedules and productivity targets, where everyone has unlimited access to the organisation's financial records, where there are no receptionists, secretaries or personal assistants, where managers exchange jobs with one another and supervision has been virtually eliminated – has now entered management folklore.
- <sup>6</sup> The structure of franchise organisations epitomises this concept.
- <sup>7</sup> Indubitably it is the leader who crafts the vision of an organisation and the strategies that are necessary to realise that vision.
- <sup>8</sup> As an observation, the title of the journal of the Institute of Management Accountants (USA) changed in March 1999 from *Management Accounting* to *Strategic Finance*. Based on market

## **Notes...continued**

research and member input, the latter was perceived to be a more descriptive name for the changing role of the traditional management accountant.

<sup>9</sup> For Dunphy and Griffiths (1998, p.160) "Communities of practice are distinct from the formal units or workgroups of the organisation. They are more flexible and fluid, and shift as the issues facing the organisation change. They cut across regular organisational boundaries, linking individuals anywhere in the organisation and at any level on the basis of shared interest".

<sup>10</sup> Stealing technological secrets, for example, is already a flourishing business around the world.

Chapter **10** *Epilogue*

Now this is not the end. It is not even the beginning of the end.  
But it is, perhaps, the end of the beginning.

*Sir Winston Churchill*  
Speech at the Mansion House, London  
10 November 1942

**In summary**

The challenge of this thesis was to reconsider the presentation of accounting information to management in a way that would enable accounting and human resource professionals to work effectively together to facilitate the creation, and nurture the growth, of the talent and accumulated knowledge of an organisation's human resources. In the tradition of normative accounting theory, this thesis is fundamentally about providing an idea about what could be done to meet this challenge.

It was recognised that, to chart a way forward, it was necessary to learn from the past. This centred on understanding why the earlier propositions to account for human resources failed to gain acceptance and why human resource management remains a predominantly operational discipline of limited importance at senior

management levels. The conclusion drawn from this analysis was that, in both cases, the method had been wrong.

Attempts to develop a human resource accounting model had become entrapped in the regulated world of financial accounting. They had focused too much on the use of traditional statements of financial performance and financial position. Putting aside the differences arising from the methodology of measurement, the propositions were seen by many as attempts to treat human resources in the same way as the physical and financial resources of an organisation and, as such, demeaning to the dignity of people. This limited support for the paradigm had permitted the accounting profession, faced with other, more pressing issues, to allow discussion on the topic to fade away.

Human resource management, on the other hand, was a case of a change of identity gone wrong. Correctly perceiving that a change was required to the way in which organisations managed their employees, the personnel management discipline sought to change the way others viewed them by renaming themselves and adopting a more strategic outlook. Unfortunately, prescription and practice were poles apart, for human resource professionals were unable to demonstrate the linkages between the core business processes, the resultant human resource management choices and policies, and the impact on organisational performance. They wanted to play a new game but did not fully understand the rules.

The business environment has undergone, and continues to undergo, profound change. Externally, changes in society's values are pressuring organisations to become socially responsible as well as financially viable and rewarding to all of their various stakeholders. Internally, technological advances have fundamentally changed the way an organisation goes about its business on a daily basis. These advances have led to a downgrading of the skills required by many people who undertake routine jobs. Yet, in other areas, imagination, diversity, creativity, innovation and synergy are becoming increasingly central to success. New and sometimes completely different people skills and capabilities are needed. To attract and retain outstanding people, organisations must develop and build on the knowledge potential of their workforce. They need to understand how they may best acquire or create this

indispensable commodity of new knowledge. Sustainable organisations must conceive systems that provide clear indicators of success or failure in meeting this need.

The human resource accounting model developed in this thesis aims to do just that. It acknowledges that many of the traditional practices of accounting, with which we are familiar and comfortable, are no longer suitable for organisational planning, control and performance measurement systems. In this respect, the model adopts one of the newer concepts in accounting, the balanced scorecard, as it seeks to present something more than the short-term monetary reports so prevalent up to now. This concept provides the structure for describing an organisation's vision and strategy in tangible, understandable terms. It serves as a language for debate within the organisation and acts as an interface between people who are independently developing a view of the organisation in which they have a common interest. A properly constructed balanced scorecard contains a unity of purpose because all of its measures are directed toward achieving an integrated strategy. As the term implies, the scorecard is an aid to creating a *balance* among the various factors that need to be considered when determining the strategy for an organisation's future development.

Currently, the measures included in the innovation and learning perspective of the balanced scorecard are less developed than those of the other three perspectives and this detracts from the idea of *balance* in the concept. The model has therefore been developed with the intention of filling that void. Whilst the need to provide information on the value of employees' knowledge and skills has been recognised and articulated in the model, this has been balanced by a range of indicators reflecting employee development and satisfaction. Overall, it is seen to offer a practical framework for providing information on an organisation's knowledge and skills: how they are valued, how they are nurtured and how they contribute to organisational sustainability. The proposed measures, used in the context of the balanced scorecard, are seen as complimentary to traditional financial measures and provide a way of reducing the danger of a harmful short-term approach to the management of human resources. Furthermore, they provide the means by which employees of an organisation may become more aware of the significance of their work and of their value to the organisation.

The viability of the model depends on its acceptance in practice. The model was considered by several organisations where the knowledge and skills of their employees far outweighed physical capital as the key asset in the organisation. These organisations were looking for a way to integrate the complex dimension of human resources into models of organisational accountability. They needed a new model that would meet the accountability tests of relevance and reasonable measurement and, at the same time, provide more meaningful information to stakeholders. Generally, the model developed in this thesis was well received in these organisations. A number of the measures were accepted for immediate use while others are subject to further evaluation. Those accepted for immediate use include calculated measures of employee competency, measures of the elan and potential creativity of the workforce, as well as indicators of the rate of knowledge dissemination and the value of employees' knowledge and skills to the organisation. Complete adoption was hampered by the lack of appropriate technological infrastructure to allow for the collection of all the necessary data. This creates a temporary problem in the cost-effective collection of the data. However, as the upgrading of infrastructure proceeds, this issue will no longer be relevant. Even so, where the data is available, or easily collected, these organisations will progressively introduce these new performance indicators as long as they are internally useful and perceived to be of benefit in improving their accountability to stakeholders.

It would appear, then, that as the twenty-first century beckons, the human resource accounting model envisaged in this thesis could have an influential role to play in the performance measurement and accountability of organisations with respect to their human resources. Furthermore, by using the model, which encourages a move away from vague, subjective terms of performance measurement to the more specific, objective language of numbers, human resource professionals will be able to show that they care about both people and profitability. They will also be able to provide reliable evidence of the outcome of their decisions involving the employment of people. In this way, human resource managers will earn their seat at the 'Round Table'.

## **Further research**

No theory, even after a practical evaluation, may ever be considered all encompassing. The model developed in this thesis was never expected to be so. It was only intended to act as a catalyst for the ongoing development and implementation of a more comprehensive way to assess the performance of, and provide accountability for the stewardship of employee talent and accumulated knowledge entrusted to an organisation. Even Shell International (1999), with all the resources at its disposal, recognises that introducing fundamental changes to conventional wisdom takes many years (see appendix 9) and is a long and tortuous process.

Even as this epilogue is written, it is apparent there are issues that still need to be addressed. The path to the introduction of the model proposed in chapter seven within the CRIs has been, and will continue to be, fraught with distractions. The most obvious is that many of those people in the CRIs who have the power to implement the necessary changes are locked into the short-termism mentality that pervades second wave organisations. The ongoing development of information systems in the CRIs, and the output from those systems, is being geared to meet the immediate needs of the environment in which they operate. This, as Foucault (1973) infers, is presently moulded by external demands for information that are based on models developed for organisational structures predominant in the second wave. Change will only come from a limited number of sources. In the immediate future, chief executives who realise that they need more balanced information about broader issues will drive change. It becomes a question of how to convince them that alternative models will be more suited to their needs. In the longer run, promotion of new ideas by educators, particularly at tertiary level, will see the next generation of graduates, in turn, seek to implement new models of information such as that proposed in chapter seven. Wider dissemination of information about these new models, through literature and conferences, will achieve greater debate than presently exists. The challenge is there.

In the context of the broad content of this thesis, this challenge may be taken up in several ways. First, applied research should be conducted with a representative

sample of organisations that have adopted the balanced scorecard. The purpose of this research would be to better appreciate the types of performance indicators they have included in the innovation and learning perspective of their balanced scorecards; the factors influencing the development of these indicators; and how well they meet the needs of management and the various stakeholders. From this research will come a greater appreciation of the organisational factors constraining the development of indicators that will adequately inform on the creation and growth of the talent and accumulated knowledge of an organisation's human resources. Second, further research should be conducted in existing knowledge-based organisations to establish whether they really do have more interest in valuing the accumulated knowledge of their human resources and what form this is taking. Third, and perhaps concurrently with the previous suggestion, the model developed in this thesis could be refined to reflect the expectations of a wider cross-section of users.

Continuing with the refinement of the model developed in this thesis, it should be remembered that the value of knowledge was based on the cost of acquisition rather than on use-value. Furthermore, the values attributable to the various forms of knowledge were determined on the basis of cost of acquisition that applies in just one corner of the global village. Many organisations, particularly those in the embryonic stage of becoming third wave organisations, recruit employees from around the globe in search of the specific knowledge and skills they seek. The cost of a university education varies significantly from country to country, and indeed between universities in some countries. For example, the annual cost of an undergraduate education from Princeton (USA) is US\$33,000, from UCLA (USA) it is US\$13,000 and in Britain, an Oxford humanities undergraduate degree costs something like E£8,000 a year (Ryan, 1999). Does this really mean the value of knowledge acquired varies depending on the institution attended? Some will argue that it does. Others suggest that "it is 'snobbish' to argue that a degree from Luton does not have the same value as a degree from Oxford" (*ibid.*, p.25). An individual may place greater value on an education received from a more elite institution, but the model is considering the value from an organisation's perspective. Perhaps it will take a more egalitarian view and base its assessment of value for all employees on the costs applicable at a local university. Further empirical research should be undertaken to appreciate the

views of organisations on this matter and subject them to objective examination and debate.

In some ways, this question may be resolved when considering the position of a new employee, with a degree or two, who has been working elsewhere before joining an organisation. Using a consistent base will certainly make it easier to attribute a value to the domain knowledge new employees bring with them to an organisation. But what of a person whose domain knowledge from post-secondary education has been fully depleted due to the efflux of time. More than likely this person will have benefited from many years of experience working elsewhere, but it has been argued that tacit knowledge is not transportable from one employer to another. In these circumstances, how would an organisation ever justify headhunting an experienced employee from another organisation? It would appear to be spending money recruiting someone of less value to the organisation than an existing employee of similar standing. Yet, on the surface, the main reason an organisation would do this is because the outside person would be expected to contribute to the expansion of the overall wealth of the organisation in other ways. What is more, the very nature of third wave organisations - the 'virtual' or 'ephemeral' organisations envisaged by Peters (1992) - would suggest that tacit knowledge extends beyond the organisation. Is there a third category of knowledge that has not been considered in this thesis? There is certainly room for further examination and debate on this issue, but for now the use of the balanced scorecard in this model of human resource accounting appears to be a step forward in the right direction. For the issue is one of *balance*. While the organisation will suffer a reduction in the value of its knowledge and skills, it would expect to see an improvement in another perspective of the balanced scorecard.

That these issues are now being raised is representative of the way organisations will behave in the third wave. It is a matter of learning to learn based on deuterio-learning principles. Such a climate of continuous knowledge and skill development should not only enhance the wealth of an organisation but also assist in the growth of people. It is the beginning of a journey into the twenty-first century, where the search will continue for new horizons, new ways of thinking, new opportunities.

# *APPENDICES*

1. AURION HR Software
2. Supplement to Skandia's 1996 Interim Report
3. Telia's Statement of Human Resources
4. Extract from CFR's 1997 Annual Report
5. Extract from ESR's 1997 Annual Report
6. Extract from IRL's 1997 Annual Report
7. Extract from LRL's 1997 Annual Report
8. Definitions of terminology used in CRIs' performance indicators
9. Shell's sustainable development road map

# APPENDIX 1: AURION HR SOFTWARE

Page 1 of 4



## HR Software

### ABOUT AURION

Aurion is an integrated human resources and payroll package. Aurion's modular design means Aurion grows with you. You implement the modules you need now and add other modules later.

#### About

Aurion was first released in April 1998. The latest generation of Aurion released in 1994 was a rewrite for client / server.

#### Support

### THE AURION SOLUTION

#### Contact

Aurion enables you to meet these challenges. Aurion meets today's business needs and is ready for the business needs of tomorrow. The design philosophy is simple. Aurion streamlines the human resources business by capturing data at the natural point of entry and automating the flow through of work processes. Highly automated processing is a key building block to deliver powerful reporting and analysis. Aurion enables you to create your own information using the tools at hand while maintaining security over data access.

Updated  
February 19, 1999

With Aurion, organisations have at their fingertips, the information they need to build a workforce with the skills and experience to respond quickly to changing business needs.

### OVERVIEW

- Integrated workflow.
- Employees access to their own information.
- Performance appraisal. Aurion supports competency and performance based appraisal.
- Staff bank. Match person to competency profile.
- Real time reporting. At any time you can tell how much you are spending on salaries.
- Cost your business, including direct, oncosts and service charging.
- Real time costing. Aurion updates cost attribution whenever a person changes cost centre or job, using cost allocations you define.
- On line headcount and statistical reports.
- You set the rules. Specify a person's leave, other entitlements and work pattern for full and part time staff. Pay staff by exception, return or package.
- Real time payroll. Any change updates a person's pay online so their net pay is always up to date.
- Designed and tuned for large organisations.
- Access control. You decide who can access Aurion, what they can do and whose records they can see.

### AURION ARCHITECTURE

Aurion is a client / server solution written in Uniface. Using Uniface means your investment is protected as Uniface is future proof, scalable and portable. With UNIFACE you choose the:

- Hardware platform;
- Operating system;

<http://www.aurion.com.au/about.html>

- Network;
- Presentation Interface;
- Database.

**SUPPORTED PRESENTATION INTERFACES include:**

- All Windows platforms including NT.

**SUPPORTED OPERATING SYSTEMS include:**

- NT;
  - UNIX (including AIX, HP-UX and Solaris);
  - VMS;
  - OS400;
  - VAXVMS.
- SUPPORTED DATABASES include:**
- DB2 and DB2/6000;
  - INFORMIX;
  - Ingres;
  - ORACLE;
  - SQL Server;
  - SYBASE

**INSIDE AURION 8.00**

**ORGANISATION**

*Highlights*

- Record and report on jobs, organisation structure and employment history.
- Update employment history when people change jobs.
- Update cost attribution for a person when they change jobs.
- Online headcount reports with staffing to budgets.

**PEOPLE**

*Highlights*

- Record and report on a range of information on your staff.
- Maintain occupancy details
- Calculate increments
- Start people.
- Cease people.

**SALARY PACKAGES**

*Highlights*

- Define packages, components and tax treatment.
- Model package to assess best salary / benefit mix.
- Monitor expenditure against package.
- Maintain history of salary reviews.
- Link to payroll.

<http://www.aurion.com.au/about.html>

## LEAVE

### *Highlights*

- Define leave awards and conditions.
- Administer entitlements & accruals.
- Adjust for impact of leave not to count as service.
- Calculate leave liability for provision accounts.
- Update payroll.

## PAYROLL

### *Highlights*

- Update payroll when a person changes job, package or takes leaves.
- Update a person's pay online whenever there is a change so their net pay is always up to date.
- Define cost categories and assign cost profiles.
- Define a person's award and work pattern including hours worked and the days worked each week.
- Pay by exception, return or package.
- Interface payroll to general ledger, financial and other applications.

## COSTING

### *Highlights*

- Cost pay at any time during pay.
- Maintain full history of costing.
- Define any type of cost category and apply unlimited number of cost allocations.
- Set defaults for organisation unit, job grade, position person or white in job.
- Apply exception cost allocation defaults for people and project work.
- Define any number of oncosts to apply to a person or group of people.
- Nominate account for any type of payment, liability or on cost or pay disbursements.
- Derive account and cost allocation from defaults and apply to all payments, liabilities, and oncosts.

## TRAINING

### *Highlights*

- Manage & schedule training activities.
- Monitor the cost of training activities.
- Training Guarantee Levy reports.
- Generate letters.

## RESOURCE BUDGETING

### *Highlights*

- Competency based assessment and management.
- Training needs analysis.
- Match staff to jobs.
- Monitor and appraise performance.
- Succession and career planning.

## RECRUITMENT

### *Highlights*

<http://www.aurlon.com.au/about.html>

- Administer recruitment activities.
- Build checklists to monitor progress of recruitment activities.
- Generate letters.

**O.H.S.S.**  
*Highlights*

- Administer compensation claims; analysis costs.
- Maintain details of work related injuries using Worksafe Australia standards
- Statistical analysis of injuries / claims

**UTILITIES**  
*Highlights*

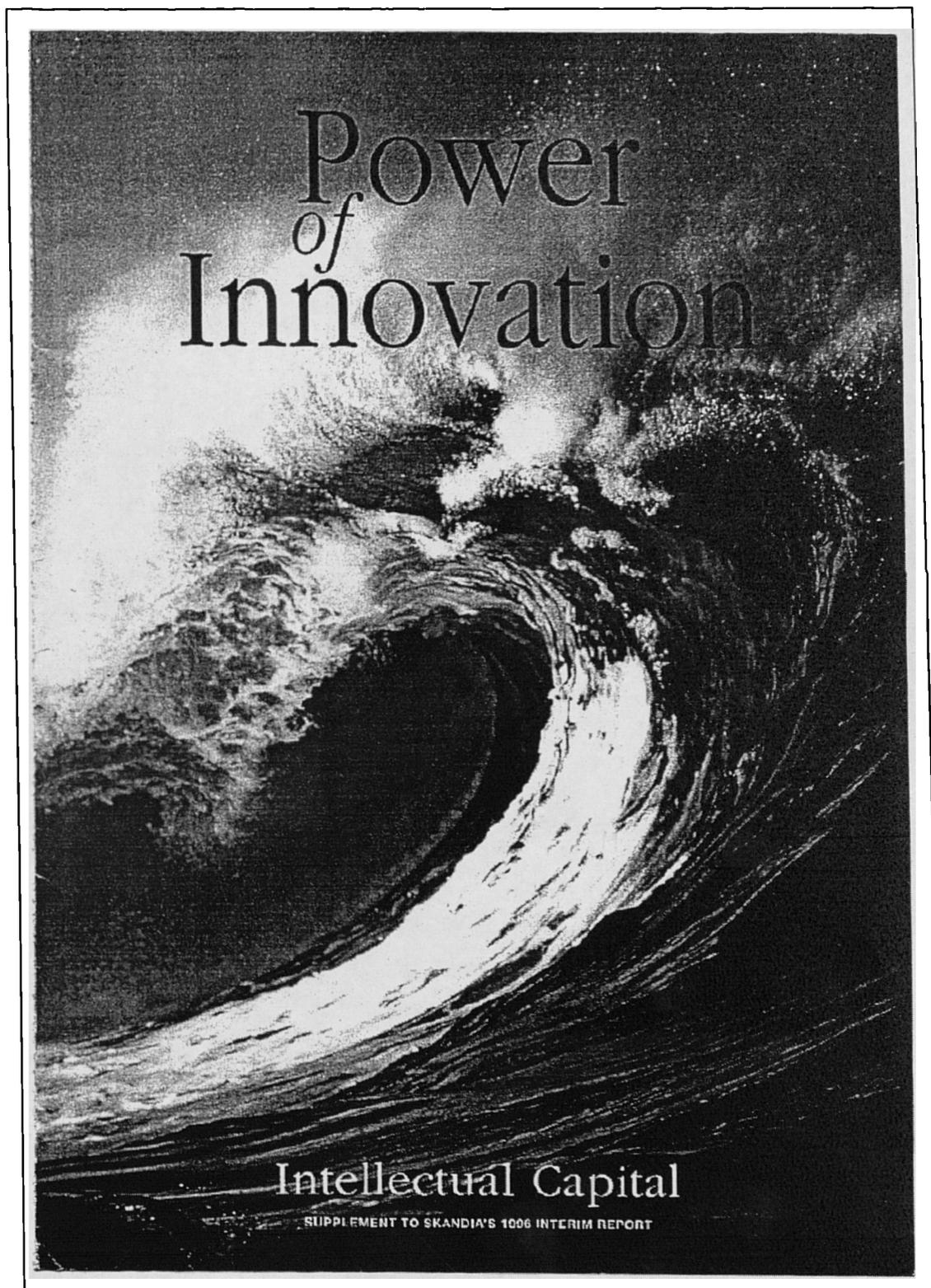
- Control access at three levels.
- Standard reports.
- Online enquiry with hot print.
- Dynamic Data Exchange (DDE).
- Audit trail with auditor enquiry.
- Mail.
- Calendar

*"The way people work is changing and organisations are looking to their human resource solution to help them navigate the change."*

HRS

aurion@aurion.com.au

**APPENDIX 2: SUPPLEMENT TO SKANDIA'S 1996 INTERIM  
REPORT**



**D**evelopments are unfolding at an accelerating pace. Never in Skandia's over 140-year-history have the demands on us to quickly and continuously prepare for the future been as great. This does not mean that we should throw tradition overboard. Without it, it would be difficult to identify and capitalize on the opportunities that the future offers.

For our tradition holds much of what we in recent years have been emphasizing that is just as important as our financial capital, namely, our intellectual capital – the sum of our human and structural capital.

At the same time, this intellectual capital is just as much a key ingredient of the future. Tradition and the future are interwoven and enable us to come to the realization in a changing world that tomorrow's business situation is not the same as today's.

We can choose to passively watch as the market changes or take an active part in the process. Skandia has chosen to be active.

We can choose to focus strictly on streamlining or we can seek new opportunities and markets. Skandia has chosen to take the offensive and view the future as an asset for growth.

We can choose to draw from our heritage or we can continue to build it up for future generations. Skandia has chosen to build further.

The goal is to make Skandia an innovative business community within society at large. Our innovative power will determine how well we accomplish this goal.

It will be possible to measure the degree of success in our stock price, our earnings trend and our attractiveness as an employer and business partner.

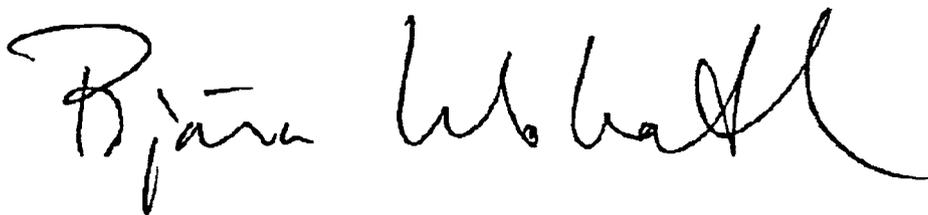
There has never been a better time for a business revolution and quest for new heights than today. This is not a revolution of anarchists, however, but of activists and innovators: it's about  *daring to open the flow of ideas and propose that which has never been considered before; about tearing down walls between what were previously independent units; about fostering a climate of knowledge sharing within the group that is conducive to creativity and value creation.*

It's about having the courage to realize that the key word for the future is not only competition, but understanding that the future is more a matter of collaboration and context. About  *daring to understand that we do not need to do everything ourselves, but can collaborate with competence partners outside Skandia.*

It's about being innovative and accomplishing something neither we nor others in the industry have accomplished before.

We have already started such a revolution through our focus on Skandia Future Centers, among other things. There we are devising ways to develop our immense intellectual capital and use the strategic renewal process to capitalize on our opportunities. Our responsibility is to turn the future into an asset.

Rune Wikström, President and CEO



# Innovation for Growth

**W**hen we look back on human history, we can see two waves of change: the agricultural revolution and the industrial revolution. We now seem to be in the midst of what the American futurist Alvin Toffler has called "The Third Wave." Our challenge is to understand this new wave so we can ride it and not fight it.

To understand the economic activity that followed from the agricultural revolution, economists early on developed the metaphor of the farm. Land and labour were the fundamental factors. Food was the most important output. Acquiring land was the way for a person or a nation to become richer.

As the industrial age emerged, economists adopted a new economic metaphor based on the factory. Capital, labour, and raw materials were the basic inputs. Manufactured goods replaced food as the typical form of output. For a person or a nation, investing in capital goods like machinery and plant became the new path to riches.

Now, the personal computer is displacing the factory as the icon that stands for economic activity. People in the computer business now classify economic inputs into three new categories: hardware, software, and wetware (or brainware, since the brain is a "wet" computer). Innovation is now understood as the driving force behind increases in wealth.

We can see this new metaphor in action in the kitchen. To make a cake, we must have hardware — pans, an oven, and ingredients. It also takes the wetware or brainware of an experienced cook. But the most important input is the software, the recipe. It gives us the instructions we need for converting ingredients worth a few pennies into a finished product worth far more.

What are the outputs in this new image of economy? We use our three inputs to produce more hardware, more software, and more wetware. When we bake a cake or make a computer chip, we produce a tangible piece of hardware

When we teach someone how to be an engineer, we produce new wetware.

When someone develops a new recipe for a cake, a new design for a computer chip, or a new procedure for processing electronic purchase orders, this person has developed new software. Production makes hardware. Education makes wet-

ware. *Innovation makes software.*

Innovation is a uniquely important kind of economic activity because software is something we can write down and communicate to others. Its value increases in proportion to the number of users. In a world with billions of people, this means that new software can create enormous value.

Software is also unique because the supply of new, better software is inexhaustible. There are however limits on

production. If we follow any fixed set of software instructions

and recipes, we will eventually run out of

raw materials. There are also limits on education.

It would be infeasible for society to plan for every person to have 30, then 40, then 50 years of education. But we will never run out of new things to discover.

There are many things we cannot predict about where the current wave of change will take us. We can, however, be sure that innovative companies and societies will be the ones that thrive.



PAUL FLOREN, PROFESSOR OF ECONOMICS, GRADUATE SCHOOL OF BUSINESS, STANFORD UNIVERSITY, USA.



# Power of Innovation

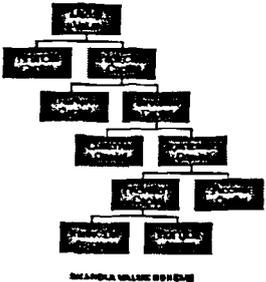
**F**or the past two years Skandia has been describing its work surrounding intellectual capital in supplements to the group's financial reports. The components which make up intellectual capital, including innovation capital, were presented in the supplement to the 1995 Annual Report (See also Skandia Value Scheme below.)

Innovation capital refers to the explicit, packaged result of innovation, in the form of protected commercial rights, intellectual property, and other intangible assets and values. Harnessing this power of innovation requires a more dynamic perspective and a synchronized focus on human and structural capital for renewal. Thus, the power of innovation is found in the border zone between human capital and structural capital. The goal is to achieve a multiplicative effect in order to enhance rapid knowledge sharing and develop new business applications. In doing so, new value is created. The critical success factor is not only the number of new ideas, but more so, their implementation. This can be facilitated by having the right company culture, leadership and infrastructure.

A company's strategies for growth, competence development and competence renewal can bear great

significance for its future value. The power of innovation creates value in that innovation capital is either recycled or generated anew.

Growing organically by recycling systematized concepts in new markets – as in the case of Skandia AFS (Assurance & Financial Services) – or using a unique concept to capture a position in a mature market – as in the case of Skandia-Banken – are examples of the power of innovation.



In mature, "fully developed" operations, cash flow is usually a crucial concern. But it is a well known truth that few operations are ever complete. Companies that do not invest in renewal undermine their longterm value appreciation and jeopardize their very existence.

Large corporations often have much untapped potential – competencies that can be brought forth, systematized and leveraged. When this happens, human capital is converted to structural capital, and intellectual capital is created. Skandia is striving to describe and quantify the value in this with the Skandia Navigator management and reporting model.

Companies that identify the driving forces in their operating environment at an early stage and can convert them and create new business opportunities – while at the same time managing to further refine existing operations – will be tomorrow's winners.

Within Skandia various models are currently being developed to systematically describe and assess the company's true innovative power. Controllers and internal auditors, among others, are taking part in this work. The purpose is to provide management with a visibility of the opportunities afforded to the group by the flow of knowledge and competence development.

Skandia's innovation culture can be described as a wave that is kept in perpetual motion by the flow of ideas within the group.

# Renewal in Skandia

**A**ll too often, people fail to recognize opportunities when they see them. This applies to businesses as well. That is why many companies are active only in a part of their potential operating sphere.

Skandia is no exception. But by systematically creating more space for the employees' innovative capabilities, in some 120 professional categories, new business concepts are being identified and developed within the group.

Through this continuous renewal, the conventional concept of insurance – with its focus on indemnification in one form or another – is coming into new light. What is emerging is an ambition to help customers live a richer life in the broader sense, within the context of "Security for Generations."

New products and services are being launched. Skandia AFS has entered a number of foreign markets and has developed the unit linked assurance concept, with exceptional growth. Presently AFS is starting up activities in Malaysia, and a new licence has just been granted to establish operations in Japan. This means that Skandia now has access to the world's largest market for savings and life assurance products.

Integration of operations in the Nordic countries was begun in 1990. Processes for product development, market penetration, claims handling and systems development – among other things – have been modified through cross-fertilization of the various countries' operations. National thinking has been replaced by a global flow of knowledge in cross-border networks

In 1992 Skandia's management made the decision to reduce the company's reinsurance activities, while at the same time investing more in the growing unit linked assurance operations with their low insurance risk. The reduced risk level in the insurance portfolio has resulted in a significant earnings improvement. The level of risk in the balance sheet has also been addressed. As part of this strategy, the non-life reinsurance operations in the U.S. were sold in 1996. This further reduced the level of risk.



During this time, innovative ways of working have also been developed for operations in mature markets. Skandia has redefined the industry standard in distribution and production. Examples include the telemarketing insurance company DIAL; the unit linked company SkandiaLink; the telephone bank SkandiaBanken; Intercas in Spain; American Skandia; and a long list of other units.

Health, environment and safety concerns are the focus of a concept devised by Skandia in cooperation with its commercial clients in the Nordic countries. These activities are an active endeavour to support low-prevention and raise safety awareness.

In the health area, Skandia's Lifeline and Worldline programmes in Sweden are associated more with preventive fitness activities and rehabilitation than with conventional health care. What's unique about a Lifeline insurance plan is that Skandia's indemnification is delivered as a service, not monetary payments.

Another service that Skandia now offers as commercial clients is psychological assistance after traumatic experiences, such as robbery or assault.

Recycling concerns and environmental responsibility are putting new demands on the management, construction and ownership of real estate. At Skandia Real Estate, an environmental re-orientation is currently in progress. In connection with Skandia Real Estate's "Rent with your heart. Rent with your brain" campaign, vacant premises are being advertised on the Internet. Additional examples of innovations adopted at Skandia Real Estate are district cooling systems for individual buildings and electronic devices to count visitors at shopping centres.

Outside the traditional business activities is another project based on values that have grown strongly during the Nineties: "Ideas for Life." Through this endeavour, Skandia provides ideas and financial support to help build bridges between responsible community groups – such as parents who volunteer to patrol streets at night – and society's own network of police, schools and social services.

Skandia's competence insurance is a new type of service under development for the emerging knowledge society.

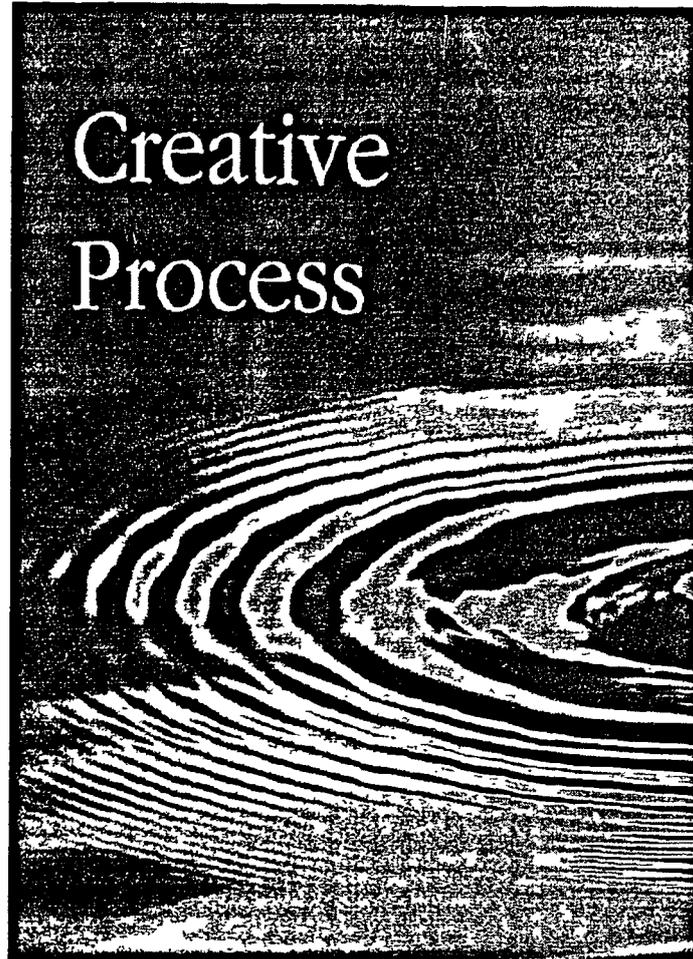
*'Knowledge innovation is the creation, evolution, exchange and application of new ideas into marketable goods and services, leading to the success of an enterprise, the vitality of a nation's economy and the advancement of society.'*

JOSEPH A. AMERSON, FUNDATION OF INTELLECTUAL CAPITAL

**N**ot the biggest. But in many respects the first. In a short period of time the insurance company DIAL, with its staff of more than 245 people in Sweden, has achieved tangible results from its innovation process. Part of its vision is to dare to be different. DIAL has evolved into a sort of competence laboratory within the Skandia group. Between theory and practice a number of functioning, highly-trafficked links for rapid competence growth have been developed.

#### **Innovation Assessment**

In an initial Innovation Assessment, in which DIAL's innovative strength was reviewed in ten different areas, the company scored an average value of 8.7



on a scale of 1-10. The areas in which DIAL was assessed included cooperation and innovation ability, training, products/services, market image, learning networks and communication techniques.

The highest internal score - nearly a 10 - was given for DIAL's use of technology and learning networks, while a lower score was received for the company's market imaging.

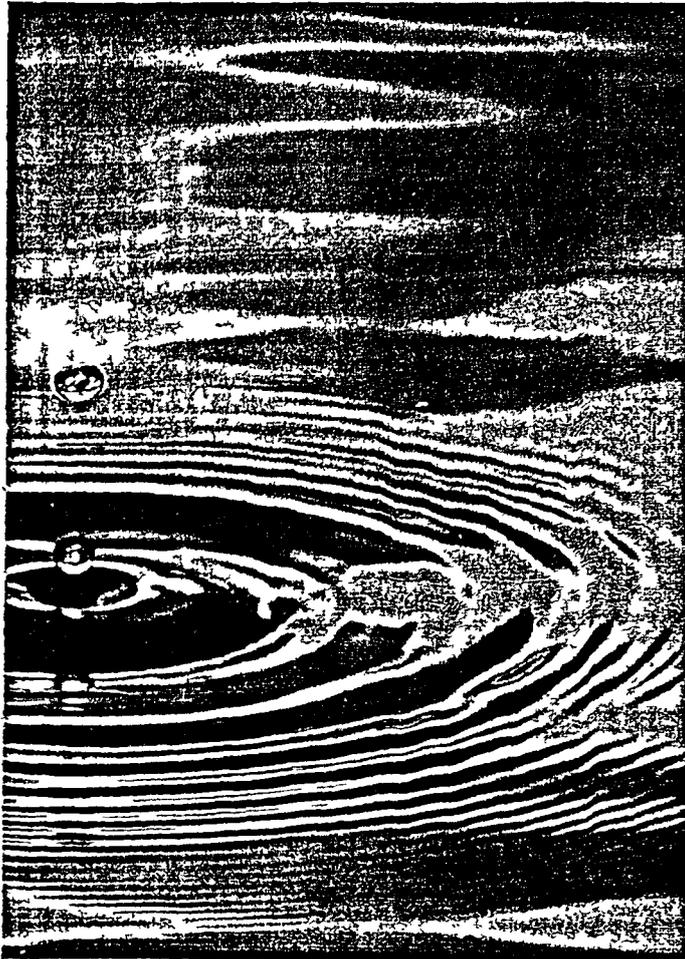
#### **Main Strategy**

DIAL's objective is to work creatively with its customers to achieve mutual success. One example is in automobile insurance, where a new routine for

conducting repair work has been devised. Through continued after-sales collaboration with dealers, repairs are handled by their own experts. In addition, this process is made smoother by a claims assessment system that minimizes administration and shortens processing times for both the customer and DIAL.

#### **Renewal Factors**

The objective is to achieve concrete results with the help of distinct, quantifiable targets and a flat organization that stimulates idea sharing and makes it possible for employees to influence



**Renewal.** It's the results that count. Rewards are given out when the impossible is made possible. A special "idea group" continuously composes ideas from the staff. A Golden Bumblebee is awarded to ideas that make the impossible possible.

**Implementation**  
Committed, competent employees lead not only to satisfied customers, but in successful customers as well. The decision-making process is supported by a set of principles which create a culture characterized by agility, dynamism and continuous re-examination.

**Structure**  
Work is conducted by small, autonomous groups with own profit responsibility and hence composing internal and external competences. Well defined goals are measured and visualized through the reward system. DIAL is an example of an imaginary organization with a network that extends out – among other things – to dealerships for various car makes.

**Employees**  
While focusing on a given set of values and their own capabilities, employees are encouraged to strive toward

individual and team goals. Rewards, even for team results, are individual. The goal is that all information should be available for all employees. Insight breeds commitment. To this end, Lotus Notes is now being installed for all employees to further enhance knowledge sharing. On Scandia's human capital index, which measures employee motivation, among other things, DIAL has scored the highest values of any unit in Scandia Norden in recent years.

**Process**

DIAL's objective is to benefit from the boundless flow of knowledge in a strategic business network of internal and external parties. The thrust of collaboration projects is to increase the unit's collective competence.

**Customers**

How the customers perceive DIAL is also of interest. A comparison with the five largest non-life insurance companies in the private insurance segment, based on Sweden's "Customer Barometer 1995," showed that DIAL has the most satisfied customers.

**Technology**

DIAL is a telemarketing insurance company and has an unusually high level of IT literacy; every employee has his or her own PC, and expert systems provide comprehensive, real-time information on insureds for prompt claims adjustment. Claims assessment programs have been developed and installed at auto repair shops. Roughly 35 per cent of the employees telework. IT innovations are aimed to provide greater customer success and higher profitability.

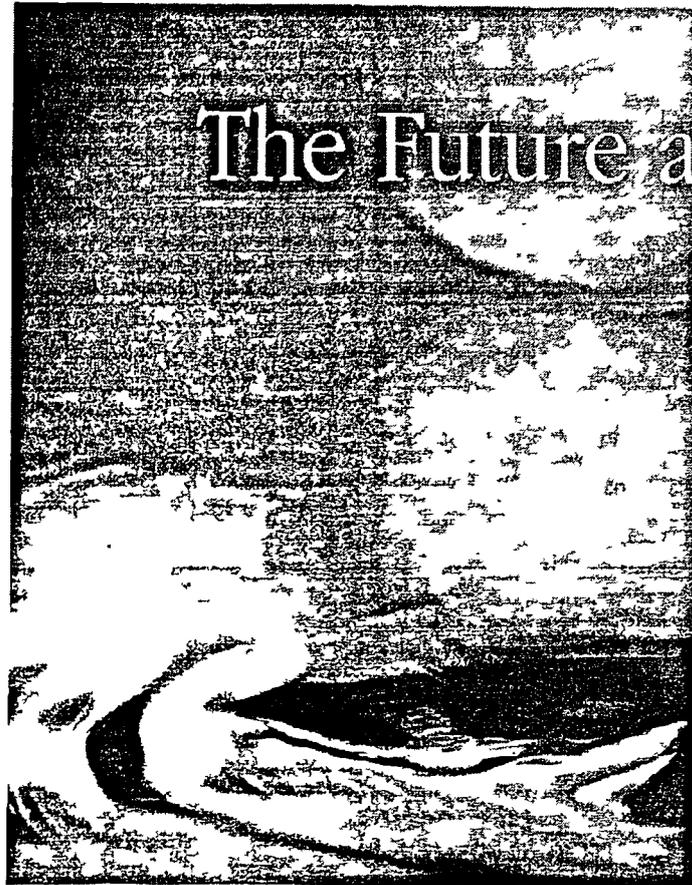
*'Every organization needs one core competence: innovation. And every organization needs a way to record and appraise its innovative performance.'*

PETER F. DRUCKER, HARVARD BUSINESS REVIEW

**O**ne is just over 30 years old, a Spaniard, and works as a financial analyst. The second is about 55, Swedish, and an insurance actuary. The third is nearly 40, British, and a pension market manager.

These are three of twenty members of five future teams that met for a couple of days this past summer at Skandia Future Center (SFC) in the archipelago town of Vaxholm, north of Stockholm.

Opened in May 1996, SFC at Villa Askudden represents a bold venture in Skandia's development. And despite its location on the periphery—geographi-



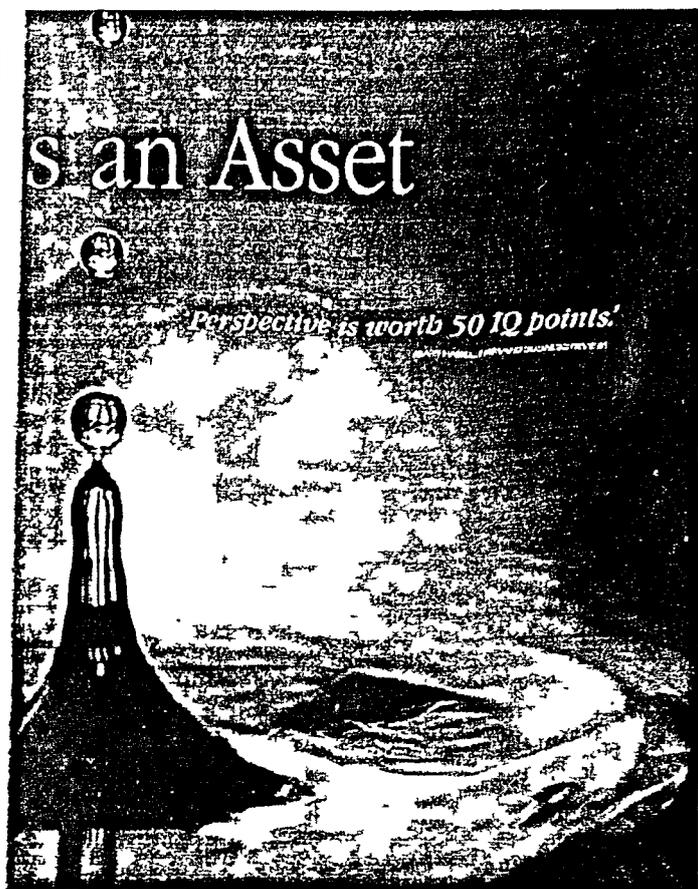
cally speaking—in terms of the global flow of ideas it is right in the centre. Through SFC—eventually also in other locations in the world—Skandia aims to advance its positions in the market and innovatively create its future instead of being surprised by it.

That's why the future teams have been assembled. The members were not chosen for their characteristically futuristic insight. They were chosen because they represent a cross section of a competence-intensive, global service company—in terms of age, competence and geography.

The twenty individuals, it could be said, are a microcosm of Skandia. Some of the innovative ideas they raise in their work could have decisive importance for Skandia's renewal. Their findings are not kept within any inner circle, but are passed on to the group management for integration into their strategies and decisions.



FUTURE ASSET  
 KNOWLEDGE AS ASSET  
 CURRENT ASSET  
 GROWTH AS ASSET  
 PROJECT AS ASSET  
 PRODUCT AS ASSET



During the past few years Skandia has systematically focused on the company's intellectual capital – that is, its human and structural capital – as a lever to generate renewal.

This involves making a concerted effort to liberate the creative resources and desire to develop that exist in a large organization, but which normally remain untapped due to the employees' lack of time or the orthodoxities under which they operate.

It's a matter of viewing the future as an asset in connection with the development of products, services and the company itself, as well as in the development of relations with customers and competence partners.

Skandia also works with the concept

of knowledge innovation, which refers to a method of optimizing the flow of competencies within the group and its networks in the operating environment. The objective is to enhance success for all parties involved.

This requires development of work methods and techniques for collective knowledge handling, with a focus on organizational capital. Greater awareness of available knowledge and the rapid sharing of knowledge are central factors.

This work method can be described as a progression on a life-cycle curve (see sigmoid curve illustration opposite). This could be seen as a gradual management evolution – from viewing products and services as assets, to viewing projects, companies, clients and knowledge

as assets, and ultimately viewing the future itself as an asset. The velocity of movement along this development curve and the ability to advance to the next level, together called organizational float, will be one of the most crucial organizational competencies for strategic success and survival.

It is a matter of creating a wave of innovations in the company and then riding them into the future. Or about viewing the future as an ocean of unexploited opportunity.

No one can predict with precision how this future will look. But one thing is clear: Skandia's current field of operation will be widening and new activities will emerge.

This will lead to greater collaboration between units within Skandia and external competence partners. This explains why Skandia is now being transformed into a sort of community of entrepreneurs working in collaboration.

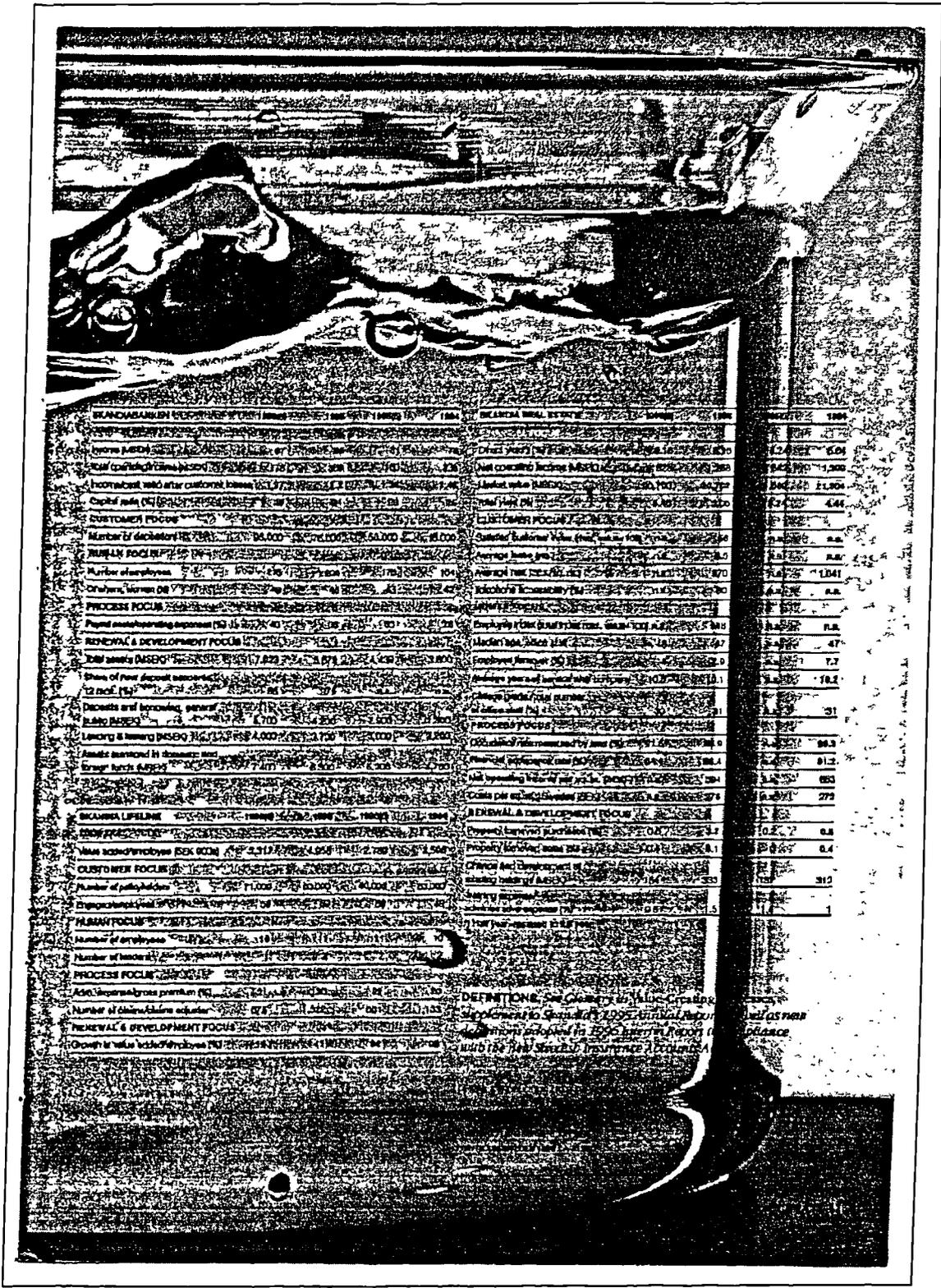
The thrust of Skandia Future Centers represents, among other things:

- a concept for turning the future into an asset;
- a work process based on collaboration across generational, cultural and departmental borders within the Skandia group, as well as across borders with external competence partners;
- a networking organization.

SFC's ambition is to make innovation a core competence within Skandia and foster a climate of collaboration that creates value, stimulates growth and increases the return on intellectual capital.

The twenty members of the five future teams together make up one – of several – steps in this futurizing process.





SECTION	DESCRIPTION	UNIT	VALUE	UNIT	VALUE
CUSTOMER FOCUS	Net operating income	1,000	1,000	1,000	1,000
	Market share	100	100	100	100
	Customer retention	100	100	100	100
	Customer satisfaction	100	100	100	100
	Customer loyalty	100	100	100	100
	Customer engagement	100	100	100	100
	Customer advocacy	100	100	100	100
	Customer retention rate	100	100	100	100
	Customer lifetime value	100	100	100	100
	Customer churn rate	100	100	100	100
HUMAN FOCUS	Number of employees	100	100	100	100
	Employee retention	100	100	100	100
	Employee satisfaction	100	100	100	100
	Employee engagement	100	100	100	100
	Employee productivity	100	100	100	100
	Employee turnover	100	100	100	100
	Employee development	100	100	100	100
	Employee well-being	100	100	100	100
	Employee diversity	100	100	100	100
	Employee loyalty	100	100	100	100
RENEWAL & DEVELOPMENT FOCUS	Renewal rate	100	100	100	100
	Development rate	100	100	100	100
	Renewal & development score	100	100	100	100
	Renewal & development index	100	100	100	100
	Renewal & development ratio	100	100	100	100
	Renewal & development trend	100	100	100	100
	Renewal & development forecast	100	100	100	100
	Renewal & development outlook	100	100	100	100
	Renewal & development strategy	100	100	100	100
	Renewal & development plan	100	100	100	100
FINANCIAL FOCUS	Revenue	100	100	100	100
	Profit	100	100	100	100
	Assets	100	100	100	100
	Liabilities	100	100	100	100
	Equity	100	100	100	100
	Debt	100	100	100	100
	Income	100	100	100	100
	Expenses	100	100	100	100
	Net income	100	100	100	100
	Return on investment	100	100	100	100

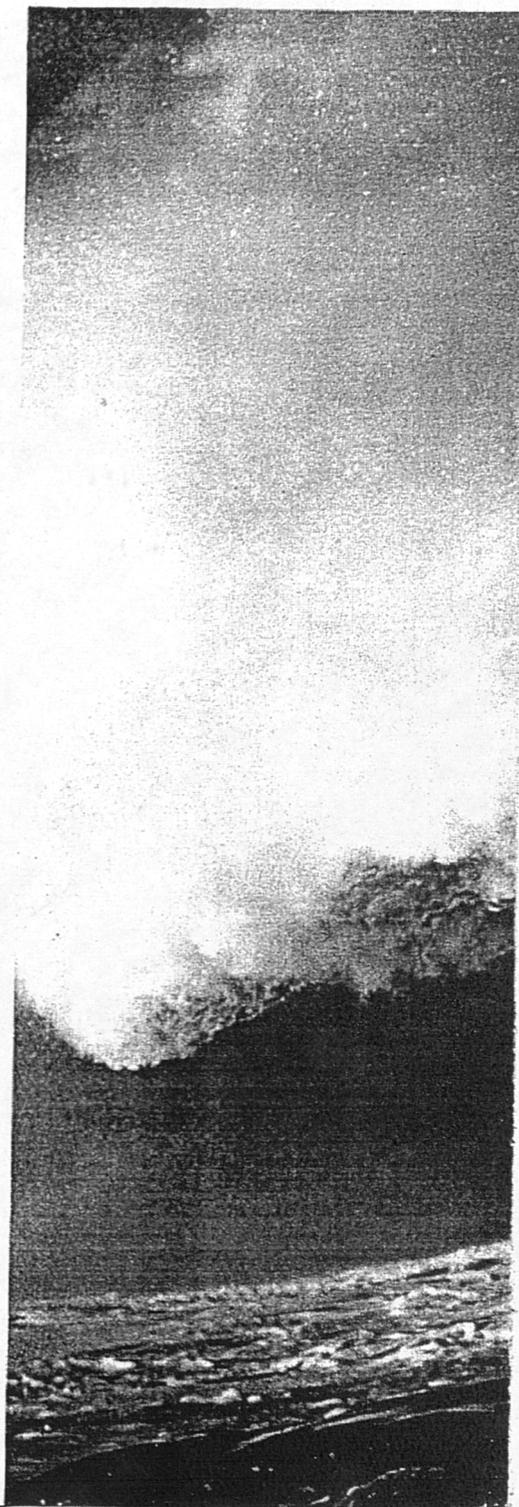
For information or to order copies of:

- Visualizing Intellectual Capital
- Intellectual Capital: Renewal & Development
- Value-Creating Processes
- CD-ROM About Intellectual Capital,

please contact Skandia,  
Market Communications,  
tel: +46-8-788 10 00  
fax: +46-8-788 26 85  
Internet: IC@af.s.skandia.se  
<http://www.skandia.se>

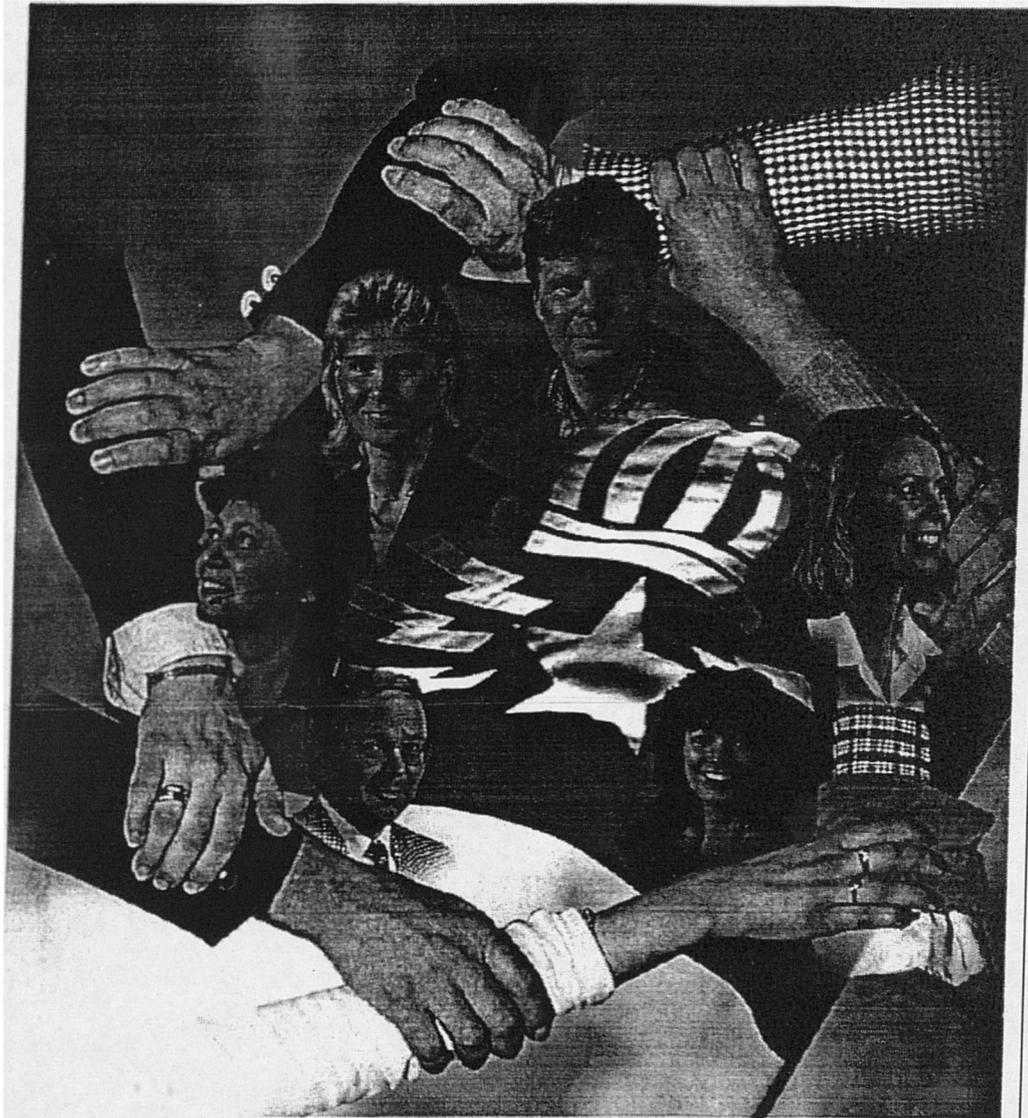


**Security for Generations**

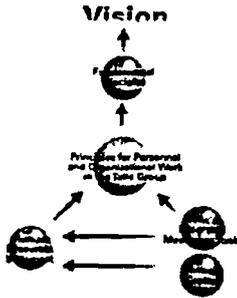


APPENDIX 3: TELIA'S STATEMENT OF HUMAN  
RESOURCES, 1996

**Statement of**  
*Human Resources 1996*



## Our Operating Environment



A company's ability to create value-added used to depend on how skillfully it could use limited resources - raw materials, manufacturing processes, and financing - more cheaply and effectively.

Today, a modern, knowledge-based company's competitive advantage is based on its ability to create value-added using the intangible assets that are in such short supply. Staff expertise is no longer one resource among several but the crucial resource, the deciding factor in competition. In contrast to other means of production, competence has the wonderful characteristic of improving and expanding with use. In contrast to previous beliefs, the new approach allows a company to use this resource without having to own it. Rather, it is the company's task to create conditions that attract the best human resources and motivate them to give their all while they are part of the organization.

These insights are so new that the business world largely lacks the tools to evaluate and manage intangible resources. At the same time, the realization is growing that statistics and reports, which constitute a virtual flood in many companies, seldom provide the information that is most vital to the company's development and survival.

### TELIA'S DEVELOPMENT WORK

Previously, we at Telia tried to fit human resources into a traditional accounting model (balance sheet and income statement) in an attempt to value these intangible assets. In 1996, we implemented a new, integrated measuring tool (TIM) at Telia to evaluate the development of and connections between market capital, human capital, and financial efficiency.

### TELIA'S MODEL

The Telia Group will be permeated with shared, uniform values and principles, which will guide all operations.

These fundamental principles show how we work at Telia and how we have chosen to structure our operations to pursue our business concept and realize our vision. Our Principles for Personnel and Organizational Development illustrates how we will manage and develop human capital to generate results in the future.

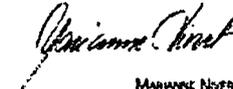
Telia is increasingly developing into an information and knowledge company. To give a balanced and accurate picture of Telia's value in the market and significance for our customers, we must structure information about our assets in a non-traditional manner.

That is why we have created a structure to describe and evaluate the personnel as a resource in the company. Just as the traditional process employs uniform terminology and accounting principles to describe financial capital, our structure has led to the creation of a common language to describe and evaluate our human capital and its capacity to generate results.

In Principles for Personnel and Organizational Development, we define 11 areas crucial for Telia's success. In these areas, we describe how we will work to have an impact on future results. We have also defined indicators by which we can measure our progress.

We have chosen to present the information at a consolidated level and, when possible, compare values over time.

We will continue to develop our human resources statement so that in the future it will be an even better instrument for measuring and highlighting Telia's competitive strength and ability to develop.

  
 MARIANNE NIVERT  
 SENIOR FINANCIAL VICE PRESIDENT  
 TELIA GROUP

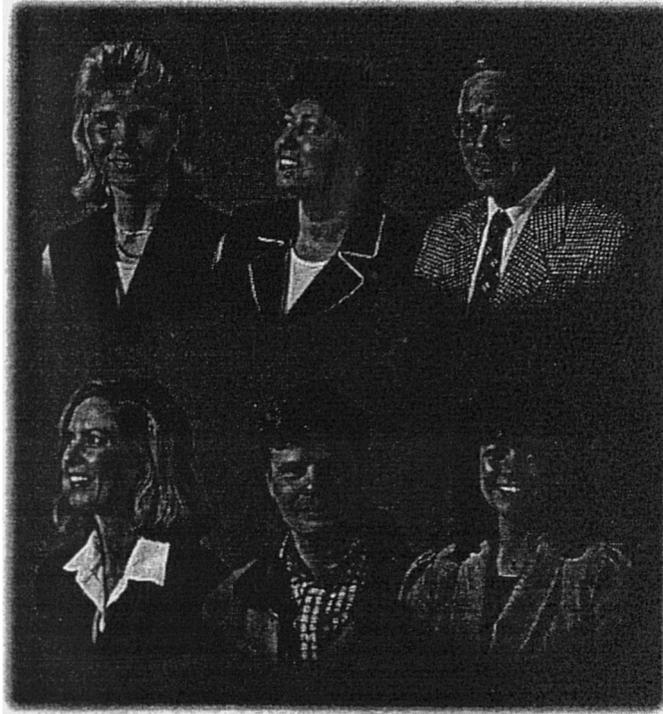
## Key Human Resource Ratios for the Telia Group 1996

	1994	1995	1996
<b>Our Staff and Our Managers</b>			
Number of employees	32,593	33,066	34,182
% managers	8.2	6.5	4.4
<b>Internal Communication</b>			
No. of employees with access to electronic mail	N/A	N/A	22,900
Number of employees with Telia's PC Driver's License	N/A	N/A	3,500
<b>Human Resource Requirements/Recruitment and Mobility*</b>			
<b>Personnel turnover</b>			
<i>recruitment</i>	1.8	4.4	4.9
<i>retirement</i>	1.1	2.3	1.6
<i>other attrition</i>	10.9	3.8	3.7
Internal mobility	6.1	8.1	15.6
<b>Organization and Working Methods</b>			
<b>Travel</b>			
<i>trips/employee by air</i>	2.7	3.1	3.7
<i>trips/employee by train</i>	0.74	0.8	1.0
<i>km with own car/employee</i>	2,520	2,210	1,670
No. of videoconferencing installations under Telia management	N/A	N/A	100
<b>Remuneration and Conditions</b>			
Salaries and wages, MSEK excluding social security contributions	7691	7948	8876
Number of suggestions/employee	N/A	0.5	0.4
Total awarded, MSEK	N/A	8	5
<b>Work Environment</b>			
Absenteeism due to illness, %	4.5	4.1	3.3
Occupational injuries per 1,000 employees	8.7	6.3	4.4
<b>Equal Opportunity</b>			
% women/men, all employees	38/62	39/61	36/64
% women/men, managers	19/81	23/77	26/74

\* Personnel turnover refers to the number of exits in each respective category expressed as a percentage of the total number of employees. The high internal mobility for 1996 is somewhat misleading, because it is mainly a result of the reorganization still under way.



## Our Staff and Our Managers



Breakdown of Time, Tella Group



- Absenteeism due to illness, 2.2%
- Vacation, 11.8%
- Personal leave, 2.7%
- Other absence, 0.2%
- Leave of absence, 1.7%
- Time worked excluding overtime, 91.2%

It is vital that our customers, alliance partners, and staff perceive Tella to be a united and efficient Group.

To empower staff and managers to meet customer needs, in 1996 we created project-oriented, cross-functional teams and organized our work into processes. To establish and strengthen uniform values, principles, and working methods common throughout the Group, all Tella managers will participate in a management development program on Tella's Fundamental Principles. During 1996, 250 of Tella's some 1,500 managers participated in the program.

**1997 Goal:** All managers have participated in the program.

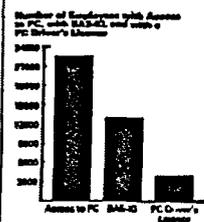
At Tella, managers and staff should balance the time they spend on work, leisure, and activities such as parenting. We believe that balance is the only way to ensure that the time spent at work will generate results. Balance also reduces the negative effects work can have on health. Of the total hours worked in 1996, 2.6% were paid overtime. 11% of Tella's employees work on a trust basis with unregulated working hours.

## Internal Communication



At Telia, we share responsibility for providing and searching for information. To achieve widespread and effective distribution of information, we need a common technical platform. That is why work commenced in 1996 to introduce a standardized infrastructure for the whole Group: Telia's BAS-K1. Standardization will provide a stable and secure IT environment for handling information and will enable the implementation of change in a fast and secure manner. Standardization will also facilitate internal mobility. It will be even easier to get started at a new position in Telia. Today, around 13,500 staff members have access to the new platform.

**1997 Goal:** At least 18,000 computer users working in the new IT environment. International studies show that incorrect PC use resulting from a lack of skills leads to losses of about SEK 60,000 per person in operations and production. For the Telia Group, the goal is for all staff members to reach a skills level that minimizes such losses. To ensure that all employees obtain the maximum benefits from the new IT environment, Telia introduced a "PC Driver's License." To qualify for a PC Driver's License, staff members must pass theoretical and practical tests that show they have attained the necessary level of knowledge.



STATEMENT OF HUMAN RESOURCES 6



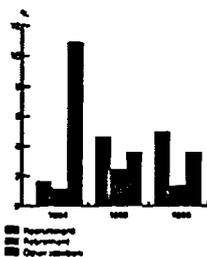
## Human Resource Requirements/Recruiting and Mobility

To successfully face the competition and fulfill our customers' needs, we must make sure that we always have qualified personnel.

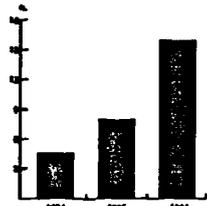
We want to achieve this by making the most of internal resources and by boosting our

store of new competence. We believe that reasonable mobility promotes cooperation within the Group and provides staff with a wider perspective, enabling them to better satisfy customer demands.

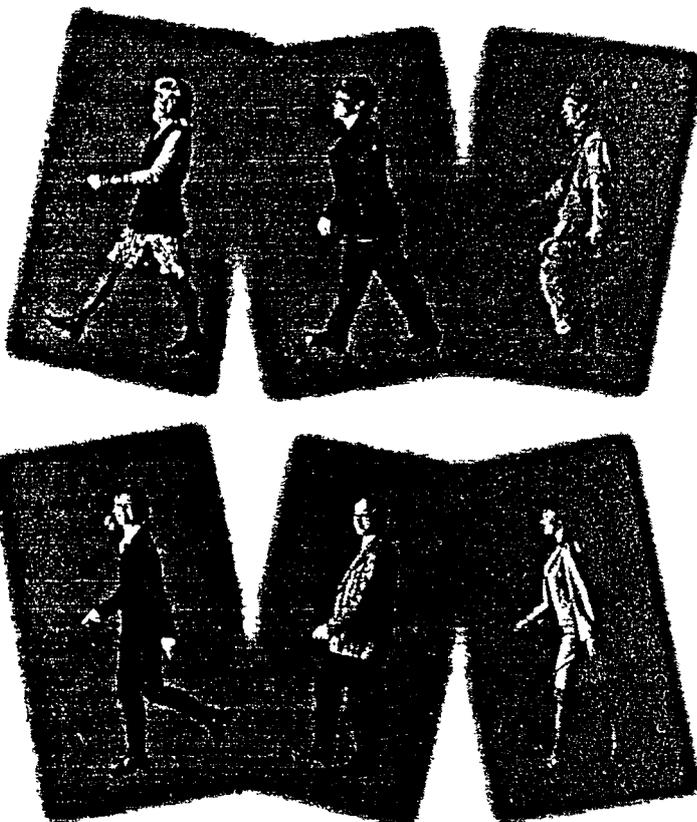
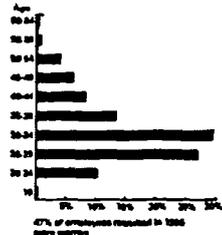
Internal Mobility (%), TSB Group



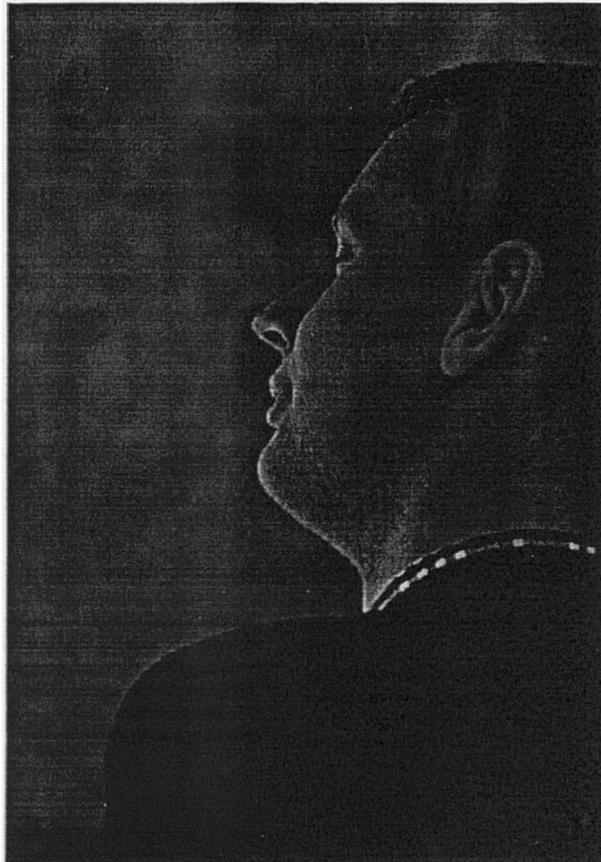
Internal Mobility between Companies in the TSB Group (%)



Profile of Your Employees, TSB 1996



## Competence Development



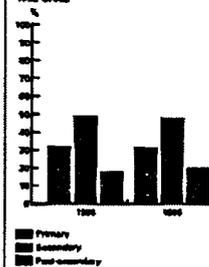
Competence development consists of personal development, experience, and pure knowledge acquisition. It can be achieved through mentor programs, learning on the job, internal mobility, or further education. We can also recruit with the aim of raising

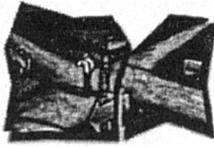
the general level of competence in the Group.

At Tetia, we work actively with all these forms to develop competence. Currently, we are focusing on the development of formal competence only.

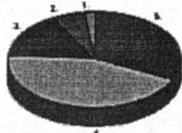


Professional Level of Employees, Tetia Group



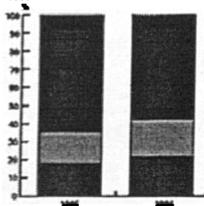


Distribution of Employees by Process, 1995



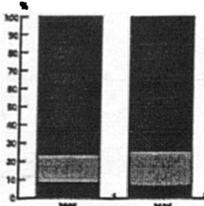
- Main processes
- 1. Business Control, 1.0%
  - 2. Product Development, 4.7%
  - 3. Marketing & Sales, 19.4%
  - 4. Service Production, 44.3%
  - 5. Support processes, 30.6%

Distribution of Employees by Operational Area, 1995



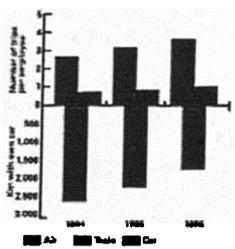
- Research/Development
- Installation
- Customer Maintenance
- Marketing/Sales
- Support functions
- Other

Distribution of Executives by Functional Area



- Internal control operations
- Product office
- Marketing/Sales
- Planning/Development
- Management Control

Trend in Tele



## Organization and Working Methods



To become a more efficient organization, we will focus our attention and energy on our customers and those work flows that lead to direct efforts on behalf of customers. Accordingly, in 1996 we began structuring our business activities into processes that the Group would have in common and that entail working with task-oriented projects in cross-functional teams.

Preparatory work has reached different stages in different areas of the Group, but the structural changes will be realized during 1997.

Many of our employees have chosen to telecommute to improve the quality of their lives. Staff members who work out of their homes on a regular basis sign a special agreement with Telia. In 1997, each company in the Group will study what proportion of staff telecommutes. At the same time, we are reevaluating the definition of telecommuting so that the results of these studies are informative.

As an alternative to face-to-face meetings, videoconferences can be used at about 100 installations owned by Telia. This form of telecommunication is one way of reducing internal travel and the strain on the environment. It also gives us more time to focus on production. Other alternatives to face-to-face meetings are teleconferencing and web conferences.

**1997 Goal: Develop support systems to be able to monitor capacity utilization of videoconference installations and set goals to increase the use of videoconferencing.**

It is important for us to be where the customer is. That is why we have chosen a decentralized organization with work groups distributed among several communities in Sweden. This has initially led to increased travel. In 1997, we should successively expand the use of telecommunications as opposed to travel.

## Remuneration and Conditions



Salaries paid in millions of SEK excluding employer's social security contributions

1994	1995	1996
7,881	7,948	8,878

Telia's future depends not only on our ability to satisfy customers but on our ability to foster commitment in daily efforts towards transformation. Within the framework of our process-oriented operations, the "Your idea" concept will be one of several tools to continuously improve and adapt Telia's operations to customers' needs.

An important part of our human resource policy is to draw attention to and reward good ideas and achievements. "Your idea" will be developed in the next few years to apply new suggestions more effectively. We

will analyze which areas generate suggestions. We also want to highlight the innovative strength in the Group through focused campaigns and by rewarding commitment to renewal.

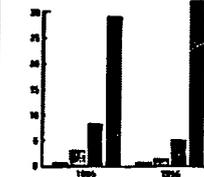
**1997 Goal:** At least one suggestion per employee.

To further nurture the energy for renewal in our Group, we formed Telia-I in 1996. Telia-I is a network that will serve as a greenhouse for innovation. About 30 innovation promoters will highlight and champion ideas that can be developed to benefit customers and to become profitable businesses for Telia.

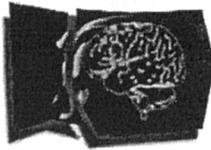
\* Note that not all units in the Telia Group have utilized the "Your idea" concept, so the statistics shown here comprise only units involved.



Suggestion Activity at Telia



■ Number of suggestions/employee  
 ■ Number of suggestions/employee  
 ■ Average per employee  
 ■ Income from the activity, MSEK



## Work Environment

In 1996, we added employer-employee collaboration on the work environment to the Group contract on structures for concentrated, active participation. Thanks to this, issues concerning the work environment are no longer dealt with almost as an afterthought but are being incorporated in the same system as other, traditional issues eliciting staff input.

By implementing uniform work routines, we have adapted tasks aimed at internal control of the work environment, which must be dealt with systematically according to the Workers' Protection Act, to our process-oriented operations. Internal control should make demands on and support all processes to benefit the Group's business development. At the same time, control should promote the physical and mental well-being, commitment, quality of life, and development of each staff member. The demands of society must also be satisfied.

To delegate work environment issues further out in the organization, we want to raise the level of expertise on these issues. That is why we have developed a model for certification of managers' work environment expertise.

## Equal Opportunity and Diversity

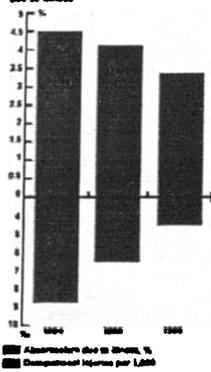
It is vital for Telia's business success that we satisfy our customers' diverse needs.

Therefore, one of our goals should be for Telia's human resources to reflect and represent the diversity of our customers and society as a whole. To reach this goal, we are making continuous efforts to enhance equal opportunity, which is being incorporated into the work process as a natural part. This work has reached different stages in different parts of the Group.

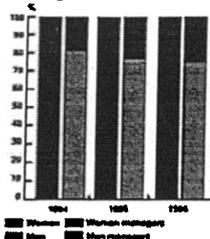
**1998 Goal: 30% of all managers are women.**

We are pursuing active recruitment to achieve a more even gender distribution and to find staff members with more experience from other countries and cultures. Telia is rapidly expanding its business abroad and needs staff members who are familiar with conditions in countries where the Group is active and who can deal with those new customer segments on their terms. In 1997, Telia intends to implement its second program to attract well-educated people with culturally diverse backgrounds who can contribute international expertise to the Group.

Occupational Injuries and Absenteeism due to Illness



Gender Distribution of Employees and Managers



## Definitions

### **TELIA'S FUNDAMENTAL PRINCIPLES**

Principles for working together in the Telia Group, structuring and building our operations, and for managing and following up such work to achieve efficiency in the decision-making process and to reach our desired results. Principles encompass our business concept, values, strategies, business control, organizational principles, and processes as well as rules, guidelines, and recommendations for operations.

### **PRINCIPLES FOR PERSONNEL AND ORGANIZATIONAL DEVELOPMENT WORK AT THE TELIA GROUP**

Telia's principles for managing personnel and organizational work in the Group to achieve business goals.

### **TELIA'S INTEGRATED MEASURING TOOL (TIM)**

An internal tool used in the business control process to measure the development of and connections between human capital, market capital, and financial efficiency.

#### **Human Capital**

A measurement of the staff's and organization's ability to create value and efficiency.

#### **Market Capital**

The value that the market perceives Telia delivers to its customers.

#### **Financial Efficiency**

The financial results in the form of cash flow and profitability.

### **TELIA'S MESSAGING SYSTEM (TMS)**

System for transmitting electronic mail tailored to Telia's needs.

### **IT**

Information technology. Used interchangeably for different telecommunication and computer applications.

### **BAS-KI**

Basic Office Information. The Telia Group's standardized suite of computer applications Programs that enable communication (e-mail and Internet/Intranet), word processing, spreadsheet calculations, presentation and the development of databases.

### **COMPETENCE**

The sum of each person's knowledge, skills, experience, attitudes, and networks.

### **PROJECT**

Assignment of a non-recurring nature that is limited with respect to its results, deadline, and cost.

### **PROCESS**

A work flow of the elements follow-up/reporting, analysis/strategic options, planning/decision making, and implementation.

### **TELECOMMUTING**

A change in the spatial organization of work (for example, an employee can carry out all or part of his or her work from home instead of at the regular workplace) during an agreed period of time.

### **TELIA'S VALUES**

Development, cooperation, and commitment.

### **DIVERSITY**

Diversity refers here to differences in gender, age, expertise, and cultural background.

Additional copies of the **Statement of Human Resources 1998** can  
be ordered via fax from +46 8 604 5472 (Telia Trycksakslager, Farsta)

JETLAG KOMMUNIKATION 1997. PUNKTEN TRYCKERI AB 1 068/97 LITA 802 1315

Telia AB,  
Corporate Personnel  
SE-123 86 FARSTA



# APPENDIX 4: EXTRACT FROM CFR's 1997 ANNUAL REPORT



## Actual performance versus Statement of Corporate Intent

Indicator	Target	Achievement
<b>Good employer</b>		
Regulatory compliance	Develop and implement procedures to ensure compliance with federal regulations and legislation	Codes and procedures are in place and safety compliance is maintained
Productivity	Complete a program of action in response to the 1995 contract survey	The program of action reviewed by the process and the contract changes were made in the year of study
Staff development	Continue to invest resources in staff development and training	Jobs are structured for training and development. Staff development process completed through performance management system
<b>Social responsibility</b>		
Environmental goals	Reduce compliance expenditures in areas of waste management and environmental	Our primary resource management practice is being implemented
Quality of Working Life	Promote Quality of Working Life	Construction continues with Quality of Working Life which leads to the quality of working life
Education	Support science education	Supporting of science fair, biotechnology resource kit, school visits
<b>Financial</b>		
Total revenue	\$27,071,200	\$27,659,000
Percentage of (BEST and MALS) revenue to total revenue	71.5%	69.4%
Profit before tax	\$1,248,400	\$1,558,000
Current ratio	1.12:1	1.17:1
Return on assets	7.5%	5.4%
Return on equity	6.1%	6.0%
Proprietorship	73.5%	70.1%



Actual performance versus Statement of Corporate Intent		
Indicator	Target	Achievement
<b>Benefit to New Zealand</b>		
Benefit to New Zealand	New Zealand sales have been a vital component of our growth strategy. We have developed a...	Our sales in New Zealand have been a vital component of our growth strategy. We have developed a...
<b>Technology transfer</b>		
New and continuing joint ventures	5 new joint ventures, 130 commercial contracts, 20 joint ventures and...	185 joint ventures, 185 commercial contracts, 20 joint ventures and...
Information exchange	33 papers published, 80 papers published, 20 joint ventures and...	42 papers published, 80 papers published, 20 joint ventures and...
Human services	1000 services provided, 1000 services provided, 1000 services provided...	1000 services provided, 1000 services provided, 1000 services provided...
Intellectual property	New patents granted, 1000 patents granted, 1000 patents granted...	1000 patents granted, 1000 patents granted, 1000 patents granted...
<b>Excellence</b>		
Key business processes	1000 key business processes, 1000 key business processes, 1000 key business processes...	1000 key business processes, 1000 key business processes, 1000 key business processes...
Quality of products	1000 quality of products, 1000 quality of products, 1000 quality of products...	1000 quality of products, 1000 quality of products, 1000 quality of products...
Time to market	1000 time to market, 1000 time to market, 1000 time to market...	1000 time to market, 1000 time to market, 1000 time to market...
Key operating systems	1000 key operating systems, 1000 key operating systems, 1000 key operating systems...	1000 key operating systems, 1000 key operating systems, 1000 key operating systems...
Global	1000 global, 1000 global, 1000 global...	1000 global, 1000 global, 1000 global...
<b>Human capital</b>		
Staff	1000 staff, 1000 staff, 1000 staff...	1000 staff, 1000 staff, 1000 staff...



## APPENDIX 5: EXTRACT FROM ESR's 1997 ANNUAL REPORT

### Scientific output performance indicators

	Actual	Target
Invitations to address conferences, act as referees, participate on Scientific Boards and Committees	61	40
Publication in refereed journals	21	30
Funding from external research purchasers, \$M	1.9	2.4
Value of external training programmes, \$000	166	350
Successful challenges of expert evidence	Nil	Nil
Training & development: revenue, %	1.4	4.0
Staff turnover, %	13	15
Value of public good services provided in New Zealand, \$M	20.0	21.9
Value of graduate scholarship programmes, \$000	63	60

### Key financial performance measures

	Year ended 30/6/97	Target	Year ended 30/6/96
Revenue, \$M	26.8	29.3	27.0
Profit, \$M	(0.64)	(0.03)	0.33
Return on equity, %	(5.5)	(0.3)	2.9
Return on assets, %	(7.4)	5.1	2.4
Current Ratio	0.70	0.67	1.09
Proprietorship, %	61.1	59.2	62.3
Gearing, %	18.6	16.3	17.6
Interest Cover	0.0	3.0	1.6
Revenue/FTE, \$000	85.5	88.7	84.4

*Targets are as stated in the Statement of Corporate Intent*

Annual Report 1996/1997



©

## APPENDIX 6: EXTRACT FROM IRL'S 1997 ANNUAL REPORT

INDUSTRIAL RESEARCH LIMITED AND SUBSIDIARIES



	Actual	SCI
<b>Science</b>		
Completed PGSF objectives	96%	90%
Papers submitted for publishing	140	130
Invitations to scientists to speak at conferences	23	6
International collaborative agreements	2	2
<b>Technology Transfer</b>		
Reports to clients	520	400
Agreements transferring or registering intellectual property	51	25
New technology for business growth (TBG) contracts	14	8
Increase overseas revenue to	\$2.4m	\$1.8m
Key commercial clients who spend more than \$50K or more on research	47	70
Patents exploited	7	5
Customer benchmark survey	1	1
<b>Human Resources</b>		
Nominations of staff for honours and awards	9	8
Training for staff at least one day duration	27%	50%
Wording of job advertisements to attract women, Maori and Pacific Island applications to at least half of all positions advertised	✓	✓
<b>Financial</b>		
<b>(a) Financial Performance</b>		
- Net surplus before interest, taxes and restructuring expenses	3,432	3,588
- Net surplus/(deficit) before tax	2,903	3,050
- Net surplus/(deficit) after tax	2,047	2,006
- Ratio of revenue to personnel costs	2.11	2.15
- % net surplus before interest, taxes and restructuring expenses to average funds employed	14.41%	14.77%
- % net surplus after tax to average shareholders' funds	10.92%	10.24%
<b>(b) Financial Position</b>		
- Current ratio	0.93	1.28
- Liquidity ratio	1.11	1.69
- Proprietorship ratio	61.06%	67.99%
- Gearing (using financial debt)	18.77%	15.90%
- Crown's nominal investment (defined as Equity and Crown Debt)	19,761	20,187
<b>(c) Other Statistics</b>		
- Capital expenditure	3,121	3,100
- Budgeted full time equivalents (FTE's)	351.02	364.02
- Available cash at year end	1,517	2,600
- Revenue per FTE (000's)	120.11	122.2

## APPENDIX 7: EXTRACT FROM LRL's 1997 ANNUAL REPORT

### NON-FINANCIAL TARGETS

	1994/95 Achieved	1995/96 Achieved	1996/97 Target	1996/97 Achieved
<b>Benefit to New Zealand</b>				
Key issues in our science area	NR	NR	NT	narr. p10 - 19
% Research Portfolio PGSF	60%	58%	NT	58%
<b>Facilitation of the application of research</b>				
% other Public Good Agencies	17%	16.2%	NT	18.5%
Popular articles (incl. news media)	>500	>360	NT	>500
Contract reports	392	NR	NT	146
WWW usage	NR	NR	NT	>363,000pages
Seminars and training workshops	>70	136	NT	>160
User participation in research	NR	NR	narr.	narr. p21
<b>Ethics</b>				
AEC: Applications and approvals	narr.	32	narr.	40 (+ narr.) p22
<b>Excellence</b>				
Project management	NR	NR	NT	narr. p23
Environmental accounts	narr.	narr.	tabled acct	narr. p23
Customer satisfaction	NR	NR	narr.	narr. p23
% PGSF Progs. completed to FRST satisfaction	100%*	100%*	100%*	100%*
% FRST Outputs completed on time	90%	92%	NT	92%
Refereed papers published	NR	NR	170	>160
Reviews of research programmes	NR	NR	narr.	4 external
<b>Human capital</b>				
Retention or recruitment difficulties	narr.	narr.	narr.	narr. p25
<b>Good employer</b>				
Days lost to injuries	183	40.5	<40.5	107
ACC claims	\$39,000	\$6,000	<\$6,000	\$1,000
% Salary costs invested in training	1.5%	2.2%	Up to 2%	1.8%
<b>Social responsibility</b>				
Treaty of Waitangi initiatives	narr.	narr.	narr.	narr. p27
Community consultation and participation	narr.	narr.	narr.	narr. p27
Policy development	NR	narr.	narr.	narr. p28
Promoting science (including education)	narr.	narr.	narr.	narr. p28
Advocacy	NR	NR	narr.	narr. p29

\* subject to FRST Review and Evaluation Procedures which will be completed by October 1997.  
We have no indications that performance will be below 100%.

NR not reported on  
NT no target set

narr. reported on by narrative; no quantitative target — see pages indicated

## **APPENDIX 8: DEFINITIONS OF TERMINOLOGY USED IN CRIS' PERFORMANCE INDICATORS**

### **STAFF COMPOSITION**

SCIENTISTS AND SCIENCE TECHNICIANS – all staff directly involved in actual research or scientific research. If they could conceivably be authors named on a scientific publication, they should be included.

SCIENCE SUPPORT – any staff whose work logistically supports the research effort directly, but whose work could not of itself be described as research. For instance: laboratory assistants, research report editors, librarians, nursery staff, farm staff, ship crew and workshop staff.

GENERAL SUPPORT – activities that support the generic non-research or infrastructure component of the CRI as a whole. Included here are financial, accountancy, salary, personnel, secretarial, stores and maintenance staff.

MARKETING, PROMOTION AND LIAISON – although elements of these activities are undertaken by many staff, this category should be confined to those staff who have designated positions.

MANAGEMENT – this category covers those that formulate strategy, plan and direct the CRI beyond the limits of a single science program. It should not be reserved solely for staff designated as 'management', but for management activities performed by any staff that are an overhead and not accounted for directly within a program or project budget.

### **PUBLICATIONS**

PAPERS IN INTERNATIONAL, EXTERNALLY REFEREED SCIENTIFIC JOURNALS, SERIES OR BOOKS – the term 'international' also refers to New Zealand journals as long as they are included in standard citation lists.

PAPERS IN LOCAL, INTERNALLY OR EDITOR REFEREED JOURNALS, SERIES OR BOOKS – the term 'local' refers to the distribution, not to the country of origin. Publications in journals of local scientific societies, in-house publications, trade or sector journals are included.

CONFERENCE PAPERS AND ABSTRACTS – this category covers non-refereed short papers and abstracts accompanying presentations at scientific or technical conferences. Long refereed papers published in conference proceedings should be included in the first category in this list.

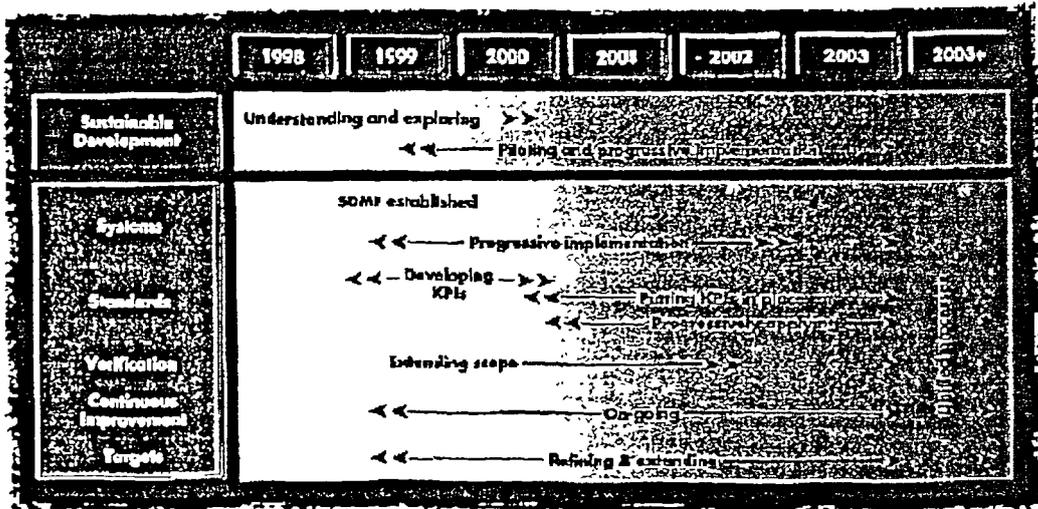
RESEARCH MONOGRAPHS OR BOOKS – scientific and technical works reporting primary scientific data or analysis.

POPULAR BOOKS – scientific or technical works that report little or no primary scientific data or analysis and are primarily aimed at a general audience. This category includes textbooks.

SCIENTIFIC AND TECHNICAL REPORTS – client commissioned consultancy reports that may also contain new scientific work but are refereed internally, are generally the property of the client and of limited distribution.

Source: CCMAU (1998).

# APPENDIX 9: SHELL'S SUSTAINABLE DEVELOPMENT ROAD MAP



Source: The Shell Report, 1999 (p.36)

# ***BIBLIOGRAPHY***

- ADAMS C. AND ROBERTS P. (1993), 'You are what you measure', *Manufacturing Europe 1993*, pp.504-507
- ALBERT M. (1993), *Capitalism against capitalism*, London: Whurr
- ALFORD L.P. (1940), *Principles of industrial management*, New York: Ronald Press Company
- ALLEN D. (1999), 'Scorekeepers...or scorers?', *Management Accounting*, May, p.18
- ALLEN T.J. (1977), *Managing the flow of technology*, Cambridge: MIT Press
- AMERICAN ACCOUNTING ASSOCIATION (1971), 'Report of the committee on accounting theory construction and verification', *The Accounting Review*, Supplement to vol. XLVI, pp.50-79
- AMERICAN ACCOUNTING ASSOCIATION (1973), 'Report of the committee on human resource accounting', *The Accounting Review*, Supplement to vol. XLVIII, pp.169-185
- APPLEBAUM E. AND BATT R. (1994), *The new American workplace: transforming work systems in the United States*, Ithaca: ILR Press
- ARGYRIS C. AND SCHÖN D.A. (1978), *Organizational learning: a theory of action perspective*, Reading: Addison Wesley
- ARMSTRONG M. (1987), 'Human resource management: a case of the emperor's new clothes?', *Personnel Management*, Vol.19 No.8, pp.30-35
- ARMSTRONG M. AND LONG P. (1994), *The reality of strategic HRM*, London: Institute of Personnel and Development
- ARMSTRONG P. (1995), 'Accountancy and HRM', in J. Storey (ed.), *Human resource management: a critical text*, London: Routledge

- ASSC (1975), *The corporate report - a discussion paper*, London: Accounting Standards Steering Committee
- BAIRD L. AND MESHOULAM I. (1988), 'Managing two fits of strategic human resource management', *Academy of Management Review*, Vol.13, pp.116-128
- BAKER G.M.N. (1974), 'The feasibility and utility of human resource accounting', *California Management Review*, Summer, pp.17-23
- BALDWIN A.D. AND KASPER G.M. (1986), 'Toward representing management-domain knowledge', *Decision Support Systems*, Vol.2, pp.159-172
- BARNEY J.B. (1991), 'Firm resources and sustained competitive advantage', *Journal of Management*, Vol.17, pp.99-120
- BATESON G. (1972), *Steps to an ecology of mind*, New York: Ballantine
- BAXTER W.T. (1971), *Depreciation*, London: Sweet & Maxwell
- BEARDWELL I. AND HOLDEN L. (1994), *Human resource management: a contemporary perspective*, London: Pitman
- BEAUMONT P.B. (1992), 'The US human resource management literature: a review' in G. Salaman (ed.), *Human resource strategies*, London: Sage Publications
- BEAUMONT P.B. (1993), *Human resource management: key concepts and skills*, London: Sage Publications
- BEAVER W.H. (1981), *Financial reporting: an accounting revolution*, Englewood Cliffs: Prentice Hall
- BECKER B. AND GERHART B. (1996), 'The impact of human resource management on organizational performance: progress and prospects', *Academy of Management Journal*, Vol.39, pp.779-801
- BECKER G.S. (1993), *Human capital: a theoretical and empirical analysis, with special reference to education*, 3<sup>rd</sup> ed., Chicago: The University of Chicago Press

- BERRIDGE J. (1992), 'Human resource management in Britain', *Employee Relations*, Vol.14 No.15, pp.62-92
- BEUTELL N.J. AND WALKER A.J. (1991), 'HR information systems', in Schuler R.S. (ed.), *Managing HR in the information age*, Washington: The Bureau of National Affairs
- BHASKAR K.N. AND HOUSDEN R.J.W. (1985), *Accounting information systems & data processing*, London: Heinemann
- BILES G.E. (1986), 'Auditing HRM practices', *Personnel Administrator*, December, pp.89-93
- BILES G.E. AND SCHULER R.S. (1986), *Audit handbook of human resource management practices*, Alexandria: American Society for Personnel Administration
- BISHIR J.W. AND DREWES D.W. (1970), *Mathematics in the behavioural and social sciences*, New York: Harcourt, Brace & World Inc.
- BLAND-ACOSTA B.A. (1988), 'Developing an HRIS privacy policy', *Personnel Administrator*, July, pp.52-59
- BONTIS N. (1996), 'There's a price on your head: managing intellectual capital strategically', *Business Quarterly*, Summer, pp.40-47
- BORMAN W.C. (1991), 'Job behaviour, performance and effectiveness', in M.D. Dunnette and L.M. Hough (eds.), *Handbook of industrial and organizational psychology*, Vol.2, Palo Alto: Consulting Psychologist Press
- BOUDREAU J.W. AND RAMSTAD P.M. (1997), 'Measuring intellectual capital: learning from financial history', *Human Resource Management*, Vol.36 No.3, pp.343-356
- BOURNE H. (1999), 'Pricing: the strategic implications', *Management Accounting*, March, p.26

- BRADLEY K. (1992), 'The human capital audit and business performance', in K. Bradley (ed.), *Human resource management: people and performance*, Aldershot: Dartmouth Publishing Company
- BRENNAN B.A. (1992), 'Mind over matter: how current accounting practices hobble innovative companies', *CA Magazine*, June, p.20-24
- BREWSTER C. (1993), 'Developing a "European" model of human resource management', *International Journal of Human Resource Management*, Vol.4 No.4, pp.765-784
- BRIDGES W. (1988), *Surviving corporate transitions*, New York: Doubleday
- BROMWICH M. AND BHIMANI A. (1989), *Management accounting: evolution not revolution*, London: CIMA
- BROMWICH M. AND BHIMANI A. (1994), *Management accounting: pathways to progress*, London: CIMA
- BROMWICH M. AND HONG C. (1999), 'Activity-based costing systems and incremental costs', *Management Accounting Research*, March, pp.39-60
- BROWN W. (1981), *The changing contours of British industrial relations*, Oxford: Blackwell
- BRUMMETT R.L. (1970), 'Accounting for human resources', *New York Certified Public Accountant*, July, pp.547-555
- BRUMMETT R.L., FLAMHOLTZ E.G. AND PYLE W.C. (1968), 'Human resource measurement: a challenge for accountants', *The Accounting Review*, April, pp.217-224
- BRYANT B., FARHY N. AND GRIFFITHS A. (1994), *Self managing teams and changing supervisory roles*, Sydney: Centre for Corporate Change, AGSM
- BURCHELL S., CLUBB C., HOPWOOD A., HUGHES J. AND NAHAPIET J. (1980), 'The roles of accounting in organizations and society', *Accounting, Organizations and Society*, Vol.5 No.1, pp.5-27

- BURNS J., EZZAMEL M. AND SCAPENS R. (1999), 'Management accounting change in the UK', *Management Accounting*, March, pp.28-30
- BURNS J., SCAPENS R. AND TURLEY S. (1996), 'Some further thoughts on the changing practice of management accounting', *Management Accounting*, October, pp.58-60
- BURNS J., SCAPENS R. AND TURLEY S. (1997), 'The crunch for numbers', *Accountancy*, May, pp.112-113
- CAHILL P. (1993), 'Management accountants and virtual reality', *Management Accounting*, September, pp.46-48
- CALLUS R. (1999), 'New framework needed for fairness and flexibility', *HR Monthly*, March, pp.10-13
- CAPLAN E.H. (1966), 'Behavioural assumptions of management accounting', *The Accounting Review*, September, pp.496-509
- CAPLAN E.H. AND LANDEKICH S. (1974), *Human resource accounting: past, present and future*, New York: National Association of Accountants
- CARROLL S.J. (1987), 'Strategic planning and compensation systems', in D.B. Balkin and L.R. Gómez-Mejía (eds.), *New perspectives on compensation*, Englewood Cliffs: Prentice Hall
- CASCIO W.F. (1991), *Costing human resources: the financial impact of behaviour in organizations*, Boston: PWS-Kent Publishing Company
- CASCIO W.F. (1994), *Measuring the \$ impact of HR practices*, Adelaide, South Australia, 14<sup>th</sup> March
- CASCIO W.F. AND BAILEY E. (1995), 'International human resource management: the state of research and practice', in O. Shenkar (ed.), *Global perspectives of human resource management*, Englewood Cliffs: Prentice Hall
- CASSE P. (1994), 'People are not resources', *Journal of European Industrial Training*, Vol.18 No.5, pp.23-26

- CERIELLO V.R. (1980), 'Human resource management systems; toy or tool?',  
*Journal of Systems Management*, May, pp.36-39
- CERIELLO V.R. AND FREEMAN C. (1991), *Human resource management systems: strategies, tactics and techniques*, San Francisco: Jossey-Bass
- CHAMBERS R.J. (1966), *Accounting evaluation and economic behaviour*,  
Englewood Cliffs: Prentice Hall
- CHERNS A.B. (1978), 'Alienation and accountancy', *Accounting, Organizations and Society*, October, pp.105-114
- CHORAFAS D. (1986), *Applying expert systems in business*, New York: McGraw-Hill
- CLEGG H. (1979), *The changing system of industrial relations in Great Britain*,  
Oxford: Blackwell
- COFF R.W. (1997), 'Human assets and management dilemmas: coping with the hazards on the road to resource-based theory', *Academy of Management Review*, Vol.22, pp.374-402
- COLLINS A., BROWN J. AND NEWMAN S. (1989), 'Cognitive apprenticeship: teaching the crafts of reading, writing and mathematics', in L.B. Resnick (ed.), *Knowing, learning and instruction*, New Jersey: Lawrence Erlbaum
- COLLIS D.J. (1996), 'Organizational capability as a source of profit', in B. Moingeon and A. Edmondson (eds.), *Organizational learning and competitive advantage*, London: Sage Publications
- COMMONS J.R. (1924), *Legal foundations of capitalism*, New York: The MacMillan Company
- CONNER K.R. (1991), 'A historical comparison of resource-based theory and five schools of thought within industrial organization economics: do we have a new theory of the firm?', *Journal of Management*, Vol.17, pp.121-154

- COOPER R. (1988), 'The rise of activity based costing – part one: what is an activity based cost system?', *Journal of Cost Management*, Summer, pp.45-54
- COOPER R. AND KAPLAN R.S. (1991), *The design of cost management systems*, Englewood Cliffs: Prentice Hall
- COOPER R. AND TURNEY P.B. (1990), 'Internally focused activity-based cost systems', in R.S. Kaplan (ed.), *Measures for manufacturing excellence*, Cambridge: Harvard Business School Press
- COVEY S.R. (1990), 'Using stake-holder information systems', *Executive Excellence*, May, pp.3-6
- CROWN COMPANY MONITORING ADVISORY UNIT, NEW ZEALAND (1997), *CRI model - issues of re-investment in and accounting for human resources*, Wellington: Internal report
- CROWN COMPANY MONITORING ADVISORY UNIT, NEW ZEALAND (1998), *Discussion paper on the identification and monitoring of the key financial and non-financial performance indicators for Crown Research Institutes*, Wellington: Internal report
- DANIEL W. AND MILLWARD N. (1983), *Workplace industrial relations in Britain: the DE/PSI/ESRC survey*, London: Heinemann
- DAVENPORT T.H., DE LONG D.W. AND BEERS M.C. (1998), 'Successful knowledge management projects', *Sloan Management Review*, Winter, pp.43-57
- DAVIES R.E AND SWEETING R.C. (1993), 'The 'new' paraphernalia revisited', *Management Accounting*, February, pp.42-48
- DAVIS G.B. (1973), *Computer data processing*, 2<sup>nd</sup> ed., Tokyo: McGraw-Hill
- DIMICK E.E. AND MURRAY V.V. (1978), 'Correlates of substantive policy decisions in organizations: the case of human resource management', *Academy of Management Journal*, Vol.21, pp.611-623

- DOBIJA M. (1998), 'How to place human resources into the balance sheet', *Journal of Human Resource Costing and Accounting*, Vol.3 No.1, pp.83-92
- DODD S.C. (1955), 'Diffusion is predictable: testing probability models for laws of interaction', *American Sociological Review*, Vol.20, pp.392-401
- DONALDSON G. AND LORSCH J.W. (1983), *Decision making at the top: the shaping of strategic direction*, New York: Basic Books
- DONOVAN (1968), *Royal Commission on trade unions and employer associations*, Report, Cmnd 3623, London: HMSO
- DRUCKER P. (1955), *The practice of management*, London: Heinemann
- DRUCKER P. (1993), *Post-capitalist society*, New York: Harper Business
- DRURY C., BRAUND S., OSBORNE P. AND TAYLES M. (1993), *A survey of management accounting practices in UK manufacturing companies*, London: ACCA
- DUNPHY D. AND GRIFFITHS A. (1998), *The sustainable corporation: organisational renewal in Australia*, Sydney: Allen & Unwin
- DUNPHY D. AND MILLS J. (1982), 'Human resource planning for major projects in Australia', *Transactions of the Institution of Engineers, Australia General Engineering*, Vol.6 No.2, pp.61-65
- DYER L. (1984), 'Studying human resource strategy: an approach and an agenda', *Industrial Relations*, Vol.23 No.2, pp.156-169
- EDMONDS C.P. AND ROGOW R. (1986), 'Should human resources be reflected on the balance sheet', *Financial Executive*, January, pp.42-44
- EDWARDS P. (1967), *The Encyclopedia of Philosophy*, London: MacMillan
- EDWARDS R.S. AND BELL P. (1961), *The theory and measurement of business income*, Berkeley: University of California Press

- ELKINGTON J. (1997), *Cannibals with forks: the triple bottom line of 21<sup>st</sup> century business*, Oxford: Capstone Publishing
- ELKINGTON J. (1999), 'Triple bottom-line reporting: looking for balance', *Australian CPA*, March, pp.18-21
- ELLIOTT R.K. (1992), 'The third wave breaks on the shores of accounting', *Accounting Horizons*, June, pp.61-86
- EMERY F. (1993), 'Characteristics of socio-technical systems' in E. Trist and H. Murray (eds.), *The social engagement of social science: the socio-technical perspective*, Philadelphia: University of Pennsylvania Press
- ENGEL E. (1883), *Der werth des menschen*, Berlin: Verlag von Leonhard Simion
- FARR W. (1853), 'Equitable taxation of property', *Journal of the Royal Statisticians Society*, Vol. XVI, March, pp.1-45
- FAYOL H. (1949), *General and industrial management*, London: Pitman (first published in 1916)
- FERGUSON D.H. AND BERGER F. (1985), 'Employees as assets: A fresh approach to human-resources accounting', *The Cornell H.R.A. Quarterly*, Vol.25 No.4, pp.24-29
- FINNIE J. (1986), 'Financial evaluation of advanced manufacturing systems', in C.A. Voss (ed.), *Managing advanced manufacturing technology: proceedings of the UK Operations Management Association conference, 2-3 January 1986*, Kempston: IFS Publications
- FITZ-ENZ J. (1980), 'Quantifying the human resources function', *Personnel Journal*, Vol.57, pp.41-52
- FITZ-ENZ J. (1990), *Human value management*, San Francisco: Jossey-Bass
- FITZ-ENZ J. (1995), *How to measure human resources management*, 2<sup>nd</sup> ed., New York: McGraw-Hill

- FITZGERALD L. AND MOON P. (1996), *Performance measurement in service industries: making it work*, London: CIMA
- FLAMHOLTZ E.G. (1971), 'Should your organization attempt to value its human resources?', *California Management Review*, Winter, pp.40-45
- FLAMHOLTZ E.G. (1973), 'Human resource accounting: measuring positional replacement costs', *Human Resource Management*, Vol.12, pp.8-16
- FLAMHOLTZ E.G. (1985), *Human Resource Accounting*, 2<sup>nd</sup> ed., San Francisco: Jossey-Bass
- FLAMHOLTZ E.G. (1996), *Effective management control: theory and practise*, Boston: Kluwer Academic Publishers
- FLESHER D. AND FLESHER T. (1980), 'Human resource accounting in Mississippi before 1865', *Accounting and Business Research*, Vol.10 special issue, pp.124-129
- FOMBRUN C., TICHY N.M. AND DEVANNA M.A. (1984), *Strategic human resource management*, New York: John Wiley & Sons
- FORSON A. (1997), 'Performance measurement 2000: the growth of real-time reporting', *Journal of Strategic Performance Measurement*, December, pp.22-29
- FOUCAULT M. (1973), *The order of things: an archeology of the human sciences*, New York: Vintage Books
- FOUNDATION FOR PERFORMANCE MEASUREMENT (1999), *The well rounded annual report*, London
- FOWLER A. (1987), 'When Chief Executives discover HRM', *Personnel Management*, Vol.19 No.1, p.3
- FRENCH S.H. Jr. (1954), 'Measuring progress toward industrial relations objectives', *Personnel*, Vol.5, pp.338-347

- FRIEDMAN A. AND LEV B. (1974), 'A surrogate measure for the firm's investment in human resources', *Journal of Accounting Research*, Autumn, pp.235-250
- FRY T.D., STEELE D.C. AND SALADIN B.A. (1995), 'The role of management accounting in the development of a manufacturing strategy', *International Journal of Operations & Production Management*, December, pp.21-31
- GAISS M. (1998), 'Enterprise performance management', *Management Accounting*, December, pp.44-46
- GALBRAITH J. AND KAZANJIAN R.K. (1986), *Strategy implementation: structure, systems and process*, 2<sup>nd</sup> ed., Reading: Addison Wesley
- GALBRAITH J. AND NATHANSON R. (1978), *Strategy implementation: the role of structure and process*, St. Paul: West Publishing
- GALL S. (1995), 'We must not hide the ugly face of war', *Evening Standard*, 14<sup>th</sup> November, p.9
- GALLAGHER M. (1986), *Computing and personnel management*, London: Heinemann
- GAMBLING T.E. (1974), 'A systems dynamics approach to HRA', *The Accounting Review*, July, pp.538-546
- GARVIN D.A. (1993), 'Building a learning organization', *Harvard Business Review*, July/August, pp.78-91
- GERHART B. AND MILKOVICH G.T. (1992), 'Employee compensation: research and practice', in M.D. Dunnette and L.M. Hough (eds.), *Handbook of industrial and organizational psychology*, Vol.3, Palo Alto: Consulting Psychologist Press
- GILBERT R. (1997), 'Profitable people', *People Management*, Vol.3 No.1, pp.22-27
- GLAUTIER M. AND UNDERDOWN B. (1973), 'Problems and prospects of accounting for human assets', *Management Accounting*, March, pp.98-102

- GLOBERSON A., GLOBERSON S. AND FRAMPTON J. (1991), *You can't manage what you don't measure*, Aldershot: Avebury
- GOFFEE R. AND HUNT J. (1996), 'The end of management? Classroom versus the boardroom', *Financial Times*, 22<sup>nd</sup> March
- GOLDRATT E. AND COX J. (1984), *The goal*, London: Gower
- GÓMEZ-MEJÍA L.R. (1994), *Fostering a strategic partnership between operations and human resources*, Scarsdale: Work in America Institute
- GORDON M.E. (1972), 'Three ways to effectively evaluate personnel programs', *Personnel Journal*, Vol.51, pp.498-510
- GOSSE D.I. (1993), 'The role of cost accounting in a computer-integrated manufacturing environment: an empirical field study', *Journal of Management Accounting Research*, Vol.5, pp.159-179
- GRAMM W.S. (1981), 'Property rights in work', *The Journal of Economic Issues*, June, pp.363-375
- GRAY R. (1994), 'Social and environmental accounting, accountability and reporting: new wine in old skins or silk purses from sows' ears', *Accounting Forum*, March, pp.4-30
- GRAY R., OWEN D. AND ADAMS C. (1996), *Accounting and accountability: changes and challenges in corporate social and environmental reporting*, Hemel Hempstead: Prentice Hall
- GRAY R., OWEN D. AND MAUNDERS K. (1987), *Corporate social reporting: accounting and accountability*, Hemel Hempstead: Prentice Hall
- GREENE R. AND BARRETT K. (1994), 'Auditing the accounting firms', *Financial World*, 27<sup>th</sup> September, pp.30-34
- GRINOLD R.C. AND MARSHALL K.T. (1977), *Manpower planning models*, New York: North-Holland

- GRÖJER J-E. AND JOHANSON U. (1991), *Human resource costing and accounting*, Stockholm: Arbetarskyddsämnden
- GUEST D.E. (1987), 'Human resource management and industrial relations', *Journal of Management Studies*, Vol.24 No.5, pp.503-521
- GUEST D.E. AND HOGUE K. (1994), as reported in *Personnel Management Plus*, May, p.1
- GUL A. (1984), 'An empirical study of the usefulness of human resource turnover costs in Australian accounting firms', *Accounting, Organizations and Society*, Vol.9 No.3/4, pp.233-239
- GUTH W.D. AND TAGIURI R. (1965), 'Personal values and corporate strategy', *Harvard Business Review*, September/October, pp.123-132
- HALLY D.L. (1994), 'Cost accounting for the 1990s', *Finance*, December, pp.129-182
- HANDY C. (1994), *The age of paradox*, Boston: Harvard Business School Press
- HANDY C. (1996), 'Intelligence - capitalism's most potent asset', *HR Monthly*, December, pp.8-11
- HANDY L., BARHAM K., PANTER S. AND WINHARD A. (1989), 'Beyond the personnel function: the strategic management of human resources', *Journal of European Industrial Training*, Vol.13 No.1, pp.13-18
- HARE R.M. (1982), *Plato*, Oxford: Oxford University Press
- HARRELL A.M. AND KLICK H.D. (1980), 'Comparing the impact of monetary and non-monetary human asset measures on executive decision making', *Accounting, Organizations and Society*, Vol.5 No.4, pp.393-400
- HAUSER J. AND KATZ G. (1998), 'Metrics: you are what you measure', *European Management Journal*, Vol.16 No.5, pp.517-528
- HAWKINS M.D. (1988), 'Micros and mainframes: emerging systems to support HRP's newer roles', *Human Resource Planning*, November, pp.21-25

- HAYES R.H. AND PISANO G.P. (1994), 'Beyond world-class: the new manufacturing strategy', *Harvard Business Review*, January/February, pp.77-86
- HEARNE J. (1999), 'Welcome to new age management', *Charter*, March, pp.38-41
- HEKIMIAN J.C. AND JONES C.H. (1967), 'Put people on your balance sheet', *Harvard Business Review*, January/February, pp.105-113
- HENDRY C. (1991), 'International comparisons of human resource management: putting the firm into the frame', *International Journal of Human Resource Management*, Vol.2 No.3, pp.415-440
- HERMANSON R.H. (1964), *Accounting for human assets*, Occasional paper no.14, Bureau of Business and Economic Research, Michigan State University
- HERMANSON R.H., IVANCEVICH D.M. AND HERMANSON D.R. (1992), 'Corporate restructuring in the 1990s: the impact of accounting incentives', *The Corporate Growth Report*, February, pp.14-18
- HINES R.D. (1988), 'Financial accounting: in communicating reality, we construct reality', *Accounting, Organizations and Society*, Vol.13 No.3, pp.251-261
- HIROMOTO T. (1988), 'Another hidden edge – Japanese management accounting', *Harvard Business Review*, July/August, pp.34-35
- HOWELL R.A. AND SOUCY S.R. (1987a), 'The new manufacturing environment: major trends for management accounting', *Management Accounting*, July, pp.21-27
- HOWELL R.A. AND SOUCY S.R. (1987b), 'Cost accounting in the new manufacturing environment', *Management Accounting*, August, pp.42-49
- HOWELLS J. (1996), 'Tacit knowledge, innovation and technology transfer', *Technology Analysis & Strategic Management*, Vol.8 No.2, pp.91-106
- IFAC (1998), *The measurement and management of intellectual capital: an introduction*, New York

- INDUSTRIAL RESEARCH LIMITED (1997a), *Annual report*, Auckland
- INDUSTRIAL RESEARCH LIMITED (1997b), *Statement of corporate intent: 1 July 1997 to 30 June 2000*, Auckland
- INNES J. AND MITCHELL F. (1990), 'The process of change in management accounting: some field study evidence', *Management Accounting Research*, Vol.1 No.1, pp.3-19
- INSTITUTE OF ENVIRONMENTAL SCIENCE AND RESEARCH LIMITED (1997a), *Annual report*, Wellington
- INSTITUTE OF ENVIRONMENTAL SCIENCE AND RESEARCH LIMITED (1997b), *Statement of corporate intent for the financial year ending 30 June 1998*, Wellington
- ITAMI H. (1987), *Mobilizing invisible assets*, Boston: Harvard University Press
- IVISON S. (1999), 'It's time we looked at management accounting standards', *Management Accounting*, February, pp.48-50
- JACKSON S.E. AND SCHULER R.S. (1995), 'Understanding human resource management in the context of organizations and their environments', in J.T. Spence, J.M. Darley and D.J. Foss (eds.), *Annual review of psychology*, Palo Alto: Annual Review Inc.
- JACKSON-COX J., MCQUEENEY J. AND THIRKELL J.E.M. (1987), *Strategies, issues and events in industrial relations: disclosure of information in context*, London: Routledge & Kegan Paul
- JAGGI B. AND LAU H. (1974), 'Toward a model for human resource valuation', *Accounting Review*, April, pp.322-329
- JAUCH R. AND SKIGEN M. (1974), 'Human resource accounting: a critical evaluation', *Management Accounting*, May, pp.33-36

- JOHANSON U. (1999), 'Why the concept of human resource costing and accounting does not work: a lesson from seven Swedish cases', *Personnel Review*, January/February, pp.91-107
- JOHNSON H.T. (1992), *Relevance regained: from top-down control to bottom-up empowerment*, New York: The Free Press
- JOHNSON H.T. (1995), 'Management accounting: catalyst for inquiry or weapon for control', *The Systems Thinker*, November, pp.1-5
- JOHNSON H.T. AND KAPLAN R.S. (1987), *Relevance lost: the rise and fall of management accounting*, Boston: Harvard Business School Press
- JONES G. AND WRIGHT P. (1992), 'An economic approach to conceptualizing the utility of human resource management practices', *Research in Personnel/Human Resources*, Vol.10, pp.271-299
- JONES T.C. (1995), *Accounting and the enterprise: a social analysis*, London: Routledge
- KAPLAN R.S. (1982), *Advanced management accounting*, Englewood Cliffs: Prentice Hall
- KAPLAN R.S. (1984), 'Yesterday's accounting undermines production', *Harvard Business Review*, July/August, pp.95-101
- KAPLAN R.S. (1986), 'Must CIM be justified by faith alone?', *Harvard Business Review*, March/April, pp.87-93
- KAPLAN R.S. (1988), 'One cost system isn't enough', *Harvard Business Review*, January/February, p.61-66
- KAPLAN R.S. AND ATKINSON A.A. (1998), *Advanced management accounting*, 3<sup>rd</sup> ed., Upper Saddle River: Prentice Hall
- KAPLAN R.S. AND NORTON D.P. (1992), 'The balanced scorecard – measures that drive performance', *Harvard Business Review*, January/February, pp.71-79

- KAPLAN R.S. AND NORTON D.P. (1993), 'Putting the balanced scorecard to work', *Harvard Business Review*, September/October, pp.134-142
- KAPLAN R.S. AND NORTON D.P. (1996), *Translating strategy into action: the balanced scorecard*, Boston: Harvard Business School Press
- KEENOY T. (1990), 'HRM: a case of the wolf in sheep's clothing', *Personnel Review*, Vol.19 No.2, pp.3-9
- KERR J.L. (1982), 'Assigning managers on the basis of the life cycle', *Journal of Business Strategy*, Vol.2, pp.58-65
- KIKER B.F. (1966), 'The historical roots of the concept of human capital', *Journal of Political Economy*, October
- KILCOURSE T. (1994), 'A human resource philosophy', *Management Decision*, Vol.32 No.9, pp.37-42
- KIM W.C. AND MAUBORGNE R. (1997), 'Fair process, managing in the knowledge economy', *Harvard Business Review*, January/February, pp.66-75
- KINNIE J.K. AND ARTHURS A.J. (1996), 'Personnel specialists' advanced use of information technology: evidence and explanations', *Personnel Review*, Vol.25 No.3, pp.3-19
- KLEIN D.A. (1998), *The strategic management of intellectual capital*, Oxford: Butterworth-Heinemann
- KOLAY M.K. (1986), 'Human resource accounting: an appraisal', *ASCI Journal of Management*, March, pp.262-276
- KOSSEK E.E., YOUNG W., GASH D.C. AND NICHOL V. (1994), 'Waiting for innovation in the human resources department: Godot implements a human resource information system', *Human Resource Management*, Spring, pp.135-139

- LADO A.A. AND WILSON M.C. (1994), 'Human resource systems and sustained competitive advantage: a competency based perspective', *Academy of Management Review*, Vol.19, pp.699-727
- LAMMERT T.B AND EHRSAM R. (1987), 'The human element: the real challenge in modernising cost systems', *Management Accounting*, July, pp.32-37
- LANDCARE RESEARCH NEW ZEALAND LIMITED (1997a), *Annual report*, Christchurch
- LANDCARE RESEARCH NEW ZEALAND LIMITED (1997b), *Statement of corporate intent for 1997-1998*, Christchurch
- LAWLER E. (1992), *The ultimate advantage: creating high involvement organisations*, San Francisco: Jossey-Bass
- LAWSON M. (1998), 'Nice work if you can get it' *The Australian Financial Review*, 22-23 August, p.28
- LAZONIK W. (1990), *Competitive advantage on the shop floor*, Cambridge: Harvard University Press
- LEBAS M. (1994), 'Management accountants: the challenges of the next decade', in IFAC (ed.), *A view of tomorrow: management accounting in the year 2004*, New York
- LEE T.A. AND TWEEDIE D.P. (1978), *The private shareholder and the Corporate Report*, London: ICAEW
- LEGGE K. (1995), *Human resource management: rhetorics and realities*, Basingstoke: MacMillan
- LEV B. AND SCHWARTZ A. (1971), 'On the use of the economic concept of human capital in financial statements', *Accounting Review*, January, pp.103-112
- LEVINE H.Z. (1986), 'Highlights of AMA's 57<sup>th</sup> annual human resources conference, Part 2', *Personnel*, October, pp.41-45

- LIEBOWITZ J. (1998), 'Expert systems: an integral part of knowledge management', *Kybernetes*, Vol.27 No.2, pp.170-175
- LIKERT R.M. (1967), *The human organization: its management and value*, New York: McGraw-Hill
- LIKERT R.M. AND BOWERS D.G. (1973), 'Improving the accuracy of P/L reports by estimating the changes in dollar value of the human organization', *Michigan Business Review*, March, pp.15-24
- LITTLER D.A. AND SWEETING R.C. (1989), *Management accounting: the challenge of technological innovation*, London: CIMA
- LITTLETON A.C. (1966), *Accounting evolution to 1900*, 2<sup>nd</sup>. ed., New York: Russell & Russell
- LOFT A. (1991), 'The history of management accounting: relevance found', in D. Ashton, T. Hopper and R.W. Scapens (eds.), *Issues in management accounting*, Hemel Hempstead: Prentice Hall
- LYALL D., OKOH K. AND PUXTY A. (1990), 'Cost control into the 1990's', *Management Accounting*, February, pp.44-45
- MABEY C. AND ILES P. (1996), 'Human resource management in the UK: a case of fundamental change, facelift or façade?' in T. Clark (ed.), *European human resource management*, Oxford: Blackwell
- MABEY C. AND SALAMAN G. (1995), *Strategic human resource management*, Oxford: Blackwell
- MACKAY J.T. (1987), '11 key issues in manufacturing accounting', *Management Accounting*, January, pp.32-37
- MACKEN J.J. (1992), *The employment revolution*, Sydney: The Federation Press
- MACNEAL K. (1939), *Truth in accounting*, Houston: University of Pennsylvania Press

- MAHLER W.R. (1979), 'Auditing PAIR', in D. Yoder and H.G. Heneman Jr. (eds.), *ASPA handbook of personnel and industrial relations*, Washington: BNA Books
- MAISEL L.S. (1992), 'Performance measurement: the balanced scorecard approach', *Journal of Cost Management*, Summer, pp.47-52
- MANTOUX P. (1967), 'The destruction of the peasant village' in P.A.M. Taylor (ed.), *The industrial revolution in Britain: triumph or disaster?*, Boston: D.C. Heath & Company
- MANVILLE B. AND FOOTE N. (1996), 'Harvest your workers' knowledge', *Datamation* [online], July, Available from: <http://www.datamation.com/plugin/issues/1996/july/07know1.html>
- MARQUÈS E. (1976), 'Human resource accounting: some questions and reflections', *Accounting, Organizations and Society*, Vol.1 No.2/3, pp.175-178
- MARRIS P. (1974), *Loss and change*, London: Routledge & Kegan Paul
- MARSTON C.L. AND CRAVEN B.M. (1998), 'A survey of corporate perceptions of short-termism among analysts and fund managers', *European Journal of Finance*, Vol.4 No.3, pp.233-256
- MASON R.A. (1998), *The aerospace revolution*, London: Brassey's
- MAYO E. (1933), *The human problems of an industrial civilization*, New York: MacMillan
- MCLAUGHLIN D.J. (1986), 'The turning point in human resources management', in F.K. Foulkes (ed.), *Strategic human resources management: a guide for effective practice*, Englewood Cliffs: Prentice Hall
- MCMILLAN I.C. (1978), *Strategy formulation: political concepts*, St. Paul: West Publishing

- MCNAIR C.J., LYNCH R.L. AND CROSS K.F. (1990), 'Do financial and nonfinancial performance measures have to agree?', *Management Accounting*, November, pp.28-35
- MCNAIR C.J., MUSCONI W. AND NORRIS T. (1988), *Meeting the technology challenge: cost accounting in a JIT environment*, Montvale: NAA
- MCNERNEY D.J. (1996), 'Workflow and self-service transform HR', *HR Focus*, March, pp.1-6
- MCWHINNEY W. (1992), *Paths of change*, London: Sage Publications
- MEE M.J. (1982), 'The tasks of human asset accounting', *Accounting and Business Research*, Winter, pp.42-48
- MERRIHUE W.V. AND KATZELL R.A. (1955), 'ERI - Yardstick of employee relations', *Harvard Business Review*, pp.91-99
- MILES R.E. AND SNOW C.C. (1984), 'Designing strategic human resource systems', *Organizational Dynamics*, Vol.12, pp.36-52
- MILLER M.S. AND HELLER A.S. (1988), 'Attention HRIS professionals! You to can earn a six-figure salary!', *Personnel*, December, pp.19-26
- MILLER P. (1994), 'Accounting as social and institutional practice', in A.G. Hopwood and P. Miller (eds.), *Accounting as social and institutional practice*, Cambridge: Cambridge University Press
- MINK O.G., SCHULTZ J. AND MINK B. (1991), *Open organizations*, 2<sup>nd</sup> ed., Austin: Catapult Press
- MINTZBERG H. (1994), 'The rise and fall of strategic planning', *Harvard Business Review*, January/February, pp.107-114
- MIRVIS P.H. AND LAWLER E.E. (1983), 'Systems are not solutions: Issues in creating information systems that account for the human organization', *Accounting, Organizations and Society*, Vol.8 No.2/3, pp.175-190
- MONK R. (1999), 'Wittgenstein and the two cultures', *Prospect*, July, pp.66-67

- MORGAN E.V. (1965), *A history of money*, Harmondsworth: Penguin
- MORLEY M.F. (1978), *The value added statement: a review of its use in corporate reports*, London: ICAEW
- MORSE W.J. (1973), 'A note on the relationship between human assets and human capital', *The Accounting Review*, July, pp.589-593
- MYDDELTON D.R. (1995), *Accountants without standards: compulsion or evolution in company accounting*, London: The Institute of Economic Affairs
- NEUMANN B.R. AND JAOUEN P.R. (1986), 'Kanban, zips and cost accounting: a case study', *Journal of Accountancy*, August, pp.132-141
- NEW ZEALAND GOVERNMENT (1992), *The Act to provide for the formation of Crown-owned companies to undertake scientific research and other related activities, and to provide for matters incidental thereto*, Wellington: New Zealand Government
- NEW ZEALAND INSTITUTE FOR CROP AND FOOD RESEARCH LIMITED (1997a), *Annual report*, Christchurch
- NEW ZEALAND INSTITUTE FOR CROP AND FOOD RESEARCH LIMITED (1997b), *Statement of corporate intent: 1998-2000*, Christchurch
- NEWELL G.E. (1972), 'Should humans be reported as assets?', *Management Accounting*, December, pp.13-16, 54
- NICHOLLS F.A. (1975), 'Human asset accounting', *Certified Accountant*, June, pp.323-324
- NIVEN M.M. (1967), *Personnel management 1913-1963*, London: IPM
- NONAKA I. (1994), 'A dynamic theory of organizational knowledge creation', *Organizational Science*, Vol.5 No.1, pp.14-37
- NONAKA I. AND TAKEUCHI H. (1995), *The knowledge creating company: how Japanese companies create the dynamics of innovation*, New York: Oxford University Press

- ODIORNE G.S. (1986), 'Evaluating the human resources program', in J.J. Famulano (ed.), *Handbook of human resource administration*, 2<sup>nd</sup> ed., New York: McGraw-Hill
- OECD (1988), *New technologies in the 1990s: a socio-economic strategy*, Paris
- OECD (1996), *Measuring what people know: human capital accounting for the knowledge economy*, Paris
- OGAN P. (1988), 'Assessing the impact of human resource accounting information on management decisions: a field experiment', *Personnel Review*, Vol.17 No.3, pp.29-35
- OLIAN J.D. AND RYNES S.L. (1984), 'Organizational staffing: integrating practice with strategy', *Industrial Relations*, Vol.23, pp.170-183
- O'NEIL J.R. (1993), *The paradox of success*, New York: Putnam
- OTLEY D.T. AND BERRY A.J. (1980), 'Control, organisation and accounting', *Accounting, Organizations and Society*, Vol.5 No.2, pp.231-244
- OZAKI R. (1992), *Human capitalism: the Japanese enterprise system as a world model*, New York: Penguin Books
- PAAUWE J. (1995), 'Personnel management without personnel managers', in P. Flood, M.J. Gannon and J. Paauwe (eds.), *Managing without traditional methods: international innovations in human resource management*, Wokingham: Addison Wesley
- PARKER L.D., FERRIS K.R. AND OTLEY D.T. (1989), *Accounting for the human factor*, Sydney: Prentice Hall
- PARKER S. (1975), *Workplace industrial relations, 1972*, London: HMSO
- PERGALLO E. (1981), 'Merchandising of slaves as portrayed in the fifteenth century ledger of Jachomo Badoer - a Venetian merchant', *Accounting and Business Research*, Winter, pp.61-65

- PERKIN H. (1996), *The third revolution: the international professional elite since 1945*, London: Routledge
- PERKS R.W. (1993), *Accounting and society*, London: Chapman & Hall
- PETERS T. (1992), *Liberation management*, New York: Alfred A. Knopf
- PETERS T. AND WATERMAN R. (1982), *In search of excellence*, New York: Harper and Row
- PETERSON D.J. AND MALONE R.L. (1975), 'The personnel effectiveness grid: a new tool for estimating personnel department effectiveness', *Human Resource Management*, Vol.14, pp.10-21
- PFEFFER J. (1994), *Competitive advantage through people*, Boston: Harvard Business School Press
- PFEFFER J. (1997), 'Pitfalls on the road to measurement: the dangerous liaison of human resources with the ideas of accounting and finance', *Human Resource Management*, Vol.36 No.3, pp.357-365
- PLENDER J. (1997), *A stake in the future: the stakeholding solution*, London: Nicholas Brealey Publishing
- POPPER K.R. (1972), *Objective knowledge: an evolutionary approach*, Oxford: The Clarendon Press
- PORTER M. (1981), *Competitive strategy*, New York: MacMillan
- PORTER M. (1985), *Competitive advantage: creating and sustaining superior performance*, New York: MacMillan
- PRIMROSE P.L. (1991), 'The appliance of science', *Manufacturing Engineer*, November, pp.42-43
- PURCELL J. (1982), 'Macho managers and the new industrial relations', *Employee Relations*, Vol.4 No.1, pp.3-5

- PUXTY A.G. (1993), *The social & organizational context of management accounting*, London: Academic Press
- PYLE W.C. (1970), 'Human resource accounting', *Financial Analysts Journal*, September/October, pp.69-78
- QUINN J.B. (1992), *Intelligent enterprise: a knowledge and service based paradigm for industry*, New York: The Free Press
- QUINN J.B., ANDERSON P. AND FINKELSTEIN S. (1996), 'Managing professional intellect: making the most of the best', *Harvard Business Review*, March/April, pp.71-80
- REICH R. (1992), *The work of nations: preparing ourselves for 21<sup>st</sup> century capitalism*, New York: Vintage Books
- ROBINSON D. (1975), 'Two approaches to human asset accounting', *Accountancy*, February, pp.46-48
- ROLL E. (1995), *Where did we go wrong?: from the gold standard to Europe*, London: Faber and Faber
- ROSLENDER R. AND DYSON J.R. (1992), 'Accounting for the worth of employees: a new look at an old problem', *British Accounting Review*, December, pp.311-329
- RUSSELL J.S., TERBORG J.R. AND POWERS M.L. (1985), 'Organizational performances and organizational level measures of performance', *Personnel Psychology*, Vol.46, pp.849-863
- RYAN A. (1999), 'The American way', *Prospect*, August/September, pp.24-28
- SACKMANN S.A., FLAMHOLTZ E.G. AND BULLEN M.L. (1989), 'Human resource accounting: A state of the review', *Journal of Accounting Literature*, Vol.8, pp.235-264
- SADAN S. AND AUERBACH L.B. (1974), 'A stochastic model for human resource valuation', *California Management Review*, Vol.16 No.4, pp. 24-31

- SALAM D.J. AND PRICE L.K. (1988), *Principles of payroll administration*, Paramus: Prentice Hall Information Services
- SANGELADJI M.A. (1977), 'Human resource accounting: a refined measurement model', *Management Accounting*, December, pp.48-52
- SCAPENS R., TURLEY S., BURNS J., JOSEPH N., LEWIS L. AND SOUTHWORTH A. (1996), *External reporting and management decisions – a study of their interrelationship in UK firms*, London: CIMA
- SCARPELLO V. AND THEEKE H.A. (1989), 'Human resource accounting: A measured critique', *Journal of Accounting Literature*, pp.265-280
- SCHUELER G.F. (1995), 'Why "oughts" are not facts', *Mind*, October, pp.713-723
- SCHULER R.S. AND HUBER V.L. (1993), *Personnel and human resource management*, St. Paul: West Publishing
- SCHULER R.S. AND JACKSON S.E. (1987), 'Linking competitive strategies with human resource management practices', *Academy of Management Executive*, August, pp.207-219
- SCHULER R.S. AND JACKSON S.E. (1988), 'Organizational strategy and organizational level as determinants of human resource management practices', *Human Resource Planning*, Vol.10, pp.125-141
- SCHULER R.S. AND WALKER J. (1990), 'Human resources strategy: focussing on issues and actions', *Organizational Dynamics*, Summer, pp.5-19
- SCHULER R.S. AND YOUNGBLOOD S.A. (1986), *Effective personnel management*, St. Paul: West Publishing
- SCHWAN E.S. (1976), 'The effects of human resource accounting data on financial decisions: an empirical test', *Accounting, Organizations and Society*, Vol.1 No.2/3, pp.219-237
- SCOTT A. (1994), *Willing slaves?: British workers under human resource management*, Cambridge: Cambridge University Press

- SEAL W.B. (1993), *Accounting, management control and business organisation*, Aldershot: Avebury
- SEMLER R. (1993), *Maverick: the success story behind the world's most unusual workplace*, London: Random House
- SENGE P.M. (1990), *The fifth discipline: the art and practice of the learning organisation*, New York: Doubleday Currency
- SHARP R. (1999), 'New technology pushes HR information out into the business', *HR Monthly*, March, p.40
- SHELL INTERNATIONAL (1999), *The Shell report 1999: people, planet & profits, an act of commitment*, London
- SISSON K. (1995), 'Human resource management and the personnel function', in J. Storey (ed.), *Human resource management: a critical text*, London: Routledge
- SKANDIA (1996), *Power of innovation*, Supplement to Skandia's 1996 Interim Report, Stockholm
- SMITH C.E. (1995), *The Merlin factor: keys to the corporate kingdom*, Aldershot: Gower
- SMITH M. (1990), 'The rise and rise of the NFI', *Management Accounting*, May, pp.24-26
- SMITH M. (1994), *New tools for management accountants*, Melbourne: Longman
- SMITH M. (1997), *Strategic management accounting: issues and cases*, 2<sup>nd</sup> ed., Sydney: Butterworths
- SNELL S. (1992), 'Control theory in strategic human resource management: the mediating effect of administrative information', *Academy of Management Journal*, Vol.35, pp.292-327

- SPARROW P.R. AND MARCHINGTON M. (1998), 'Re-engaging the HRM function: rebuilding work, trust and voice', in P.R. Sparrow and M. Marchington (eds.), *Human resource management: the new agenda*, London: Financial Times Pitman Publishing
- SPICELAND J.D. AND ZAUNBRECHER H.C. (1976), 'Human resource accounting: an historical perspective', *The Accounting Historians Journal*, Vol.3 No.4, pp.43-49
- SRINIDHI B. (1998), 'Needed: agile accounting to match agile organisations', *Agility & Global Competition*, Winter, pp.41-55
- STEADMAN G.T. (1980), *The basics of organizations*, Sydney: Butterworths
- STERLING R.R. (1970), *Theory of the measurement of enterprise income*, Lawrenceville: University of Kansas Press
- STEWART T.A. (1991), 'Brainpower: how intellectual capital is becoming America's most valuable asset', *Fortune*, June 3, pp.44-60
- STEWART T.A. (1994), 'Your company's most valuable asset: intellectual capital', *Fortune*, October 3, pp.68-74
- STEWART T.A. (1997), *Intellectual capital: the new wealth of organizations*, New York: Doubleday Currency
- STOREY J. (1992), *Developments in the management of human resources*, Oxford: Blackwell
- STOREY J. (1995), 'Human resource management: still marching on or marching out?', in J. Storey (ed.), *Human resource management: a critical text*, London: Routledge
- SUZAKI K. (1993), *The new shop floor management*, New York: The Free Press
- SVEIBY K. (1997), *The new organizational wealth - management and measuring knowledge based assets*, San Francisco: Brett-Koehler Publishers Inc.

- TAMPOE M. (1993), 'Motivating knowledge workers – the challenge for the 1990s',  
*Long Range Planning*, Vol.26 No.3, pp.49-55
- TAYLOR F.W. (1911), *Principles of scientific management*, New York: Harper
- TELIA (1997), *Statement of human resources 1996*, Farsta
- TERPSTRA D.E. AND ROZELL E.J. (1993), 'The relationship of staffing practices to  
organizational level measures of performance', *Personnel Psychology*,  
Vol.46, pp.27-48
- TICHY N.M. (1983), *Managing strategic change*, New York: Wiley
- TINKER T. AND PUXTY A. (1995), *Policing accounting knowledge: the market for  
excuses affair*, New York: Markus Wiener Publishers
- TOCHER K. (1970), 'Control', *Operational Research Quarterly*, June, pp.159-180
- TOCHER K. (1976), 'Notes for discussion on 'Control'', *Operational Research  
Quarterly*, June, pp.231-239
- TOFFLER A. (1980), *The third wave*, New York: Morrow
- TOLLINGTON T. (1998), 'ABC v TOC: same cloth as absorption v marginal,  
different style and cut?', *Management Accounting*, April, pp.44-45
- TOMASSINI L. (1977), 'Assessing the impact of human resource accounting: an  
experimental study of managerial decision preferences', *The Accounting  
Review*, Vol.52 No.4, pp.904-914
- TORRINGTON D. (1989), 'Human resource management and the personnel function'  
in J. Storey (ed.), *New perspectives on human resource management*,  
London: Routledge
- TORRINGTON D. (1998), 'Crisis and opportunity in HRM: the challenge for the  
personnel function', in P.R. Sparrow and M. Marchington (eds.), *Human  
resource management: the new agenda*, London: Financial Times Pitman  
Publishing

- TORRINGTON D. AND HALL L. (1987), *Personnel management: a new approach*, Hemel Hempstead: Prentice Hall
- TRICE H. AND BEYER J. (1993), *The cultures of work organisations*, Englewood Cliffs: Prentice Hall
- TSAY J.J. (1977), 'Human resource accounting: a need for relevance', *Management Accounting*, March, pp.33-36
- TURNER D. AND CRAWFORD M. (1998), *Change power: capabilities that drive corporate renewal*, Sydney: Business and Professional Publishing
- TURNER G. (1996), 'Human resource accounting - whim or wisdom?', *Journal of Human Resource Costing and Accounting*, Spring, pp.63-73
- TYSON S. AND FELL A. (1986), *Evaluating the personnel function*, London: Hutchinson
- ULRICH D. (1997), 'Measuring human resources: an overview of practice and a prescription for results', *Human Resource Management*, Vol.36 No.3, pp.303-320
- ULRICH D. (1998), 'Intellectual capital = competence x commitment', *Sloan Management Review*, Winter, pp.15-26
- UNRUH A.R. AND MATHEWS M.R. (1992), 'Human resource accounting: an important topic revisited', *Accounting Forum*, December, pp.25-35
- VON KROGH G. (1998), 'Care in knowledge creation', *California Management Review*, Vol.40 No.3, pp.133-153
- VON KROGH G., NONAKA I. AND ICHIJO K. (1997), 'Develop knowledge activists', *European Management Journal*, October, pp.475-483
- VYSSOTSKY V.A. (1980), 'The use of computers for business functions', in M.L. Dertonzos and J. Moses (eds.), *The computer age: a twenty year view*, Cambridge: MIT

- WALKER A.J. (1982), *HRIS development*, New York: Van Nostrand Reinhold Company
- WALKER J.W. (1980), *Human resource planning*, New York: McGraw-Hill
- WALKER J.W. (1992), *Human resource strategy*, New York: McGraw-Hill
- WALTON R.E. (1985), 'Towards a strategy of eliciting employee commitment based on policies of mutuality' in R.E. Walton and P.R. Lawrence (eds.), *Human resource management, trends and challenges*, Boston: Harvard Business School Press
- WATTS R.L. AND ZIMMERMAN J.L. (1986), *Positive accounting theory*, Englewood Cliffs: Prentice Hall
- WHIPP R. (1992), 'HRM: competition and strategy' in P. Blyton and P. Turnbull (eds.), *Reassessing human resource management*, London: Sage Publications
- WHITE M. AND MARAJIAN L. (1982), 'Information resource management', in *The international word processing and software guide*, Lightwater: Network Communications
- WILEY C. (1992), 'A comprehensive view of roles for human resource managers in industry today', *Industrial Management*, Vol.34 No.6, pp.27-29
- WILSON R.M.S. AND CHUA W.F. (1993), *Managerial accounting: method and meaning*, 2<sup>nd</sup> ed., London: Chapman & Hall
- WINDSOR D.B. (1986), *Developing a computerised personnel system*, Brighton: Institute of Personnel Management
- WINTERMANTEL R. AND MATTIMORE K. (1997), 'In the changing world of human resources: matching measures to mission', *Human Resource Management*, Vol.36 No.3, p.337-342
- WITKIN E. (1988), 'The HRIS business: making the customer happy', *Personnel*, February, pp.18-26

- WITTINGSLOW G. (1997), 'The future for HR professionals: line manager or policy maker?', *Asia Pacific Journal of Human Resources*, Vol.35 No.3, pp.104-109
- WORLD BANK (1993), 'Marshalling knowledge for development', *World Bank Policy Research Bulletin*, March/April
- WRIGHT P. AND SNELL S. (1991), 'Toward an integrative view of strategic human resource management', *Human Resource Management Review*, Vol.1, pp.203-225
- WRIGHT P.C. AND RUDOLPH J.J. (1994), 'HRM trends in the 1990s: should local government buy in?', *International Journal of Public Sector Management*, Vol.7 No.3, pp.27-43
- WRIGHT P.M. AND FERRIS G.R. (1996), 'Human resources management: past, present and future', in G.R. Ferris and M.R. Buckley (eds.), *Human resources management: perspectives, context, functions and outcomes*, 3<sup>rd</sup> ed., Englewood Cliffs: Prentice Hall
- WRIGHT P.M. AND MCMAHAN G.C. (1992), 'Theoretical perspectives for strategic human resource management', *Journal of Management*, Vol.18, pp.295-320
- WRIGHT R. (1970), 'Managing man as a capital asset', *Personnel Journal*, April, pp.290-298
- YEUNG A.K. AND BERMAN B. (1997), 'Adding value through human resources: reorienting human resources management to drive business performance', *Human Resource Management*, Vol.36 No.3, pp.321-335
- YEUNG A.K., BROCKBANK W. AND ULRICH D. (1994), 'Lower cost, higher value: HR function in transformation', *Human Resource Planning*, Vol.17, pp.1-16
- ZADEK S., PRUZAN P. AND EVANS R. (1997), *Building corporate accountability: emerging practices in social and ethical accounting, auditing and reporting*, London: Earthscan Publications

ZEDECK S. AND CASCIO W.F. (1984), 'Psychological issues in personnel decisions', *Annual Review of Psychology*, Vol.35, pp.461-519