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OPERATIONS MANAGEMENT IN THE FINANCIAL SERVICES INDUSTRY IN SOUTH AFRICA

By

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Abstract

Operations Management in the Financial Services Industry

In South Africa

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The Southern Life Association Limited, a South African Insurance company, is at the edge of a major transformation. At the beginning of the first research cycle undertaken for this thesis, the company was preparing itself for significant internal changes. At the end of the cycle the company has been sold and is preparing itself to merge with another company to form a Financial Services Industry giant. At both the start and the end of the research, the company had a vision, which was significantly different from its past. Translating this vision into practical actions that drive the company into the future is critical. When significant changes are required, a vital window period exists that allows companies to effectively, efficiently manage and implement change. Should the period, or opportunity, be missed, companies could find themselves lagging behind their competitors, ineffective and having to plough additional resources into ensuring that they catch up. This window period, if effectively managed, can give the company the opportunity to project itself forward and gain a competitive edge.

The management at Southern Life had realised the need to change the company. They also knew that the Board of Directors required an improved return on investment. An eighteen-month period was set aside to design and implement the necessary changes. This thesis attempts to look at what management *can do* to best utilise this window period to the company's best advantage.

In order to intervene effectively an Inquiry Framework, or Philosophical Framework of Inquiry as it is referred to, was utilised. This Inquiry Framework is based on the theories and principles of Action and Applied Research, Epistemology, Pragmatism, the Scientific Method and Systems Thinking. When applied rigorously the framework leads one down a path of understanding the situation, raising concerns, developing the hypothesis or question, and providing and evaluating an answer. The research and inquiry process acts like a funnel, allowing the researcher to start broadly and generally and with each cycle, narrowing down to the specific. It aims to facilitate management problem intervention, change and learning in an operational environment.

For practical purposes, the thesis focuses on the operational area of the Employee Benefits Division of the company. It reviews the history of the Division in the belief that historical decisions made have led to the current situation. This being a situation of unprofitability, complexity and a multitude of problems.

In order to add value to the company, the research and changes were made during the eighteen-month window period. The research shows that problems exist with data quality, processes and people.

The quality of data is linked directly to customers, and as researching customers would have added additional complexity, the data quality problems are not directly addressed in this thesis.

Changes are made to processes, based on the Laws, Theorems and Principles offered by Operations Management (Hopps, Spearman, 1996) and Cybernetics (Clemson, 1984). These are found applicable to the operational environment of this industry. The final argument is based upon the assumption that, as these Laws, Theorems and Principles have not been applied in this environment, that the same are not being applied in other Financial Services environments.

The third cycle of research addresses problems surrounding people. Low morale and fluctuating productivity prevail. A theoretical attempt is made to resolve these as, at the time of research, the Division had already started the process of merging and had put a stop to all change projects.

Reflection on what has transpired facilitates learning. Each cycle of application ends with a conclusion, a reflection on problem solving and personal learning. This helps to give focus to the next cycle of application. Ultimately the purpose of the research is to learn from experience and apply that learning to bring about change.

Lastly, areas for future research are identified. The first suggestion is further research the field of Operations Management in the Financial Services industry. The second is research on what happens to the people who are retrenched from the company. It would be interesting to compare their career developments with those of studies into the future of work.

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Introduction

If one had to review the Financial Services industry in South Africa over the last couple of months, one could easily draw the conclusion that the industry is undergoing a tremendous amount of change. Some of the more recent events include de-mutualisation of mutual insurance companies, mergers between banks and insurance companies, aggressive take-overs amongst companies and insurance companies re-focusing on their core business and the selling unprofitable business. In addition to this well known South African financial journalists, such as Magnus Heysteck (Saturday Argus), have been berating the industry for poor service, high lapse rate on policies, incorrect selling of policies and for giving poor advice to customers. A range of external factors influences the industry itself. These include increased regulation of the industry by the Financial Services Board and government. Proposed increases in taxation of retirement benefits, increased disclosure of financial status of companies and commission earned by Brokers and agents. Lastly with the opening up of international markets the industry is experiencing increased global competition.

The general perception of the financial services industry in South Africa is described as "fat-cat". If this perception is true, why is all this change happening now? Is the industry not so profitable that it can coast through the economic turmoil that is occurring in this country?

The purpose of this thesis is to apply an Inquiry Framework to the Employee Benefits, or Group Retirement Funding, Division of a large Insurance company in South Africa. It aims to throw light on the current situation. It aims to understand, design, implement and evaluate an intervention within the Operations area of this business. A summary of the thesis is covered in *Chapter 1.* Details of the Philosophical Framework of Inquiry are found in *Chapter 3.* The business environment selected for application is described in *Chapter 2.* The application cycles are covered in *Chapters 4 to 6.* A conclusion is drawn in *Chapter 7.*

The thesis may be titled "Interim Management - Managing for Performance in an environment where known, fundamental changes are going to occur within a known period of time." The aim of the inquiry is to identify essential operational management priorities that would enable management to keep the operation viable during the interim situation. Management is primarily concerned with the continued delivery of service to customers.

The scope of the inquiry has been limited to one operational region of the Employee Benefits Division of the Southern Life Association Ltd., known as the "West Coast Region". The reasons for this are purely practical. However, it may transpire that the findings are applicable to other administrative regions within the Division. The region is concerned with providing an administration service to customers, often referred to as Retirement Fund Services (RFS). The glossary provides the reader with a summary of insurance terms referred to in the body of the thesis.

Chapter 1

Summary

This chapter aims to summarise the contents of the thesis for the reader. It provides an overview from which the reader is invited to delve into the subsequent chapters for more detail.

The background of the company used for research , described in *Chapter 2*, sets the context and provides an initial problem statement. This being that the administrative area of the business was not viable as it was not making a sufficient contribution to the return on investment for shareholders.

The Philosophical Framework of Inquiry was designed to help the researcher understand what the real problems may be and gain a holistic picture of what is happening in the area of research. Before the research findings are discussed, an overview of the framework of inquiry is given. The framework is covered in detail in *Chapter 3.*

1.1 Research Framework - An Overview

In developing the framework, three distinct areas are used to define problem solving and inquiry structures. These are philosophy, methodology and technique. Defining these provide a high level view of the framework and provide an overall map for guiding inquiry.

1.1.1 The Philosophical Framework

The framework of inquiry is under-pinned by a philosophical approach. It provides the context for the framework and for any practical situation to which the framework is applied. Any framework needs to ensure that research is rigorous, which the philosophical paradigm provides.

Following a path of Epistemology, Pragmatism and the Method of Science, within which, each discipline follows a specific path.

Epistemology looks at the possibility or impossibility of gaining knowledge. It questions our ability to have indisputable knowledge of reality. The route taken by *Affirmation of Knowledge* provides the possibility of acquiring knowledge in a particular situation. The *primary instrument of Knowledge* applied is *Empiricism*, where the ability to reason in order to gain knowledge is followed. A secondary instrument of Rationality is applied to ensure that experience yields knowledge that meaningful and significant. The framework requires that the researcher take an overall view of a Realist and Pragmatist. This helps to ensure that problem solving focuses on the practical, which make a difference to the situation at hand. The "Realm of Value" is taken into account through the systemic view taken when applying the framework.

The work of Charles Pierce (Misak, 1991) is used as the basis for the description on Pragmatism.

Pragmatism's central insight is that there is a connection between knowing the meaning of a hypothesis and knowing what experiential consequences to expect if the hypothesis is true. Pragmatists deal with matters concerning their practical requirements and consequences, treating facts with reference to their practical lessons.

Pragmatism offers a practical and rigorous philosophy with which to guide the formulation of a scientific method of inquiry to problems experienced in an organisation. It differs from other schools of thought in that it is mainly concerned with the consequences of thoughts and actions and with improving conduct in future situations. It depends upon reliable methods, reason, logic and experience in order to arrive at new beliefs. The advantages of pragmatism are:

- it provides a rational context for inquiry;
- it makes sense of the practice of inquiry;
- it justifies and provides a method of inquiry.

A diagrammatic overview of Pragmatism, as represented by Pierce, is illustrated in *Figure 1.*

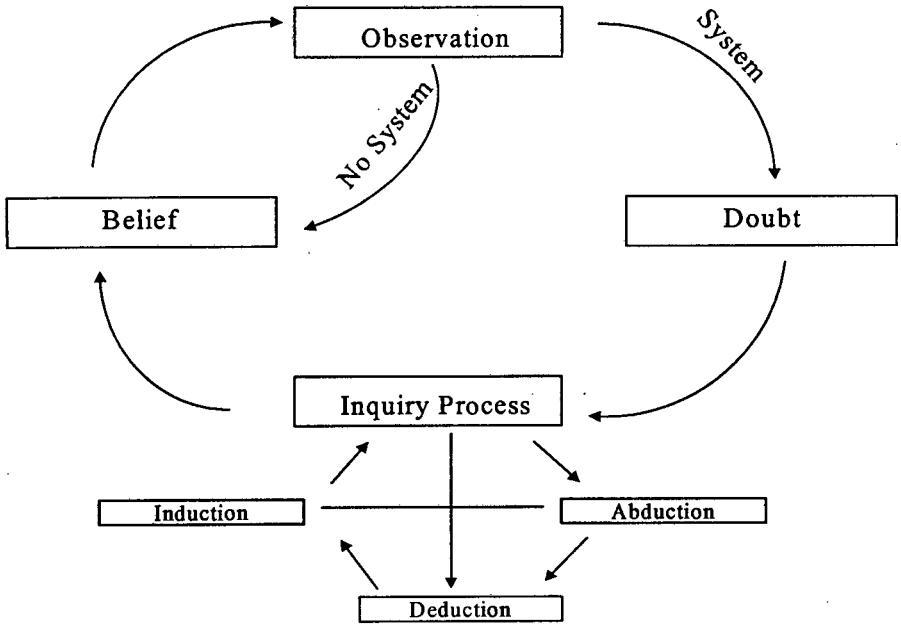


Figure 1 - Peirce's Pragmatism

Peirce's theory of Scientific Method (Reilly, 1970) can be summarised as a process consisting of observation, doubt, a process of inquiry and a system of belief. Observation, combined with experience, gives rise to doubt and we enter a process of inquiry to settle belief or rid ourselves of doubt.

The philosophical framework, illustrated in *Figure 2*, is built around the three distinct sections typical of Peirce's Scientific Management Inquiry method (Reilly, 1970). Within each of these are the driving entities of:

A Rule	a belief or mental model
A Case	an observation or actual situation
A Result	an expected occurrence or consequence

The three sections are:

Abduction (Result Rule Case)
Noticing an undesirable situation (Result), looking for the cause (Rule) and testing to see if this is the Case.

Deduction (Rule Case Result)
Development of a theoretical basis of operation (Rule), which is then tested (Case) and which has a particular output (Result).

Induction (Case Result Rule)
Examines the observable (Case) and determines via explanation (Result) what prevailing theory applies (Rule).

Each part of this method requires different input, is transformed differently and yields different output. While it is important to understand the differences between each part, it is equally important to realise that in a complex problem solving situation, all three will be used in rotation and possibly repeatedly.

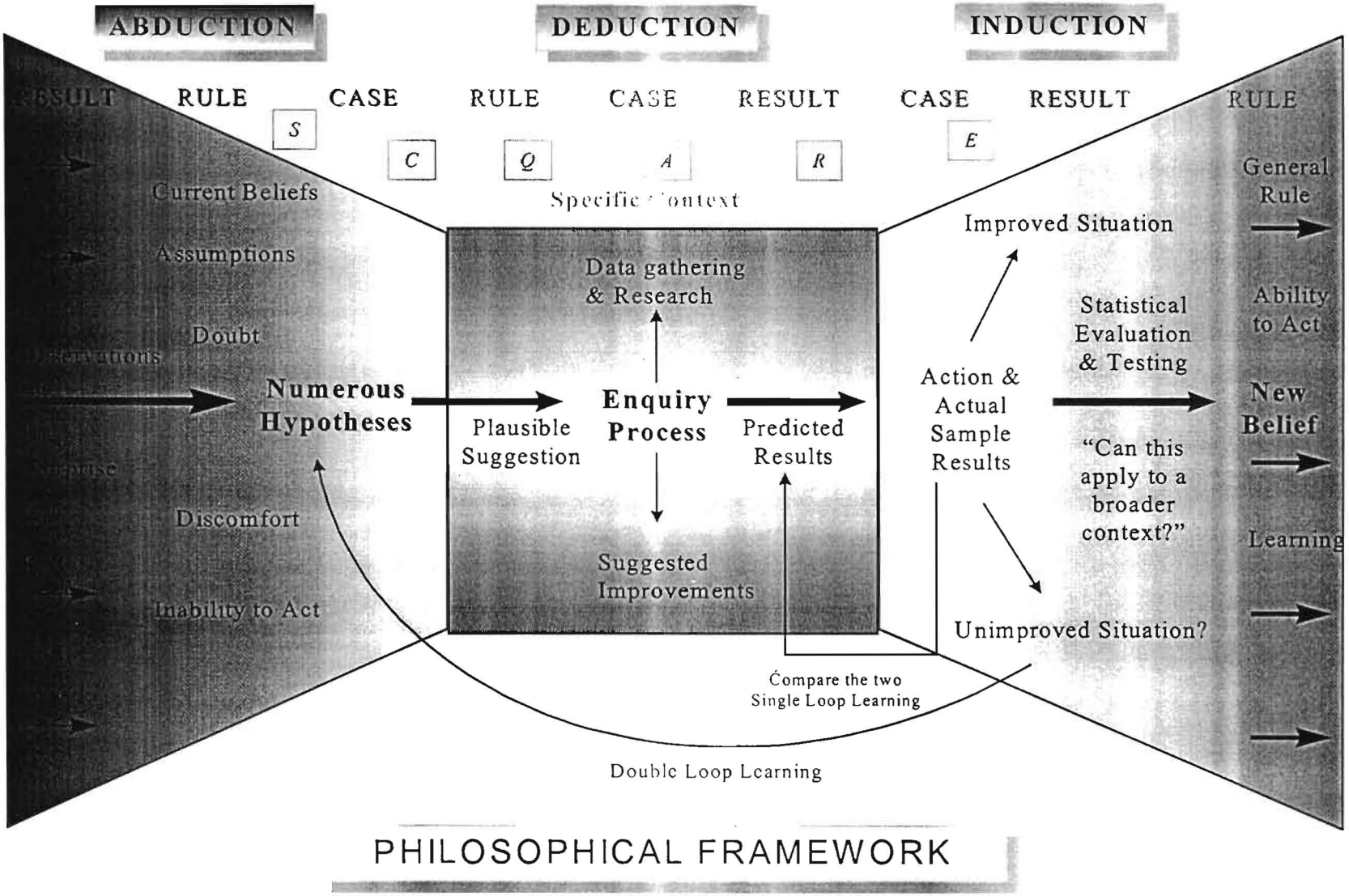


Figure 2 - Philosophical Framework of Inquiry

To apply this interpretation of Peirce's Scientific Method effectively an explanation of each part, the inputs, transformation, outputs and reasons for their use are detailed in *Table 1*.

In order for the process of inquiry to have a significant outcome, to ensure rigor and meet the expectations of the philosophical paradigm it is necessary that personal assumptions, perceptions, values and principles be:

- Examined
- Explicitly identified
- Monitored

This is to guard against the introduction of ulterior motives.

Any process of inquiry should broadly meet the following requirements:

- Be economic in terms of time and money
- Take into account the effect of other projects
- Add value by ensuring quality research is undertaken
- Consider others perceptions and interpretations
- Consider the statute and other general conditions

Further depth can be achieved if the inquirer understands how to meet the purpose of each part of the process of abduction, deduction and induction. The questions formulated in *Table 2*, along with the questions formulated in the Methodology area of the framework, help to ensure this.

Certain aspects of Pragmatism, as derived from Peirce, are essential to the framework. The inquiry ought to have a clear understanding of the *aim* of the inquiry. The *meaning of observations* made needs to be accurately interpreted if accurate predictions are to be made. Observations are classified in terms of signs and the qualities and attributes of signs must be understood. The underlying belief system, of both the inquirer and the stakeholders, needs to be explored. The inquirer needs to understand how the knowledge of the situation at hand is evolving and if continuity exists in the answer provided.

Underpinning the philosophical aspect of the framework are the *methods* used by the researcher to uncover detailed elements of the research environment.

Table 1: The Scientific Management Process of Inquiry

Abduction Amplifies the situation and concern	Deduction Explains the question, reasoning and answer	Induction Amplifies the evaluation and reflection
• Interpretative • Readily refutable • Contains elements of generality • Infers a case or explanatory hypothesis	• Tentative exploration • Experimental testing • Moves from the general to the specific • Infer a result	• Generalising an evaluative process • Moves from the specific to the general • Allows experimental testing of a theory • Infers a rule
The Process **INPUT** Fallible assumptions Beliefs, Discomfort, Observation, Doubt ↓ **TRANSFORMATION** Reason, Research, Experimentation Develop an hypothesis that explains the observed fact ↓ **OUTPUT** New ways to explain discrepancies Develop a rule as input to Deduction	The Process **INPUT** A Rule, Plausible suggestion ↓ **TRANSFORMATION** Test the value of the hypothesis Experience within a specific context ↓ **OUTPUT** Observable prediction	The Process **INPUT** Sample experiment Prediction within a specific context ↓ **TRANSFORMATION** Rigour (apriori, tenacity, authority) Statistics, Sample to test Quantitative counting Qualitative estimation ↓ **OUTPUT** General rule, Judgement Rule of action, Consequences
Why use abduction? • Critical thinking process • Explore alternatives • Explore beliefs • Rational process • Generate numerous hypotheses	**Why use deduction?** • To test the hypothesis	**Why use induction?** • To investigate what portions of the consequence generated by the hypothesis will be verified • To determine new beliefs /rule

Table 2 - Questions to aid the Scientific Method

Abduction	Deduction	Induction
Purpose : abduct numerous hypotheses	*Purpose : predict results of one of the hypotheses*	*Purpose : test and evaluate the actual outcomes, to improve and learn*
1. Have you the experience to describe the situation? What is and what has been? Question whether or not your observations are fact or fallacy	1. What can feasibility and plausibly be predicted?	1. Identify the characteristics that you intend observing and testing.
2. Uncover your own or others perceptions of the situation and document these. What are the common elements?	2. Are the answers easy to implement and easy to test?	2. Have you reflected and searched for points of learning?
3. Use proven methods when designing your interviews and questions	3. Brainstorm for possible consequences of recommendations	3. Have you identified trends which may create/improve/disprove existing theory
4. Concerns are the problem statement of doubt. This statement focuses on what you would not do not what you can do	4. Are the predictions empirically observable, testable and justifiable?	4. Be skeptical in your reflection
5. May start with multiple doubts. Using techniques such as brainstorming, and fishbone diagrams to sequence and prioritise. Look for alternatives	5. Are the predictions classified into existing theoretical classifications?	5. Is your sampling technique solid and is it representative?
6. When selecting the hypothesis, is it simple? Is it the one with the least assumptions? Can you link it to known theory?	6. Document the general principles that govern the situation	6. What is the probability?
7. Characterise and classify the data that you intend testing	7. Is the conclusion the statement for which you are giving reasons?	7.

1.1.2 The Methodology Framework

The philosophical section of the framework provides a fundamental and broad context for inquiry. It provides the theory of knowledge in use. The methodological framework provides the method of gathering information and understanding a situation. *Figure 5* illustrates this section of the framework.

This part of the framework is based upon the theories of Cybernetics (Clemson, 1984), Systems Theory (Kauffman,1980), the Viable Systems Model (Stafford Beer, Course Notes), Human Dynamics and Work Systems (Hoebeke, 1994), Operations Management (Hopp, Spearman, 1996) and Soft Systems Methodology (Naughton, 1984). Each theory is briefly discussed. Please refer to *Chapter 3* for a detailed insight. Underpinning the theories is the belief that any process of research ought to be approached with learning in mind and in order to achieve this the researcher ought to be in a position to think critically. Brookfield's (1987) concept of critical thinking is used as a means to encourage the exploration of alternative ways of thinking and acting, which is a crucial component of the Scientific Method.

The theory of Cybernetics (Clemson, 1984) forms the basis of this section of the framework of inquiry. Cybernetics is defined by Stafford Beer as *"The Science of Organisation"*. Combined with the opinion that Management need to develop *"(1) a sound intuition into the human and physical behavior of a system, (2) the ability to understand a system systemically and (3) a knowledge of the basics."* Cybernetics provides the inquirer with the means to understand the system boundaries, its purpose, how its performance is measured and how it goes about organising itself.

Embedded in the Methodology Framework is the use of *Systems Theory*. It provides a method for understanding the patterns that exist amongst the parts and the general rules of organisation within a system. A series of questions are used to analyse, synthesis and understand the stakeholders involved in the system. In addition to this the use of the Management Tetrahedron Model (Prof T.Ryan, Course Notes), illustrated in *Figure 3*, forms the basis for determining the effect of management on the system.

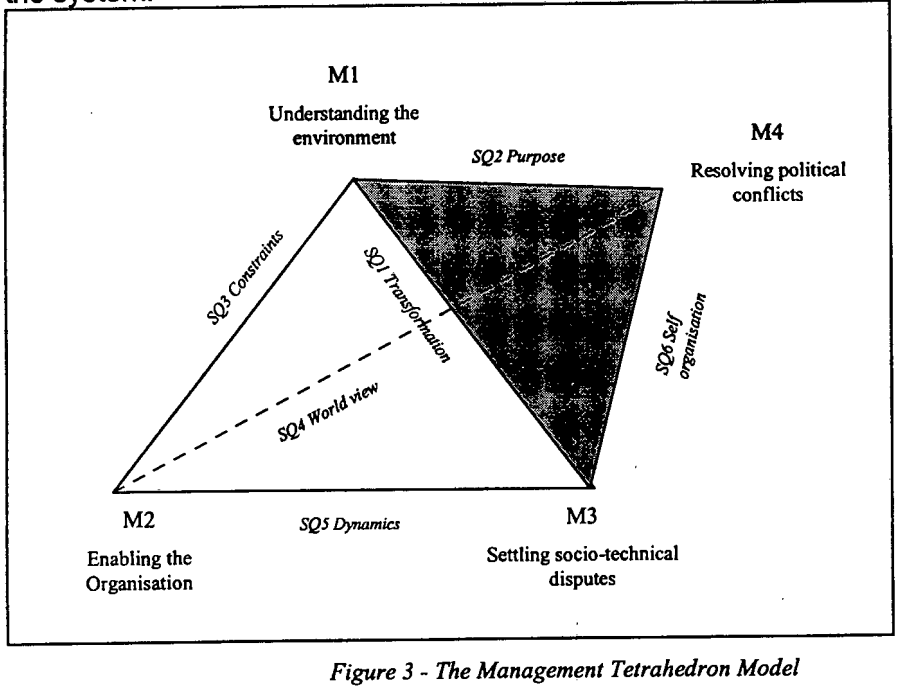


Figure 3 - The Management Tetrahedron Model

Cybernetics and Systems theory move the researcher through the phases of understanding the *situation, the goals and assumptions* into the *planning* and *data gathering* phases of the framework.

Inherent in the process of planning and data gathering is the ability of the researcher to act, learn and review what has been achieved. The learning cycle, illustrated in *Figure 4*, and derived from the work of Handy, Mumford, Revans, Argyris and Beer, is used to guide the inquirer. This learning cycle is linked to Peirce's theory of the Scientific Method, referred to in *Figure 1.*

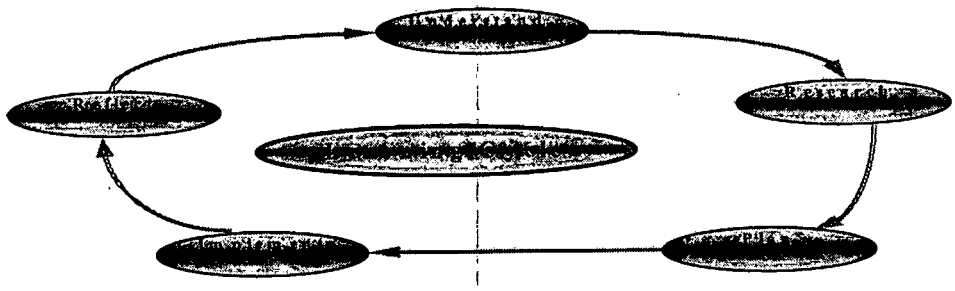


Figure 4 - Learning Cycle

The laws, theorems and principles offered by Operations Management (Hopp, Spearman, 1996), Cybernetics and Work Systems further the analysis. Operations are construed to be the primary value adding function within an organisation. The concepts around inventory, capacity and scheduling need to be understood. Key to *analysing* operational problems is understanding the effect that variability and variety have on the environment's ability to produce. Elements of cycle-time, work in progress and throughput are critical in optimising operations.

The human input into the operational environment adds a second dimension of variety that acts together with non-human inputs. A work system represents the co-operative relationship between activities and people with the objective of transforming specific inputs into specific outputs. The development of the work system allows us to understand why people collaborate and compete. From *analysis,* the researcher needs to be in a position to generate feasible, plausible recommendations that positively influence the situation at hand. Using the Soft Systems Methodology, Systems Dynamic Modeling (Senge, 1994), Viable Systems Model (Stafford Beer, Course Notes) and scenario planning methods help the inquirer to predict plausible alternate options.

Soft Systems Methodologies are used to deal with a situation which presents a multi-faceted problem. It is necessary to identify the hidden aspects, through rigorous discovery and learning, to be able to develop an appropriate response to the problem. The method consists of following seven stages with the aim of building conceptual models and comparing these to the operational situation so that actions for implementation can be selected.

Systems Dynamic Modeling enables the researcher to predict possible patterns of behavior should a system be changed. It enables testing of the hypothesis before actual changes are implemented.

The Viable Systems Model (VSM) is an arrangement of five functional elements that are interconnected through a complex system of information and control loops. The principles of recursion inherent in Cybernetics allow this model to be used to investigate all levels of the organisation and any aspects that may affect its organisation. It provides the researcher with a method for uncovering alternate options.

Key to Action Research is the process of reflection and evaluation. In any inquiry process the researcher, or inquirer, needs to have clear methods by which she plans to review and evaluate the outcome of the work done. Key Performance Indicators (KPI's) need to be identified at the start of the inquiry as well as during the planning phase. The "Balanced Scorecard", which measures a more holistic set of indicators other than just financial indicators, is recommended. The KPI's are applicable at any level of recursion in the system, to individuals, teams or the whole organisation.

In addition to qualitative and quantitative evaluation, the manner in which evaluation is broached is important. Brookfield's concept of critical thinking is again useful.

The inquirer needs to *understand* the current state of the system and how the system works. *Research* alternative desired states for the system and gather data on the essential issues. *Plan* how to achieve the desired state and who should be involved. *Implement* changes to the system, while involving all stakeholders and monitor the effects of the change. *Reflect* on learning points so that the same mistakes are prevented in the future and document learning.

The last component of the Philosophical Framework of Inquiry is an overview of the techniques used.

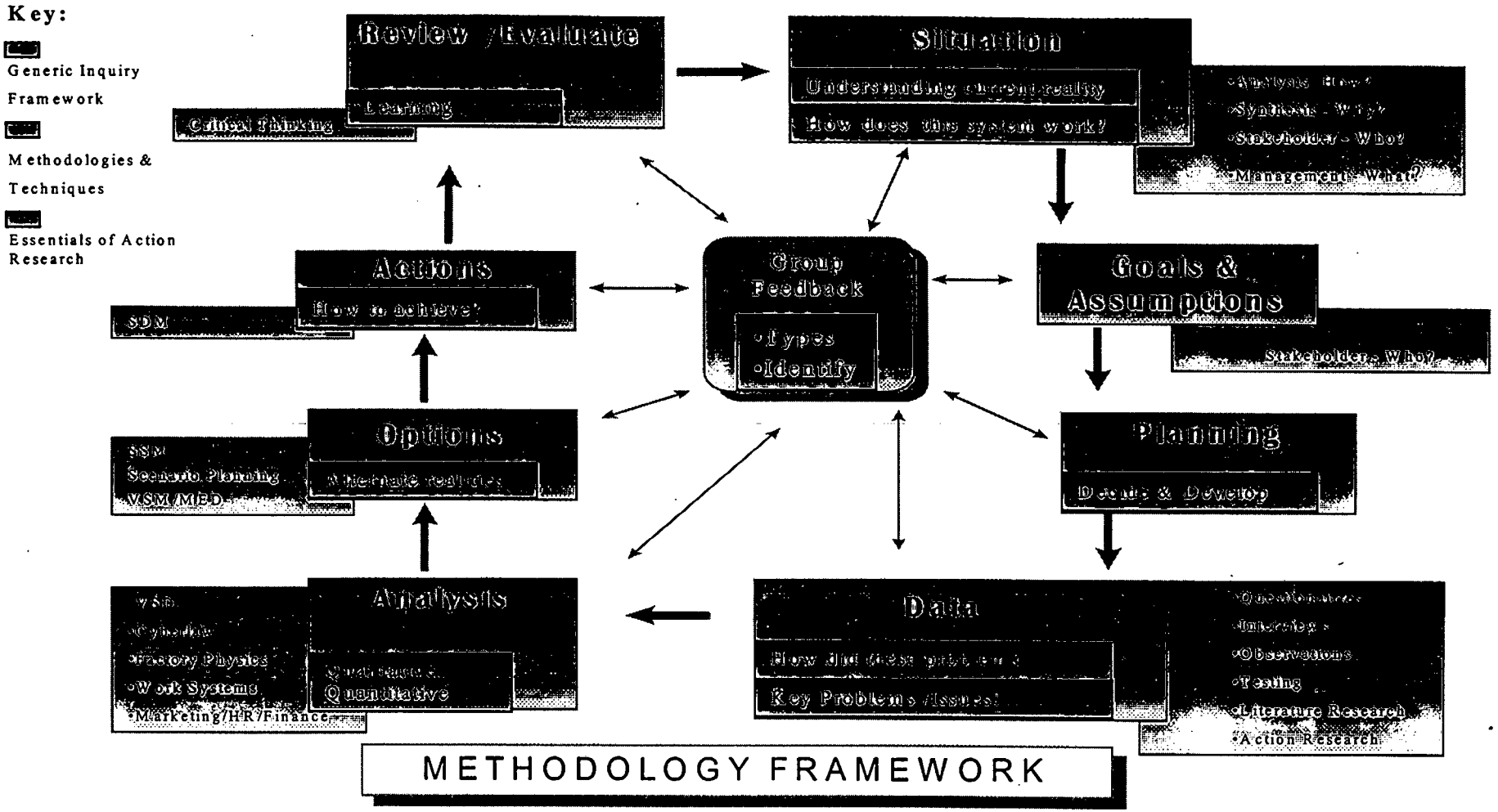


Figure 5 - Methodology Framework of Inquiry

1.1.3 The Technique Framework

Techniques move the research from the theoretical to the practical. These are used to collect, organise, differentiate and select data. Techniques used during the research phase of this thesis were selected from "The Memory Jogger™ II" (Brassard, Ritter 1994). Selecting the most appropriate technique for the situation at hand is crucial. Techniques most frequently used are illustrated in *Figure 6.*

The context that the framework ought to be used in is within an environment of change. It is based on the premise that the environment that the researcher, manager or decision-maker find themselves in is one of constant change.

Essentially the inquirer needs to believe that the system can be changed and a better state achieved. In order to achieve this successfully, the Framework needs to be applied with rigor. The Map of Inquiry, shown in *Figure 7*, summarises the research process.

The research process as described here and in *Chapter 3* was applied to an operational environment of an Insurance company. A broad situation, giving an overview of the background to the environment and the situation during the research process, is discussed in the next section.

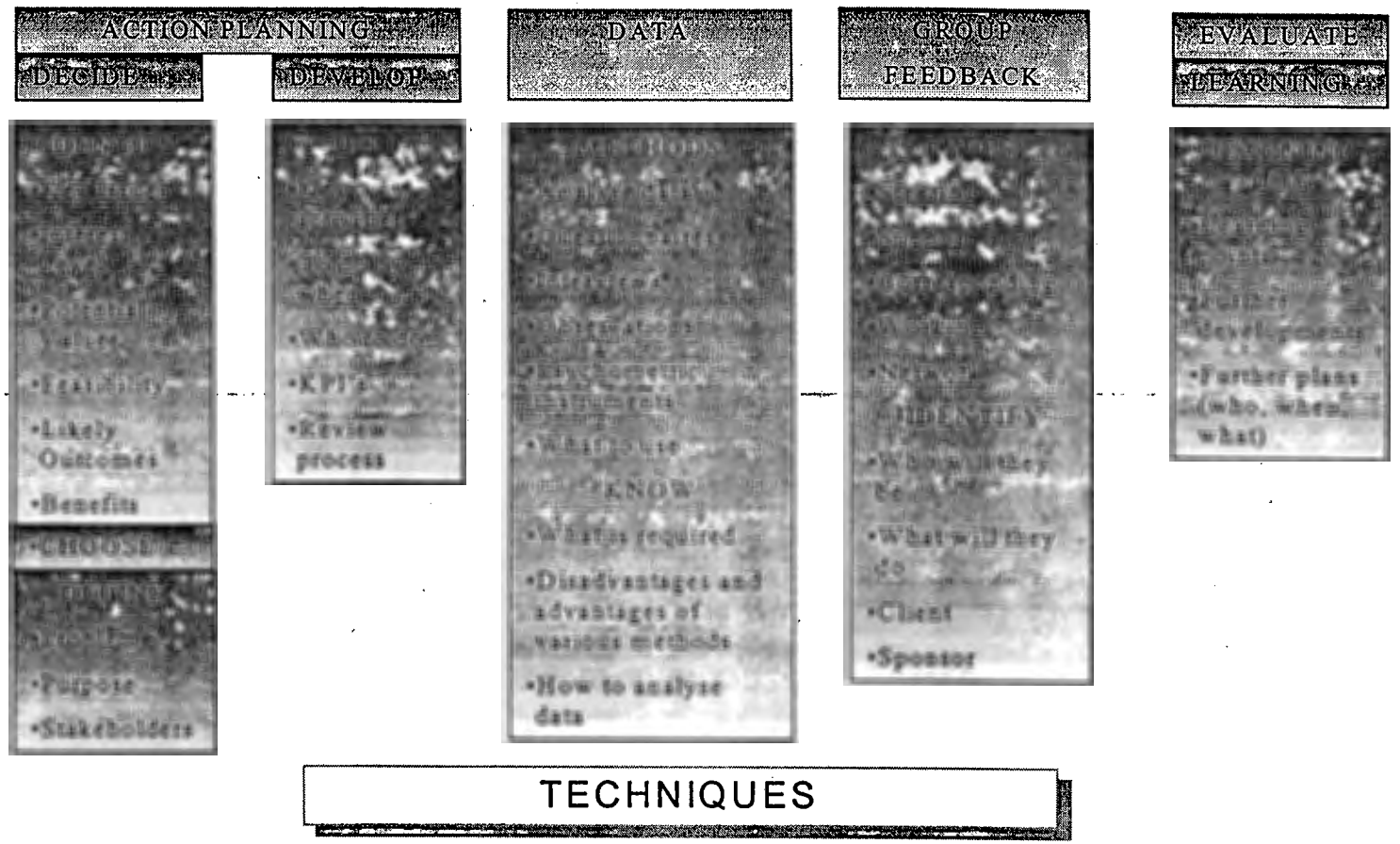
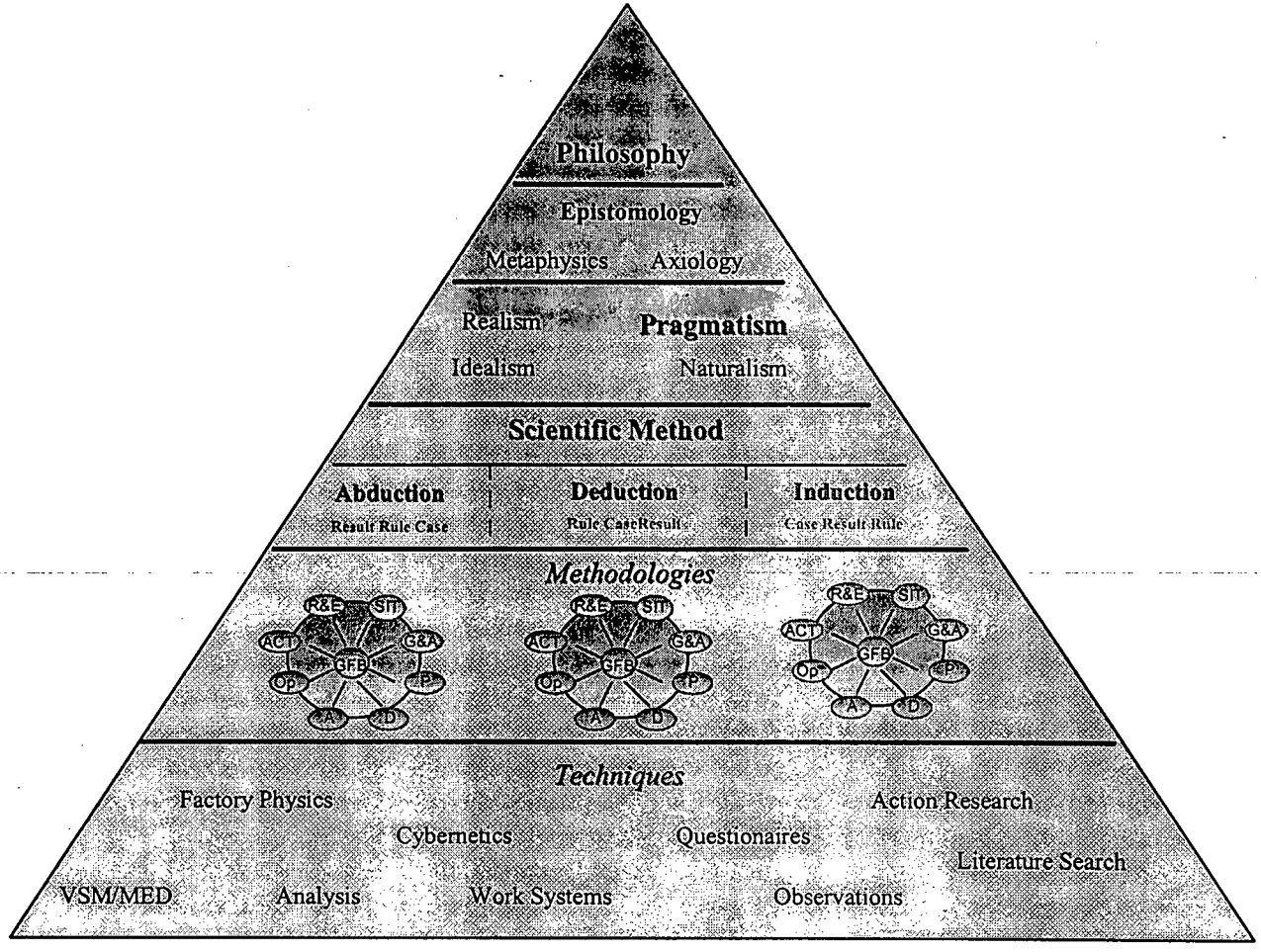


Figure 6 - Technique Framework



MAP OF ENQUIRY

Figure 7 - Map of Inquiry

1.2 Situation

The Employee Benefits Division's primary area of business is that of providing employers with group retirement funding and risk benefit solutions. The manner in which the Division has met this purpose has, over time, evolved and changed. A useful expression to describe what follows in the thesis is "Today's problems were yesterdays solutions". Setting a context around the background of the Division is therefore important. *Chapter 2* sets a detailed historical context for the environment in focus.

The Division could typically be described as a bureaucracy with the operational environment processing work on a functional basis. A function was completed and passed down the line for the task to be completed. The management style was paternalistic, operating in a hierarchical organisation structure. The first significant wave of change occurred towards the end of the 1980's, with the cycle of change lasting roughly six years. The numbers of reporting levels were reduced and teams, performing a range of functions, were created. Staff were required to deal directly with customers, while a culture of learning was encouraged. The ability to apply knowledge and skill, rather than just gain knowledge and skill, was promoted. New computer systems were installed. In 1996, external consultants were contracted to review the structure and processes used within the company. A significant finding, amongst others, was that a large percentage of the Division's portfolio of schemes was not contributing towards the 21% return on investment (ROI) required by shareholders.

Over the eighteen month period, and as changes were implemented, the operational situation changed within the Division. At first, the company was preparing itself to transform the manner in which it operated and then ¾ of the way through the research the company was sold. A detailed analysis and synthesis of the operational situation can be referred to in *Chapters 4 to 6*. Each cycle of research yields unique concerns, which are developed throughout the thesis.

1.3 Concern

The background provides the basis for the initial hypothesis developed for the thesis. The Division believed that changes made was sufficient and would result in administration delivering an adequate ROI. The findings show that, for a large percentage of schemes, the ROI is below zero (Result). The application of the framework attempts to uncover what the cause of unprofitability is (Rule) and evaluates this to see establish whether or not the hypothesis is approximates the truth as provided by laws, theorems and principles (Case).

Each cycle of application utilises the framework to develop depth and refine the hypothesis. An answer, along with reasoning, is provided. After evaluation, the hypothesis is refined.

1.4 Answer, Reasoning & Evaluation

Chapters 4 to 6 contain the detail of each cycle of application. Each chapter follows the format of understanding the situation, raising concerns and questions, providing an answer along with the rationale for, and evaluation of, each answer. The summary covers the concern, high level answer and evaluation for each cycle.

1.4.1 First Cycle of Application - June to December 1997

In order to improve profitability the Division has the option of decreasing costs or increasing sales. Income is generated by charging a monthly administration fee. Researching the situation raises the *concern* that the fee and premium rate review process is inefficient and does not serve the purpose of the system as a whole (Rule). It also points towards an increase in the number of schemes where the administration contract may be terminated (due to poor investment returns). If these schemes are unprofitable, the Division may want to terminate these contracts. However, it still means that administration staff may be tied up winding these up. Research shows that the termination process is also inefficient (Case). Should these processes be reviewed, a 20% improvement in cycle time is predicted, while accuracy of output could increase. Scheduling of termination tasks could also improve (Result).

Implementing changes meant creating specialist teams. Changes were not made to the fee and premium rate review process, however a team was created to focus on the termination process only. (These processes were previously incorporated as a general function that each administrator performed for a portfolio of schemes) The Variability Law (Hopp, Spearman, 1996) states that "In a steady state, increasing variability always increases average cycle-times and work-in-progress levels". While the Variability Placement Law states that " Variability early in the routing has a larger impact on work-in-progress and cycle-times than equivalent variability later in the routing". Variability is defined as "the quality of non-uniformity of a class of entities". These changes meant that administrators in these teams would deal with lower levels of task variability. As the fee review process takes place at the beginning of the annual life cycle of a scheme, errors made at this point in time impact processing and profitability throughout the year. (The termination process naturally occurs at the end of a scheme's life cycle.) In addition to the *rules Little's Law* states that throughput (TH) equals work-in-progress (WIP) over cycle-time (CT). In order to get cycle-time to decease, throughput must increase and work-in-progress decrease. Changes were implemented and evaluated after a 4½-month production period.

Evaluation was completed by comparing predicted against actual cycle times extracted from monthly production statistics. The *result* is that a 40% increase in cycle time was achieved during the period of evaluation. Observations made also showed that planning and accuracy had improved. Other, smaller improvements were also noted. Indirectly profitability had been positively influenced.

Predictions for creating a specialist fee and premium rate review team did not show that significant improvements in cycle-times and error rates could be achieved.

The Redundancy of Resources principle (Hopp, Spearman, 1996) states that "Maintenance of stability under conditions of disturbances requires redundancy of critical resources".

This leads to questioning whether critical processes within the termination and fee review functions could be reduced. The significant improvements achieved in creating a specialist termination team implied that further research was needed in this area. One concludes that the Laws and principles may be applicable in the environment researched.

1.4.2 Second Cycle of Application - January to March 1998

The situation shows that the entire fee and premium rate review process focuses and builds on the previous fee and premium rate levels, which assumes that these were correct to start off with. The current process does not focus on attaining profitability at all (Case).

Within the termination team work-in-progress had increased significantly, as was expected, during this cycle. Many of the processes are internally focused, while others are completed to comply with legislative requirements. With the volume of termination's, or work in progress, increasing, it is important that the Division can accurately monitor the reasons for termination and track trends. The situation also showed a disconcerting lack of control around clearing scheme accounts, closing scheme records and de-registering schemes (Case).

Implementing changes to the fee and premium rate review system meant changing the basis on which schemes were reviewed. Instead of increasing an existing rate it meant re-pricing all the schemes to establish what the fee and/or premium rate ought to be to post a 21% ROI. The work-in-progress levels remain predictable throughout the year as each scheme's fees and/or premium rates are reviewed annually. Throughput needs to increase for cycle-time to improve. Implementing changes to the termination processes meant establishing which part of the process was the bottleneck. This was seen to be the termination quote, which is processed for all terminating schemes and for customers who are considering canceling their contract. In both cases people capacity is in the shortest supply. The fee and premium rate review process was changed and automated with a 20% improvement in cycle-time, based on the *Pareto Principle*, predicted. The changes to the termination processes were implemented during the third cycle of research.

Evaluation showed that, on average, the number of people required on a monthly basis to process fee and premium rate review dropped from 8 to 2,2. For 1 month, a 90% improvement in cycle-time was shown (Result).

Now research showed that the *results* of changes implemented were in line with the various laws, theorems and principles applied (Rule). The recommended changes helped serve the purpose of improving overall profitability. However, an emerging concern was the level of customer service provided by administration staff.

The turnover of staff had also increased, due to the uncertainty that existed in the environment, so those left were required to process higher volumes of work.

1.4.3 Third Cycle of Application - April to May 1998

At the start of the third cycle of application the company was sold and all change related projects were put on hold. Implementation of the changes to the termination process however went ahead. The operational structure, at an executive level, for the Division was changed. This meant re-designing the balance of the operational environment. This, together with the expectation that business units were to post a 21% ROI, presented an opportunity to research how the two companies could merge successfully. This situation represents the *result* of decisions made. An extract on productivity statistics showed a sharp decline in the average number of tasks completed per administrator after the merger announcement (Rule)

The concern raised was that, regardless of changes made to data or process quality, if the concerns of staff were not effectively addressed, the levels of productivity would continue to decline, thus negatively influencing profitability (Case).

While an answer is recommended, it was not practical to implement and evaluate potential changes during the period of research available. It was recommended that the mechanism for rewarding people be adjusted to suit the interim purpose of the Division, which is to merge the two companies. In addition, communication and change management practices need to increase. The answer is derived from theories offered by Hopp & Spearman (1996) and Grint (1991).
The "Realist Model" (BJ van Loggerenberg), shown in *Figure 33*, illustrates that productivity will negatively influence profit if a decrease exists in either product quantity and/or resource quantity. We know that resource quantity (people) is reducing. Product and resource price has increased. Advantage exists in increasing the product quantity. The only options available to do this are (1) improve the processes to decrease cycle time and (2) increase the willingness to work.

In an attempt to synthesis all the changes made, a final evaluation, of each cycle, concludes *Chapter 6*. Cycle one and two address the need to improve processes. Cycle three, in the light of the then situation, recommends the need to address the concerns of the staff. It postulates that, unless people's physiological and security needs are met, productivity, in spite of process changes, will continue to decline.

Using the "Thesis of Verisimilitude" (WH Newton-Smith, 1991), discussed in *Chapter 3 section 3.4*, this application accepted the laws, theorems and principles of cybernetics and operations management as the basis for action. In testing these in a service environment and accepting the evaluation of the outcome, one can state that, to an increasing degree, these laws, theorems and principles are applicable to an operational environment within the Financial Services Industry. If the evaluation has in fact shown that the application of these increases the approximation of truth of the laws, theorems and principles, one is then in a better position to make predictive statements about the Industry as a whole.

1.5 Conclusion

Conclusions are drawn in a number of areas, namely on the process of problem solving, the relevance of the inquiry framework to management, the relevance of the Scientific Method to management, management learning and development and finally personal learning.

The cycles show that the situation is dynamic. Management therefore needs to find a way to continually apply and review changes as most appropriate to the situation. Action Research lends itself to continual cycles of research and learning and proves to be a useful management tool.

A dilemma for managers is how to interpret data and make decisions that result in progress towards the desired purpose of the business. Deciding on the significance of data and understanding the possible consequences of actions lead to an improved situation. The inquiry framework acts as a guide in terms of understanding

The Method of Science facilitates changes and evolution towards a better state. Sound empirical methods of evaluation ensure understanding the significance and consequences of changes. Pragmatism offers a process of inquiry that delivers concerns and plausible recommendations that are concerned with action. Epistemology supports the manager to act. It assists managers in developing capacity to build pertinent mental models of a situation. Most of the complex issues facing management today, requires learning. Managers can learn to cope systematically with complex issues by organising their mental models into interacting triads. This includes viewing the issue at different levels of recursion, categorising the issue and utilising systems questions to understand.

Developing the framework of inquiry, along with the relevant literature research, and applying the framework to an operation environment has meant personally developing a sense of commitment and rigor. I am curious by nature, and the framework has provided me with a formal platform from which I can start trying to make sense of the world that I live and work in. The group process of action learning ensured that I developed a richer picture. The process of action research proves to be never ending, with research adapting to the needs of the environment.

Chapter 2

Problem Statement

A useful expression to describe what follows in the thesis is "Today's problems were yesterdays solutions". This leads one to believe that the problems currently experienced within the Division, and the company as whole, are as a result of previous decisions. The background and the decisions made at that time have led the Division to its current situation and the decisions that are currently being made will lead to its future.

The abductive phase of the inquiry framework starts with an understanding of the result and rule and describes the case. The description of the background to the Employee Benefits Division puts the result into context for the reader. The description of the theories in use provides the rule for the reader.

As a means of ensuring that the work done in this thesis is meaningful and can be related to general theories of work, it is described in these specific terms as drawn from the Sociology of Work (Grint, 1991).

2. Background

The Employee Benefits Division's primary area of business is that of providing employers with group retirement funding and group risk benefit solutions. The manner in which the Division has met this purpose has, over time, evolved and changed.

The Division can typically be described as a bureaucracy, grounded in formal rules and procedures. During the period mid nineteen sixties to end nineteen eighties the structure emulated extended division of labour, administrative hierarchies, demarcated offices, meritocratic career structures, rationalised systems of control, pre-requisite levels of literacy and skills serving diversified products and services. The actuarial and accounting professions were and are still are strongly linked to the organisation.

Each staff member performed restricted administrative functions, with work being "passed down the line" for completion. Teams were structured to produce specific processes linked to specific products. Only management and sales staff was allowed to communicate with the customer. Twenty-one career or staff grading structures existed, with hierarchical career promotion being the key motivating factor. The work environment was strongly linked to Taylorist / Fordism (Grint, 1991) principles. In addition, administrative staff and first line managers were, and are, predominantly female.

The management culture and style could largely be described as paternalistic. Strict time and dress codes were prescribed. Corporate canteen facilities were divided between management and staff. Staff benefits in terms of housing etc. were linked to the staff grading system, and as such, the career structure. Disparity existed in reward structures based on genders and race.

Towards the end of the 1980's it was first recognised that (1) the Division, when viewed individually, was no longer profitable, (2) customers were not happy with the service they were getting and the Division was losing market share, (3) the Division had become reliant on dominant Brokers for new business and (4) service problems were strongly linked to the structure within the Division and to the way in which work was processed.

Over a period of six to seven years, (change has been incremental with some areas ahead of others), a radical re-design of the region, and to some extent, the Division has taken place. *Figure 8* illustrates the organisational structure of the Division and is followed by a detailed analysis of the changes that were effected during this time.

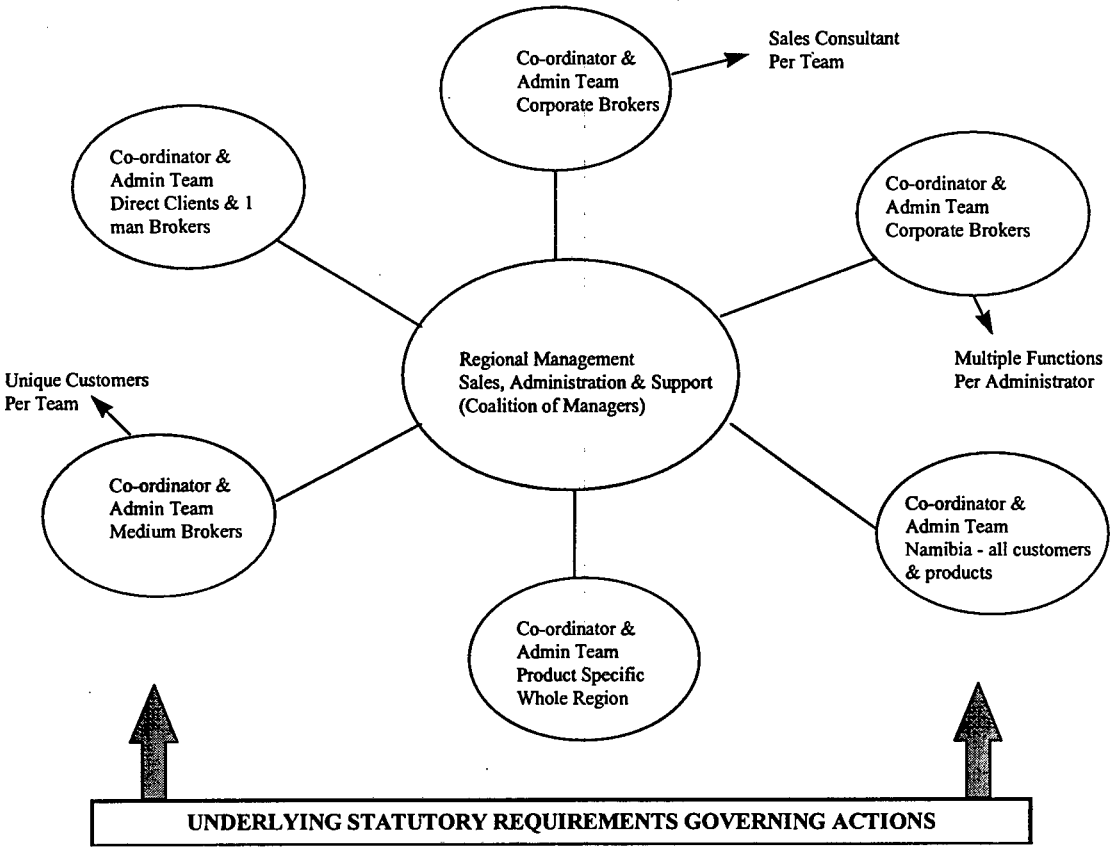


Figure 8 - *Organisational Structure*

2.1.1 Structure, Rewards and Development

The reporting levels were reduced from 20 to 5. The career linked grading system was removed for line managers and staff reporting to them. Grade promotions no longer exist for lower level staff. Career growth at the lower levels is seen to be horizontal rather than vertical, with knowledge and the ability to apply knowledge to business improvement as the important individual growth area.

Rewards are linked to employee performance, which is measured via skills, knowledge, productivity and behavior assessment. The acquisition of knowledge, formal training and on-the-job coaching is strongly supported. It is envisaged that, in the future, elements of pay flexibility will be introduced. In addition to this, reliance on and rewarding of the adherence to rational rules and procedures is practiced and areas of specialisation exist describing a role-based culture.

It is believed that creativity is widely dispersed throughout employees. Employees are therefore expected and encouraged to participate in developmental projects that fall outside the immediate realm of their work.

The elements of vision and goal orientation were introduced. Individuals are encouraged to set their own goals within Regional and Divisional parameters.

2.1.2 Customer Focused Teams

Initially work teams supporting a group of customers were introduced; this was further enhanced by linking sales staff to the team and ensuring that each team services and supports a unique customer base.

Teams were initially trained to be multi-functional, with core functions being performed by individuals within the team. This was enhanced by training individuals to perform multiple functions, by increasing the number of functions performed within the team and lastly having each employee capable of fully servicing and supporting his/her own group of customers. Lastly, sales staff was allocated a unique niche market to prospect and acquire business from. In other words, a manufacturing cell was created.

It is believed by management that these Customer Focused Teams (CFT's) boost productivity with the Coordinator (team manager) playing a mediating role between the employee, employer and customer.

Communication with the customer occurs directly with the individual providing the core service. The customer now has one point of contact with the Division. Decisions regarding administration service largely lie within the team. Flexibility and decentralised decision making regarding the customer is encouraged, showing a tendency towards a task based culture.

2.1.3 Working Technology

A number of technological changes have also been effected during this time. The transition from one mainframe computer system to another (during 1992/1993) is one. Continual enhancements to existing processes and the adding of new processes are another example. The implementation of the Process Management Environment (PME) system, aiming to map processes, smooth administration workflow and provide productivity related management information has also been significant.

Technology has formed the platform from which products and processes progress. It is used to centralise control. Design of systems and processes, while attempting to encompass human elements, is not viewed as a socially constructed process. Attempts have been made to view human and non-human elements as a "seamless web" without much success.

2.1.4 Systems and Contingent Theories

These have emerged as tools used to better understand and improve on problem areas within the Division and are practiced by small pockets of individuals.

Divisional performance is directly linked to specific niche markets and continual adjustment in terms of "goodness of fit" between situational characteristics and divisional structure is practiced.

2.1.5 Management Structure and Political Theories

A dominant coalition of managers, represented by a divisional management team, make the strategic choices for the division, aiming to give direction in terms of vision and leadership.

These descriptions show that the Post Fordism / Flexible Specialisation (Grint, 1991) theory is in use within the Region. However, it is much more difficult to isolate any other specific theories of work. A blend of theories in use can be seen. The extent to which these are espoused and practiced however, is very dependent on the individual manager.

Generalisation, in terms of this description, of dominant theories in use is therefore unavoidable and necessary. These are viewed by individuals as the principles upon which they base decisions and manage people.

Four areas were perceived to be potential divisional weaknesses. A number of projects attempted to address these:

1. The acquisition, application and sharing of knowledge by employees : A competency improvement project aiming to continually increase the knowledge and skill of employees and enhancing the manner in which performance, productivity and behavior is rewarded and incentivised has been in place for two years;

2. Ineffective technology, creating duplication in processes and inefficient processes : A Business Process Improvement project was in place for eighteen months and aimed to rationalise and improve production processes;

3. The inability of the Division to effectively and efficiently monitor and control process and human performance: A Process Management Environment (PME) system was introduced to computerise process work-flows, improve procedural standards and provide productivity related management information. The implementation of this project has met with resistance in certain areas. As a result, the system is not used consistently throughout the division;

4. The inability of the Division to become profitable: Attempts have been made to measure profitability at an individual scheme level. However, a minimum administration fee income is used as the basis for determining this. This is not linked to activity occurring in the scheme, with the result that scheme profitability is inaccurate.

Ultimately these projects all served the purpose of improving the profitability of the division.

The manner in which the Region evolved and the decisions taken at the time can be seen all to have contributed to the current situation, or case, in the Region.

In November 1996, a group of external consultants was hired by the Board of Directors. Their initial brief was to review the executive structure of the company. In January 1997, this was reviewed and the brief extended to include a review of the structure, people and processes required to produce a return on investment, for the shareholders, of 21%.

A team of Southern Life staff and external consultants were formed (known as the transformation team) and, after a six-month period of inquiry, findings were shared with the company.

2.2 Transformation Team Findings

The initial findings are discussed purely to show the reader that a dramatic change in the company is required. The companies cost / income ratio was found to be 17%, considerably higher than the competition. The company was experiencing a low growth in premium income and a reduction in market share. Competitors where experiencing the opposite. The Southern showed a high lapse rate on individual policies. Lastly, a poor return on investment was being posted for shareholders.

More specifically, it was found that schemes with more than 500 members in the Retirement, Risk and Investment scheme and Risk Only scheme categories are the only profitable schemes. In addition to this, it was estimated that the division was most competent at managing Risk Only schemes. Furthermore, it is stated that high capital sums are required for the Guaranteed Fund investment portfolio.

2.3 Problem Statement

An environment exists where, in spite of a large number of changes in terms of structure, management policy and operational functioning, a large number of schemes administered by the Division are unprofitable. Assuming that the Division continues operating in this fashion, the profitability of administration will continue to decline.

Due to the unprofitability of schemes the viability of the administration system is threatened. Should the situation not improve, the administration area of the business will be closed down.

Within this context the research methodology was developed and applied.

Chapter 3

The Development of a Research Methodology

The Research Methodology or, as it will be referred to in this Chapter, the Philosophical Framework of Inquiry, is constructed with three elements. These being philosophy, methodology and technique. It is intended to be used in a recursive fashion. The design aimed its use in an operational environment. The development followed a cycle of theory and research, application, reflection and learning, with each cycle adding a new theoretical flavour to the framework. Ultimately, the framework aims to improve the quality of inquiry so that managers are able to make more informed decisions.

The development of a research methodology encompasses literature research. The purpose of the literature research is to provide the reader with the theoretical detail that underpins the development of the Framework of Inquiry and its application. Where appropriate literature is referred too directly in the body of the application. Otherwise, the reader is requested to assume that the body of knowledge covered in this Chapter applies.

3. Philosophical basis for the Framework of Inquiry

Philosophy aims to answer the questions of life, the eternal questions of mankind, i.e. those related to reality, knowledge and value. Philosophy is interested in truth. It falls into the fields of inquiry and investigation and, through these, seeks the ultimate truth. The meaning of facts as applied to life is what makes philosophy significant.

Philosophy operates within the realm of interpretation and explanation in terms of ultimate relations and meaning. It interprets reality, knowledge and value through taking multiple views of experience. Experience is related to aesthetic, moral, social, political, aspects of life. Experience is analysed to determine what constitutes the experience. Beliefs and rules are examined. Philosophy is concerned with the nature of the self. It questions whether it is physical, social or spiritual. It is ultimately concerned with value.

Philosophy is a theoretical and speculative subject, thus not necessarily practical. The Literature Research is primarily interested in following the philosophical pathway of Epistemology, Pragmatism and the Method of Science. It is in this context that attempted links are made between philosophy and the practice of management. A question that is often asked is "Is management a science or an art?" Philosophy provides some insights through its relation to the fields of science and art.

3.1.1 Philosophy and Science

J.Donald Butler, in his book *Four Philosophies and their Practice in Education and Religion*, states that philosophy and science are alike. He say's "they are both interested in knowledge. Both of them are fields of inquiry and investigation. Both ask questions and seek to determine answers to these questions. Knowledge is an end towards which both strive". Further to this, both the pragmatist and the scientist seek facts.

The significance of the facts interests both the philosopher and the scientist. The philosopher believes he can aid mankind, while the scientist wants to further the aims of science. What may differ between the philosopher and the scientist is the method used to interpret and explain the relation between the facts and how meaning is inferred.

3.1.2 Philosophy and Art

Butler states that both philosophy and art are concerned with interpretation, appreciation and enjoyment of the meaning of facts. Philosophy is concerned with values, which include aesthetics, and seeks experiences, which result in the fullest life. This is not unlike the artist who interprets an experience and illustrates this experience through the medium of art.

3.2 What is Philosophy?

The understanding or processing of experiences and phenomena involve the use of our senses and thought processes which, in turn, are guided by our underlying assumptions. These assumptions are underpinned by, and based upon the beliefs we hold of the world we live in. These belief systems are our answers to the basic problems with which we struggle, those related to reality, knowledge and value. These problems embrace subjects of religion, art, science, education and philosophy to varying degrees.

Why do we focus on philosophy? It provides us with a basis for dealing with the complexities which the realm of work presents to us. We look to it to provide a theory of knowledge, meaning and value to guide our inquiry process in grappling with the problems of management.

As stated previously, philosophy is a theoretical and speculative subject, thus not necessarily practical. Rupert C. Lodge states that philosophy is "Life at the reflective level". We come to that level of experience after maturing influences such as crises, earnest inquiry and purpose.

The philosopher and, more specifically in this case, the inquirer has to be highly conscious of themselves and has to factor in their own experience. They must know that they are part of their own worldview and this influences their interpretation of experience. The philosopher and the inquirer must be interested in pure truth for the sake of truth only.

Three primary branches of philosophy, which deal with the problems of reality, knowledge and value, are commonly recognised. A high level view describes these branches as:

Branch	Purpose	Indicative Questions
Metaphysics	Reality	• What is the nature of the universe in which we live? • What is real?
Epistemology	Knowledge	• How does a man know what is real? • How do we come by our knowledge? • How do we know that it is true, error or illusion? • How do we relate ideas (science of logic)?
Axiology	Value	• What are important values desired in living? • Are these values rooted in reality?

The development of the research methodology firstly follows the path of Epistemology.

3.2.1 Epistemology

Epistemology covers the possibility or impossibility of getting knowledge. Our ability to have indisputable knowledge of the reality constituting the heart and core of existence is questioned.

Four primary categories of questions are posed in the epistemological branch of Philosophy. In turn each category presents divergent views or answers to each question.

1. This questions the possibility or impossibility of getting knowledge. It inquires into our ability to have indisputable knowledge of the reality, that which constitutes the heart and core of existence:
    - *Agnosticism*: believes that reality is unknowable;
    - *Skepticism*: holds an attitude of honest doubt as to whether knowledge of anything deserving the name "reality" is possible;
    - *Affirmation of Knowledge*: believes that some knowledge is possible.

2. This holds beliefs around the instrument of knowledge being sense-perception, experience, reason, intuition, authority and/or revelation:
    - *Empiricism*: sense-perception experience is the primary instrument of knowledge. The functions of reason being one of coordinating the finding of experience. Some recognise no other authority than the Scientific Method;
    - *Rationalism*: reason is regarded as universal. It is used to interpret, relate and unify the results of experience so as to yield meaning and significance;
    - *Intuitionism*: truth is known by a flash of insight or immediate awareness and is regarded as jumping ahead of reason;
    - *Authoritarism*: knowledge is comprised of objective content. Once an item of knowledge is a part of the common experience of man, it is rather a simple matter for this knowledge to be transferred into the experience of the individual;

- *Revelation*: this is seen to be a present instrument of knowledge, comparable to sensation, reason and intuition.

3. The degree of directness or indirectness there is in the knowing process is questioned:
    - Does direct knowledge exist?
    - Do items or objects of knowledge enter our mind when we come to know them?
    - Knowledge as a matter of inference, interpretation or conclusion which is constructed by the mind;
    - Knowledge is a matter of intuition.

4. The levels of sensation and perception, and the influence these have, are questioned. What happens when the senses are stimulated, when qualities arise in the consciousness and are identified? Is it largely at the sense-perceptual level that the individual is in contact with the remainder of existence?
    - Are the senses simple gateways?
    - Are the senses and perceptions patterns of activity by which the individual interacts?
    - Are the sensual and perceptual patterns a manner in which the individual projects themselves and thereby develops a self and a means of creating change?

3.2.2 The Four Schools of Philosophy

There are four primary schools of thought, which attempt to explain the questions raised by Metaphysics, Epistemology and Axiology. These, as represented in contemporary thought, are:

1. ***Naturalism*** : The world of nature is regarded as the entire reality. The physical universe is all there is;

2. ***Idealism*** : Reality is constituted by the same substances as ideas, minds or senses. Idealism can also be referred to as "ideaism", "mentalism" or "spiritualism";

3. ***Realism*** : Gives distinctive difference to the problems of knowledge. Objectives of the external world are real in themselves and not dependent upon the mind for their existence;

4. ***Pragmatism*** : The use of things is more important than the knowledge of things. Utility is of prime importance and must be capable of realisation. Pragmatism springs from idealism. Reality is viewed as many, with the individual capable of making a difference.

Four primary categories of questions are posed in the epistemological branch of Philosophy. In turn each category presents divergent views or answers to each question. The four schools of philosophy each have a view on Epistemology and question whether or not it is the soul of philosophy.

- *Idealism*: Yes it is. By solving the problems of knowledge, we imply solutions to the problems of philosophy. The nature and characteristics of knowledge determine the nature and characteristics of existence;

- *Realism*: No it is not. Knowledge has no causal relationship with existence;
- *Pragmatism*: The problems of knowledge are never going to be solved. It is unimportant to try to solve them anyway. Pragmatists prefer to focus on the consequences of actions and the practical, social values that will make the world a better place for man.

In terms of the pathway followed by the Inquiry Framework, the main school of interest is that of Epistemology and Pragmatism.

3.2.3 Pragmatism

Charles Peirce founded pragmatism. In a letter to William James (1902), Peirce writes, " Pragmatism is correct doctrine only in so far as at is required that material action is the mere husk of ideas. The brute element exists, and must not be explained away.... But the end of thought is action only in so far as the end of action is another thought. Far better to abandon the word "thought" and talk of "representation" and then define what kind of representation it is that constitutes consciousness." Peirce was concerned with learning. Material action and its consequences must not be explained away, but ought to give rise to another thought, which encourages the inquirer into another cycle of inquiry.

Pragmatism's central insight is that there is a connection between knowing the meaning of a hypothesis and knowing what experiential consequences to expect if the hypothesis is true.

Pragmatists deal with matters concerning their practical requirements and consequences, treating facts with reference to their practical lessons.

Pragmatism offers a practical and rigorous philosophy with which to guide the formulation of a scientific method of inquiry to problems experienced in an organisation.

It differs from other schools of thought in that it is mainly concerned with the consequences of thoughts and actions and with improving conduct in future situations. It depends upon reliable methods, reason, logic and experience in order to arrive at new beliefs. The advantages of pragmatism are:

- it provides a rational context for inquiry;
- it makes sense of the practice of inquiry;
- it justifies and provides a method of inquiry.

The aim of inquiry is to settle belief. In other words, it is to prove something true or false and in the process of doing so, derive some knowledge. The inquiry process starts with an observation, a perceptual judgement, based on experience. This generates desire and/or doubt, which at this point is beyond the control of reason, to find out *how we would act* if the doubt was resolved. This is an admission that we do not know something, the implicit desire to know it and an effort to discover what the truth really is.

Peirce describes observations, and the meaning or understanding that these give, by linking observations to signs. He infers that understanding increases if the interpreter can accurately define terms and use the term to make accurate predictions.

In order to apply a sign, the interpreter must know what qualities and attributes a sign connotes. There must be rationale and, to make a connotation, there must be interpretation.

Signs, therefore, are described to be:

- *Icons*, which resemble something and have internal meaning. Connotation is used to describe these;
- *Indices*, which are connected to objects and have external meaning. Denotation is used to describe these;
- *Symbols*, which have a known purpose and depend on a rule.

Experience is described to be anything that is forced upon one. Anything that is compelling, surprising, brute or impinging that happens without dealing with reason can be described as experience, including perception. Peirce states that experience comes from two sources, namely the inner, or ideal, and the outer, or real. These are described as:

- **Inner, or ideal experiences**, uses the world of mathematics, logic and reasoning and inquire into the truth by inward experimentation and observation;

- **Outer, or real experience**, is a clash between the senses and our experience and inquires into the facts by experimentation and observation.

He states that interpretation occurs in three ways. It occurs *immediately* and depends on the fitness of a sign to be understood in a particular way. It occurs *dynamically* by affecting the interpreter and sparking off a chain of thought. Lastly, a *final* interpretation is made when an interpretation is believed to be correct.

Peirce's "cycle of pragmatism" is supported by authors like Handy, Mumford, Revans and Argyris, specifically in the context of it being a learning cycle. The pragmatic pathway, therefore, represents a cycle of learning and inquiry that is dynamic and adapts to a changing environment.

Peirce supports a scientific approach to problem solving and inquiry and warns against using tenacity, authority and a priori methods in inquiry.

3.2.4 The Method of Science

Charles Peirce's theory of Scientific Method (Reilly, 1970) can be summarised as a process consisting of observation, doubt, a process of inquiry and a system of belief. It is a pragmatic method directed towards *"theoretical knowledge, intellectual purport".* The spirit of pragmatism encompasses the consequences and meaning of a hypothesis, and in this case, the explanatory hypothesis. The method of science ought to be pursued dynamically, and is based upon the fundamental premise that the search for knowledge must be done for its own sake, for the pure sake of truth.

Observation must be based on experience and must have the "ability" to influence the observer's perceptual judgment.

Essentially the word "observation" is explained as "the right fact, observed by a mind, furnished with the appropriate ideas that are highly probable". It is a surprising event that is new and that generates desire and doubt that is beyond the control of reason in its formation.

Observation, combined with experience, can give rise to *doubt*. When developing an explanatory hypothesis, which is our attempt to solve a doubt, we are trying to find out *how we would act* not how we will act. Our thoughts apply to conceived action. This is our admission that we do not know something, the implicit desire to know it and our effort to discover what the truth really is.

We enter a process of inquiry to settle belief or to rid ourselves of doubt. The method of inquiry that we adopt ought to fix real belief, not start with the answer in hand and remain responsive to future argument and evidence. The process ought to ensure that the end of the inquiry leads to further thought and inquiry.

The scientific method of inquiry follows a process of *Abduction, Deduction and Induction"*. In each, the inquirer makes an inference. These inferences lead from stable premises to stable conclusions.

3.2.4.1 Abduction - The Explanatory Hypothesis

Abduction is the process of developing a plausible conjecture or explanatory hypothesis. It is a form of ampliative inference, allowing us to add body to our understanding of a situation and/or a belief. The inquirer aims to infer a case by proceeding from observing an undesirable situation, or result, investigating the cause of the situation, or rule, and inferring, or creating, an explanatory hypothesis. Any hypothesis ought to be *antipositivistic*, in that it must be readily refutable.

Practically, Peirce advises that any hypothesis must be verifiable experimentally. It must be economic in terms of time and money, take into account the effect of other scientific projects and add value by ensuring that research is based upon intelligent, structured questions.

The inquirer must be able to break the hypothesis down into its smallest components, yet the statement, or question, as a whole must be broad and inclusive. The function of an "explanatory hypothesis" is to supply a proposition, which if it had been known to be true before the idea/phenomenon presented itself, would render the hypothesis true. The hypothesis serves to explain and interpret the observed facts. More than one hypothesis is possible, however the simpler hypothesis should be preferred, the one that makes lesser assumptions - remember we perceive what we are conditioned to perceive, therefore we must be open to change our point of view

Lastly, the inquirer needs to be aware that the hypothesis is by nature a general statement, or question, as perceptual judgment is a way of gaining general knowledge of the world.

3.2.4.2 Deduction - Inferring a Result

Deduction is the process of deducing experimental predictions from the hypothesis and watching for these predictions to come true. It proceeds from Rule to Case to Result.

Peirce argues that virtual prediction is an experiential consequence. It is deduced from the hypothesis and selected as a consequence, independent of whether or not the inquirer knows the truth. It is a process of testing the value of the hypothesis. The inquirer must realise that this process is only a tentative explanation and therefore the process poses as a question or a plausible suggestion.

The outcome of deduction, or in another term "the truth of the result", is reached, not by reasoning, but by experience and this must generate observable predications.

3.2.4.3 Induction - Inferring a Rule

The process of induction proceeds from Case, Result to Rule. It teaches us what to expect experimentally of a theory and to see whether our predications come true. It is a quantitative investigation that investigates what proportion of the consequences generated by the hypothesis will be verified. It may result in new theory, and as such, is a generalising and evaluatory process.

The characteristics of the object or events that you are testing must be pre-designated and the observable qualities must be named. The process of reasoning, the consequence of theory, must be ascertained after the inductive process. This ensures that the inquirer does not match the process to suit the reasoning.

In the inductive phase, the inquirer classifies general ideas attached to objects of experience. A quantitative counting of occurrences and if required, qualitative estimation of the importance of the characteristics obtained is completed. The inquirer appraises the probation singly, then combined and passes final judgment.

As a whole the testing of a hypothesis, whether successful or not, aids the process of science and, in this case management, in two ways. (1) The new experiences gained in the testing phase become the basis for new, more accurate hypothesis. (2) The inquirer becomes more qualified to select a better hypothesis.

Peirce states: "To give the hypothesis any value, consequences must be deduced from it which can be tested by observation, according to the scientific method. This process must depend upon a method of deducing the characters of law which would gradually evolve through the action of habit-formation on chance occurrences, and on a method of learning, through observation, whether or not the predicted characters belong to the actual laws of nature."

The Rationality of Science (Newton-Smith, 1991) provides useful insight into the development and evaluation of the hypothesis.

3.3 The Rationality of Science

3.3.1 The Rational Image of Science

Scientists are perceived as maintaining the essence of rationality and the methods adopted to prove or disprove theories, serve to bolster this image. A superior face is put on science because of past successes and the mystery that surrounds the techniques used in scientific work.

The mere fact that a theory is scientifically proved does not mean that it will never be disproved or modified by scientific inquiry. This situation can be explained in terms of rational and non-rational models.

3.3.2 Rational Models

There are two ingredients to rational models:

1. Production of theories	The goal of science, useful for making predictions, or determining the truth;
2. Principles for comparing rivals	Often referred to as methodology, used to rate how the theories achieve the goal.

Shifts in theory can be explained in terms of the rational model if:

1. The goal is that proposed by the model;
2. The new theory is superior to the old;
3. Scientist agree that the new is better than the old;
4. This agreement leads to the abandonment of the old theory for the new.

Such shifts are affected by: internal factors, those that relate to features of the theory, and external factors, such as psychological and sociological factors.

The accepted stance of Rationalists is that within mature science, results can only be described and understood if they are based on a rational model. This principle has been challenged on two levels:

a) The first presupposes the acceptance of the idea of a rational model, but questions scientific practice, regarding scientific change as being more influenced by non-rational factors than commonly accepted;
b) The second argues against the idea of rational change measured against a rational model is not acceptable.

3.3.3 The Incommensurability of Theories.

At the core of the rationalist ideal is the need to specify parameters against which the relative results of rival theories can be measured. Only when this can take place is scientific enterprise valid.

Non-rationalists such as Kuhn and Feyerabend, hold that that this cannot be done, resulting in theories being incommensurable.

3.3.4 The Goal of the Scientific Enterprise.

If the problem of incommensurability can be overcome, then it is only necessary for the Rationalist to prove his claims and comparisons against the goals of science. Rationalists have generally tended to be realists. The realists view of science is the claim, "that theories are true or false in virtue of how the world is, and that the point of the scientific enterprise is to discover explanatory truths about the world".

The two crucial problems facing the rationalist are as follows:

1. What reason is there for taking the conclusion of inquiry to be truth or approximation to the truth? Can one render science understandable by assuming some other goal?

2. If no account other than one making the conclusion approximation to the truth is acceptable how can we provide a satisfactory explanation of this notion?

3.4 The Thesis of Verisimilitude

3.4.1 Pessimistic induction

Past theories have turned out to be false. Since there is no good reason to make an exception in favour of our currently most cherished theories, we ought to conclude that all theories which have been or will be propounded are strictly speaking false. Prima facie, this induction, if granted, does more than a little to tarnish the image of science as the very paradigm of institutionalised rationality. If we have inductive evidence that the goal is not ever to be reached, how can it be rational to continue to pursue it?

While the historically generated sequence of theories of a branch of a mature science are all, strictly speaking, false, **the theories are increasing in verisimilitude; that is, in the degree to which they are approximately true**. The thesis of verisimilitude or *TV* (on this account of the matter rationality) consists in believing in those theories, which it is most reasonable to presume, have the highest degree of verisimilitude among the available rival theories.

3.4.2 Laudan

Laudan (1977) remarks that setting up truth or verisimilitude as goals for scientific inquiry "may be noble and edifying to those who delight in the frustration of aspiring to that which they can never (know themselves to) attain; but they are not very helpful if our object is to explain how scientific theories are (or should be) evaluated."

Laudan claims the overall problem-solving effectiveness of a theory is determined by assessing the number and importance of the empirical problems which the theory solves and deducting therefrom the number and importance of the anomalies and conceptual problems which the theory generates.

We need to remember that we accept theories as a basis for action. The reason we do so is that we assume those theories on which we act, capture, to some degree important truths about the world. But if (1) the rational acceptance of a theory is to be determined on the basis of its problem-solving capacity; (2) the problem-solving capacity of a theory can be determined without reference to the truth or falsity of its constituent hypotheses; and (3) the success of a theory as a problem solver provides no evidential support for the truth or truthfulness of a theory, it would be irrational in the extreme to act on a theory which turned out to be acceptable on Laudan's model. To accept a theory rationally as a basis for action is to just accept it as telling us something or other about how the world is, and that is to accept the theory as being more or less true.

3.4.3 The Transcendental Strategy

Newton- Smith states that "Laudan and others have been far too swift in rejecting the theses that the goal of the scientific enterprise is to be understood in terms of progress towards increasing verisimilitude, and that we can have reasons (on occasion at least) for believing that we have indeed made progress".

If theories were increasing in truth-content without increasing in falsity-content, one would expect an increase in predictive power. Thus, he suggests we have more reason to believe in *TV* than its denial, and that we should consequently tentatively adopt that hypothesis.

We therefore need to analyse the notion of verisimilitude. Laudan, for instance, objects that "no one has been able even to say what it would mean to be closer to the truth, let alone to offer criteria for determining how we could assess such proximity".

3.4.4 Verisimilitude

The argument for TV requires the assumption that greater verisimilitude entails the likelihood of greater observational success. It should be said at the outset that the analysis of verisimilitude to be given could not be used to ascertain directly in any practical way the relative degree of verisimilitude of rival theories.

It will be helpful to begin by reviewing the central problem involved in any attempt to define verisimilitude. Any interesting pair of theories, each of which has something going for it, will contain the same number of truths and the same number of falsehoods: namely, an infinite number.

It should contain more truth in its content and if it also contains more falsehood that increased falsehood, should be offset by a much greater improvement in its truth-content.

In view of the importance of the notion of content, our first task must be to analyse it.

One aspect of our intuitive idea of one theory's having more content than another is that one-theory answers more questions than another.

We have explicated a notion of relative content for respectable theories. The next stage in moving towards an approximation to the truth, about verisimilitude, requires defining a notion, to be called relative truth. That is, we want to take the ratio of truths in finite sequences of sentences in the theory that fares best to truths in finite sequences of sentences in the theory that fares worst.

Using the notion of relative content and relative truth, Newton-Smith defines relative verisimilitude as follows:

T_2 has greater verisimilitude than T_1 and only if both:
(1) the relative content of T_2 is equal to or greater than that of T_1;
(2) T_2 has greater truth relative to T_3 and T_1

This definition captures an opinion of the approximation to the truth. The definition of relative truth means that less of its content will be false. It follows from this definition that if one theory has greater verisimilitude than another it is likely to have greater observational success.

There is no reason to assume that selecting theories based on these principles will maximize the verisimilitude of our theories.

To support rationality it is necessary to:

1. Defeat the incommensurability argument by showing that theories are comparable;
2. Justify the goal;
3. Articulate a set of rationally justifiable principles for comparing the relative merits of rival theories;
4. Investigate the extent to which actual scientific change approximates to the ideal rational model.

Although a rationalist model involves "contentious presuppositions and simplifying assumptions", it is accepted that rationality is way in which scientific inquiry should be viewed.

3.5 Observation, Theory and Truth

In support of the rationalists view of scientific theories it is accepted that there is a difference between theoretical (T terms) and observational terms (O terms). For example and O term will be 'it is blue' while a T term will be of the nature of "it weighs 3.5 kgs".

The commonly accepted distinction referred to as the O/T distinction must not be confused with the two activities of science, being OBSERVING and THEORISING.

- Observing leads to singular and specific statements
- Theorising leads to generalised statements

Both these actions may happen at the same time, therefore it is possible that observational type reports will include theory and vice versa, hence there is no dichotomy between the two.

It is argued that O terms can be made without making any amendments to the theory within which they operate. However there can be no distinction drawn between the two types of term. This can be shown as follows:

a) Observation can be detected using our senses unaided by anything;
b) There can be no real difference between directly sensing and sensing the effects;
c) Often a theory is used to explain observed phenomena, until the observation can be theoretically explained.

This is not to mean that it is not necessary to make a distinction, as it is useful to know whether terms are from observation or theory. Newton-Smith gives an O term the following principles, which may be revised by theory:

a) The more observational a term, the easier it is to identify as an O term;
b) The more observational, the less the reliance on instruments;
c) The more observational, the easier it is to understand without first having to understand a scientific theory.

3.5.1 Realism versus Instrumentalism

Instrumentalism is the most important alternative to Realism and the conclusion that the differentiation between observation and theory is not important is incompatible with Instrumentalism.

Realism	The assumption that scientific proposition is true or false, where truth is understood to be the theory. It does not need to be an all or nothing situation. Someone maybe a realist about only some aspects of a theory or some theories but not all.
Global realist	A person who looks at all theories in a realist manner, i.e. all theories is treated as true or false. Attacked by the instrumentalists, as they do not believe it is correct to evaluate theories in terms of true or false.
Epistemological Instrumentalism	Theories are true or false but fact plays no role in our understanding of these theories.
Semantical Instrumentalism	Theories are not even thought of as true or false.

To explain why a system passes from one observable state to another we need to know something about the system and we need to discover some of the truths.

Instrumentalists regard the O terms as being true or false and the T terms are not considered. What is important is *logic,* which is used to derive observable predictions from theoretical sentences. These derivations must be achieved using the truth preserving rules of inference.

3.5.2 Relativism

Accepts the idea of truth or falsehood of a theory but disputes the construct of this idea held by the realist. What is true depends on the social perspective of the person who is examining the theory. This means that truth changes as time and ages pass.

3.5.3 Realism and Epistemology

In the eyes of a minimal realist, theories are true or false. While for a stronger realist, an epistemological aspect regarding the possibilities of discovering the truth or falsehood of a theory must be added.

Realist tradition is one of optimism and so the theory of realism can be further strengthened through the Thesis of Verisimilitude (Expectation/Possibility).

3.6 The Rational Image Under Examination

3.6.1 Popper

Popper sees truth as the aim of science or more accurately to achieve a better approximation of truth or a higher degree of verisimilitude. He maintains that if the results are as the hypothesis predicts, that simply means that the hypothesis has not been refuted. Therefore truth can not be absolutely defined, merely the relevant degrees of truth.

Popper adopts a purely deductivist methodology as he has problems of logic regarding induction. For a theory to be scientifically valid it has to be falsifiable. Based on this theory a hypothesis must be believed until it is proven false or a counter-example is produced that disproves the hypotheses.

It is important that a theory can be corroborated by having undergone repeated tests of a high degree and to perform well in these tests. Corroboration will evaluate past performance, but there is a problem trying to identify how one theory can have greater verisimilitude than another. It must be assumed that a theory, which passes many tests as opposed to a theory, which fails many tests, has greater verisimilitude.

The results of Popper's examination are the following important insights:

- The importance of the ***method of refutation and falsification***.
- The main concern in both science and philosophy is, or ought to be, the search for truth.
- Popper also holds the ***Casual Ingredient in Realism***. The claim that some, at least, of the theoretical terms of a theory denote real theoretical entities which are casually responsible for the observational phenomenon that prompts us to posit their existence.

3.6.2 Lakatos

Lakatos 's examination attempted to improve on Popper's ideas, being concerned with the question of how rationalists could defend the principles of comparison. However, he fails to establish the link required by Rationalists, between the methods of science and its goal.

The main objection to Popper is the adoption of a limited two-dimensional format. I.e. two cornered argument between the theory and the outcome of a test of that theory and the only interesting outcome can be a refutation of the theory.

However Realists suggest a three cornered fight, the theory, rival theories and the test. Some of the most interesting results come from confirmation of the theory in question. It is not correct to abandon a theory simply because it has some anomaly, as a theory with anomalies is better than no theory at all.

Lakatos's initial proposal is that the scientific enterprise argues between two theories and the world acts as a referee, and a theory only fails if:

a) Another theory predicts outcomes that are impossible with the first theory;
b) It explains the success of the first theory;
c) Some of the additional content of the new theory is confirmed.

No theory that has some validity should be rejected, unless it is in favour of a better theory and this should not happen unless some investigation of the first theory is conducted to determine if it can be modified.

This is seen by Lakatos as advocating a series of theories, each generated by modifying a previous one. This is known as Scientific Research Program or SRP. It is necessary to determine which theories can be included in a SRP or family of theoretical assumptions. Each SRP must have a core and this is regarded as what would normally be the basic theoretical idea. The convention is to accept the core as true and keep to this in the face of anomalies

Any problems caused by anomalies can be addressed by modification of a related theory, observation, or of the initial theory. It must be remembered that no theory on its own gives rise to testable conditions, to obtain such conditions we need the initial conditions and those of auxiliary theories.

Lakatos intended his model to:

- Demarcate the difference between the scientific and non-scientific;
- Evaluate competing SRPs;
- Explain scientific change.

It is argued that:

- The first is pointless. The idea that to fail to be a scientist is to fail is not acceptable. What is important is the conception of what is a good theory and what is not;
- Objection to using the second. It is necessary to fit his model, that it is understood that the various SRP's may have alternating periods of progression and degeneration;
- Assumes that most scientific change can be accounted for in terms of internal factors. The fact that there was a change is sufficient.

The methodologist wishes to understand what guides the choice of a theory and therefore, should not be surprised to find that some choices are wrong. However investigating the evolution should be considered relevant. The philosophy of science without the history of science is meaningless.

There is a need to establish that there has been progress in science and then we can examine the history of science to determine what principles brought about this progress.

Lakatos sees corroboration as giving support to a theory not as evidence of verisimilitude on the basis that increasing corroboration indicates increasing verisimilitude.

3.6.3 T.S.Kuhn

Thomas Kuhn introduced the word paradigm, which encompasses the following:

1. shared symbolic generalisations
2. models
3. values
4. metaphysical principles
5. examples of concrete problem situations

Kuhn maintains that scientific investigation is undertaken strictly within the bounds of a paradigm and when anomalies present themselves, these can not be explained. The result is that the existing paradigm begins to loose its credibility and a new one may emerge.

These paradigm shifts are referred to as a revolution. It brings about changes in the standards governing permissible problems, concepts and explanations. The new paradigm must be able to solve most of the puzzles that have been solved in the previous paradigm as well as the anomalies that the previous could not.

A new problem of incommensurability may emerge, as it is feasible that there is an inability to compare the two paradigms due to their fundamental differences.

The characteristics of a good scientific theory identified by Kuhn are:

a) A theory should be accurate within its domain
b) A theory should be consistent
c) A theory should have broad scope
d) A theory should be simple
e) A theory should be fruitful

3.6.4 Feyerabend

Feyerabend contests the idea that there is such a thing as scientific method. He is against the idea of searching for rules that guide scientists in the business of theory choice. He holds that science is just one tradition among many and that it should be removed from it's pedestal and we should rather strive to create a society in which all traditions have equal access to power and education.

Feyerabend's attempt to expose the rationalist account of the scientific enterprise is based largely on the method. The method of science attempts to find (1) rules used in the discovery of theories and (2) principles for the evaluation of competitive theories in the light of available evidence.

Feyerabend denies that there is any distinction between these two studies, and to adopt any particular rules or methodologies is to impede progress, as the only principle that does not inhibit progress is that of anything goes.

Feyerabend holds that we should proliferate theories at odds with accepted theories in order to improve our chances of discovering facts relevant to assessing the acceptability of the original theories. Variety of opinion is necessary for objective knowledge.

3.7 Theories are Incommensurable

If theories are not comparable in size or value and have no common measure, then these cannot be compared and consequently there cannot be any rationally justifiable reason for thinking that one theory is better than another.

There are three types of incommensurability:

- *incommensurability due to value variance,* where the disagreement is based on value judgments which differ for each individual;
- *incommensurability due to radical standard variance,* where the disagreement is based on a difference as to the principles of comparison;
- *incommensurability due to radical meaning variance,* where the dispute arises for the positivist tradition in which theoretical and observational terms are incompatible. The meaning of theoretical terms (T-terms) was regarded as problematic from a semantics view. Whereas observational terms (O-terms) had meaning specified directly through their connection with experience.

3.7.1 Variance of meaning

To overcome the theory/observation dichotomy, it is necessary to understanding the meanings and definitions. Within the framework it is then possible to determine if a given T-term means the same within theory T_1 as it does within theory T_2.

Meanings can vary in three ways:

1. A change in the theory does not change the meaning of the T;
2. All the T terms change in a theory change, while the meaning of O-terms remains constant;
3. *Radical meaning variance (RMV)* any change in the theory brings a change in the meaning of all terms, both T and O. Thus different theories cannot be logically incompatible and it is no longer possible to justify rationally choices between the theories by reference to the observational level.

For changes in meaning to be useful there must at least be some elements within the new theory that are recognisable in the old or ideas that overlap. Although there may be some differences in the sense of theories there is a oneness in the terms of reference. There is then a need to engage in some form of translation, which inevitably affects the process of theory comparison.

It is argued that there is no good reason to take the source of incommensurability seriously. Given also that indeterminacy of translation is incompatible with the thesis of realism (and that we cannot make the scientific enterprise intelligible except on the assumption of realism) we need not take indeterminacy seriously.

3.8 Scientific Method

3.8.1 The quest for method

There has been progress in science and this progress, is best understood as an improvement in the verisimilitude of our theories. We have evolved evidential or epistemic procedures of some success, which can be referred to as the scientific method, hereafter, *SM*.

3.8.2 The rupture with refined common sense

Some practicing scientists have described *SM* as nothing more than refined common sense. Pre-scientific common-sense procedures include the discovery of correlations between observations. Unless we possessed this faculty, the human race would never have survived. The discovery of correlations between observations is an important part of scientific activity. The search for regularities involves a refinement of common sense both in the fact that the observations may be more precisely specified and in the fact that there will be a search for correlation's that are not so evident.

The procedures of common sense involve not only noting repeated conjunctions of observations but also conjecturing hypotheses based on hunches and putting them to the test.

SM as currently constituted, is more aptly described as involving a rupture with the procedures of common sense. For the discovery of correlations between observations, far from being the end of science is but its beginning.

3.8.3 Method in mathematics

Whether there is general progress in science towards greater verisimilitude is a matter of controversy. Mathematics provides an interesting and enlightening foil for our investigation of *SM* because in mathematics this sort of controversy is almost non-existent. Results, once established, remain in the repertoire of the mathematical community. Proofs in mathematics are just that – proofs.

3.8.4 Probability and confirmation

For the greater part of the time during which the institution of science has existed, the goal was seen to be the discovery of necessary truths. The development of the modern conception of science as a search for contingent, empirical explanatory theories was, accompanied by the development of the quantitative concept of probability.

It was natural to explore the possibility that the theory of probability could be invoked in representing the process of theory choice. For instance, given rival theories T_1 and T_2 and total available evidence E, one looks to see which theory E renders more probable.

The first aspect of probability is that of *objective chance* and the second is that of *guarded assertion*. There is no possibility of using the first notion of probability in representing theory choice. Probability construed as guarded assertion fares no better than probability construed as objective chance in representing theory choice. Probability as guarded assertion can give us no guidance.

Since truth eludes our grasp at the level of theories, we must employ instead the notion of being approximately true. In science we ought to be interested in support for claims that a theory is approximately true or is more approximately true than another theory, and not in support for claims that a theory is true. We have already seen that the probability calculus fails if we shift from a concern with truth to a concern with verisimilitude.

It may be that some non-probabilistic theory of support or confirmation can be devised to deal with support for claims of approximation to the truth. The primary use made of probability theory within science is the choice between statistical hypotheses.

We continually make discoveries in science, and there is every reason to suppose that we make discoveries in the area of methodology as well.

If we knew more about the world, we should discover variables, the determination of the values of, which would enable us to make non-probabilistic predictions of the outcome of measurements.

3.8.5 The Ultimate Test

What we aim at in science is the discovery of explanatory truths. Explanatory power comes from theories, but since there is no hope of having grand theories that are strictly speaking true, we should see ourselves as aiming at theories, which have an ever-increasing degree of verisimilitude. The ultimate test as to whether one theory has more successfully latched on to a facet of the world than another theory is their relative observational success.

In the end, then, the ultimate test of the superiority of one theory over another is observational success. If we can locate factors that have guided scientists in making theory choices, which turned out to be correct on the ultimate test, we shall have inductive grounds for operating within the constraints of these particular inductive factors.

The factors relevant to theory choice in science are not constitutive of a good theory. The goodness of theories is constituted by their degree of verisimilitude.

3.8.6 The Good-Making Features Of Theories

Observational nesting	A theory ought to preserve the observational successes of its predecessors. It will count against a theory if it is unable to replicate the observational successes of the theory currently in the field. If a theory not only preserves observational success but also improves it, this obviously counts in its favour.
Fertility	A theory ought to have scope for future development. It should contain ideas to guide research. Theories are evolving historical entities, which rarely spring into existence fully fleshed out.
Track record	The longer the theory is in the field, the more important its past record of accomplishment becomes. Continuing observational success not only counts in itself for the theory; it is also an indicator of future fertility.
Inter-theory support	It counts in favour of a theory that it supports a successful extant theory. This support may take the form of providing an explanation of the laws of one theory by the other. It counts against a pair of theories if no matter how successful they are in their own domains they clash in the sense that they cannot be consistently worked together in domains of common application.
Smoothness	Nice theories have observation successes. The smoothness with which adjustments can be made in the face of failure is an important factor in theory evaluation. Once there are alternatives, it is important to consider which theory can more smoothly cope with its failures.
Internal consistency	A theory ought to be internally consistent. For a realist construal of theories, our concern is with verisimilitude.
Compatibility with well-grounded metaphysical beliefs	Theory construction and theory choice are guided by certain very general metaphysical beliefs. For instance, with one or two exceptions no theory that violates the principle of the causality of time has ever been seriously propounded. We reject the proposal that something in the physical world happened because the time was ripe for it to happen. We look to something happening in time to explain the event. Our ground for holding this belief is simply the success we have had in operating under it. However, within the category of well-grounded metaphysical beliefs there should be included some with specific content. For instance, within physics there is hostility to theories involving action at a distance. Our picture of science will be distorted if we do not note this.
Simplicity	Relative simplicity largely lies in the eyes of the theoretician and not in the theory. The case for simplicity is pragmatic. It simply is easier to calculate with simpler theories. However, there is no reason to see greater relative simplicity of this sort as an indicator of greater verisimilitude. Any model of the factors relevant to theory choice must include a response mechanism. SM as far as it involves theory choice evolves under the regulation of the response mechanism of the ultimate test.

3.8.7 The role of judgment

A practicing scientist is continually making judgments for which he can provide no justification beyond saying that that is how things strike him. Just as our success in dealing with the world in everyday life reinforces justifiably our faith in our perceptual judgments, the scientist's success gives him justified grounds for relying on his judgment.

3.8.8 Counting the costs

If I am being rational in my decision making, I shall try to arrive at an assessment of the relative probabilities of each course of actions leading to the goal. There may be costs involved, which differ with the courses of action. The courses of action may, even if successful, give me a different degree of realisation of the goal. If we multiply the chances of the benefit by the probability of getting it we have, what is called the *expected utility* of that course of action.

Should decision making in science take into account costs and expected utilities? We should opt for the theory that seems less likely to be the better. This serves to remind us of what is often overlooked in discussions of the rationality of science namely, costs and expected utilities.

The situation is not so absurd if we imagine ourselves in a position to decide how a limited budget should be spent.

3.8.9 Temperate Rationalism

It is argued that the would-be rationalist such as Popper, Lakatos or Laudan has to meet five challenges in order to vindicate his model.

1. He has to solve the problem of incommensurability. He has to meet the arguments of Kuhn and Feyerabend which purport to show in the case of major theoretical change theories simply cannot be compared due to radical meaning variance of the terms in the theories.
2. The rationalist has to vindicate his claim about the goal of science and thereafter show that the principles of comparison are in fact a means to that goal.
3. Given his views of science as progressive, the rationalist has to establish not only that following his methodology will in the future bring progress but also that there has been progress in the past.

The rationalist has to display that there has been an appropriate fit between the actual history of science and the reconstruction of history generated using his model.

Peirce provides the inquirer with additional guidelines for completing an inquiry cycle. Starting with *Belief* the inquirer needs to realise that gaining a belief is also the starting place for a new thought, thus the process never really stops. The intention of the inquiry and learning cycle is to form a *habit* and rules *for action.*

The inquirer needs to be aware that knowledge gained is never exact, absolutely universal or absolutely certain. The inquirer always needs to start out with the attitude that belief is *fallible* and as such any inquiry could turn out to be false. In addition any inquiry has a limited range, and as such the inquirer cannot possibly understand all the relationships that exist. This supports the idea of falliblism, in that the unknown relationship may prove the inquiry false.

The inquirer ought to be aware of his own beliefs and that these beliefs influence his understanding of the situation he finds himself in. As such, what the inquirer may believe to be true may not be true for others. Each individual holds his own belief of *reality*. That what can be used is what the community, or in the case of the employer, the employee and customer, commonly believe to be real or true.

The world of work changes rapidly, and so does the objective of the organisation. Within this context, accurate knowledge about the organisation quickly becomes obsolete. The inquirer therefore needs to understand that knowledge evolves, as does reality. An inquiry process that stops has two weaknesses; namely, (1) it no longer represents reality and (2) has cut itself off from reality.

The inquirer must be aware that nature, as organisations do, conforms to laws and the way of identifying these is to identify regular events that conform to a law. The inquirer, however, focuses on what could happen in the future if certain conditions are met. Actions, when repeated, become habits, which in turn, when repeated become laws.

3.9 The Philosophical Framework of Inquiry

The framework of inquiry is under-pinned by a philosophical approach. It provides the context for the framework and for any practical situation to which the framework is applied. Any framework needs to ensure that research is rigorous, which the philosophical paradigm provides.

To facilitate the assimilation of philosophical inquiry, with the meaningful analysis of a situation, a practical framework of inquiry was developed. The framework, like a funnel, leads one from a broad general situation, through cycles of application, to detailed specific areas of application. The purpose of the framework is to:

- Succinctly summarise and illustrate the process adopted;
- To guide the inquiry, analysis and evaluation process;
- To enable a process of management learning and inquiry.

In essence the framework blends the philosophical paradigm, along with the strengths of a scientific method, with the theories of Action Research and Learning, Cybernetics, Systems Theory, the Viable Systems Model, Human Dynamics and Work Systems, Operations Management, Soft Systems Methodology and Systems Dynamic Modeling.

3.9.1 The Philosophical Paradigm

Problem solving is a logical process for discovering and displaying the underlying structures that give rise to events we consider undesirable. To enable the definition of problem solving and inquiry structures, a diagrammatic representation of the necessary activities is presented in *Figure 7*. This figure represents a high level view of the framework and is multi-dimensional, accommodating the principles of philosophical inquiry with systemic methodologies and techniques that have been used in the reasoning process.

The path of Epistemology, Pragmatism and the Scientific Method is followed throughout the framework. Then, within each discipline, a specific path is followed.

Epistemology looks at the possibility or impossibility of gaining knowledge. It questions our ability to have indisputable knowledge of reality. The route taken by *Affirmation of Knowledge* provides the possibility of acquiring knowledge in a particular situation. The *primary instrument of Knowledge* applied is *Empiricism*, where the ability to reason in order to gain knowledge is followed. A secondary instrument of Rationality is applied to ensure that experience yields knowledge that meaningful and significant. The framework requires that the researcher take an overall view of a Realist and Pragmatist. This helps to ensure that problem solving focuses on practical matters, which make a difference to the situation at hand. The "Realm of Value" is taken into account through the systemic view taken when applying the framework.

The work of Charles Pierce is used as the basis for the description on Pragmatism. *Pragmatism's* central insight is that there is a connection between knowing the meaning of a hypothesis and knowing what experiential consequences to expect if the hypothesis is true.

Pragmatists deal with matters concerning their practical requirements and consequences, treating facts with reference to their practical lessons.

Pragmatism offers a practical and rigorous philosophy with which to guide the formulation of a scientific method of inquiry to problems experienced in an organisation.

It differs from other schools of thought in that it is mainly concerned with the consequences of thoughts and actions and with improving conduct in future situations. It depends upon reliable methods, reason, logic and experience in order to arrive at new beliefs. The advantages of pragmatism are:

- it provides a rational context for inquiry;
- it makes sense of the practice of inquiry;
- it justifies and provides a method of inquiry.

Peirce's theory of Scientific Method (Reilly, 1970) can be summarised as a process consisting of observation, doubt, a process of inquiry and a system of belief.

Observation, combined with experience, gives rise to doubt and we enter a process of inquiry to settle belief or rid ourselves of doubt.

The philosophical framework, illustrated in *Figure 2*, is built around the three distinct sections typical of Peirce's Scientific Management Inquiry method. Within each of these are the driving entities of:

A Rule	a belief or mental model
A Case	an observation or actual situation
A Result	an expected occurrence or consequence

The three sections are:
Abduction (Result Rule Case)
Noticing an undesirable situation (Result), looking for the cause (Rule) and testing to see if this is the Case.

Deduction (Rule Case Result)
Development of a theoretical basis of operation (Rule), that is tested (Case) and that has a particular output (Result).

Induction (Case Result Rule)
Examines the observable (Case) and determines via explanation (Result) what prevailing theory applies (Rule).

Each part of this method requires different input, is transformed differently and yields different outputs. While it is important to understand the differences between each part, it is equally important to realise that in a complex problem solving situation, all three will be used in rotation and possibly repeatedly.

To apply the scientific method effectively an explanation of each part, the inputs, transformation, outputs and reasons for their use are detailed in *Table 1*.

In order for the process of inquiry to have a significant outcome, to ensure rigor and meet the expectations of the philosophical paradigm it is necessary that personal assumptions, perceptions, values and principles be:

- Examined
- Explicitly identified
- Monitored

This is to guard against the introduction of ulterior motives.

Any process of inquiry should broadly meet the following requirements:

- Be economic in terms of time and money
- Take into account the effect of other projects
- Add value by ensuring quality research is undertaken
- Consider others perceptions and interpretations
- Consider the statute and other general conditions

Further depth can be achieved if the inquirer understands how to meet the purpose of each part of the process of abduction, deduction and induction.

The questions formulated in *Table 2*, along with the questions formulated in the Methodology area of the framework, help to ensure this.

Certain aspects of Pragmatism, as derived from Peirce, are essential to the framework. The inquiry ought to have a clear understanding of the *aim* of the inquiry. The *meaning of observations* made needs to be accurately interpreted if accurate predictions are to be made. Observations need to be classified in terms of signs and the qualities and attributes of signs must be understood. The underlying belief system, of both the inquirer and the stakeholders, needs to be explored. The inquirer needs to understand how the knowledge of the situation at hand is evolving and if continuity exists in the answer provided.

3.9.2 The Methodology Paradigm

The philosophical section of the framework provides a fundamental and broad context for inquiry. It provides the theory of knowledge in use. The methodological framework provides the method of gathering information and understanding a situation.

The theory of Cybernetics forms the basis of this section of the framework of inquiry. Cybernetics is defined by Stafford Beer as *"The Science of Organisation"*. Combined with the opinion that Management need to develop *"(1) a sound intuition into the human and physical behavior of a system, (2) the ability to understand a system systemically and (3) a knowledge of the basics."* Woven into this section are also the theories of Action Research and Learning and Human Dynamics.

3.9.2.1 Systems Theory - Understanding the Situation

Systems theory is concerned with the patterns that exist among the parts and the general rules of organisation within a system. It provides a way of obtaining an understanding of how a particular environment works without having to have specialist knowledge of all the factors at work. The overall stability of a system is created by the inherent stability of numerous smaller units and through the circular relationships within systems and their parts. Systems are analysed by understanding the required input, transformation parts and activities and the required output. The questions given in *Table 3* guides the inquirer when analysing the system and gaining a systemic understanding of the situation.

Analysis - The How	Synthesis - The Why	Stakeholders - The Who
• Describe the Input, Transformation and Output; • What are the parts of the system? What stabilises these (self organises)? • How do the parts behave? Bring about transformation? • What is the relationship amongst the parts? • What self-organising tendencies do the parts/system have?	• What is the actual and desired purpose of the system? • How do the "hierarchy of sub-objectives" influence this purpose? • What are its Measures of Performance (MOP)? • Why does it work in the way it works? Processes and activities? Interactions? (Model these SSM/SDM) • What are the boundaries / environment? • What are the constraints on the system? True or avoidable?	• Who is the decision-maker, the client? • Who are the actors - the doers of the work? • Who is affected by the transformation (antagonistic & protagonistic)? • What are their worldviews? What beliefs and assumptions are these based on? What is their source of power and motivation? • Who can stop the system operating?

Table 3 - Systemic Questions

When analysing a system it is also important to understand the management aspects of the business function. Management of work which revolves around understanding the environment, enabling the organisation, settling socio-technical disputes and resolving socio-political conflicts. The tetrahedron model shown in *Figure3*, is a three-dimensional geometric form constructed from four triangular faces. It offers a useful principle for integrating the issues and systems questions into a coherent model that has a good measure of integrity. In this model, the four vertices represent the four managerial issues and the six edges the systems insights gained from answering the six systems questions. This model is used as the basis for determining the effect of management on the system.

Management must have an understanding of both the internal and external environments that exist within an organisation. The culture within an enterprise affects its objectives and the decisions made, while often there are external factors that may even be strong enough to drive the goals and processes of the organisation. Understanding the environment is about being effective, doing the right thing that will ensure that the organisation is relevant to it's environment.

Enabling the organisation is about doing things right, and developing the capacity to do things right. The enabling triad identifies the three elements of this process viz. being able, wanting to (desire) and performing the necessary functions.

Socio-technical disputes arise as a result of interactions with other parts of the organisation. For example, the Marketing function may require funds for market research and product distribution, but there may have been an insufficient budget allocated to meet these expenses creating tension between functions.

Socio-political disputes arise when there are conflicting ideologies among the actors, customers and owners. For instance, new labour legislation is likely to create conflict with the owners and management of associated companies. Powerful lobbies may be created by disputes, which may arise if a particular group is not in favour of the products or services of an organisation seeking funds for its operations. The government can be the source of conflict if it legislates or becomes involved with the breaking down of and prevention of monopolistic practices.

A series of questions, shown in *Table 4*, can be used to understand management issues.

Management - The What
• What is the context? Are the right things being done, how effective is it?
• How are resources managed?
• What are the socio-technical problems?
• What are the socio-political problems?
• What are the internal & external values?
• What is required to run the day-to-day business?
• What makes things happen? What enables the organisation to be effective, efficient and efficacious?
• How do other parts interact with the operational parts?

Table 4 - Management Questions

3.9.2.2 Cybernetics

Cybernetics studies the difference between effective and ineffective organisation methodologies and is concerned with systems that exhibit a holistic property. It provides the inquirer with a means to synthesise an understanding of a system before the planing phase is entered into.

Each of the system parts has properties not possessed by the system as a whole and that no system can be known completely. Any two different perspectives (models) of a system will reveal truths about that system that are neither entirely independent nor entirely compatible. A system survives only as long as all essential variables are maintained within their physiological limits.

To understand an organisation it is necessary to identify the various components of it. Cybernetics is, in Stafford Beer's, terms "the science of effective organisation". This relates to systems that are complex, dynamic, probabilistic, integral and open.

Cybernetics provides the inquirer with the means to understand the systems' boundaries, its purpose, how its performance is measured and how it goes about organising itself. Twenty-two theorems, laws and principles are offered by cybernetics, which are useful when understanding a system, planning for change and evaluating change.

3.9.2.3 The Viable Systems Model

The VSM is an arrangement of five functional elements that are interconnected through a complex of information and control loops.

The principles of recursion inherent in Cybernetics allow this model to be used to investigate all levels of the organisation and any aspects that may affect its operation. The components of the VSM are listed in *Table 5*.

The Elements of the Viable Systems Model		
Element	**Description**	**Function**
SYSTEM 1(S1)	Operations	We are interested in this internal function. It is managed by System 3, integrated with the world by System 4 and the effect of these is balanced by System 5. Its effect on the organisation is coordinated by System 2. Each is autonomous and must have all the parts of a viable system. It connects to the local environment and absorbs from the overall environment
SYSTEM 2 (S2)	Co-ordination	This system co-ordinates the operational functions to meet current needs. It must solve conflict and enable the operational units. It dampens uncontrolled oscillations between the parts
SYSTEM 3 (S3)	Control	This is a focus on the here and now and is where the orders are generated. There should be a two-way communication between System 3 and System 1 for the organisation to work effectively. There is also an audit function labeled S3 *, which tests that the output of the operation is within acceptable tolerances. Maintains internal stability, interprets policy, allocates resources carries out audits.
SYSTEM 4 (S4)	Intelligence	Is concerned with the external and the future. It deals with threats and opportunities and analyses input from the environment. It provides information regarding the model's environment, distributes environmental information and transmits urgent information from/to all systems
SYSTEM 5 (S5)	Policy	Here the policy of the organisation is set and monitored. This is concerned with the integration of the whole system to the wider system of which it is part. Represents the whole system to the wider system

Table 5 - Elements of the VSM

When inquiring into a situation, the inquirer needs to understand the implications for the future organisational policy (S5), the manner in which the organisation gathers intelligence (S4), the manner in which it Audits & Controls itself (S3), the manner in which it is coordinated & managed (S2) and in the way in which it produces (S1). Essentially, we can use the VSM to describe the current & future enterprise and the Viable Systems Diagnostics to diagnose possible problem areas.

System Recursion Levels and Elements of the VSM					
System Recursion Level	**System 1**	**System 2**	**System 3**	**System 4**	**System 5**
Operational subsystem	Performs the physical functions that produce the output	Solve problems of exception by coordinating capacity, inventory schedules	Control over the production of a physical product or service	What are the demands of the operation before and after the one under investigation	Managing quality/qty outputs
Operational System	The grouping of all operational sub systems. This is the overall view of the output process	Balance capacity, inventory and schedule issues across the sub operational systems	Control the integration of the autonomous parts/ operational subsystems	Investigation of new technology, planning staffing, budget changes	Managing strategic policy re new tech etc. with what has to be achieved by the sub systems
Organisation	Monitor the : The operational systems Monitor other sub systems : HR Finance Accounting Monitor interaction between all these systems	Concerned with balancing the effect of environmental variables that will cause disturbances Technology Economy Social	Give the orders that will control and guide the subsystems at all levels that make up the organisation	Looks into the future and determining the customer needs, economic trends	Setting who we are and what we want to achieve creating the org identity by matching

3.9.2.4 Human Dynamics and Work Systems

The human input into a process is the second dimension of variety that acts with non-human inputs. A work system represents the co-operative relationship between activities and people with the objective of transforming specific inputs to specific outputs. Such a system displays characteristics of a social system; it has input, output, transformation, a purpose, consists of humans who are the actors, owners and customers, and operates in an environment. The development of a work system allows us to understand why people collaborate and compete.

There is no resemblance between work system boundaries and organisational structures. Work systems refer to a system of meaningful activities, which can vary in size and can be networked, or loosely coupled to create a large enterprise.

Work systems are made up of process levels, which describe the hierarchy of activities performed. By definition, the relevance of a work system's input is lost as the process level is removed from the immediate area of influence. People can contribute to up to three different successive process levels and are only restricted by their limited information processing capabilities. It must be clear that it is not possible to relate organisational positions to process level influence.

Organisational hierarchical positions are linked to authority between people in an organisation, while process levels are concerned with the contribution made to an activity or in the broader sense the enterprise. Contributions are made on three different successive levels. A process of a higher order is one whose output creates conditions for of a lower order.

Process levels can be grouped into different domains, depending on the time span, i.e. the time needed to materialise the results of activities deployed. The longer the time spans the higher the process level. The domain is a representation of the various strata of process levels and work systems. Four domains have been identified, each having three successive strata. The domains are: (1) the added value domain spanning a stratum of 1 day to 2 years, (2) the innovation domain from 1 to 10 years, the value systems domain, from 5 to 50 years and lastly the spiritual domain spanning a period of greater than 20 years.

Each domain has its own emerging characteristics as a viable system.

An operation is placed within the Value Added domain where added and subtracted value is created for clients, actors and owners. The reason for its existence is the mutual appreciation by suppliers and customers of the benefit around an exchange. It is not always possible or desirable to meet all the needs of customers. In order to maintain manageable systems, the range of requirements, or variability, needs to be limited.

The essential variables of this domain are:

- Throughput time — time span required for the process, work capacity rather than actual process time
- Volume requirement — relevant unit for the customer
- Quality requirement — emergent systemic quality in which customer places appreciation
- Price requirement — appreciation directly related to the price customer is prepared to pay (2 approaches to price, SP = costs + margin, Margin = SP - costs) also related to how far customer is willing to go for product, how long he is willing to wait

The questions referred to in *Table 6* may be used by the inquirer to gain a better understanding of the human dynamics and work systems of the organisation, or system, in focus.

Work Systems	Individuals	Relationships	Laws
• Which type of work system (domain) are we investigating: Added value, Innovation, Value or Spiritual? • How do we characterise the conditions created by each domain for the subsequent domain? • How many process levels exist and contribute to the output of each specific domain? • Is the enterprise/ domain purpose known to and understood by the worker? • How does the performance feedback system work? Is it effective? • What are the Human Resource Policies of the enterprise? • Which behavior variables, in this situation, ought to be selected and managed? • What is the actual and espoused value system? Describe the culture? • Are activities structured around the basic transformation processes? • Are activities clustered around fundamental changes to *input*? • Does the transfer of responsibility, between activities, take place at the lowest point of change? • Do people work in team to achieve the output? • Does each team have a designated leader? • Do the teams plan and organise their own work and evaluate their own performance? • How "open" is the enterprise to learning - does it value mistakes or openly penalise them? • What is the level of individual and group participation? • Job-design - what is the involvement of the stakeholders?	• Does the individual understand what is expected? How are they measured, what feedback do they get and what are the consequences of their actions? • How willing, able & capable is the individual in performing the activity? • Is the job challenging - does the individual have a variety of activities to perform? • Do individuals have the appropriate skills and knowledge to perform the activity? • Do individuals plan and evaluate their own work? • How significantly do individual goals differ from those of the enterprise? • What is the worldview of the worker? • Do the work systems encourage the worker to add the appropriate value? Do workers feel that they add value or contribute to the success of an enterprise?	• Can you identify the "network of relationships" amongst people? • How is strategic, control and audit information shared? Is it commonly understood?	• People, not organisations, are self-optimising; • People are different; • For any program, their exists a champion who can make it work - for a while; • People get burnt out - how do you deal with a cynical burnt out work force? • Responsibility without the commensurate authority is demoralising and counterproductive;

Table 6 - Human Dynamics

3.9.2.5 Operations Management

In order to serve the purpose, Operations Management must understand the dynamics at play within the operational environment. Operations are construed to be the primary value adding function within an organisation. The concepts around inventory, capacity and scheduling need to be understood. Key to analysing operational problems is understanding the effect that variability and variety have on the environment ability to produce. Elements of cycle time, work in progress and throughput are critical in optimising operations. The questions detailed in *Table 7* can guide to inquirer.

Physical Dynamics of the Operational Environment (Process & Activities)
• What mix of Materials, Money, Manpower & Machinery is used for transformational purposes?
• Is the transformation predominantly Manufacture, Transport, Supply or Service?
• Which goods or services are the *outputs*?
• Does the customer push or pull?
• What policies govern the management of *inventory*?
• How is work *scheduled*? (MRP, JIT, CONWIP)
• How is variety dealt with in the production process?
• How is *capacity* managed? (4M's)
• What is the capacity configuration?
• What is the throughput (TH), Work in Progress (WIP) and cycle time (CT)?
• What is the bottleneck rate (Rb)?
• What is the raw process time (To)?
• What is the critical WIP (Wo)?
• What is the congestion coefficient (α)?
• What is the queue length and how is this managed?
• What causes process time variability? (Breakdown / Set-ups / Recycle / Re-do)

Table 7 - Operations Management Questions

When inquiring into any system, it is useful to understand the influence of other parts of the supra-system. Those parts that are external to the operational parts, but that may play a vital role in the viability of the system. *Table 8* can guide the inquirer into understanding these parts of the business and when viewed along with systemic questions, can provide useful insight.

Marketing	Human Resources	Accounting & Finance
• What / Who is the target market? • What is the marketing-mix (Product, Place, Promotion, Price)? • What does the market / client want? • What is the competition doing? • How is the product distributed?	• What is the common practiced culture within the enterprise? • What is the leadership style? • What motivates people? • Identify the power networks - Where are these? Describe them? • How does the enterprise learn? • How does it attempt to shift paradigms?	• How profitable is the enterprise? • What are the ROI & ROS? • What is the sales / expense ratio? • What is the debt, equity, risk, liquidity and cashflow position? • Look at the Income Statement and Balance Sheet

Table 8 - Business Administration Questions

Up to now the Framework of Inquiry has focused on gaining a systemic understanding of the organisation using methodologies to analyse and synthesise data. The inquirer needs to be in a position to generate feasible, plausible recommendations that positively influence the situation at hand. Using the Soft Systems Methodology (SSM), Systems Dynamic Modeling (SDM), Viable Systems Diagnosis and Scenario planning methods help the inquirer to predict and make plausible suggestions.

3.9.2.6 Soft Systems Methodology

Soft Systems Methodologies is used to deal with a situation which presents a multi-faceted problem. It is necessary to identify the hidden aspects, through rigorous discovery and learning, to be able to develop an appropriate response to the problem. The seven stages of this process are illustrated in the *Figure 9*. To determine the root definitions, use is made of pertinent questions commonly known as C.A.T.W.O.E. This technique prompts the investigator to establish:

Customers of the relevant system, both victim and beneficiaries
Actors of the relevant system, those who perform activities in the system
Transformation process, the inputs, how they are changed and the outputs
World view that gives relevance to the system
Owners of the system and their power over the system
Environmental constraints that are exercised over the system.

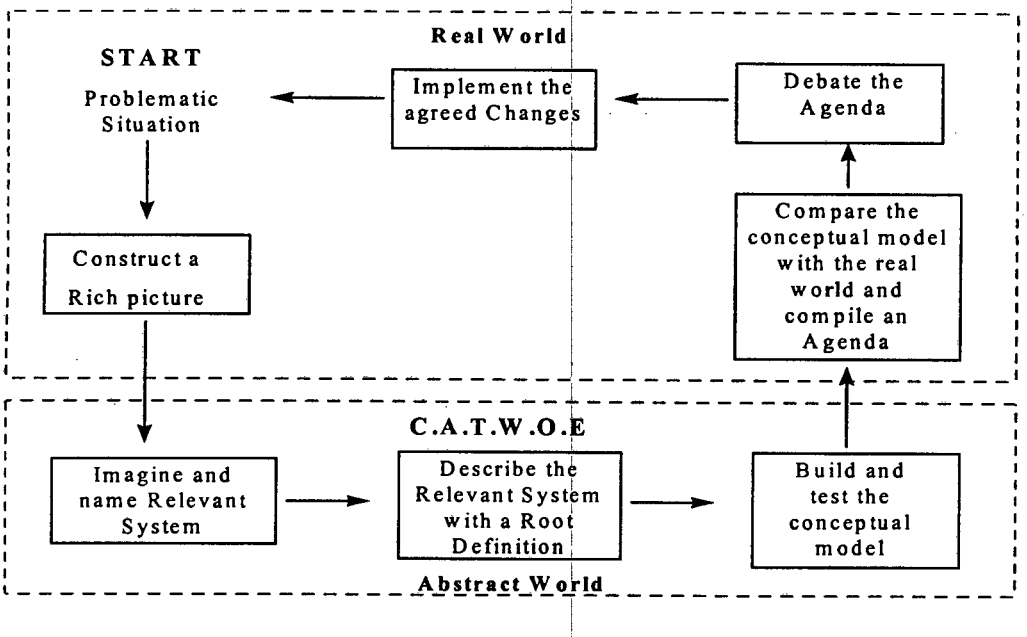


Figure 9 - The Soft Systems Methodology Cycle

3.9.2.7 Using the VSM to design alternatives

When a process of analysis and synthesis have been completed, the inquirer ought to have a detailed understanding of the relevant environment. The VSM then can provide a useful plan for understanding what may be missing. The inquirer can question whether the change needs to encompass areas around the VSM's S1 to S5 framework.

VSM Related Questions
• What are the organisational aspects of the parts/enterprise (S1) are understood?
• What is the ability of the part/enterprise to make relevant policy (S5)?
• How does the part/enterprise gather external & internal information (S4)?
• How is effectiveness & efficacy controlled and monitored (S3)?
• How is the interaction of the parts coordinated? (S2)?
• How is information translated and communicated to the parts (S2)?
• Does a shared understanding of the processes exist amongst managers (S2)?
• On which basis does the enterprise hang together (central/de-central)?
• Which internal, economic market mechanisms are in place (MED)?

3.9.2.8 Systems Dynamic Modeling

Modeling a dynamic system essentially enable the inquirer to predict possible patterns of behavior. Models are a way to see what may happen when, based on stated assumptions, a system is changed. These allow us to test our hypothesis before we act on them. Models are built by understand the positive and negative interrelationships amongst parts. Various computer aided model packages are available. A process may be followed when modeling a system:

1. State the hypothesis or problem;
2. Name the variables in the system;
3. Identify the key variables, what these control and how control flows, note the positive and negative relationships;
4. Select the parameters that cause changes in variables;
5. Select the time frame over which you plan to run your model;
6. Run the model.

3.9.2.9 Methods to Review and Evaluate

3.9.2.9.1 Key Performance Indicators

In any inquiry process the researcher, or inquirer, needs to have clear methods by which she plans to review and evaluate the outcome of the work done. Evaluation needs to be balanced, that is that the review and evaluation need to cover a broad spectrum of items. Key Performance Indicators (KPI's) need to be identified at the start of the inquiry as well as during the planning phase. The "Balanced Scorecard", which measures a more holistic set of indicators other than just financial indicators, is recommended. The KPI's are applicable at any level of recursion in the system, to individuals, teams or the whole organisation.

In planning for change, the inquirer needs to know: (1) which financial indicators will be tracked, (2) which key processes must be monitored, (3) which processes are critical to success, (4) what can be, or has been, learned, (5) how learning will be documented, (5) what the stakeholders have gained from the changes to the system?

3.9.2.9.2 Critical Thinking

In addition to qualitative and quantitative evaluation, the manner in which evaluation is broached is important. Brookfield's concept of critical thinking used as a means to encourage the exploration of alternative ways of thinking and acting, is a crucial component of the Scientific Method. This process has been defined as "reflecting on the assumptions underlying our and others' ideas and actions, and contemplating alternative ways of thinking and living". This involves "calling into question the assumptions underlying our customary, HABITUAL ways of thinking and acting and then being ready to think and act differently on the basis of this critical thinking".

Characteristics of Critical Thinking	
A productive and positive activity	*Critical thinkers are innovators, creative and see the future as open and malleable. They have a realisation of the diversity of values in the world.*
A process not an outcome	*A continual process of questioning assumptions and critical skepticism of accepted world truths*
Manifestations of critical thinking vary according to the contexts in which it occurs	*Can be internal or can be external. i.e. workers who change their workplace to be non hierarchical have exhibited critical thinking externally*
Triggered by positive as well as negative events	*Negative events can promote thoughts of how to prevent a reoccurrence, while a positive event may activate thoughts of how to repeat the occurrence.*
Emotive and rational	*Emotions are central to critical thinking, asking questions about our accepted assumptions are disturbing. When we abandon assumptions that we have been inhibited by, we feel liberated*

As a concept it can be described as:

- The development of logical reasoning abilities
- The application of reflective judgment
- The development of an awareness of the forces at work
- The understanding and resolution of contradictions.

Therefore we justify our ideas and predict the consequences of any actions. The accuracy of these predictions can then be tested and result in reflective learning.

The central component of critical thinking is the Identification and direct challenging of currently accepted assumptions. Typically, these are taken for granted attitudes, and stereotypical ideas. A prime result of this process is the development of contextual awareness and a greater depth of understanding as to the origins of the identified belief patterns. A component is the ability to explore and imagine alternatives. For any situation, alternatives do exist. The identification of these has the effects of either liberating or threatening the pattern of thinking.

A critical thinker must be able to imagine and explore alternative ways of thinking. This leads to a further understanding of both the assumptions and contexts within which the inquiry is taking place. This inevitably results in reflective skepticism of generally believed ideas. The fact that an idea is accepted or practice has existed for a long time does not mean that they are appropriate for all time.

3.9.3 The Technique Paradigm

The philosophical and methodological frameworks rely on techniques to move from the theoretical to the practical realm. Techniques are used to collect, organise, differentiate and select data.

Only the techniques that are frequently used in the application of the framework are described in detail here.

3.9.3.1 Brainstorming

Brainstorming is used to establish a common method for a group of people to creatively and efficiently generate a high volume of ideas in a short space of time. It encourages open thinking, gets the whole group involved and allows people to build on ideas. The outcome is a list of ideas specifically related to solving problems on hand.

3.9.3.2 Fishbone Diagrams

Fishbone Diagrams are used to explore and graphically illustrate the possible causes related to a problem. It enables a group of people to focus, in increasing detail, on the content of the problem. It helps generate consensus around the problem and its causes. A problem statement along is given to the group. With asking what, where, when, how, and why questions, detail is generated. The outcome is a detailed understanding of problem causes.

3.9.3.3 Interrelationships Diagrams

The construction of interrelationship diagrams allows a team to identify, analyse and classify the cause and effect relationships amongst the parts of a system. The root cause of problems in a system as well as the key outcomes, if the root cause is improved, can be identified.

Figure 6 lists the high level techniques and represents the link between the methodological framework and techniques.

3.10 Conclusion

The Framework of Inquiry is best summarised and concluded diagrammatically. *Figures 2, 5, 6 & 7*, found in *Chapter 1*, illustrate the Framework.

The context that the framework ought to be used in is within an environment of change. It is because the environment that the inquirer, Manager or decision-maker finds himself in is one that is constantly changing. We say that a *sound intuition* ought to be developed as it is impossible for the inquirer, or Manager, to deal with all the aspects, and the related variance and complexity, all of the time. The framework intends to provide the inquirer with a set of inquiry tools that enable understanding of a situation. It is based on the opinion that when a deep understanding of a situation if gained, the inquirer is then in a better position to make sound policies, which in turn, will guide better decision making.

Essentially the inquirer needs to believe that the system can be changed and a better state achieved. In order to achieve this successfully, the Framework needs to be applied with rigor.

The framework has been applied to an operational environment recursively. However, applying the philosophical paradigm takes practice. One is tempted to continue indefinitely with cycles of application. The framework and specifically the diagrams have provided the backbone of the thesis. Without it the outcome would have had significantly less depth.

The application of the framework follows in three cycles of application. The first cycle covers a period of six months, the second and third, three months each.

Chapter 4

First Cycle of Application

The aim of the first cycle of the inquiry is to recommend and evaluate operational management practices in an interim, rapidly changing, environment. To progress it is therefore important to review the current situation, or in terms of the inquiry framework observe the actual situation - the case and then desired future. Only once this has been done, can objective concerns and questions be raised. It should be noted that all data is sourced directly from the operational environment, either via data extracts from relevant computer systems, from production reports or people.

4. Operational System June to December 1997

In terms of following the inquiry process, the abductive phase of the inquiry is applied. Taking into account the context set by the description given in *Chapter 3*, this Chapter covers the area of the Inquiry Framework aimed at gaining a systemic insight into the system in focus. The Inquiry Framework is applied at a methodological level. How the system works, why it works in a particular way, who is involved in the system and what influences the system are investigated in more depth.

At a high level, the system is seen to receive data as input, this is transformed by a combination of people and processes to provide information as output. *Figure 10* shows the parts of the administrative, operational, system.

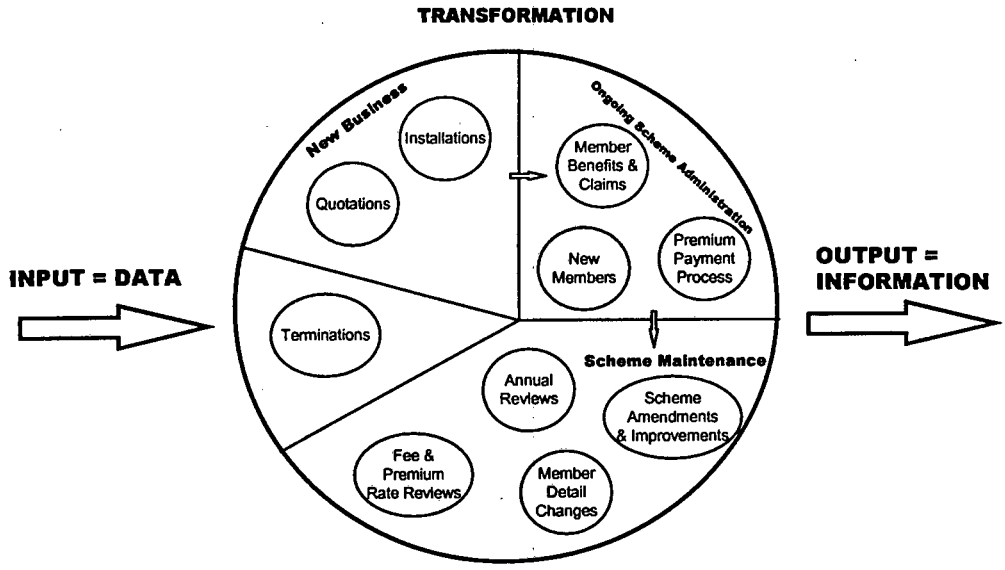


Figure 10 - Operational Parts of Administration

The parts of the system can best be described as Quotations, Installations, New Members, Member Benefits and Claims, Premium Payment Process, Scheme Amendments and Improvements, Member Detail Changes, Annual Reviews, Fee and Premium Rate Reviews and Termination's. These, which are categorised into New Business, Ongoing Scheme Administration, Scheme Maintenance and Scheme Termination, are described in detail below.

Work for each process is scheduled by the administrator on a first-come, first-served basis. Variability is caused throughout the system by inaccurate data received from the client, causing service time delays. As will be seen, administrators deal with high levels of variety, both at a process and scheme level.

4.1 Analysis of the system - The How

4.1.1 New Business

4.1.1.1 Quotations

Quotations require proposed scheme benefits, member details and, where available, previous member claims, as input. The data is captured onto a quotations system, it is processed and a draft quotation is produced. This is crosschecked before a final quotation is sent to the customer. The output is a quotation, detailing scheme and member benefits along with premium rates and administration fees.

Where input data is not available, assumptions are made in order to process the quotation. A standard three-day cycle time is adhered to. As workloads increase, staff tends to increase the number of assumptions made regarding quotation details. A relationship, with other parts, is only created when a quotation is accepted by the customer. This function is mostly performed (80%) outside of the Customer Focused Teams (CFT's) referred to in *Figure 8.*

Should a customer accept a quotation, an installation booklet is completed, which is then forwarded, along with the scheme and member details, to the administration and legal teams for installation and Rule and Policy drafting purposes. (The Legal team performs specialist functions and are not viewed as part of administration) The number of requests for retirement and investment funds quotations are strongly influenced by the return on investment achieved by the various internal investment portfolios.

4.1.1.2 Scheme Installations

The installation function uses the quotation and updated member data as input. The scheme benefit structure and costs are reloaded onto the administration computer quotation system and member details are re-captured. As output, the customer receives an initial review of the scheme benefit structure, while members receive a member benefit statement. The scheme is then considered a "live" scheme. Delays in receiving accurate data allow the administrator to balance the installation process with other scheme maintenance and ongoing administration functions. However, as Sales Consultants remuneration is partly dependent on the installation of a scheme, pressure is exerted by them on administrators, to ensure that the scheme is installed timeously. The accurate installation of a scheme is an essential process. If errors are made during the installation process, these generate processing inaccuracies in ongoing scheme administration and maintenance. Scheme installations are performed by administrators within the CFT's.

Simultaneously the legal team receives an installation booklet as input. This is used to draft Rule and Policy documents, which are, considered the output of this process. Once these documents have been signed by the client, the scheme is registered with the Financial Services Board (FSB) and is considered a legal entity in its own right. Sales Consultants may only claim final remuneration on a scheme once all the signed documentation is received from the customer.

It is therefore in their interest to ensure that Rule and Policy documents accurately reflect the customer's expectations and that drafting cycle times are met. Again, it is vital that the Rule and Policy documents are an accurate representation of the customers' expectations. These documents represent the scheme as a legal entity, must abide by various Acts of Parliament, and form the contract between the Southern Life and the customer. Inaccuracies, that have been overlooked by the Sales Consultant and the customer, generally are only highlighted once a member benefit or claim is processed, causing delays and resulting in the administration teams not meeting customer needs and expectations. A specialised legal team performs this function.

4.1.2 Ongoing Scheme Administration

4.1.2.1 New Members

Input into this function is data regarding a new member joining a scheme. The transformation occurs simply by capturing or including the new member details in a scheme and the output is a new member benefit statement. The annual audit attempts to stabilise this process in that a comparative audit of employer and scheme member information is completed. New member information influences the premium payment process significantly in that all contribution and premium payments are based on a percentage of the employers total salary roll. Therefore, should new member details be excluded and timely payments not be made for new members, scheme data and statistics become corrupt. However, as the processing of new member details have no immediate or direct bearing on the employer, i.e. the employer does not require an immediate output or the output is not tangible to the employer, the processing of these details often gets delayed.

4.1.2.2 Member Benefits and Claims

Input into this part is an application from the employer for a benefit or claim to be paid. Transformation is performed by specific processes, and output is the payment of a benefit or claim to the employee (or member). Member benefits and claims can be directly linked to the relationship an employee has with the employer. Should a member resign, be dismissed or retrenched they are termed to withdraw from a scheme. Should the employee become disabled, they are termed to be a disability applicant and should they die, a death claimant. The output of these processes has a direct influence on the employer and employee in that the output is important to both. Because of this, this part is given first priority by administrators. This is seen as a key part in the delivery of service to the customer and is largely driven by the customer.

4.1.2.3 Premium Payment Process

A payment made by the customer forms the input into this part. Transformation occurs when the payment is received and allocated to the correct scheme and moneys are invested. Output is a monthly or annual financial statement, which reflects all the financial transactions that have occurred during a given period. Controlling the receipt of money is governed by the Pensions Fund Act (PFA).

The Division is required to report non-payment of contributions to the Financial Services Board (FSB). The reporting function stabilises this part of the system, by ensuring that transformation occurs in a timely manner. This part has strong relationships with most other parts of the system. An important output of the part is increased financial gain for members; this cannot be achieved successfully if payments are not received timeously. Member benefits and claims are not processed if a scheme has payment arrears and therefore the purpose the system cannot be met. Both the issuing of financial statements and controlling payments can be seen to be sub-systems of this part.

4.1.3 Scheme Maintenance

Scheme maintenance is performed at both a scheme and a member level.

4.1.3.1 Amendments & Improvements

The input into the part is a request from the customer to amend or improve the benefit structure of a scheme. Transformation occurs when the benefit structure is changed and approved by the relevant authorities. The output is a revised scheme benefit structure and a member benefit statement, which details the changes made. If the change results in an increased administration fee income, the Sales consultant recommending the change is entitled to a bonus payment. However, the bonus payment is only made once the customer has signed the revised legal documentation. This, to some extent, drives the production of output. The part is stabilised by the annual review process. Registered Rule and Policy documents are compared to the scheme benefit structure. Where necessary changes are made. Changes influence member benefits, claims and the premium payment process.

4.1.3.2 Member Detail Changes

A request from the customer, to change a member's detail, is received as input. Transformation occurs when the member's details are changed. No immediate output is provided, however member detail changes will be reflected on the annual member benefit statement. If the member detail change results in a change in the benefits that the member is entitled to, this part will influence the payment process in that increased contributions may be required. Again, this part is stabilised by the annual review process.

4.1.3.3 Fee & Premium Rate Reviews

Payments are composed of member and employer contributions towards retirement, premiums towards risk benefits, administration fees and, where applicable, broker commission.
Input into this process is the current administration fee and rate review. Transformation occurs when the scheme activity and profile is analysed, while the output is a reviewed administration fee and premium rate. This part requires that new member information, member benefits and claims, member detail changes and scheme amendments and improvements are up to date. The regularity of payments is also analysed.

Contractually the Division is bound to advise customers, in writing, of reviewed administration fee and premium rates one month before the actual annual review date.

This occurs before the annual review, a process which administrators use to consolidate scheme activity. The transformation is therefore often based on incomplete data. High income earning or schemes with large membership are given priority over lower income earning, smaller schemes. Administration fees and premium rates for smaller schemes are reviewed automatically, helping to stabilise the part.

4.1.3.4 Annual Reviews

This part has three distinct sub-systems. The annual review can be categorised into a review of member information, scheme benefits and scheme assets. Fresh member data is requested from the customer as input into this part. Transformation occurs when scheme member information is compared to customer member data and, where necessary, scheme member information is updated. Scheme benefits are audited to ensure accuracy and updated administration fee and premium rates are inputted. Financial transactions are audited for accuracy. The output provided to the customer is a review package. This package provides a member benefit schedule for the employer, a member benefit statement for each member, a summary of scheme benefits, benefit costs, recommended benefit improvements and a financial statement. If all scheme related transformation processes are updated, the output of this part is quick to produce. In order to stabilise and catch up on outstanding production, administrators often batch other transformation processes together in anticipation of the annual review and process these along with the review.

4.1.4 Scheme Termination

An instruction to terminate the contract is received by administration as input. Transformation occurs by processing an annual review, paying out all assets held by the scheme, closing all scheme accounts and de-registering the scheme with the Financial Services Board and the Commissioner of Inland Revenue (CIR). The output is a de-registered scheme. However, even though a terminated scheme that has not been de-registered is still liable to pay annual FSB levies, the customer is only concerned with the payment of scheme assets. Often schemes are terminated to the point where assets are paid out and the balance of the transformation is left unattended to. Terminations of retirement schemes are strongly influenced by the return on investment achieved by the investment portfolio. Risk schemes are influenced by the premium rates quoted.

In gaining a systemic insight into a system, it is important to understand why the system performs in any given way. This provides the inquirer with a deeper understanding of the system and, ultimately, facilitates the design of meaningful intervention. Systemic methodologies, shown in Chapter 2, are applied.

4.2 Synthesis of the system - The Why

Describing the Purpose and the Measures of Performance of the administration system help to set the boundary in which the intervention needs to take place.

4.2.1 The purpose of the administration system

The purpose of Employee Benefits Retirement Fund Services is to provide the customer with peace of mind by accurately administering the customer's group scheme thus being in a position to provide the member with benefits. The desired purpose is to achieve a 21% return on investment for shareholders while providing the service described above. The desired purpose is strongly influenced by the "hierarchy of sub-objectives" shown in *Figure 11.*

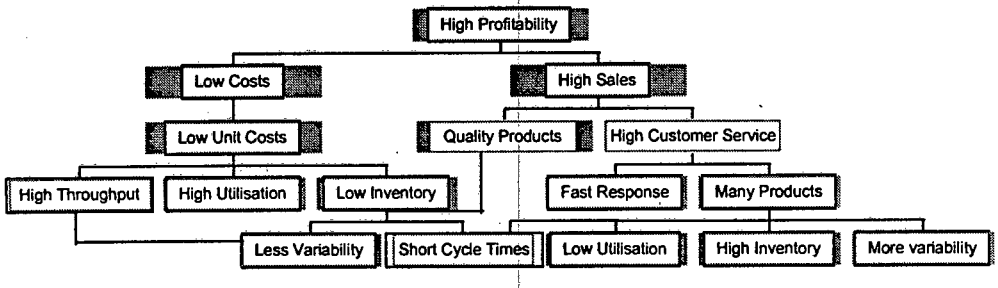


Figure 11 - Hierarchy of Sub-Objectives

Each scheme's composition is unique, therefore utilisation can be seen to be low. Activity levels on schemes vary and a large number of different processes are performed by administrators, therefore throughput is also low. The chances of variability are therefore high with long cycle times. These influence the ability of achieving high sales and negatively influence profitability.

4.2.2 Administrative measure of performance

The current measures of performance for administration are the levels of work-in-progress per task, the productivity per administrator, the achievement of set production targets and feedback from customers.

The desired measure of performance would be the level that each scheme contributes towards the profitability of the Region.

4.2.3 Interrelationships amongst parts of the system

Figure 12 illustrates the interrelationships amongst the parts of the system. Analysing the interrelationship show that the Fee & Premium Rate Review part drives other parts, it causes or has the most influence on other parts. This is shown by the five outgoing arrows exiting this part. This signifies that this part is the part that should get attention first. Member Benefits & Claims, Premium Payment Process and Annual Reviews, which have the most incoming arrows and are key outcomes of the system, ought to become the focus of planning and production achievements can be used as an overall measurement of success.

The system is constrained by the quality of data received as input from the customer. Requesting accurate data causes processing delays. This could be avoided if a customer education was implemented and responsibility and accountability for customer education was clearly allocated. (Currently customer education occurs on an ad-hoc basis and is done partly by the Sales Consultant and partly by the administration team.)

The system is also constrained by the number of people, the human resources, employed in the region. The region has not performed profitably for a number of years and, even while teams were being redesigned (new computer systems, additional process etc.); the recruitment of replacement or addition staff has not been allowed. This is a true constraint, as the company is not prepared to increase its current staff related expenses.

Lastly, the system is constrained by ineffective computer systems. The current computer system is a replica of the previous system, which was abandoned due to aging technology. Because of this a number of processes are performed manually or outside of the main system. Multiple, non-integrated computer systems exist within Employee Benefits. This causes processing errors and delays. This can be seen to be a true constraint, as redeveloping the system would take a number of years to complete.

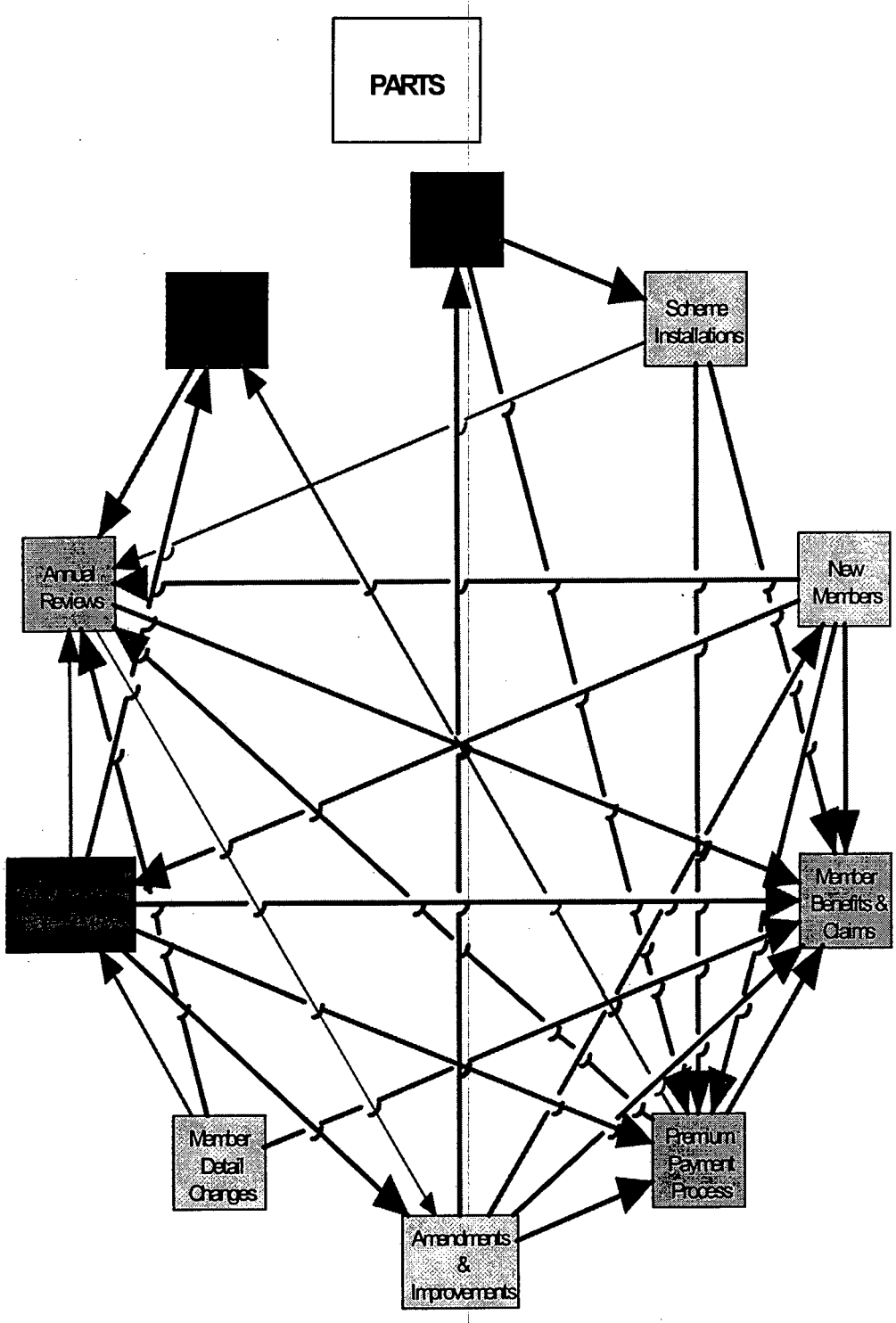


Figure 12- Interrelationship amongst Parts

Following the Inquiry Framework, it is then required to analyse and synthesise the people involved with and influenced by the system.

4.2.4 Stakeholders - The Who

This section gives the details of the pertinent people, the stakeholders, involved in the system. The stakeholders in the system can be defined as follows:

- **Customer**: The employer, board of trustees and/or the broker, who decide to place the scheme with the Southern and pay the contributions, is the customer. They can stop the system from operating by deciding to place the scheme with another underwriter. They are strongly influenced by the return on investment achieved by the investment portfolio. The payment of benefits and claims is important to the customer, as these form the purpose of having a scheme.
- **Actors**: The administrators are the actors in the system. They hold a worldview that their workloads are too high and that too much is expected of them. They feel that they have to deal with too many internal demands, which distract them from providing service to the customer.

Most feel that they have benefited from becoming multi-skilled, that this puts them in a better position to provide service. Administrators are generally motivated by seeing a task completed. Most dream of having a clear desk at the end of each working day.

- **Affected**: The members are affected by the transformation process. Their worldview is such that they pay their contributions and on the event of withdrawal, retirement, disability or death, they want their benefits paid promptly (to provide financial security). They expect benefits to be paid quickly. Increasingly, members have the power to influence who administers the scheme. What the benefit structure is and where assets are invested.

Management performs important roles in any changing environment. It is therefore important to gain a management perspective of the situation.

4.2.5 Management - The What

Taking into account the transformation teams findings and the table below, which reflects the income expense ratio for the region, one can assume that the region is not operating effectively and efficiently.

1997 →	03/94	03/95	03/96	03/97	08/98
Admin. Profit	(R9 000)	(R7 430)	(R6 343)	(R6 305)	(R 4 224)
Overall I/E	(21%)	0%	8%	(6%)	(25%)

Table 9 - I/E Ratio

In July 1997, the Region had 345 schemes on the books, a decrease from 418 in July 1996. Of the 345 schemes only 26% of these, or 91 schemes, fall within the target market and may be viewed as "profitable" schemes. These 91 schemes current contribute 49% towards total income.

The new strategy provides the region with a pathway towards profitability. However, the situation depicted above has been influenced by a lack of new business, the increase in terminations of large profitable schemes and the low return of investment shown by the investment portfolios. *Table 10* shows a comparison in return on investment of Guaranteed Fund Portfolios achieved by a variety of portfolio managers. As a result of the low return on investment offered by Southern Life on it's Guaranteed Fund Portfolio, management expect a large number of these schemes invested in this portfolio to terminate their contract with the Southern. In addition to this, large capital reserves are required to maintain the Guaranteed Fund portfolio, negatively influencing profitability.

Guaranteed Fund Bonus Declarations 1997

Company	Year - end	Income Bonus	Capital Bonus	Total
Capital Alliance	31-Mar-97	8.25	8.75	17.00
Commercial Union	31-Dec-96	7.75	6.25	14.00
Fedsure	31-Dec-96	7.50	10.50	18.00
Liberty Life	31-Dec-96	7.25	10.75	18.00
Metropolitan Life	30-Sep-96	9.25	9.50	18.75
Norwich Life	31-Dec-96	10.50	6.50	17.00
Old Mutual	30-Jun-96	9.00	9.50	18.50
Sage	31-Mar-97	8.50	8.50	17.00
Sanlam	31-Dec-96	7.75	10.00	17.75
Southern Life	**31-Mar-97**	**8.00**	**4.00**	**12.00**
Stangen	31-Dec-96	7.25	8.25	15.50

Table 10 - Return on Investment

Human resources are allocated to teams based on the number and type of schemes in each team. In turn, teams have been divided to service specific customer markets, namely: 2 Corporate Broker teams, 1 Medium Broker team, 1 Direct Customer team, 1 team servicing Namibia and 1 team servicing a particular product across the region. The recruitment of new staff has been limited for a number of years. In June 1997, a moratorium was placed on all recruitment of all new staff. In addition, human resources are allocated to each team based on the number of schemes administered in that particular markets segment. The level of activity occurring within each scheme is not taken into account. (An employer with a stable workforce will require less scheme work than an employer with a high turnover of staff.) This possibly creates an imbalance in the distribution of human resources amongst teams.

Team	W6	W7	W8	W9	WN	FS	Admin.	Mngt	Total
# of staff @ 01/08/1997	8	9	4	3	4	12	40	10	50
# of staff @ 01/09/1997	8	9	3	3	4	12	39	8	47
# of staff @ 01/10/1997	12	0	4	5	4	11	36	7	43

Table 11 - Allocation of Resources per Team

Socio-technical disputes arise mostly when other internal departments make demands on administrators' time, resulting in administrators having to prioritise internal requests above service required by the customer. Demands are also being made on teams by the transformation team, who require resources and information.

Socio-political disputes often occur between administrators and Brokers, specifically where Brokers request activities that fall outside the guidelines provided by the Pensions Funds Act.

Management is measured on the production of the administrators. High production figures are valued. These are often achieved in inefficient ways, causing problems in the scheme further down the line. The customer values the prompt, accurate payment of benefits and scheme information.

From a management perspective, accurate management information about the status of production and service levels are required to run the day-to-day business.

In order for the region to be effective, it must understand the customer's needs and be in a position to meet these needs. Furthermore, management must know what ensures and influences the profitability at a scheme level. Once this is known, efficient processes and competent administrators are required to enable the delivery of service.

The current situation within the region is embedded and strongly influenced by the new strategy adopted by the company. This strategy was formulated by a transformation team comprising of internal staff members and external consultants over a period of six months. The strategy is based upon the team's findings.

In terms of the Inquiry Framework, the section that follows may be viewed as planning, deciding what to do next and developing basic actions.

4.3 New Strategy - Desired Future

Initially a team comprising of eight Southern Life staff and seven external consultants were given the task of assessing the company's current position and investigating opportunities for growth. The analysis was chunked in to four areas, namely external influences on the company, competition, customer requirements and current performance. The strategic focus of the group being to identify attractive customer segments in order to supply the products and services required by using optimum delivery channels. Their objective was twofold: (1) "establish a viable organisation that is customer focused and delivers value to our stakeholders" and (2) "early identification of growth opportunities in our existing market as well as the wider financial market".

The vision is described as "Southern Life will re-establish itself as a powerful presence in the South African financial services market by providing competitive products that satisfy the needs of a growing market for wealth creation and protection. It will grow profitably through: (1) establishing life-long relationships with its identified end customers, (2) utilising selected delivery channels, (3) providing end customer focused products and (4) building closer alliances with other organisations to complement its competencies and capabilities, making strategic investments where necessary."

Taking into account the initial transformation team findings and the company's vision, this is translated into a distinct position for the Employee Benefits Division.

- The key customer focus will be on medium to large, (Greater than 50 members per scheme), Risk and Investment only schemes;
- We will selectively serve profitable large and medium Retirement only and Retirement with Risk and Investment schemes;
- Products will be tailored to meet the needs of employers and employees in each target market;
- Delivery channels will be specific to the needs of the target market via a direct Employee Benefit sales consultants, corporate brokers and independent brokers;

Certain performance targets were set for the company. The market share is to grow from 5% to 9%. The Cost/Income ratio is to decrease from 17.7% to 13.2%. Profitability is to increase, providing shareholder with a 21% return on investment. Costs are to be reduced by streamlining business processes. The value of the company is to be improved by increasing the share price to R99, 00 per share by 1999.

What is the impact of the strategy on the West Coast Region of the Employee Benefits Division? In order to achieve a return on investment of 21 % we will have to re-price or discard all schemes falling outside of the preferred target market and reduce expenses considerably. In the West Coast Region this could be achieved by either by re-pricing or terminating 254 schemes and reducing the number of administrative staff from 43 to 5 (in a worst case scenario).

The strategy was announced to the company on the 31 August 1997. Implementation teams were formed and trained during September. The first implementation of changes is envisaged to occur from January 1998.

Appendix 1 refers to a memorandum, issued to all administration staff, outlining some of the effects the new strategy will have on the Division.

Now I felt that I had a sufficient understanding of the administration system, or situation, and needed to emerge myself in data to establish what the possible management priorities, as reflected in the system, are. In terms of the Inquiry Framework, I need to establish the major concerns.

4.4 Brainstorming and Fishbone Analysis

The brainstorming and fishbone technique assist with finding and curing the causes of problems, not the symptoms. In reviewing my understanding of the administration system, the current situation and establishing what ought to be done to ensure the viability of the region in the interim, a brainstorming session was held with the deputy Coordinators of the region. (Deputy Coordinators are both highly competent administrators and trained as managers who deal with the day-to-day running of the teams). The purpose of this session was stated as follows "What must be done to ensure that we regain stability in the Region, thus ensuring that (1) service is delivered to customers, (2) that staff remain motivated and (3) that we prepare ourselves for the implementation of change?"

The brainstorming session highlighted five areas that the deputy Coordinators felt had to be managed:

1. Focus must remain on the external customer;
2. Scheme ownership and the related flow of work must be re-evaluated;
3. Appropriate goals and rewards systems must be instituted;
4. A communication and change management plan must be devised;
5. The possible, negative, effects of the change on people must be monitored;

Then the fishbone analysis technique was used to understand "What ought to be done to avoid problems in each of these areas?" Key issues and activities were established along with the relationships amongst these.

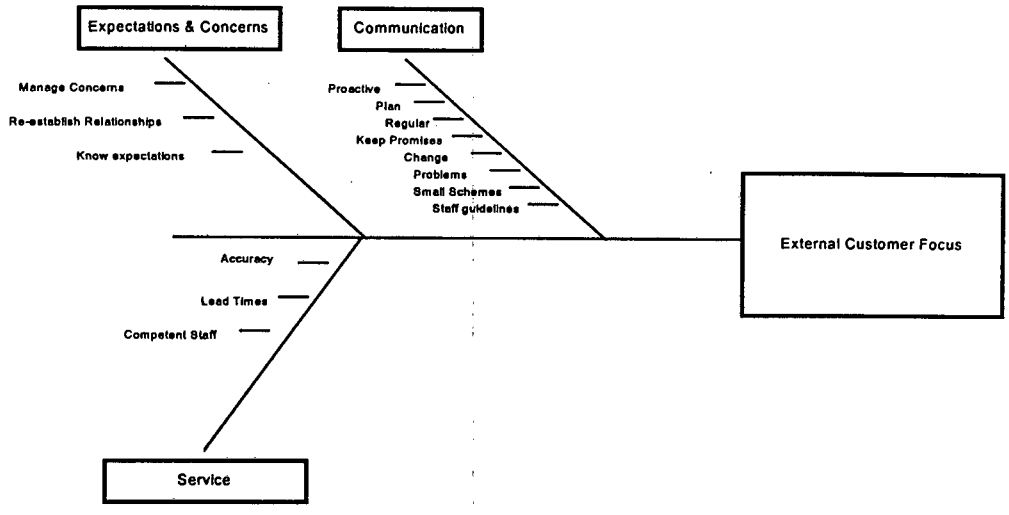


Figure 13 - External Customer Fishbone Diagram

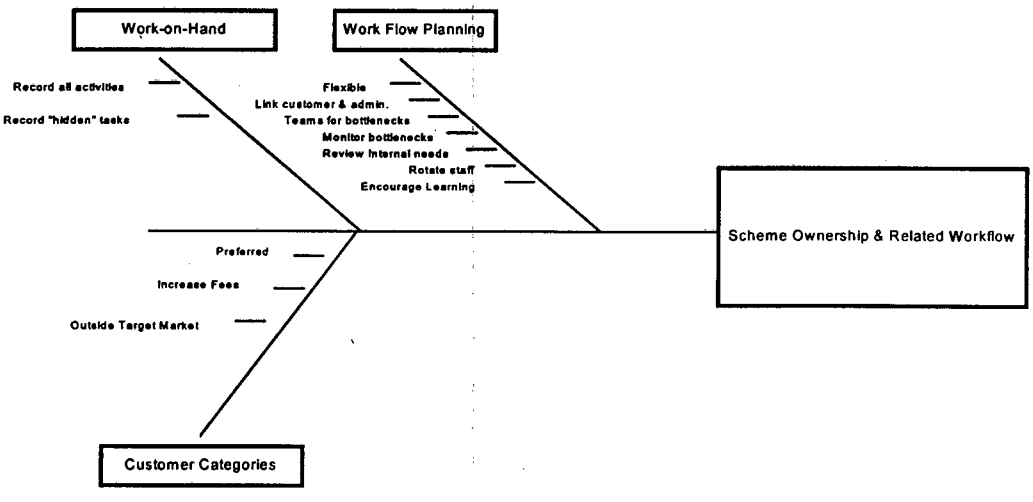


Figure 14 - Scheme Ownership Fishbone Diagram

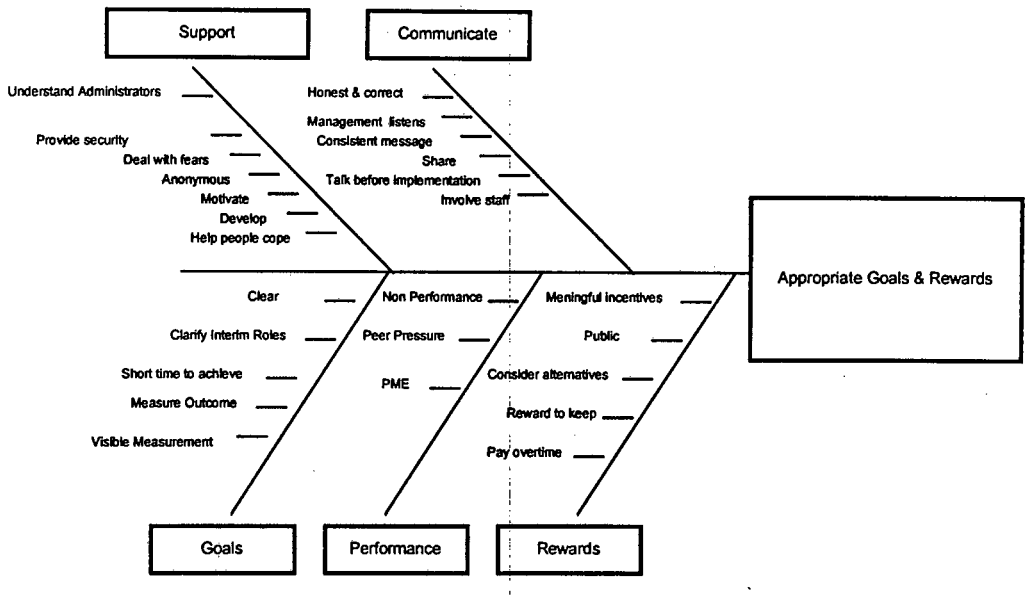


Figure 15 - Goals & Reward Fishbone Diagram

In addition to the issues raised by the Fishbone analysis, the deputy Coordinators felt it important that the possible negative effects of the change on people ought to be monitored. They felt it important to monitor stress levels and that trustworthy people ought to be available to help staff cope. They also felt that a job profiling technique ought to be used to ensure that the right people are in the right jobs. That the assumption must not be made that competent staff are necessarily the right people for the administrative role. People ought to be supported in finding alternative jobs within or outside of the company. That the company ought to pursue new opportunities and that, lastly issues surrounding people ought to be treated confidentially.

When asked the question *"what are the key performance activities and measures required to ensure that service is delivered to customers, while maintaining internal profitability requirements?"* the deputy coordinators felt that:

1. Income :
    - the credit control process must be fixed so that it can be effectively managed;
    - administration fee reviews must be closely monitored;
    - administrators must understand income parameters;
    - profitability at a scheme level must be communicated;

2. Expenses
    - volume of activity per scheme must be monitored and managed;
    - activity bottlenecks must be managed;
    - service lead times must be managed;

4.4.1 Interrelationships

The interrelationship diagram, illustrated in *Figure 16*, was constructed.

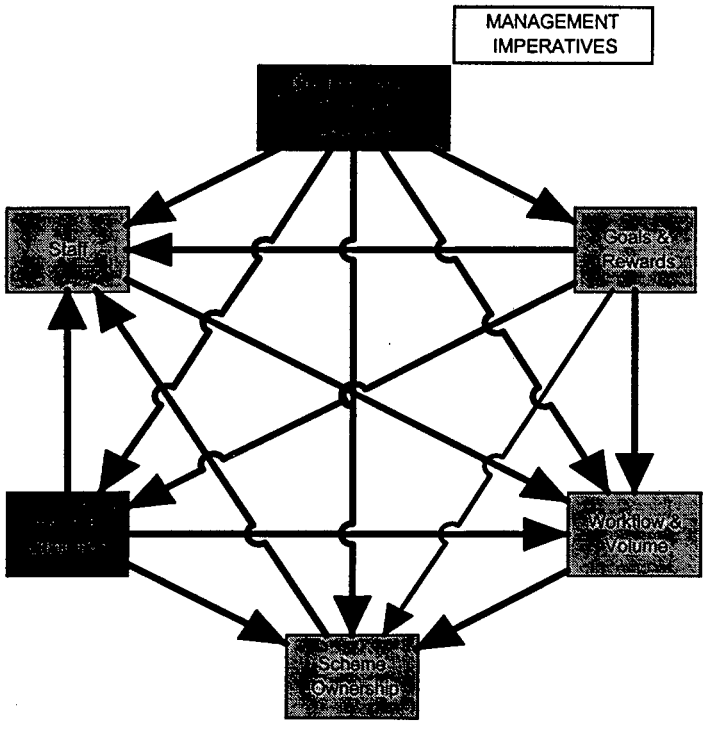


Figure 16- Interrelationship Diagram

Taking into account the desired purpose of providing the customer with peace of mind by accurately administering the customer's group scheme thus being in a position to provide the member with benefits and the desired purpose of achieving a 21% return on investment for shareholders while providing the service, the interrelationship diagram, illustrated in *Figure 16*, highlights Communication and Change Management as the key driver for achieving the purpose in the current environment. Issues raised under the headings Staff, Goals and Rewards, Work-flow and Volume and Scheme Ownership will all benefit if Communication and Change Management becomes a key management focus.

4.4.2 Data Analysis

Based on the findings of the Fishbone and Interrelationship analysis I decided to gain further insight into how people, or the actors, within the system felt about the situation at work. The Employee Care Division of Southern Life was approached to run a stress analysis on the administrative staff. Participation was voluntary and the Human Resource Research Council questionnaire 2917, found in *Appendix 2*, was used to analyse the stress levels of staff. 41% of the administrative staff in the Region attended the analysis. The overall findings are shown in *Figure 17*.

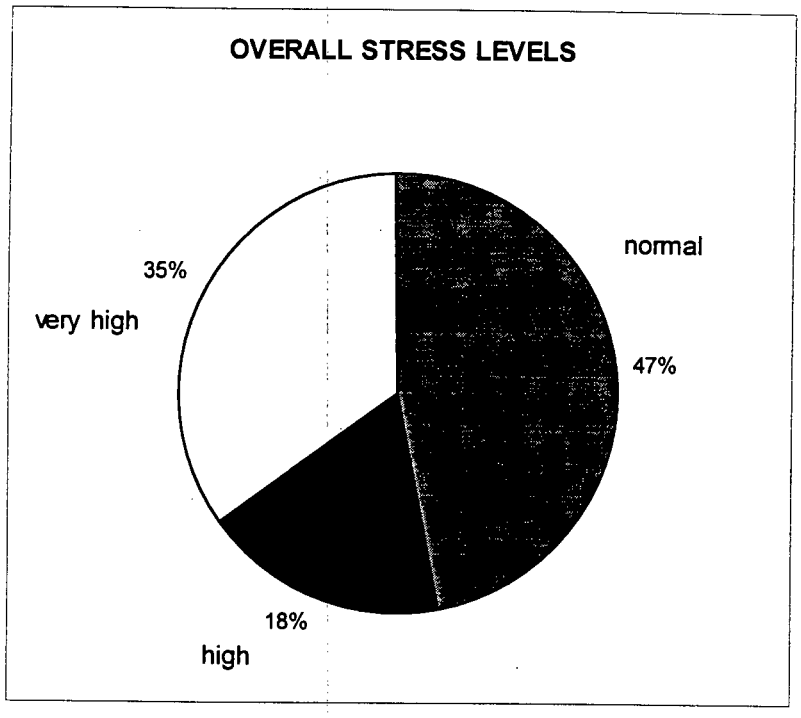


Figure 17 - Overall West Coast Stress Analysis

A detailed description of the analysis and recommendations made by Employee Care may be found in *Appendix 3*. It ought to be noted that 53% of the sample group are experiencing higher than normal stress levels.

I am not in a position to judge whether a correlation exists between the competency levels of staff and their stress levels. However, it may be important to link more competent staff to schemes that the division would like to retain. Competency is defined here as the skill, knowledge and productivity level of an employee. The competency levels, as assessed in July 1997, are shown in *Appendix 4*. The region commonly categorises competency into three levels, namely (1) an expert administrator with a competency level above 70%, (2) an average administrator with a competency level between 50 - 69% and a trainee administrator with a competency below 49%.

The data is analysed to show that 50% of the staff are expert administrators, 32.4 % are average administrators and 17.6% are trainee administrators.

The Inquiry process requires that cognisance is taken of projects influencing or aiming to achieve the same output as the inquiry at hand. It is therefore appropriate that the thinking and actions of management are taken into account.
At the beginning of September 1997, the Regional Management Team met to brainstorm the areas that they felt they needed to focus on. These were listed, in no particular order of priority, and expanded as follows. It is important that the reader note that the Regional Management Team work was completed without any outside intervention or involvement on my part. Thus, the work shown here has not been interpreted. It is simply used as additional data to enhance my understanding of the current situation and is documented as such.

4.4.2.1 Regional Management Team Priorities

1. Retain good staff :
    - Utilise the 01/10/1997 Salary Review to reward competent staff;
    - Seek challenges for competent staff;
    - Ensure that performance management is effective by continuing developmental support, informal chats with staff and reviewing flexi-time usage;
2. Maintain service levels :
    - Restructure where appropriate;
    - Monitor work-flows;
    - Boost staff morale;
    - Review human resources regularly;
    - Focus on activities that must happen;
    - Ensure effective performance management;
3. Maintain an effective Regional Management Team :
    - Enhance the interaction of new members;
    - Set and achieve key deliverables;
    - Reallocate divisional responsibilities;
    - Ensure staff involvement in the implementation of change;
    - Ensure rapid communication on strategic issues;
4. Implement an appropriate interim structure :
    - Monitor the effect of resources moving to the transformation team;
    - Resolve the matter of Namibian business;
    - Resolve outstanding matters regarding national standards and projects;
    - Look for rapid learning interventions;
5. Continually realign with the strategy as changes emerge :
    - Ensure that information from the transformation team is cascaded throughout the division;
    - Re-deploy human resources across the division, monitor weekly;
    - Reinforce the rationale for change with staff;
    - Review business process and identify possible changes;
6. Re-focus on profitable business :
    - Support the "Small Scheme" strategy;
    - Co-operate on the re-deployment of resources and work;
    - Question what gets done;

7. Continue to enhance people's capability :
    - Identify what is expected in the interim structure;
    - Develop a fast track program;
    - Ensure that resources are available to share knowledge;

The Regional Management Team regard profitability, customer service, people development, new business, strategic input, their own development and focusing on what's important as their key deliverables during the interim period.

The simplistic systemic diagram, shown in *Figure 18*, re-iterates the purpose of the inquiry and intervention.

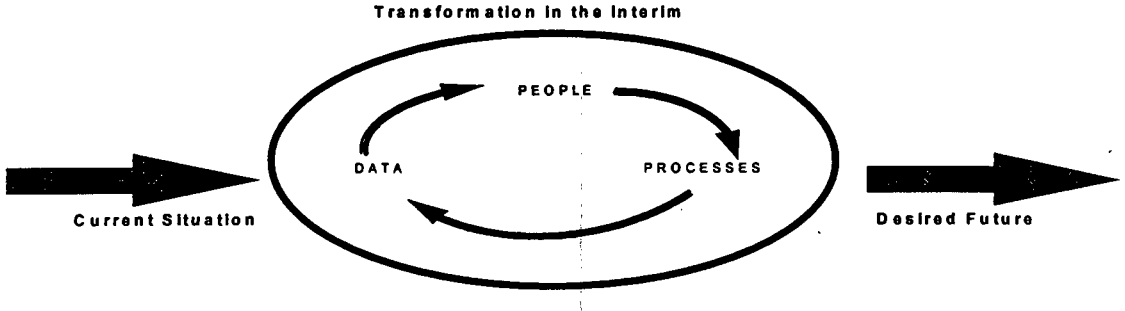


Figure 18 - Purpose of Inquiry

In terms of the inquiry process and in order to get to a point where valid recommendations can be made the possible options available, as shown in the next block in the Inquiry Framework, are explored using the Soft Systems Analysis technique.

4.5 Soft Systems Analysis of Administration

In order to uncover potential weaknesses in the administration system, the Soft Systems Methodology (SSM) is used to re-describe the system. A rich picture of the system is illustrated in *Figure 19*.

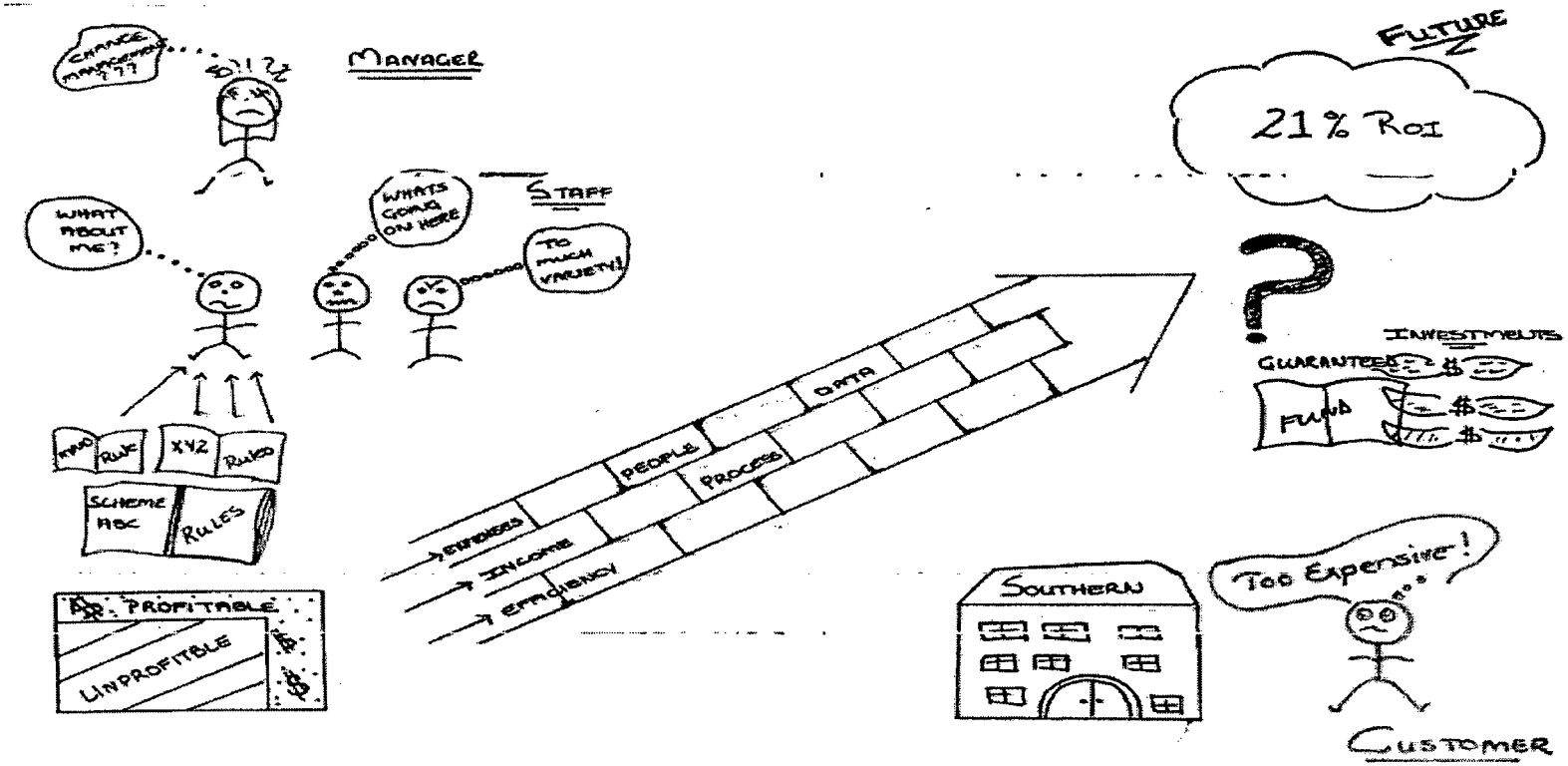


Figure 19 - Administration Rich Picture Cycle 1

At this stage of the Inquiry process, multiple concerns have been raised. Three of these are used as the basis to re-describe the Administration system. The administration fee review system shows itself as a system that drives or is an underlying cause to other parts within the administration system. The termination system shows that it has few interrelationships with other administration systems while a system of Change Management and Communication shows that it may be an essential interim management priority. Soft Systems Analysis is used to re-define these systems in an attempt to create alternative systems.

4.5.1 SSM - Root Definition 1

The Administration Fee Review is a system that determines accurate administration fees by annually analysing administration fees and services in order to achieve levels of scheme profitability that provide a 21% return on investment for shareholders.

Customer: The Southern Life is the beneficiary while the customer is the potential victim.
Actor: The scheme administrator.
Transformation: Input is data about annual fee income, activity volume and expenses per scheme. Transformation occurs by calculating the profitability and contribution towards return on investment per scheme. The output is management information detailing income, expenses, activity and profitability per scheme which enables effective reviewing of annual fees;
Worldview: Transformation occurs electronically with no manual intervention. It provides information in order to enable effective decision-making.
Owner: The customer could stop the process by not accepting the increase in fees.
Environment: This requires that Ongoing Scheme Administration and Scheme Maintenance processes are up to date prior to reviewing the fees.

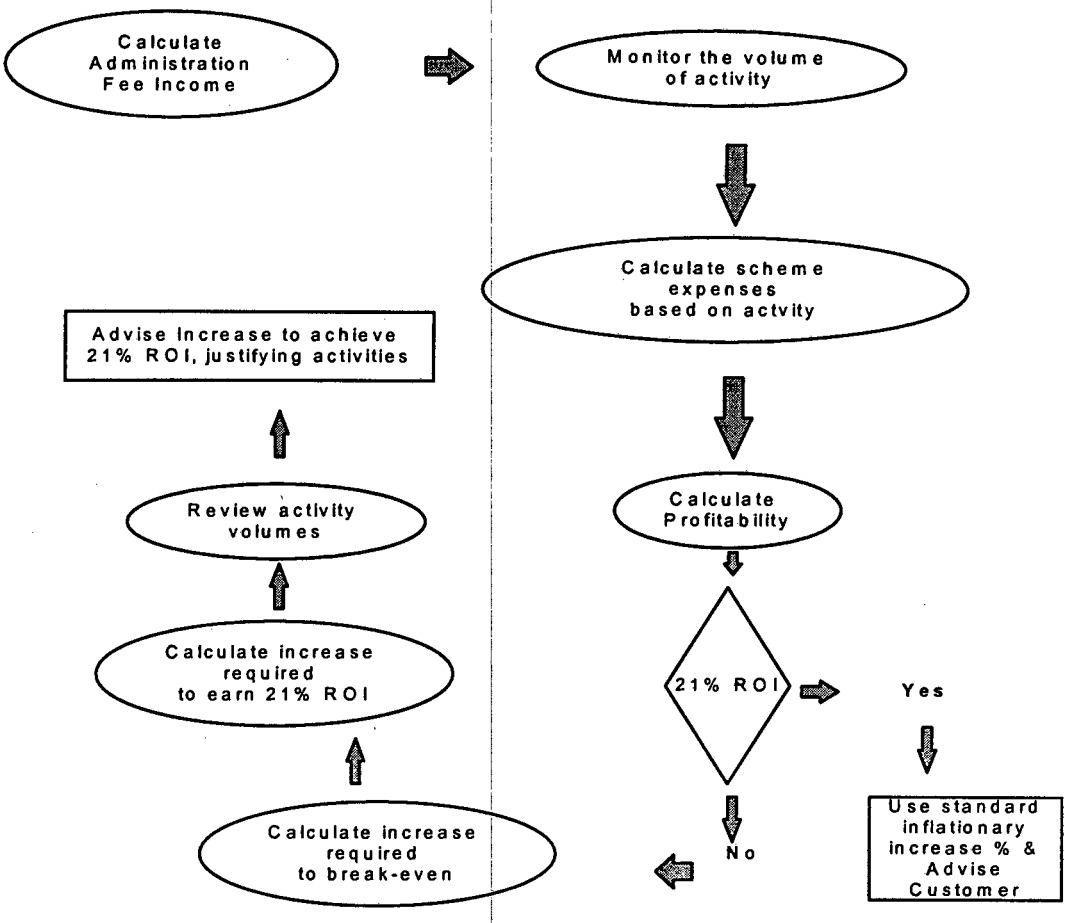


Figure 20 - SSM Conceptual Model 1

4.5.1.1 Agenda of possible changes

Activity	Exist in current systems?	Desirable & Feasible	Possible actions & comments
Calculate Administration Fee income for previous period	Yes - completed manually	Yes	Program to calculate automatically
Monitor the volume of activity per scheme	Yes - PME	Yes	Ensure that all work is recorded onto the PME work-flow system - use PME reports as an interim measure
Calculate scheme expenses based on activity	No	Yes	Activity Based Costing project will automatically calculate
ROI of 21% achieved	No	Yes	Activity Based Costing project will automatically calculate
Calculate % increase required to break-even	No	Yes	Activity Based Costing project will automatically calculate
Calculate % increase required to achieve a 21% ROI	No	Yes	Activity Based Costing project will automatically calculate
Produce Administration Fee Review documentation for customer	Yes	Yes	Integrate with other systems - so that process is seen to be a "push-button" exercise

4.5.2 SSM - Root Definition 2

Scheme Termination is a system that ensures that the termination procedures and processes are fully completed.

Customer: The Southern Life and the client is the Customer.
Actor: The scheme administrator.
Transformation: Input is a request to terminate the scheme, transformation occurs by ensuring that assets are paid out and that all accounts are closed for the scheme. The output is a scheme that is de-registered with the relevant authorities.
Worldview: In order to finalise the termination, the process must not stop with the payment or transfer of scheme assets to the client. The termination process is performed outside of the customer-focused teams.
Owner: The customer and administrator stop the transformation from occurring by giving other activities priority over this activity.

Environment: Within a portfolio of schemes, administrators may have terminated schemes that get second priority as the need to finalise a scheme after the transfer of assets is seen to be an internal process. "Live" customers need to be given first priority.

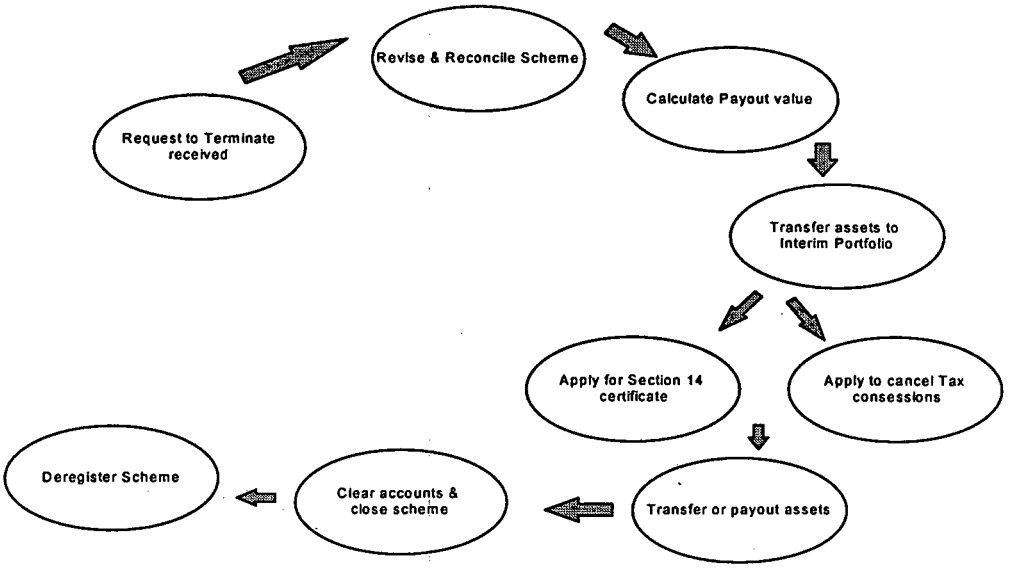


Figure 21 - SSM Conceptual Model 2

4.5.2.1 Agenda of possible changes

Activity	Exist in current systems?	Desirable & Feasible	Possible actions & comments
Request to Terminate	Yes - completed manually	Yes	Request may be generated by the Southern rather than the customer
Revise & reconcile scheme	Yes	Yes	Ensure that this process occurs first
Calculate payment value	Yes	Yes	Automate this process, based on the reconciliation
Transfer asset values to interim portfolio	Yes	Yes	Ensure that transfer occurs timeously
Apply for Section 14 / Tax cancellation	Yes	Yes	Advise members of procedure - follow-up with authorities regularly
Transfer or payment assets	Yes	Yes	Automate where possible,

5.1.1 Fee & Premium Rate Reviews

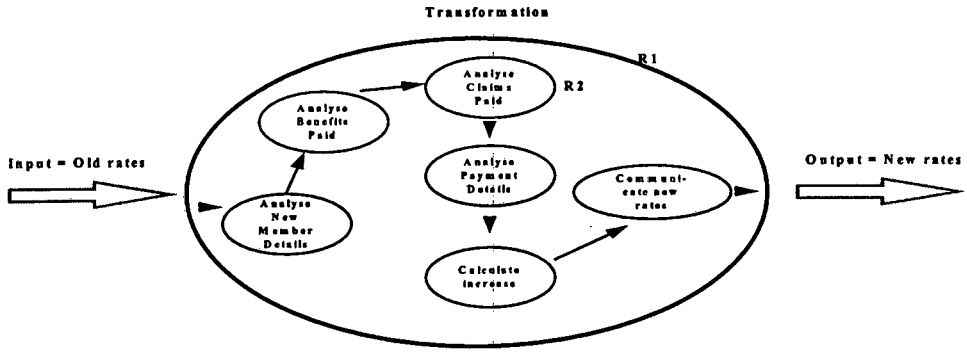


Figure 22 - Fee & Premium Rate Review Transformation

Input into this process is the current administration fee and premium rates. Transformation occurs when the scheme activity and profile is analysed, while the output is a reviewed administration fee and premium rate. This part requires that new member information, member benefits and claims, member detail changes and scheme amendments and improvements are up to date. The regularity of payments is also analysed. Payments are composed of member and employer contributions towards retirement, premiums towards risk benefits, administration fees and, where applicable, broker commission.

Increased fees and rates are calculated by increasing the rates for increased sums assured and increasing the administration fee per members. Basic increases are calculated and applied to each scheme, irrespective of the status of the scheme, so a cross subsidisation occurs amongst the schemes. Each scheme is individually reviewed.

Contractually the Division is bound to advise customers, in writing, of reviewed administration fee and premium rates one month before the actual annual review date.

This process occurs before the annual review, a process which administrators use to consolidate scheme activity. The transformation is therefore often based on incomplete data. High income earning or schemes with large membership are given priority over lower income earning, smaller schemes. Administration fees and premium rates for smaller schemes are reviewed in a pooled arrangement with standard increases applying across the board, helping to stabilise the part.

5.1.2 Termination's

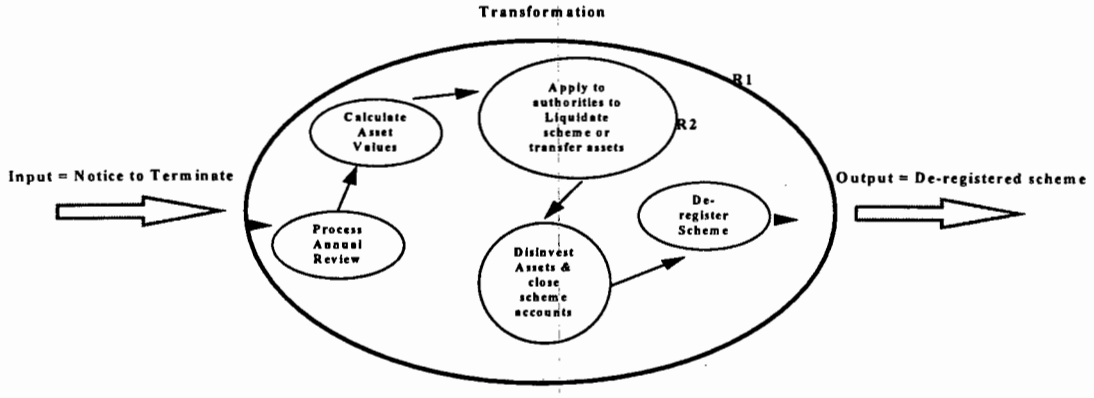


Figure 23 - Termination's Transformation

An instruction to terminate the contract is received by administration as input. Transformation occurs by processing an annual review, calculating the value of the schemes assets, translating total assets into individual member benefits, applying either to liquidate the scheme or for a Section 14 transfer certificate, paying out or transferring the assets held by the scheme, closing all scheme accounts and de-registering the scheme with the Financial Services Board and the Commissioner of Inland Revenue (CIR). The output is a de-registered scheme. However, when a terminated scheme has not been de-registered it is still liable to pay annual FSB levies. As the customer is only concerned with the payment or transfer of scheme assets, schemes are often terminated to the point where assets are paid out and the balance of the transformation is left unattended to. Termination of retirement schemes is strongly influenced by the return on investment achieved by the investment portfolio. Risk schemes are influenced by the premium rates quoted. The calculation of assets is performed manually. The administrator records an opening balance, of assets, on a spreadsheet, records the unit values, adds monthly cashflow and calculates a closing balance. The asset and cashflow information is downloaded from the mainframe finance system. Unit prices are advised on a monthly basis, and almost each administrator has a separate spreadsheet in which the unit price data is held. Errors in calculation occur when the data is incorrectly downloaded from the mainframe or corrupt unit prices are used. Very often the period over which assets values are rolled up amount to 10 or 15 years. The margin for error is therefore quite large.

In gaining a systemic insight into a system, it is important to understand why the system performs in any given way. This provides the inquirer with a deeper understanding of the system and, ultimately, facilitates the design of meaningful intervention. Systemic methodologies, shown in *Chapter 2 and 3*, are applied.

5.2 Synthesis of the system - The Why

Describing the *Purpose* and the *Measure of Performance* for each sub-system help to set the boundary in which the intervention needs to take place.

5.2.1 Synthesis of the Fee and Premium Rate Review system

The purpose of reviewing the fee and premium rates is to ensure that appropriate income is received for services levied and underwriting risks taken. The desired purpose is to ensure that income from each scheme contributes a 21% return on investment (ROI) for shareholders while ensuring that rates are competitive and do not jeopardise the opportunity for gaining new business.

The current measures of performance for rate reviews are the timely and accurate calculation of revised rates and timely communication of these to the client. The desired measures of performance for rate reviews ought to be the timely and accurate calculation of revised rates that ensure that income achieves the 21% ROI required.

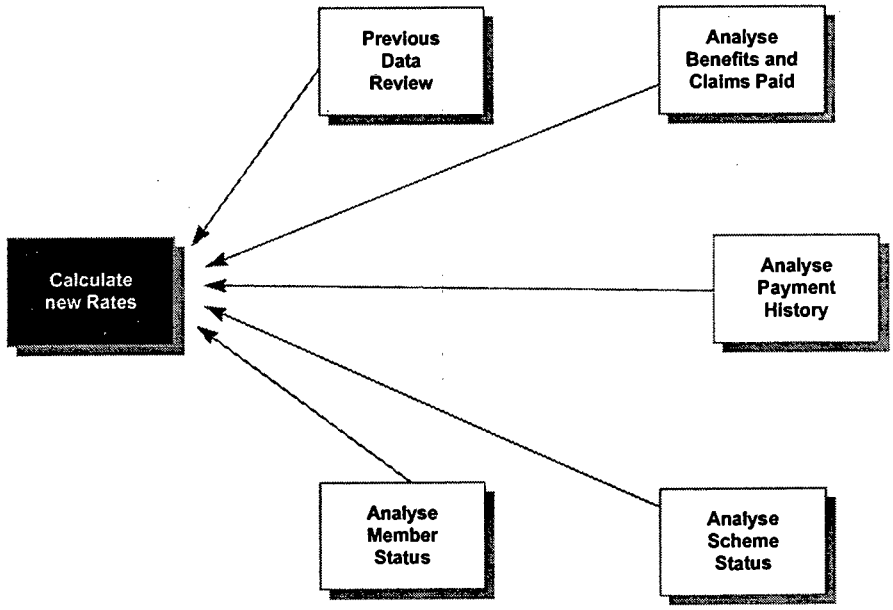


Figure 24 - Fee & Premium Rate Review Interrelation Diagram

Figure 24 illustrates the interrelationships amongst the parts of the system in focus. Analysing the interrelationships show, that all parts equally are the root cause or driver. The interrelationship technique suggests that, should these be improved the outcome will be an improved transfer or payment of assets, i.e. an improved service to the customer.

Following the Inquiry Framework, it is then required to analyse and synthesis the people involved with and influenced by the system.

5.2.2 Stakeholders - The Who

This section gives the details of the pertinent people, the stakeholders, involved in the Fee and Premium rate review system. The stakeholders in the system can be defined as follows:

- **Customer**: The employer, board of trustees and/or the broker, who decide to place the scheme with the Southern and pay the contributions, is the customer. They can stop the system from operating by deciding to place the scheme with another underwriter. They are strongly influenced by the return on investment achieved by the investment portfolio and the competitiveness of the fee and premium rates.
- **Actors**: The administrators are the actors in the system. They hold a worldview that revising fee and premium rates is an internal process, which distracts them from providing service to the customer. Most understand that they hold detailed knowledge around the process activity on each scheme and that this knowledge is required to revise rates.
- **Affected 1**: The members are affected by the transformation process. Their worldview is such that they need to get value for money; therefore, increased costs should result in improved service.
- **Affected 2**: The shareholders are affected by the transformation process. When rates are set appropriately they can attain the required 21% ROI.

5.2.3 Synthesis of the Termination system

The purpose of terminating a scheme is to ensure the accurate calculation and timely transfer of assets and/or payment of benefits to the customer and/or member. The desired purpose of terminating a scheme is to ensure the accurate calculation and timely transfer of assets and/or payment of benefits to the customer and/or member, while ensuring that internal and external control processes are also completed.

The current measures of performance for terminations are the volume of monthly production in terms of termination payment calculations, Liquidation's, Section 14 certificates and dis-investments. In addition to these, the desired measures of performance should include monitoring the volume of de-registration of schemes, the value of assets flowing out of any one investment portfolio, the customers who are terminating schemes and their reason for termination.

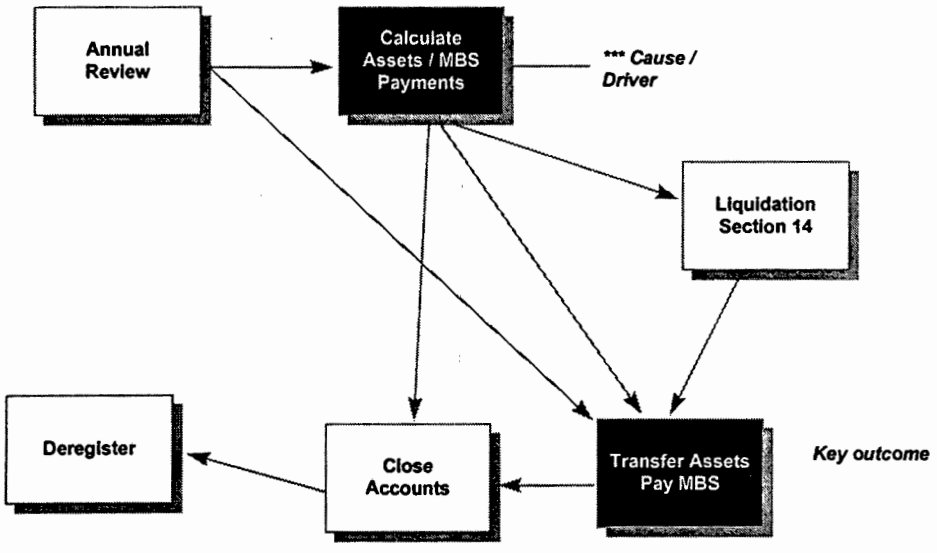


Figure 25 - Termination's Interrelation Diagram

Figure 25 illustrates the interrelationships amongst the past of the system in focus. Analysing the interrelationship show that the calculation of member benefits and scheme assets could be the root cause of processing problems. The outcomes of improving the processing capacity would be improved payment of member benefits and transfer of assets and quicker de-registration of schemes. The processing of Liquidation's and Section 14 Certificates (transfer of assets) are largely controlled externally of the system and governed by legislation.

Following the Inquiry Framework, it is then required to analyse and synthesis the people involved with and influenced by the system.

5.2.4 Stakeholders - The Who

This section gives the details of the pertinent people, the stakeholders, involved in the termination system. The stakeholders in the system can be defined as follows:

- **Customer**: The employer, board of trustees and/or the broker, who decide to terminate the scheme, is the customer.
- **Actors**: The administrators are the actors in the system. They hold a worldview that paying benefits to existing members is more important than providing service to a customer whom has ended their relationship with the company.
- **Affected 1**: The members are affected by the transformation process. Untimely termination of a scheme incurs termination penalties, which are deducted from the scheme assets, resulting in lower benefits for the member.
- **Affected 2**: The shareholders are affected by the transformation process. Termination's result in a loss of income and reduces funds in investment portfolios.

Management performs key roles in any changing environment. It is therefore important to gain a management perspective of the situation.

5.2.5 Management - The What

In December 1997 the transformation team made recommendations, in addition to those discussed in Chapter Four, which led to management decisions that, influence the sub-systems in focus.

These recommendations were as follows. All schemes with a membership of less than 100 members and a ROI of less than zero ought to be terminated. Exceptions would have to be made for Brokerages that had a mixture of schemes with the Division. All other schemes with membership of less than 100 members and a ROI of less than 21% have the fee and premium income reviewed. Furthermore, schemes with a membership of greater than 100 members and a ROI of less than 21% are audited to ensure accuracy of data. In addition, criteria for the placement of new business were recommended in line with the ROI parameter.

A detailed ROI analysis on all schemes can be found in *Appendix 6*. *Table 15* gives a summary of this information.

	Number of schemes	Percentage
ROI < 0 %	1652	70%
ROI < 21%	682	11%
ROI 21% <	470	9%
Total	2804	
Average, Overall ROI		17.5%

Table 15 - ROI per Scheme Nationally

Of the 1652 schemes with a ROI of less than 0%, 1471 schemes fell into the category of schemes with less than 100 members. These schemes are clearly outside of the market that is targeted. A breakdown of schemes per customer is shown in *Table 16.*

	Number of Brokers	Percentage of total
Schemes to be retained	92	19%
Schemes to be terminated	260	53%
Mixed portfolio - retain & terminate	141	29%
Total	493	

Table 16 - Affected Brokers Western Cape Region

Management was essentially faced with the options of re-pricing or terminating a high volume of schemes. The decisions were influenced by a number of factors, namely (1) what would the effect on the investment portfolio be should schemes be terminated and (2) what would the effect on Broker relationships be should schemes be terminated and/or re-priced.

Schemes that have assets invested in market related portfolios, i.e. where the assets at any point in time are equal to the liabilities, would not be effected by this decision. However, 870 of the 1471 schemes to be terminated are invested in the Guaranteed Fund portfolio.

Essentially the Guaranteed Fund investment portfolio guarantees the customer a smoothed return of investment that does not fluctuate at the same rate as the market. *Table* 10, which shows the current promised rate of return, also intimates that, as the rate declared by the Southern is considerably lower than the rest of the market, that performance on the fund was poor. Analysis showed that the asset liability ratio for the guaranteed fund was at 90% and that payment of all assets would result in a shortfall of R 23 500 000,00. The final decision was that schemes ought to be re-priced towards profitability, over a two-year period, and not terminated.

The situation of uncertainty around the future of scheme administration and the moratorium on the recruitment of new staff was influencing the number of resources available to process work. *Table 17* shows the current allocation of resources within the region. Staff numbers at the end of March are at 75% of budget.

Team	W6	W7	W8	W9	WN	FS	Ad min.	Mngt	Total
# of staff @ 01/08/1997	8	9	4	3	4	12	40	10	50
# of staff @ 01/09/1997	8	9	3	3	4	12	39	8	47
# of staff @ 01/10/1997	12	0	4	5	4	11	36	7	43
# of staff @ 01/11/1997	12	0	4	5	4	10	35	7	42
# of staff @ 01/12/1997	11	0	4	4	4	10	34	7	41
# of staff @ 01/01/1998	10	0	4	4	4	11	33	6	39
# of staff @ 01/02/1998	10	0	4	4	4	11	33	6	39
# of staff @ 01/03/1998	10	0	4	3	3	11	31	6	37

Table 17 - Allocation of Resources per Team

Because of the drain on resources, socio-technical disputes increasingly arise mostly when other internal departments make demands on administrator's time, resulting in administrators having to prioritise internal requests above service required by the customer. Coordinators and managers also are reluctant to share resources, resulting in unbalanced workflow across the division.

Socio-political disputes have arisen between the transformation team and the Divisional Management team. The Divisional Management team does not totally accept the recommendations made and have worked to find alternative solutions. A further potential dispute may arise between Brokers and the company, particularly those brokers who have a portfolio made up of profitable and unprofitable schemes and those Brokers who serve both the group Retirement Fund and Individual Life parts of the company.

In addition to measures of management effectiveness previously discussed, Management are required to implement the re-pricing / termination strategy, with reducing resources, over a two year period. Management face the dilemma of motivating staff to service customers while the same staff are required to shut down business that will result in their retrenchment or redeployment.

5.2.6 Management Decisions and Implementation Plan

On the 14th and 5th January 1998, a workshop was held to brainstorm, discuss and agree on a scheme rationalisation implementation plan. The question posed was "what must be done to either terminate the relationship with the client, re-price the scheme and/or build the relationship with the client?" The outcomes of this meeting are summarised as follows.

Brokers with schemes that are all to be terminated

- commission to be paid monthly (rather than annually in advance);
- specific re-pricing criteria to be applied;
- communication to include future estimated increases in fees and rates;
- regional managers to assertively manage the interaction to encourage termination or transfer of schemes;
- liquidation or section 14 costs to be borne by the client;
- termination fees not to be charged;

Brokers with schemes to be retained:

- specific re-pricing criteria to be applied;
- communication to include future estimated increases in fees and rates;
- all brokers to be contacted by sales consultants or Regional managers;
- liquidation or section 14 costs to be borne by the client;
- termination fees to be charged should the client terminate the scheme voluntarily;

Key Brokers with profitable and unprofitable schemes:

- relationships must be developed, therefore communication is vital;
- look for opportunities to outsource or transfer schemes;
- specific pricing criteria to be applied;
- increase in fees and rates will be delayed until 01/05/98 for those schemes we want to terminate;
- communication to be categorised into unprofitable, re-priced and inflationary increases;
- national brokers to be contacted as soon as possible to discussed the scheme rationalisation plan;
- all brokers to be contacted by Regional managers;
- liquidation or section 14 costs to be borne by the client;
- termination fees to be waived for schemes we want to terminate;
- market value to be paid if scheme terminates voluntarily;

Other Brokers with profitable and unprofitable schemes

- specific pricing criteria to be applied;
- communication to be categorised into unprofitable, re-priced and inflationary increases;
- communication to include future estimated increases in fees and rates;
- all brokers to be contacted by sales consultants or Regional managers;
- liquidation or section 14 costs to be borne by the client;
- termination fees to be waived for schemes we want to terminate;
- termination fees to be charged in respect of voluntary termination's;
- market value to be paid if scheme terminates voluntarily;

Direct schemes

- specific pricing criteria to be applied;
- communication to be categorised into unprofitable, re-priced and inflationary increases;
- communication to include future estimated increases in fees and rates;
- all clients to be contacted by sales consultants or Regional managers;
- liquidation or section 14 costs to be borne by the client;
- termination fees to be waived for schemes we want to terminate;
- termination fees to be charged in respect of voluntary termination's;
- market value to be paid if scheme terminates voluntarily;

Other items in the implementation plan, that influence the systems in focus are summarised.

- For associated businesses, which are defined as key clients, umbrella schemes and strategic alliances, assess the schemes from a strategic point of view and refer to management for direction;
- the strategic impact of terminating schemes that are re-insured to be assessed;
- the impact on schemes with attached housing loans needs to be assessed;

Re-pricing Criteria

In order to phase in the re-pricing towards profitability, re-pricing criteria were decided upon for categories of scheme and/or clients. Firstly, it was decided that administration fees would be a Rand based amount, rather than a percentage of contribution. Fees would be service related, therefore standard services would be covered in the annual fee and additional services would be charged for on an activity basis. This would reduce the cross subsidisation that currently occurs. Fees would automatically be debited to the fund, irrespective if contributions and premiums are paid. (In the past this transaction only took place once the client had paid, therefore if the client paid late, the Division would receive its income late. No interest was charged for overdue fees.) Minimum administration fees would be increased in order to achieve a ROI of 19%, however all increases would be limited to a maximum of 20%. A minimum increase of 5% would be levied on all funds.

At any point in time the termination conditions, as stipulated in the Rules of the fund would apply.

The conclusion drawn at the end of Cycle 1 was that, within the termination team, redundancy on critical processes ought to be reduced and that the same principles could apply to the fee and premium rate review process. This was based on the *Redundancy of Resources Principle* that states "Maintenance of stability under conditions of disturbances requires redundancy of critical resources".

In terms of the Inquiry Framework, the section that follows may be viewed as planning, deciding what to do next, developing and refining basic actions. The outcomes from the interrelationship diagrams show that the all Fee and Premium Rate Review processes ought to be reviewed and attention ought to be given the calculation of assets and member benefits under the Termination process.

5.3 Soft Systems Analysis

Taking the data from the Soft Systems Analysis performed in Cycle 1 as a starting point a detailed understanding of each system is obtained with the intention of highlighting concerns and finding plausible areas for further intervention.

The root definition described in the first section, remains the same. However, as the Activity Based Costing (ABC) system is not yet available and the context of the situation has shifted a new rich picture and a revised agenda of possible changes was completed.

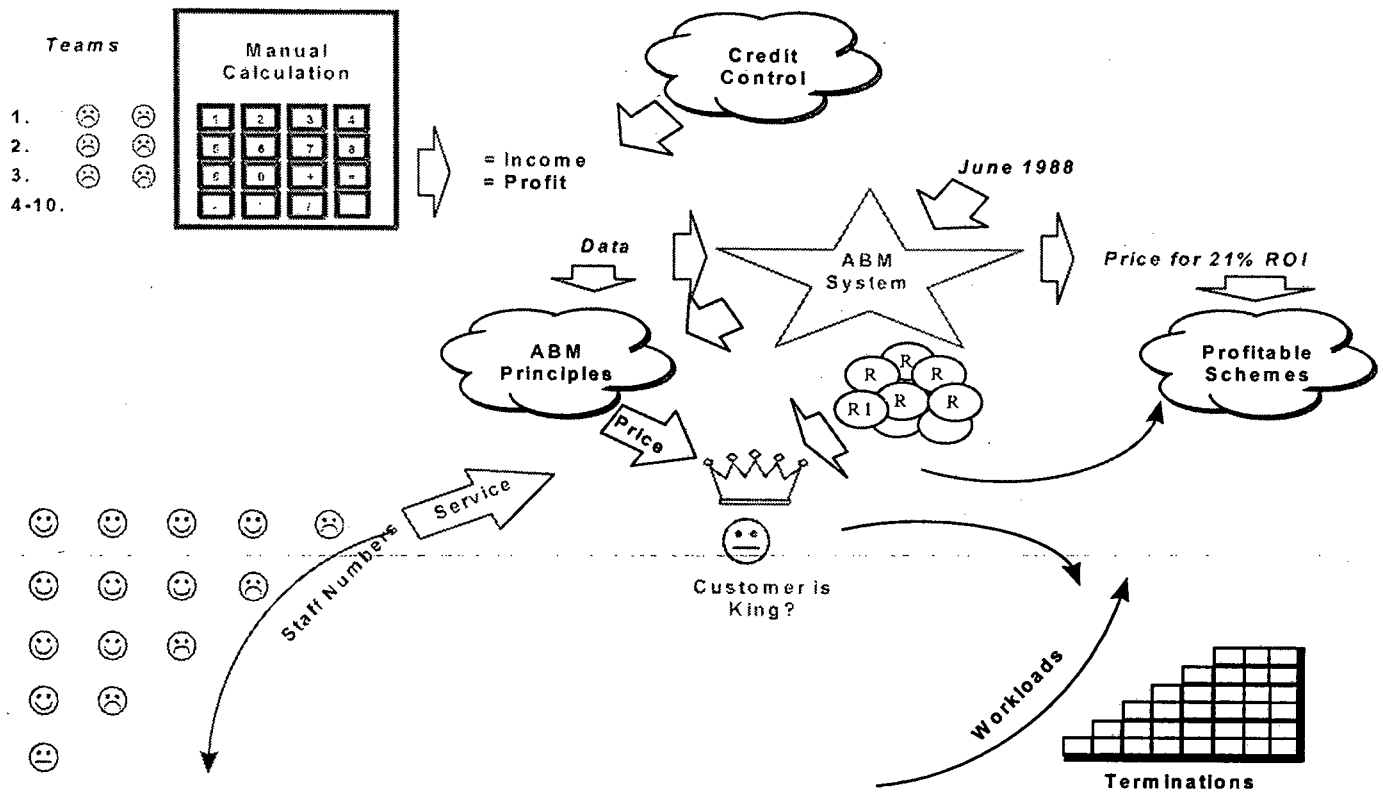


Figure 26 - Rich Picture Cycle 2

5.3.1 SSM 1 Cycle 2 - Fee & Premium Rate Reviews

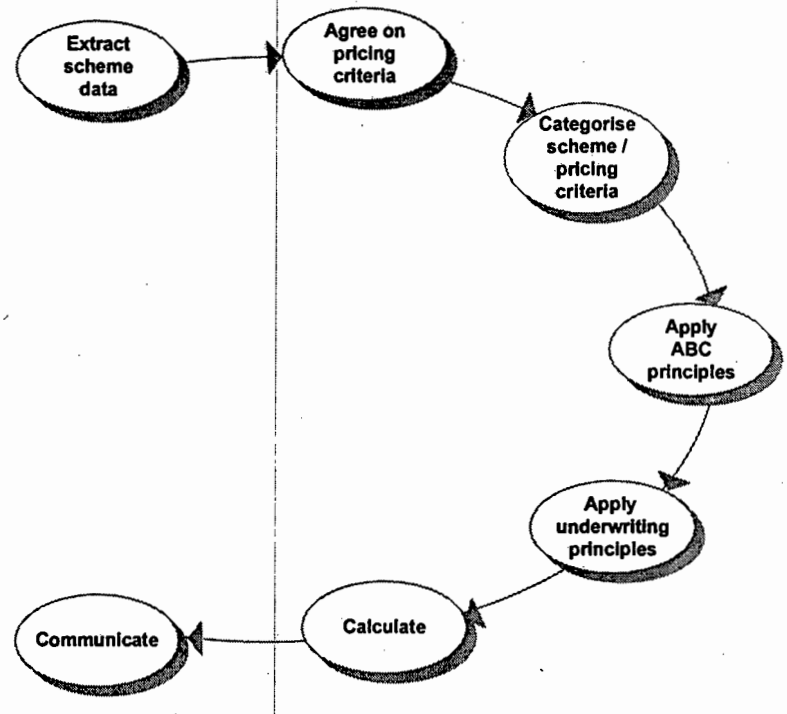


Figure 27 - Fee & Premium Rate Review Conceptual Model

5.3.1.1 Agenda of possible changes for an interim *solution*

Activity	Exist in current systems?	Desirable & Feasible	Possible actions & comments
Review calculation assumptions based on ABC principles.	No - information is available	Yes	Management to agree on interim assumptions to be used.
Extract scheme activity volumes from PME. Generate volume assumptions.	Yes - PME	Yes	Management to agree on interim assumptions to be used.
Regroup schemes into profitability categories.	Yes	Yes	Already available.
Generate re-pricing criteria	Yes	Yes	Already agreed on.
Form a team of specialists to process the reviews			Competency assessment process identifies the best individuals to select.

Calculate scheme expenses based on revised assumptions.	No	Yes	Generate interim program to calculate.
Produce Administration Fee Review documentation for customers.	Yes	Yes	Integrate with other systems - so that process is seen to be a "push-button" exercise.

5.3.2 SSM 2 Cycle 2 - Termination's

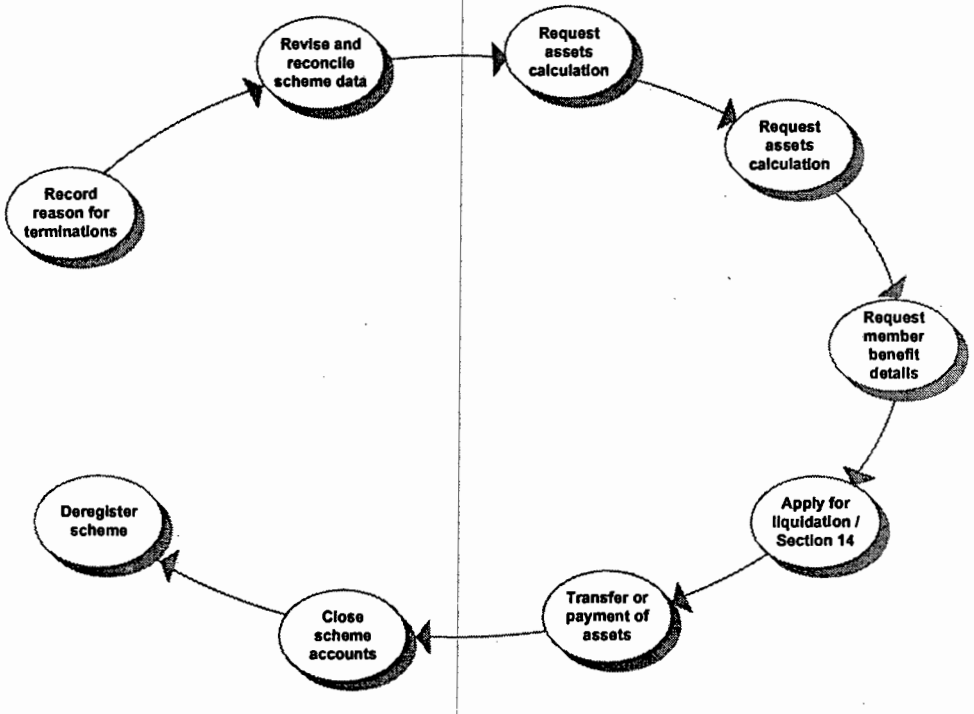


Figure 28 - Termination's Conceptual Model

5.3.2.1 Agenda of possible changes

Activity	Exist in current systems?	Desirable & Feasible	Possible actions & comments
Detailed reasons for termination recorded	Yes - completed manually	Yes	Create a central database from which trends can be established.
Revise & reconcile scheme	Yes	Yes	Ensure that this process occurs first, ensure accuracy.

Store unit prices on Finance system	No	Yes	Create a data table, which is fed automatically every month with new data.
Automatically calculate asset values, using opening balances on system, cashflow and unit price data.	No	Yes	Have either as an overnight run or as an on-line facility.
Calculate member benefits	Yes	Yes	
Transfer asset values to interim portfolio.	Yes	Yes	Where feasible consider Automation of this process once asset values have been calculated.
Apply for Section 14 / Tax cancellation / Liquidation.	Yes	Yes	Advise members of procedure - follow-up with authorities regularly.
Transfer or payment assets.	Yes	Yes	Automate where possible; ensure that unclaimed assets are transferred to unclaimed surrender value account timeously.
Clear accounts and close scheme.	Yes	Yes	Monitor the clearing of fund values, the updating of Retirement Fund Tax status, FSB statements & levies and computer system modes.
De-register scheme.	Yes	Yes	Monitor and regulate the activity closely.

5.4 Concern

When reviewing the transformation process for Fee and Premium rate reviews it is evident that the entire process focuses and builds on the previous fee and premium rate levels, which assumes that these were correct to start off with. Furthermore, as the review takes place before the annual scheme review, inaccurate data is often used. In addition, in January 1998, only 1½ months of data had been collected on the activity volumes per scheme using the Activity Based Costing system.

Basing the re-pricing of fees and rates on this data would therefore be unacceptable. The current process does not focus on attaining profitability at all.

The volume of requests for termination's and termination quotations has increased significantly (by 540%) and the Division expects an exponential increase over the next 18 months. At the same time, not all the parts of the system are entirely in the

control of the team. Many of the processes are internally focused, while others are completed to comply with legislative requirements. In the meantime, the transfer or payment of assets can take up to seven months to complete. With the volume of termination's, or work in progress, increasing, it is important that the Division can accurately monitor the reasons for termination and track trends. Finally, the lack of control around clearing scheme accounts, closing scheme records and de-registering the scheme is disconcerting.

5.5 Question

In the first cycle, a question was posed around increasing cycle times through the centralisation of Termination's into a specialist team. In this cycle, I propose that cycle times can be improved by centralising the Fee and Premium Rate Review process and question if a positive improvement in efficiency can be achieved if the processes for both systems in focus are changed or automated.

5.6 Answer

The abductive phase of the Inquiry Framework, shown in *Chapter 2* has been completed. The deductive phase starts with an explanation of a rule, which describes the underlying reason for the answer.

As described in Cycle 1, *Chapter 4*, scheme contracts provide the rule through which schemes are administered. This includes when fees and rates can be reviewed and the conditions applicable to terminating a scheme.

Management decisions provide parameters, which within change can be made. Schemes are to be re-priced, according to specific re-pricing criteria, or rules. The Division believes that notifying clients of termination will be viewed as "constructive termination", which goes against the spirit of the contract entered into and does not support the Division's philosophy around customer service.

The relevant Laws of operations management (Hopp, Spearman, 1996) also provide rules.

In recommending that operating efficiency could be improved by changing and/or automating processes, it is necessary to look at the practical implications of the recommendations, that dictates the case.

Table 18 shows, for the period under review, that the 45% of schemes have an annual review date of March. The review process needs to be completed for these schemes by the end of January so those clients can receive communication about the increases by 1 February.

The period in which these have to be completed is extremely short and should the deadlines be missed, increases in income will be delayed by a month or two, negatively effecting profitability.

Communication to clients is also extremely important, as increases advised out of context could damage long term relationships with the client. In addition to this, the new team would require some training on ABC principles and on the functional operation of the interim process. Lastly, processing reviews under these time pressures may increase the risk of inaccurate reviews.

Number of Schemes for review	Mar	Apr	May	Jun	Jul
South	330	106	67	44	184
North	469	153	77	62	200

Table 18 - Annual Number of Schemes for Review

The work in progress levels of Fee and Premium Rate Reviews is assumed to remain static for the period January to December 1998. WIP will decrease in 1999, as the Division expects to have fewer schemes to administer. Referring again to *Little's Law*, which states CT = WIP/TH, we require CT to increase, therefore we require WIP to decrease and TH to increase. Changing the throughput therefore provides the only leverage point. Throughput could be changed by adding capacity, in the form of more people or either by shortening or changing the process. The Division is not in a position to increase the number of staff and while the number of staff continues to decline, time spent on training is probably also declining. *Law 5 (Capacity)* states that "in a steady state all plants will release work at an average rate that is strictly less than average capacity"; it is impossible to utilise people 100% of the time. Changing the process is therefore recommended.

In the same light work in progress for termination's is expected to exponentially increase, as shown in *Figure 29*. The capacity for the entire process is determined by the part with the least capacity or most amount of work. The termination quote process is calculated for every terminated scheme as well as for customers who are considering terminating their schemes and want to assess their schemes asset values. This part is bottleneck in the process. In order to maintain or improve cycle times, throughput will have to increase significantly. The same constraints apply to the people.

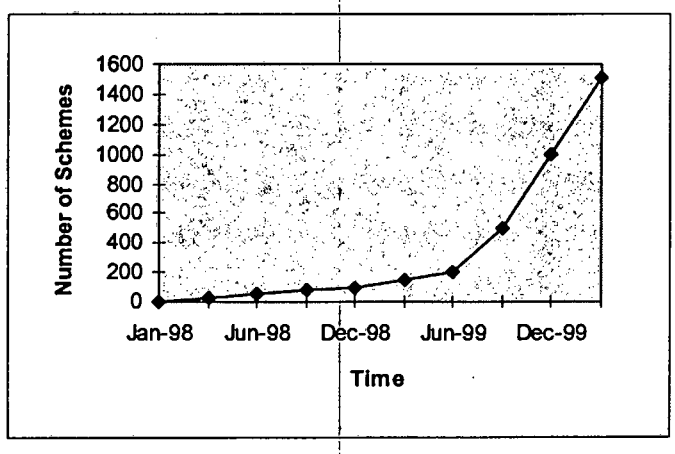


Figure 29 - Predicted Rate of Termination

The Divisions capacity is a function of the processes that it has in place (machinery), the people to use these processes (manpower), accurate data (material) about a scheme and adequate return on investment (money) to satisfy customer requirements. The ability to yield output depends on whichever element is in shortest supply, which in this case is people. In order to ensure an adequate balance of capacity, processes need to be improved. Thus, based on the forecast of termination work in progress, the Division needs to plan to adjust the capacity mix and balance into the future.

The last practical implication of changing processes includes taking into account the availability of computer programmer staff to write and test the new processes.

5.6.1 Predicted Results

The *Pareto Principle* is used to predict the possible improvement on cycle times; i.e. that a 20% improvement could be achieved 80% of the time. The recommended changes could result in a minimum of a 20% improvement in efficiency.

5.6.1.1 Fee & Premium Rate Review

	May '97	Jun '97	Jul '97	Aug '97	Sep '97	Oct '97	Nov '97	Dec '97
Number of Reviews produced (TH)	160	55	66	58	135	105	0	6
Number of staff (WIP)	12	8	5	11	13	12	0	3
Actual cycle time (CT)	0.075	0.145	0.075	0.189	0.09	0.114	0	0.50
Predicted cycle time (CT)	0.06	0.116	0.06	0.152	0.072	0.091	0	0.04

Table 19 - Specialist Team Rate Reviews Predicted Results

The average cycle time is predicted to reduce from 0.170 to 0.135 for a similar period of production.

5.7 Evaluation of Cycle Two

A virtual team, made up of review experts, was put together to process the March reviews on the 21/01/1998. However processing of these reviews was delayed until February, resulting in reviewed fees and premiums only being effective from 01/04/1998 or 01/05/1998, depending on the scheme category.

A spreadsheet was created to calculate price increases. It was based on the following assumptions and parameters.

The activity unit costs, as determined during the pilot ABC project, were correct. The quality of the scheme data, as extracted off the mainframe, was sufficiently accurate. Asset values, extracted from the finance system, were accurate. In order to achieve a ROI of 21 % parameters were set for scheme income, expenses and capital requirements. Details of these can be found in *Appendix 6.*
Scheme level data was extracted from the mainframe and dumped into the spreadsheet, which calculated recommended increases. These were reviewed in terms of management re-pricing criteria for accuracy. An extract was programmed to take final price increases and match these into a word document, from which client communication letters were automatically produced. The review documents were delivered directly to clients by sales consultants.

Programming for the automated calculation of scheme assets values, used to determine assets to be transferred or paid out on termination started in March 1998. The program is currently being tested and is expected to be functional at the end of April 1998. The program uses an opening balance as at 01/04/1994, and reading unit prices from a data table and cashflow information directly off the system, rolls up asset values on a monthly basis. This ensures that all financial transactions are accounted for and that the correct unit prices are used. The program will run on a nightly basis, therefore updated assets values will be available on daily basis. An inquiry screen, showing the market value, book value and ratio of the two and recommended transfer or payment value will be available. A help screen, advising the administrator which actions to take, based on the ratio, will be available. A management report, showing the same information, will also be available. The predicted improvement in cycle times and evaluation of the recommendation is therefore not yet possible and will be completed during the next cycle of application.

5.7.1 Predicted versus Actual Results

As the new process is completely different from the previous, a detailed comparison of cycle time activity is not possible. A comparison is therefore drawn between the total throughput and the number of people involved in the process for each period.

As the throughput requirements for each month are relatively static, that is that a review must be produced at least two months before the review date, the increase cycle time can be achieved by reducing the number of people, or capacity, completing the process.

	Jan '98	Feb '98	Mar '98	Apr '98	May '98
Number of Reviews (TH)	330	106	67	44	184
Number of staff (WIP)	4	3	1	1	2
Process Time Taken (days)	5	2	2	2	5
Actual cycle time (CT)	0.012	0.028	0.014	0.022	0.010
Average Cycle Time for period	**0.0172**				

Table 20 - Actual Fee & Premium Rate Review Results

5.8 Conclusion Cycle Two

The broader purpose of the thesis, the concerns raised in both cycles of application and the premise that the delivery of service to the customer ought to be maintained, or improved, in terms of time to deliver and quality of service, form the basis for conclusion. In concluding, one needs to question whether or not the viability has improved and stability maintained.

On the basis, that 90% improvement in efficiency has been achieved in the processing of Fee and Premium Rate Reviews, the recommended changes have been feasible. The number of staff required to process the reviews is significantly less, critical resources have been made redundant and staff have been released into the system to process other work, contributing to the stability of the whole system. The viability of the process has been improved, by ensuring that the process focuses on attaining profitable income per scheme. This contributes positively to the viability of the system as a whole.

As an indirect result of the change, improved communication with the client has been achieved by hand delivering all review letters. Sales consultants used this opportunity to explain the background to re-pricing and explain the estimated future price increases. It was also an opportunity to discuss alternative scheme arrangements should the client wish to terminate their scheme.

On the other hand, the change is not yet permanent. The calculations are based on assumptions, which would need to be adjusted as data that is more accurate is provided by the Activity Based Costing system. The risk exists that assumptions are incorrect and because of this, the fees and rates are incorrect. This could result in having to approach customers again with different increases.

5.9 Reflection Cycle Two

5.9.1 Reflection on Problem Solving

The Inquiry Framework process can be likened to a funnel. One starts the inquiry off broadly, generally uncovering areas of concern. As the inquiry progresses the concerns and changes, become more specific. One change may result in positive, or negative, consequences that were not seen to be significant, but when added together may have a significant influence on the system. As one problem area is resolved, i.e. a process bottleneck, the problems in another area become more significant. Inquiry and change therefore need to be approached as a continual cycle of learning and adjustment.

The results from the first cycle of application guided the research on the second cycle. In December 1997, I changed my position in the company, so I am no longer part of the Employee Benefits system. The outcome of recommended changes no longer have a direct bearing on my work. However, am I mindful of my reputation and as such still wanted to ensure that changes made were practical and relevant to the environment.

5.9.2 Personal Learning

The problems stemming from people are much more complex and in a service environment, where "service inventory" cannot be stored, can cause system failure no matter how sophisticated processes are. Staff are uncertain about their future and I assumed that stress levels have increased and productivity levels have decreased. Managing staff morale will remain key to maintaining the stability and viability of the Division.

Chapter 6

Third Cycle of Application

The aim of the third cycle of inquiry is to continue to monitor the progress of the Fee and Premium rate review process and to implement and evaluate the changes to the Termination asset calculation process.

In the light of decisions made by the company as a whole it is necessary to review the system in focus and adjust proposed changes where necessary. Due to the changes in the company, this Chapter first focuses on the current situation, before proceeding with the analysis and synthesis of the system.

6. Situation

6.1 Background

In the middle of March 1998 the Executive of the company announced that the company had been sold to Rand Merchant Bank Holdings and that it was to merge with this company to form a large Financial Services conglomerate called FirstRand.

The implications of this were not immediately evident. In April 1998, a Merger Steering Committee was formed with a sub-committee constituted to propose merger solutions for the two Employee Benefits Divisions of each company. Strategically Southern Life had placed itself in the position where it intended to create, because of the transformation, a unified sales arm and a unified "back office" operation for both its Individual Life and Employee Benefits operational units. The one "back office" operational environment was aimed at maximising economies of scale and minimising operating expenses. The view was that, where processes between the two areas were similar, these would be combined. Linked to this strategy were specific organisational structure design criteria and principles, which amongst other things aimed to reduce the levels of management and number of staff for the operation.

Contrary to this strategy, Momentum Life adopted a stance of keeping each operational unit functioning as separate profit centers. The company had experienced similar difficulties with unprofitable small schemes and, a number of years ago, had taken the route of immediately terminating unprofitable schemes. The resulting bad relationships with Brokers had resulted in a slow growth of new business stemming from Brokers.

6.1.1 Employee Benefits Merger Announcement

On the 15th May 1998, some details of the merger between the two Employee Benefits companies were announced. These are as follows (please refer to Appendix 7, for the detailed announcement). A separate company will be formed, with a Chief Executive Office and Managing Director.

The company will have four operating units, namely Risk Management Consulting, Direct Business, including administration, consulting and actuarial services, Brokered Administration Business and Union Business. Each business unit would function as a profit center in its own right. The 21% ROI remains the profit target for each unit. The target markets for the various units would remain largely unchanged. However, it was agreed that small, unprofitable scheme business would have to be "pursued more vigorously". Other insurance companies would be approached to buy blocks of the small scheme business, along with the staff that administer this business. Separate distribution channels will be set up for the brokered and direct business units. The Head Office for this company would be in Johannesburg, but an office would remain in Cape Town.

No details regarding the number of staff required to administer the remaining business in Cape Town was announced.

The respective Information Technology (IT) departments are required to recommend a model IT structure from which the future IT developments for the new, merged, company can progress. While this process is underway, no further changes can be made to the system in focus.

6.2 Operational System April to 15 May 1998

6.2.1 Analysis of the System - The How

When reviewing the transformation required for both the supra-system and the systems in focus, as covered in *Chapters 4* and *5*, it is evident that the analysis remains the same.

6.2.2 Synthesis of the System - The Why

Synthesising the system helps to set the boundary within which change ought to happen. Essentially the purpose, desired purpose, measures of performance and desired measures of performance remain the same. However, the merger announcement influences and may result in a slight shift for an interim *purpose* and *measure of performance* for the containing supra system.

Management now has the express *purpose* of merging the two companies, their *measure of performance* will be how smoothly and quickly this can be done, while ensuring that minimum damage is done to the business.

If one refers to the "Hierarchy of Objectives", **Figure** *11* in *Chapter 4*, the Division needs to continue to focus on lowering its costs. In order to do this, throughput ought to increase, utilisation, or in this case, productivity of staff needs to increase and variability needs to reduce. The system continues to be constrained by the number of staff resigning. In addition to this, the average productivity rate, per administrator for the Region, illustrated in Figure 30, shows a fluctuation in the average rate of production.

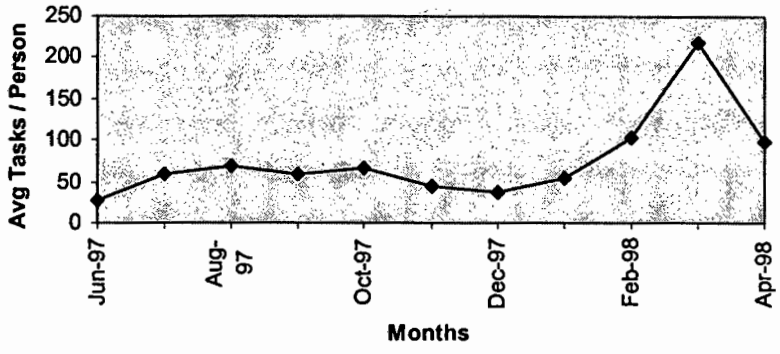


Figure 30 - Productivity Statistics

If any links can be made between productivity, morale and the events in the company, then the sharp growth in productivity and high productivity for the month of March 1998 could be linked to the status of transformation in the company. The sharp decline after March 1998 could be linked to the announcement of the sale of the company. Either way, the low morale and decreasing productivity needs to be actively managed.

6.2.3 Stakeholders - The Who

All stakeholders are influenced by the changes, however I feel that the *Customer* is most strongly influenced by the sale of the company.

- **Customer**: The customer may not want to have their scheme administered by the new company. With the improved return of investment achieved by the investment portfolios, and the market as a whole, it is now more appropriate for customers to move their schemes and assets to other companies.
- **Actors**: The administrators hold a worldview that they are required to close down business so that they can be retrenched. As no staffing details have been announced, administrators feel that the people aspects of the merger are being neglected and, as such, people are not going to be viewed as important in the new company.
- **Affected 1**: Members will be affected if schemes terminate, they may not be offered alternate benefits. They are also being affected by the declining productivity, waiting longer for benefits to be paid. The increased fee and premiums also means that more of their contributions would go towards these costs and less will go towards their retirement income.

Synthesis requires gaining as wide a perspective as possible, therefore management, who is also being affected by the merger, view's need to be taken into account.

6.2.4 Management - the What

When announcing the high level structure of the new company, a position was identified for a CEO, MD and four business unit managers. The West Coast Region alone, excluding Johannesburg, currently has seven senior managers, so it is plain to see that managers will also be affected and also face possible retrenchment.

The new management and merger committee team members have undertaken to ensure that decisions are taken and changes made as soon as possible. The IT team have until the end of the month to decide on an IT platform. The four business unit managers will also be selected by the end of the month and final merger plans will be complete by the end of June 1998.

The self-organising tendencies of people will ensure that people are questioning and deciding upon their own futures, within or outside of the new company. Socio technical disputes will start as the business units are created and these strive to get the best staff in each unit. Those remaining, possibly to close down or transfer business to Johannesburg, will require financial incentives to stay. Socio-political disputes will arise between customers and staff as unprofitable business is sold off. Disputes may arise between managers as they vie for positions in the new company.

Management will continue to be measured on the production output of administrators, their ability to create and maintain profitable business and their ability to transfer unprofitable business as quickly as possible.

The next phase in applying the Inquiry Framework would be to enter a planning phase. However; as may be seen, the current situation is fraught with uncertainty. In the light of the merger announcement, the hold on new project work and the current uncertainty, the balance of this cycle focuses on what possibly could still be done and on finally evaluating the changes made in previous cycles.

6.2.5 Brainstorming and Fishbone Analysis

People are not available to form a brainstorming group; therefore, in order to continue ideas are extracted from previous analysis. As this cycle points mostly to issues surrounding people, I decided to continue reviewing the work done in Cycle 1, *Chapter 4*, where Communication and Change Management were seen to be potential drivers of problems as perceived by staff. The interrelationship diagram shown in *Figure 16* shows that reviewing Goals and Rewards, Workflow and Volume and Scheme Ownership would all have a positive effect on people.

At the time data was gathered around the morale and stress levels of staff (Refer to Chapter 4, section 4.4.2) and as no further data gathering is possible, I assume that the overall, work related, stress levels have increased. Elliot Jaques (1996) defines work as "that which the person has to do in order to achieve the task". The effort required to perform the tasks and activities required by the place of work. In this scenario, people do not want to expend the effort on tasks and activities in an environment that will no longer be their place of work.

6.2.6 Soft Systems Analysis of People

The current system of reward is redefined using the soft systems methodology. A rich picture of the situation is depicted in *Figure 31*.

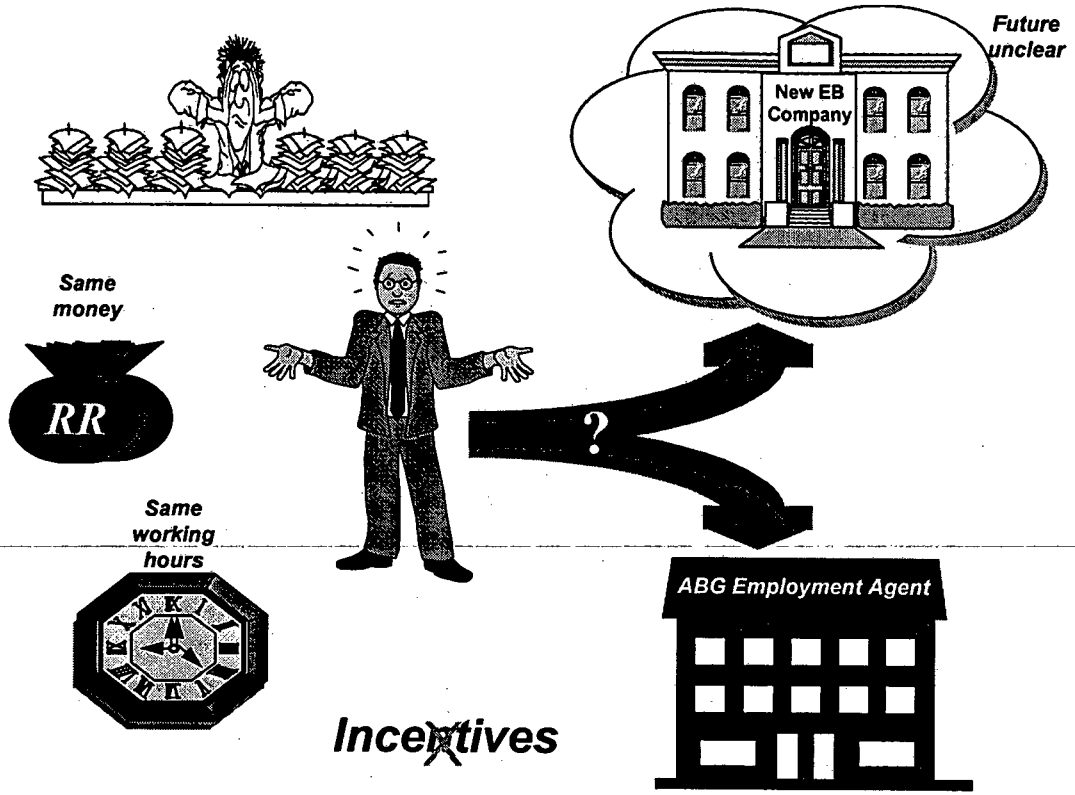


Figure 31 - Rich Picture Cycle 3

6.2.6.1 SSM Root Definition

Rewards and Goals are a system that ensures that productivity is maintained and good staff are retained in order to achieve the production output required to achieve both the 21% ROI and closure of unprofitable business.

Customer: The staff member is the beneficiary, while the new company is the potential victim (as it will be generating additional costs);
Actor: The existing management team.
Transformation: Input is knowing which staff to retain. Transformation occurs by telling those people who are to be retained and those who are to go. Also by contracting in staff to complete certain activities before they are retrenched. The output is motivated staff who are remaining with the balance aware of their fate.
Worldview: People have a right to know where they stand. Either way people will go about sorting themselves out, possibly to the detriment of the new company.
Owner: The new CEO and MD;
Environment: The environment requires open and honest communication.

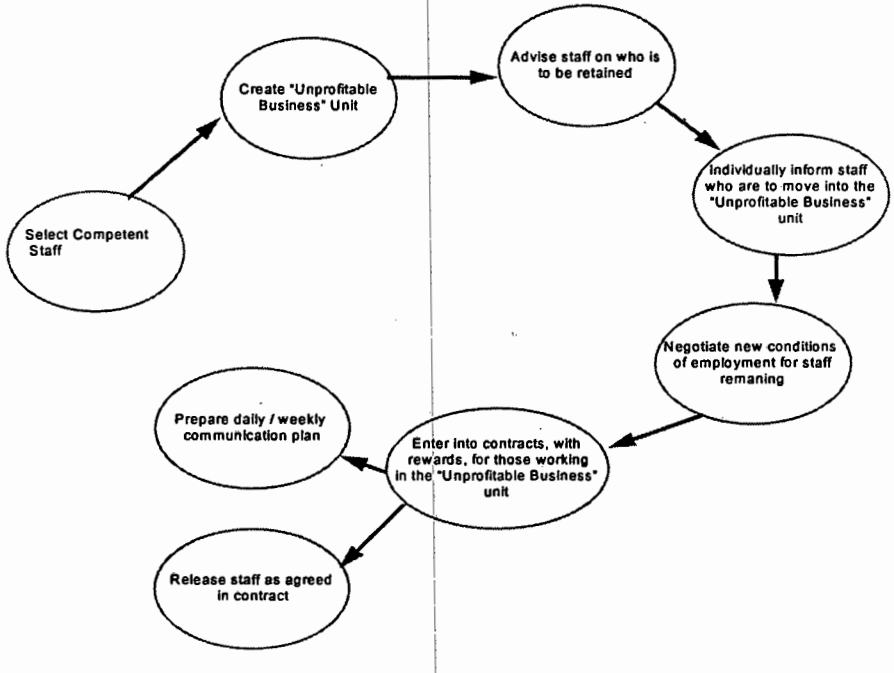


Figure 32 - SSM Conceptual Model

6.2.6.2 Agenda of possible changes

Activity	Exist in current systems?	Desirable & Feasible	Possible actions & comments
Select competent staff	Yes - information available	Yes	Finalise the number of staff to be retained, according to business needs, and select those with appropriate competencies.

Create a "unprofitable business" unit	Yes - schemes known	Yes	Decide and communicate
Individually inform those staff to be moved into "unprofitable business" unit	Yes	Yes	Counsel staff on an individual basis. Give them the opportunity to state their wishes. Start negotiating a retention benefit.
Negotiate new conditions of employment for remaining staff.	Yes	No	The Labour Relations Act and existing conditions of employment may prevail.
Define the retention benefit for those staff to be retained on contract	Yes	Yes	Additional money, possibly in the form of a cash bonus could be offered on completion of tasks.
Release staff as agreed	Yes	Yes	Contracts to include possible time of retrenchment.
Create a daily / weekly communication plan	Yes, but not used effectively	Yes	Staff need to know what's going on. Even when no decisions have been made, say so. Let people know when decisions are likely to be made.

The Inquiry Framework aims to help managers successfully intervention in an operational situation. It also aims to ensure that effectiveness and efficiency is improved. As previously stated, it is shown that data, processes and people are required to transform input into output. Previous cycles have focused on processes, as these can no longer be addressed, concerns are raised around people.

6.3 Concern

The concern raised in this cycle largely concerns the manner in which people are managed. Staff face a situation where they are completely unsure of their future with the company. While it may be argued that this is quite normal in a merger or takeover situation, it needs to be remembered that the company entered into a transformation phase during January 1997, therefore staff have been facing this situation for 16 months. Initially people were informed that, because of the transformation, a program of redeployment would be offered to staff.

As the merger progresses it is clear that no additional or new jobs are available and staff now face retrenchment. No clear communication to this effect has been given to staff.

In order to maintain the current production output, the Division needs to address staffing matters.

6.4 Question

I would question that, regardless of the status of data and processes, should the people issues not be resolved, productivity will continue to decline.

6.5 Answer

The deductive phase of the inquiry requires that the rule, that describes the current situation, be clarified.

Essentially, in order to ensure the viability of the Division the people aspects of the change need to be more effectively managed.

The Human Element of Operations Management (Hopp, Spearman 1996) states that *Law 16 (Self-Interest)*: "People, not organisations, are self-optimising." Self-preservation is also a basic human instinct. This means that people (1) will look after their own interests first and (2) make choices around work that suit there own interests. It also means that people will not necessarily act according to the goals of the new company.

Law 17 (Individuality) states that "people are different". This means that when making decisions about the future of people, individual needs ought to be accounted for. An individual, who may be selected to remain in the business, may for personal reasons, not want to be part of the new company. In as much as an individual, who is not as competent and is selected to move along with unprofitable business, may be willing to work for the new company (even if the bulk of the work is in another city).

Work is socially constructed and reconstructed and requires perpetual action by actors. The social aspects of work systems are complex and varied. Here we are dealing with the choice of employment or unemployment. Within Western economies, work serves as the foundation of society. Such economic activity is viewed as an essential part of the community and characterises the market and moral based economies. Work is regarded as being embodied in any form of formal employment, which permits the worker to meet their social obligations, such as paying taxes. While unemployment is an economic state that is generally thought unacceptable and any activity while in this state if often not classed as work (Grint, 1991).

Unemployment, in this situation, will cross all social boundaries. The consequences will however be different for each individual. The financial consequences may be more serious for administrators (who tend to be younger, married and with children) than for managers (who tend to be older and more financially established).

The retrenchment package for the company is equal to one months pay for each year of service. The average length of service in the company is eight years. Therefore, most people expect a healthy severance package.

In spite of this, I would still argue that the sharp decrease in productivity (albeit the fact that data is not available for a substantial period of time) and low morale are symptoms of a Division that is not effectively managing change. Jay W.Forrester (Business and Society Review No 35.) states that " Productivity does not increase at a constant rate. I see the rise in productivity as accelerating and declining in response to a long sweep of economic change." I see the trend in the Division as part of the change that the company is currently undergoing.

The *Feedback Dominance Theorem* states that " For high gain amplifiers, the feedback dominates the output over wide variations in input". In this case this can be translated to mean in order to gain high results from people, the feedback given to people will yield a high production output than will any changes that can be made to the input or transformation processes.

The case is such that people feel that they do not know where they stand. With the high average number of years in service, people are reluctant to resign when they feel that they can get a retrenchment package. Rumours about the future are rife. A bookmaker's book exists around who the business unit managers may be!

The result may be such that those who are frustrated by the situation and can get alternative job offers will leave. Inevitably, these are the people with higher skill and knowledge levels. Some will sit the situation out ad take a "wait and see" attitude, while the balance hope to have a job into the future.

6.6 Evaluation

6.6.1 Cycle One

Cycle 1 looked at the posed the question that should scheme termination's be processed in a specialist team the Region may be in a better position to effectively and efficiently manage the transition. *Table 21* shows the final evaluation of this change.

A positive improvement in cycle time was achieved. However, the table shows that a fluctuation still exists in Throughput (TH), although cycle time has improved. I ascribe this fluctuation to the overall time (± 7 months) it takes to finalise a termination, taking into account the time that the termination transactions are lodged with the authorities for finalisation. During this time new termination's are started, and when the "old" termination's are returned, these literally lay around until the new batch are sent to the authorities. In a way batching is occurring, which according to *Law 9 (Move Batches)* "Cycle times over a segment of a routing are roughly proportional to the move batch size over that segment". This law suggests one of the easiest ways to reduce cycle times is to reduce the move batch size, which in this case means do not wait - deal with termination's on a "first-in first-out" basis.

Total production prior to intervention						
Month	Termination's			Termination Quotations/ Asset Calcs.		
	Processed (TH)	On-Hand (WIP)	Cycle Time (CT)	Processed (TH)	On-Hand (WIP)	Cycle Time (CT)
June	0	10	0	0	0	0
July	0	10	0	0	10	0
August	0	10	0	2	12	6
September	0	10	0	24	62	2.58
October	0	10	0	16	57	3.56
01-15/11/97	0	11	0	2	56	28
Total	**0**		**0**	**44**		**10.03**
Total production for specialist team						
15-30/11/97	0			16		
December	4	40	10	8	14	1.75
January	2	52	25	10	5	0.50
February	0	64	0	12	8	0.66
March	13	70	5.38	20	4	0.20
April						
May						
Total						

Table 21 - Specialist Termination Team Final Evaluation

6.6.2 Cycle Two

The second cycle of application proposed that, as an improvement had been achieved by grouping the termination's into a specialist team, a similar improvement could be achieved if the Fee and Premium Rate Review process was revised and grouped into a specialist team. *Table20* shows the final evaluation for this process, which resulted in a 90% improvement in cycle time.

At the same time, it was proposed that an improvement in cycle times could be achieved by automating the calculation of asset and transfer values for termination's. On April 21 the program to calculate assets and transfer values went live into production. Since then, this part of the manual process has been eliminated. Accurate assets values are available on a daily basis. Due to the savings in cycle time and the fact that customers often request assets vales, this function has been returned to the Customer Focused Teams for processing. The Customer Focused Teams are also more up to date on daily scheme transactions, i.e. they are aware if a payment has been made, but not yet banked, so they are in a better position to judge the accuracy of the calculation. By returning this function to these teams, the "Redundancy of Information Theorem (Clemson, 1984), which states that "errors in information transmission can be protected against by increasing the redundancy in the message" has been successfully achieved.

6.6.3 Cycle Three

The question posed in cycle 3 was that, irrespective of improvement in processes and data quality, if the people issues were not addressed, productivity and morale would continue to decline, negatively influencing the viability of the Division. I am unable to evaluate the recommended changes. A theoretical argument needs to suffice. Productivity can be defined as "The ability to combine and convert inputs into outputs". The *Realist Model of Productivity*, developed by B.J. van Loggerenberg, illustrates the effect that productivity has on a profit/loss situation in a company. Too often companies adjust the revenue (income) and attempt to lower the cost (expense) as the only means to increase profits. The *Realist Model* shows that an increase in profit can also be achieved by increasing the quantity and quality of output produced.

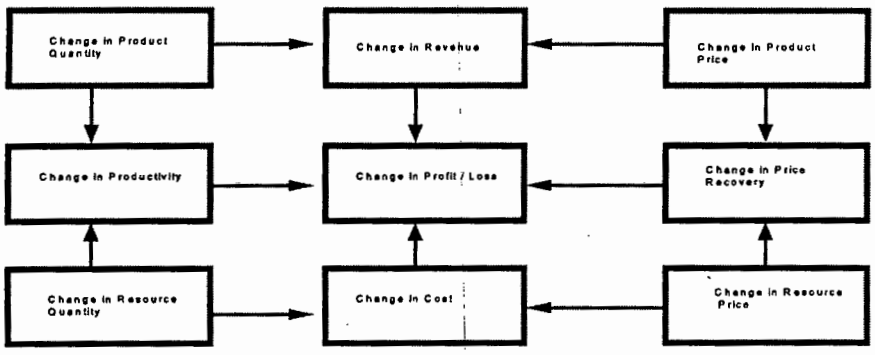


Figure 33 - Realist Model of Productivity

Using this model, we have shown that a change in product price has occurred, the resource price (people salaries) is increased a minimum of once a year, we are unable to increase the resource quantity (add more people) so our only avenue is to increase the throughput or product quantity. Our only options for doing this are (1) to improve the processes or (2) to increase the willingness to produce.

Cycle one and two address the need to improve the processes. In improving motivation Maslows Hierarchy of needs shows that at the first level people's physiological needs are to be met (shelter, food, water), at the second level their security needs (money), at the third social needs (friends co-workers, relatives), the fourth psychological needs (status, recognition, prestige) and lastly the needs of self-fulfillment. In the current situation, peoples physiological and security needs are being threatened. In Frederick Hertzbergs terms, the hygiene factors, which only effect motivation when these do not exist, need to be addressed.

Only then can motivational factors be introduced. Hertzberg classifies hygiene factors are wages, benefits, working conditions etc., while motivational factors include recognition, accomplishment, advancement etc. Until these are resolved, little can be done to improve motivation.

Chapter 7

Conclusion

7. On Problem Solving

As one proceeds through a process of inquiry into the operational details of the Industry, it is clear that many complexities exist. Each cycle of inquiry adds depth and clarity and shows, in the area of application, that problems exist with data quality, incomplete processes that don't serve the purpose of the system as a whole with people fighting to survive. Problem solving can never be approached with a start and end in mind. It is rather a process of tweaking and fine-tuning a system to move closer toward the end vision. It is a journey of exploration and action. It is something that must be practiced.

The initial *observation* made was that a whole host of changes had been effected in the company. *Doubt* existed as to whether or not the changes were effective and positively contributing towards the purpose of the company. A *process of inquiry* was entered into resulting in the *belief* that, should processes and structures change, a positive contribution towards the purpose could be made. Changes were implemented and evaluated. *Observations* made showed initial improvements. *Doubt* existed as to whether or not, if the same rules were applied, that a similar change to a difference process would yield similar results. Again the process of inquiry followed, changes were implemented and evaluation showed positive results. My *beliefs* that the laws, theorems and principles of operations management apply to a service environment were becoming more firm. However, *observation* showed staff turnover was increasing. I *doubted* that productivity statistics were stable and was concerned about the people in the system. The process of inquiry highlighted areas for possible intervention that could result in a more stable environment for people. Based on theory, I conclude that the leverage areas for change remain (1) to improve processes and (2) to increase the willingness to produce.

Ideally the cycle of learning and research should continue. At the beginning of this thesis, it was intimated that the Financial Services Industry, which is experiencing a tremendous amount of change, might be in trouble. Accepting the *Thesis of Verisimilitude*, the thesis shows that if this situation exists in one company in the Industry, one can then safely say the balance of the Industry is not applying the basic principles of operations management either and are experiencing similar operational problems. A final general statement could be that the Industry will continue to change at a high level, but unless it can get its act together at an operational level, the customer will continue to receive poor service.

In order to master the incommensurabilty argument I pose the following. The Laws, Theorems and principles used to evaluate and conclude each cycle of application are normally applicable to a manufacturing environment. However, in both the services and manufacturing environment profitability and viablity of the operation are the goal. Cycle Time, throughput and work-in-progress are key performance indicators.

I would argue that the "Realist Model of Productivity", used in the evaluation of *Cycle 3*, is not a rival theory. The first set of theories focus on *process*, while I use the "Realist Model" to focus on *people*.

However, at no point in time has any evaluation been completed on whether or not the quality of output has improved. In a manufacturing environment, ascertaining the quality of a product is relatively simple. Either the product conforms to standards or it does not.

Quality in the Financial Service Industry has two dimensions, (1) that of meeting the customers expectation in financial terms, i.e. ensuring that the customer receives peace of mind in terms of the return on moneys invested, and (2) the deliverance of service. Ensuring the profitability of a company means ensuring low costs, high quality and high sales. The use of operations management theory helps one to ensure the accuracy of data and processes, it helps towards driving costs down, which makes it easier to deliver the service. In the Group Retirement Fund Industry, sales are dependent on relationships, return of investment and quality. Relationships and quality are linked. Without effective quality control, the use of operations management theory in the Service environment could be refuted.

By design, Action Research lends itself to continual cycles of research and learning. Such is the case here. Broader research into the use of operations management practice could be done on the Insurance Industry as a whole. Another avenue for research would be into the outcome of the people involved in the system. A large number of people will be retrenched and using literature and data on the trends around the future of work, a study could be completed on how retrenched staff fare into the future.

7.1 Reflection

At the end of the day, the ability of an organisation to learn is vital to its long-term success. In application, the Inquiry Framework provides a practical learning mechanism.

7.1.1 The relevance of the Inquiry Framework to Management

In the world of work, change is exponential. A dilemma for managers is how to interpret data and make decisions that result in progress. The working environment is such that old rules do not apply anymore and the consequences of actions have enormous proportions. This often results in knee-jerk reactions, quick-fix solutions or the inability to act, leading to long-term financial losses for the organisation.

Information about the organisation and its customers is important to the manager. Taking into account the deluge of information that managers are faced with, the significance of information, which the manager is presented with, is even more important. How does the manager decide what is significant and what is not? Most managers work within a belief system that they work to further the interests of the organisation. In doing so they interpret, explain, deduce relationships and identify trends that are significant to the organisation. Furthermore, the manager is concerned with the actions that will result in the "fullest life" for the organisation. This is not unlike the philosopher or the scientist.

7.1.2 The relevance of the Scientific Method to Management

Epistemology facilitates the application of the Scientific Method. Affirmation of Knowledge is important in that knowledge or learning is possible in an operational environment. It facilitates change and evolution towards the "better" state for the employer, employee and the customer. As an instrument of knowledge, utilising the Scientific Method includes using empirical methods for testing and evaluating potential changes. This helps toward ensuring that change and evolution are meaningful. As a realist, problems that do not go away, whether viewed as real or not, would require addressing.

The Pragmatist is concerned that the process of inquiry, delivers plausible concerns and questions, and makes recommendations that are implementable and empirically testable. The "realm of Value" is taken into account when a systemic view is taken when applying the framework

Epistemology affirms that some knowledge is possible and therefore supports the manager in acting. The manager is capable of change. It is commonly said that a learning organisation is one that has a future. The manager that can use his sense-perception observation ability and proceed to test his findings is giving himself and the organisation the opportunity to learn.

The manager, by implication, is there to ensure that the operational area of the organisation functions effectively and efficiently, he is concerned with the practical application of operational matters.

Epistemology facilitates the application of the Scientific method; it provides an instrument of knowledge that the manager can use for inquiry. It facilitates change and evolution towards a "better state" for the employer, employee and customer. It ensures that change is meaningful. It raises plausible concerns and questions and delivers recommendations that can be tested and implemented. Finally, it is concerned with adding real value for the employer, employee and customer.

7.1.2.1 Management Learning & Development

The use of Scientific methods assists managers to develop the capacity to build pertinent mental models of a situation. This is turn leads to more effective management action and in effect increases the chances of achieving an intended outcome.

This all depends on management's' ability to build a pertinent mental model of the situation that needs to be managed, as we can only manage those aspects of the world that appear in our mental models. The important elements of this process are learning and inquiry.

7.1.2.1.1 Learning

A cyclical process consisting of the following phases

- Asking pertinent questions about an unexplained result
- Developing theories or models that plausibly answer these questions
- Testing the theories in practice
- Reflecting on the results of these tests and comparing them to the results predicted by the theory and so raising new questions.

7.1.2.1.2 Inquiry

The scientific method, interpreted in terms of the following steps

- Observation of an unexplained phenomenon
- Development of a theory in practice
- Comparing the test results with those predicted by the theory, and
- Accepting, modifying or rejecting the theory

The three reasoning processes inherent in the scientific method are:

- **Abduction** – the process of developing an *explanatory hypothesis* that plausibly explains a surprising phenomenon
- **Deduction** – the process that *predicts the consequences* of an hypothesis being true in a certain situation, and
- **Induction** – the process of *testing the hypothesis* against experience in the situation and drawing conclusions about the validity of the hypothesis, from the testing

The pragmatic theory of meaning states that we can only really understand something in terms of its practical consequences. Any beliefs based on this understanding are fallible – extremely limited – and are likely to prove unreliable in the future. To develop our knowledge we need to continually test our beliefs against experience and when our beliefs fail us, we must review them and, if necessary, cast them aside and search for new ones.

These learning /inquiry theories can be re-framed in terms of management and mental models as follows:

- When faced with a situation, that cannot be adequately explained by an existing mental model, management must ask questions such as, "What would be a pertinent mental model of this situation"?
- An inquiry process is then started to build a more pertinent mental model of the situation.
- Action, suggested by the revised mental model is taken, with a view to achieving some intended result.
- Actual results achieved are then compared with those predicted by the revised mental model. An unsatisfactory gap between the two results and leads to new cycle.
- There are two learning processes which complement the above theories and they both start when a gap exists between the results predicted by a mental model and the actual results experienced, but then strive to close the gap in the following different ways:
    - Single loop learning – which revises the action taken, and
    - Double loop learning – which revises the mental model on which the action is based rather than the action.

Most of the complex issues facing management today, requires double loop learning. Managers can learn to cope systematically with complex issues by organising their mental models into interacting triads (For example different levels of recursion, categories of systems, and systems questions.)

As our mental models tend to resist change we as managers need to be able to change our mental models and can do so by going through the following three stages:

- ***Unfreezing*** — Disconfirming the mental model we hold of a situation – de-stabilising it.
- ***Learning*** — Seeking new or revised models that are more pertinent to the situation than the old de-stabilised model.
- ***Re-freezing*** — Testing and confirming the new or revised models as a basis for future action.

The process of unfreezing, learning and re-freezing is consistent with the learning and inquiry processes of the scientific method and offers a useful framework for implementing double loop learning.

When attempting to understand a complex management issue it is important to view it from the following three perspectives:

- Technical or professional
- Organisation or cultural
- Personal or political

Any management action is initiated in response to some perceived concern or opportunity. It is useful to represent the shared appreciation of this concern or opportunity (the situation) graphically, as this is likely to influence the perceptions of those who have an interest in the situation.

- Then – Conceptualise the concern as the output of a transformation System (the transformation system transforms a previous acceptable situation, into an emerging situation of concern) as this then provides a framework for building a systemic model of the problematic situation and how it emerged. (Systems Questions)
  The systems methodology used (Tetrahedral Model, V.S.M, S.S.M., etc.) will determine the form of mental model (i.e. why it exists, what it looks like, how it operates, what it is doing and what it will do under different conditions)
- Then design an intervention that will address the concern in a viable and sustainable way (again as a transformation system) where the current situation or concern will be reduced to an acceptable level. (The interacting parts will reflect the designers understanding of how the proposed management action will lead to the intended outcome)
- Learning is acquired from action and implementation, (i.e. by intervening in a system to experience its response) and by understanding and evaluating the results of that intervention. This is achieved by asking questions about an unexplained result, developing theories or models that plausibly answer these questions, then testing the theories in practice and reflecting on the results in comparison to those predicted by the theory and then accepting, modifying or rejecting the theory.

In essence, there are three processes at work:

- We immerse ourselves in a problematic situation in order to gain the necessary systemic insight to deal with it (Abductive process)
- We design an intervention that will deal with the problematic situation based on our systemic understanding and our mental model. (Abductive / Deductive process.)
- We act and experience the consequences of that action (Induction)

Finally, we must use systems thinking to generate the variety needed to deal with the wide range of complex issues we face, against the background of our limited short-term memory.

The theory of triads and relationships helps us to achieve this, thereby avoiding resorting to reductionism. In achieving the management of complexity, it is crucial that coherent action takes place to achieve any purpose. This requires subjectivity and objectivity; interpretation and positivism all rolled into the management process of interpreting the nature of the world during the immersion process referred to above. The interventions that flow from the design process are positivistic in the sense that they reflect an agreed interpretation of reality. (Peirce's pragmatic philosophy)

7.2 Personal Learning

The past five years of my working career has afforded me the opportunity to develop a rich understanding and experience in the field of Operations Management. It has been during the last 3½ years of this journey that the intricacies of systems have increasing intrigued me and captured my attention. This interest, personal energy and a quest to learn has led me to pursue a more formal and focused study of the practice of Operations Management.

This journey of pursuit involved one year of study on an internal company program and 3 years of study at the University of Cape Town. In accumulating the learning and outcomes of this journey, I feel more humble, more respectful and even more captivated by the process of learning.

Discipline and rigor have inextricably been woven into my personal make-up, something that I will carry forward into my everyday life. My curious nature has been given a formal framework with which to start making sense of the world I live and work in.

The introduction to Philosophy has been infinitely intriguing and I fear I could lose myself in an ideological, academic world of philosophical study. Group work has been great! There has been many a time that, without the support of a learning group, I would have faltered. The richness offered by the group also helped to ensure that one did not walk down only one's own path.

I feel that I can best summarise and close this thesis with the chorus of the theme song from the musical, The Sound of Music, written by Rogers and Hammerstein:

Climb every mountain, search every stream
Follow every byway, until you find your dream ...
A dream that will hold all the love you can give...
Every day of your life for as long as you live ...

This excerpt resonates, for me, the soul and spirit of my journey. It is my belief that if people take the opportunity to "climb every mountain" to "search every stream" they can hold in their hand the key to their own future.

Glossary of Terms

Administrator
An individual who provides the administration service to the customer, broker and/or sales consultant for a single scheme or portfolio of schemes.

Broker
A firm or individual that represents the interests of the customer, acts as an intermediary between the customer and the insurance company and acts of behalf of the customer.

Bundled Scheme
A scheme that has a combination of retirement fund benefits, risk benefits and investments.

CC
Acronym for the credit control process.

EBEN
Employee Benefits Administration system

Fees
Professional fees charged for the administration service performed on a scheme.

FSB
Financial Services Board, the body governing the application of the Pensions Fund Act.

Group Retirement Funding
A retirement scheme created by an employer for the employees of a company with the explicit purpose of providing benefits on the retirement of the employee. On leaving the employ of the employer, the employee withdraws as a member of the scheme.

Group Risk Benefits
A scheme created by an employer for the employees of a company with the explicit purpose of providing benefits for the employee or his/her financial dependents in the event of the death, disablement and/or chronic illness of the employee.

Guaranteed Fund Investment Portfolio
An investment portfolio that is not directly linked to the stock market. The client is guaranteed a smooth performance in growth over a period of time. The underlying assets of the portfolio are invested in the same manner as any other portfolio. The difference being that an Actuary calculates capital requirements needed in order to offer the client smoothed investment performance.

Investment only Scheme
A scheme that only has it's assets invested with the Southern.

Member
A member of a scheme and employee of the customer.

Pension Fund
Another term used for a Retirement Fund

PFA
Pensions Fund Act of 1956

PME
Process Management Environment system. A PME case is a predetermined administrative function that needs to be completed by the administrator.

Premiums
Premium rates charged for provided insurance cover for risk benefits available in a scheme.

Retirement Fund Contributions
Contributions made by the employer and employee towards funding the retirement benefit of a employee.

Retirement Fund Services (RFS)
Administration, Actuarial and Risk Management Services offered to customers.

Risk only Scheme
A scheme that only has risk benefits for members.

ROSI
Receipt of Southern Income system that receives all incoming fees, premiums and contributions for the Southern Life.

Sales Consultants
An individual, employed by the insurance company, who represents both the interests of the customer and the insurance company, acts as an intermediary between the customer and the insurance company and acts of behalf of the customer.

Scheme
Legal entity that is registered with the Registrar of Pension Funds and governed by the Pensions Fund Act of 1956. A scheme may have a combination of retirement and risk benefits and may be approved or un-approved by the Commissioner.

Total Contributions
Total contributions due in terms of administration fees, risk premiums and retirement contributions.

VSM
Viable Systems Model developed by Stafford Beer

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Appendix 1 : Memorandum

MEMORANDUM

To: Retirement Funds Services Staff, Employee Benefits Staff
Fm: Jeff Spinks
Dd: 3 September 1997
Re: EMPLOYEE BENEFITS DIVISION - TRANSFORMATION PROCESS

Further to discussions with members of the Executive Committee (Exco), RFS Executive and Regional Managers confirm that the decision reached by the initial transformation process with regard to Employee Benefits business is that our focus must be to retain profitable schemes. The definition of a profitable scheme is that the return on investment is of the order of 21%. Broadly the majority of our small schemes do not fall into this category.

In the interim, minimum charges are being increased in line with the strategic intention. A communication to the market will be issued in the near future.

A specific CATT team, championed by Don Brown, will be accountable for devising and implementing a strategic plan to deal with this issue. Details of this process will be available in due course.

The likely impact to our Division will be that approximately 185 positions will no longer be required. This is anticipated to take place over a period of 18 months. Plans for redeployment, where appropriate, are under review by another CATT team. These will be communicated to you at the earliest opportunity. At the time of writing there are no specific guidelines with regard to addressing this issue. Your managers are committed to executing any guidelines fairly and effectively.

In the meantime, we need to focus on the task at hand and be actively involved in the process of transformation. The people in our Division have demonstrated an ability to deal with tough challenges. This challenge is probably one of the greatest to be achieved to date. With your help we will achieve a renewed and restyled Southern.

Regards

cc Chris Liddle
Don Brown (for circulation to RMC)

Appendix 2 : Human Resource Research Council Questionnaire 2917

EXPERIENCE OF WORK AND LIFE CIRCUMSTANCES QUESTIONNAIRE (WLQ)

E.S. van Zyl

Printed by the HSRC
134 Pretorius Street
Pretoria

Example

Scale A

1 = Virtually never
2 = Sometimes
3 = Reasonably often
4 = Very often
5 = Virtually always

How often in your work do you feel ...

restless? 5

Based on this example the deduction can be made that the person feels restless virtually always.

Now answer Questions 1-40 (under Scale A) on the answer sheet.

Scale A

1 = Virtually never
2 = Sometimes
3 = Reasonably often
4 = Very often
5 = Virtually always

How often in your work do you feel ...

1. as if you are coming up against a wall and simply cannot make any progress?
2. afraid, not knowing of what exactly?
3. uncertain (unsure, doubtful)?
4. worried?
5. that your views clash with those of another person?
6. that you are experiencing conflict?
7. bored?
8. irritated (annoyed)?
9. that you have no confidence in yourself?
10. that you depend too much on the help of others?
11. alone?
12. that you would like to attack another person?
13. that you merely accept things as they are?
14. that you are disturbed whenever you work hard at something?

Scale A

1 = Virtually never
2 = Sometimes
3 = Reasonably often
4 = Very often
5 = Virtually always

How often in your work do you feel ...

15. that you are losing control of your temper?
16. that no-one wants to support you?
17. that your work situation compares unfavourably with those of others?
18. despondent (cheerless, down)?
19. that you have broken some rule or other?
20. inferior (no self-confidence, unimportant)?
21. that someone and/or a situation is annoying you terribly?
22. guilty?
23. downhearted?
24. fearful?
25. that you can do nothing about a situation?
26. aggressive (want to hurt someone/break something)?
27. that you are getting sad?
28. overburdened (too much work/responsibilities)?
29. angry?
30. afraid without knowing whether you are afraid of a particular person and/or situation?
31. not exactly sure how to act?
32. that you are having trouble concentrating since you are worried about something?
33. that you have no interest in the activities around you?
34. that you need assistance continuously?
35. that you do not wish to participate in anything?
36. afraid of colleagues and/or supervisors?
37. that it seems as if you will never get out of this mess?
38. dissatisfied?
39. that you are tearful (weeping, sorrowful)?
40. that you have too much responsibility and too many problems?

2.2 CIRCUMSTANCES AND EXPECTATIONS

This part contains questions on the nature of your circumstances and on your expectations.

2.2.1 Circumstances

Questions are asked about the way you feel about important circumstances within and outside your work.

Indicate below Scale B how often particular circumstances occur by writing down any figure from 1 to 5. Scale B is as follows:

1 = Virtually never
2 = Sometimes
3 = Reasonably often
4 = Very often
5 = Virtually always

Use this scale to answer each of the questions below.

Example

Scale B

1 = Virtually never
2 = Sometimes
3 = Reasonably often
4 = Very often
5 = Virtually always

How often do you feel in your organization that ...

there is not sufficient opportunity for social intercourse? 5

Based on this example the deduction can be made that the person feels that there is virtually always insufficient opportunity for social intercourse within the organization.

Note also that questions are asked about circumstances in your everyday life.

Example

Scale B

1 = Virtually never
2 = Sometimes
3 = Reasonably often
4 = Very often
5 = Virtually always

How often in your everyday life do you feel that ...

there is not enough time for sport and recreation? 2

Based on this example the deduction can be made that the person feels that he/she only sometimes does not have the time for sport and other recreational activities.

Now answer Questions 1-23 (under Scale B) on the answer sheet.

Scale B

1 = Virtually never
2 = Sometimes
3 = Reasonably often
4 = Very often
5 = Virtually always

How often do you feel in your organization that ...

1. the organization as a whole does not function satisfactorily (for example owing to poor organization, little confidence in employees and/or incorrect leadership styles)?

2. you are dissatisfied about the nature (content) of your work (for example it is not interesting and challenging or it does not correspond with your aptitudes)?

3. you encounter one or more of the following: considerable noise, high/low temperatures, odours, gases, poor lighting, crowding of people and/or any other problems that concern your physical working conditions?

Scale B

1 Virtually never
2 = Sometimes
3 = Reasonably often
4 = Very often
5 = Virtually always

How often do you feel in your organization that ...

4. situations in which you find yourself, have a negative effect on the progress and development of your career (for example your weaknesses are over-emphasized and/or you find it difficult to progress to higher posts)?

5. you find it difficult to deal with social matters (such as socializing in a group and/or maintaining good interpersonal relations)?

6. you are dissatisfied with one or a few of the following: pension, medical and housing aid, bursaries, achievement bonuses, group and other insurance, salary and/or any other aspects of your remuneration package?

7. you are dissatisfied with one or more of the following: working clothes, working hours, conditions of employment, communication channels with respect to grievances and complaints, rules regarding transfers, termination of employment and/or any other regulations involving personnel matters?

Note that the following questions deal with circumstances in your everyday life.

How often in your everyday life do you feel that ...

8. family crises (for example death, illness and strife) have an adverse effect on your life?
9. financial obligations (for example the payment of a house loan) make life difficult for you?
10. the phase of life in which you find yourself currently (for example middle age and/or retirement) makes life difficult for you?
11. the general economic situation in the country (for example inflation) makes life exceptionally difficult for you?

Example

Scale C

1 = Virtually never
2 = Sometimes
3 = Reasonably often
4 = Very often
5 = Virtually always

How often do you feel in your organization that ...
you are able to talk to your colleagues? 2

Based on this example one can deduce that the respondent only sometimes feels that he can talk to his colleagues. Note also that, unlike in the case of the previous questions, a low score (virtually never) represents a negative trend while a high score (virtually always) represents a positive trend.

Now answer Questions 1-53 (according to Scale C) on the answer sheet.

Scale C

1 = Virtually never
2 = Sometimes
3 = Reasonably often
4 = Very often
5 = Virtually always

How often do you feel in your organization that ...

1. you receive recognition for what you do?
2. regulations regarding personnel matters (for example concerning working hours, conditions of employment and working clothes) reflect well on the organization?
3. you can get the work assigned to you done in time?
4. you are able to perform your tasks without having to be on your feet for long periods, having to lift heavy objects, having to be in a bent or crouching and/or in an uncomfortable position?
5. you are able to assume full responsibility for all you do?
6. you can perform your tasks without the nature of your work and your actions endangering other people's safety/lives and/or having a negative effect on the nature/quality of thei lives?

Scale C

1 = Virtually never
2 = Sometimes
3 = Reasonably often
4 = Very often
5 = Virtually always

How often do you feel in your organization that ...

30. you have good relations with your colleagues?
31. your colleagues consider you successful and/or hard-working?
32. your salary is adequate to motivate you to work hard at all times?
33. you are making progress?
34. your job equipment (for example computer, stationery and tools) is in working order?
35. personnel regulations (for example those regarding transfers and working hours) contribute to your satisfaction?
36. your input is adequately remunerated?
37. your physical working conditions (for example lighting and office space) are adequate for the type of work that you do?
38. you are happy with the nature of your fringe benefits (for example housing, pension, medical aid)?
39. you are able to perform your duties without time playing too big a role?
40. the way in which things are organized contributes to your good achievement?
41. management believes its employees to be hardworking and/or reliable?
42. you have enough work to keep busy?
43. the requirements of your job correspond with what you have to offer?
44. the social demands made on you are of such a nature that you can easily satisfy them (maintain good relations with others)?
45. your good achievements are noticed?
46. you are able to display initiative?
47. you are able to be involved in different tasks?
48. your post is essential and will be retained?
49. you find regulations regarding staff matters (for example working hours, working clothes) satisfactory?
50. you are able to maintain good relations with your supervisor(s)?
51. your potential is used to the full?
52. you are able to talk to your supervisor whenever you want to?
53. you are able to maintain good social relationships with everybody?

Appendix 3 : Confidential Stress Survey for Employee Benefits

Introduction

This stress survey was undertaken at the request of Renee Blohm of Employee Benefits during September 1997.

The results are presented in graph format. Feedback sessions have been arranged for some staff members on their request The rest of the staff, in agreement with Renee, opted not to have any feedback sessions.

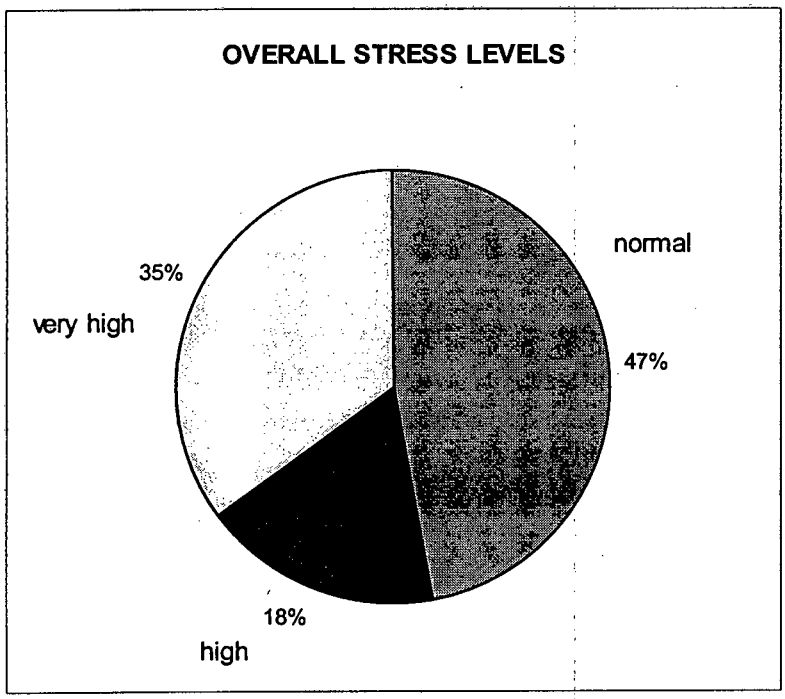
16 members of Employee Benefits (West Coast) participated in the survey.

Overall stress levels

The overall stress levels of the 17 team members who participated in the survey were as follows:

Results

Normal -	8	
High	-	3
Very High	-	6

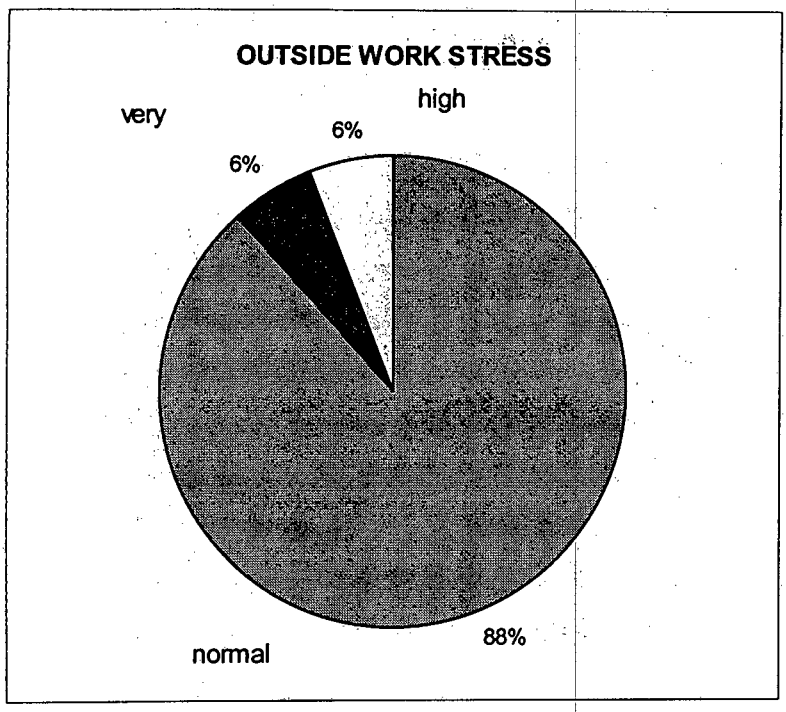


Outside of work stress

Results

The stress levels pertaining to circumstances outside of the work were as follows:

Normal -	-	15
High	-	1
Very High	-	1



DISCUSSION

Personal problems experienced by individuals were explored and appropriate counseling offered.

Circumstances within the work environment

Circumstances within the work environment are divided into several factors consisting of organisational functioning, task allocation, physical working conditions and job equipment. Career opportunities, social matters and lastly remuneration.

Stress levels were measured per factor and the results are as follows:

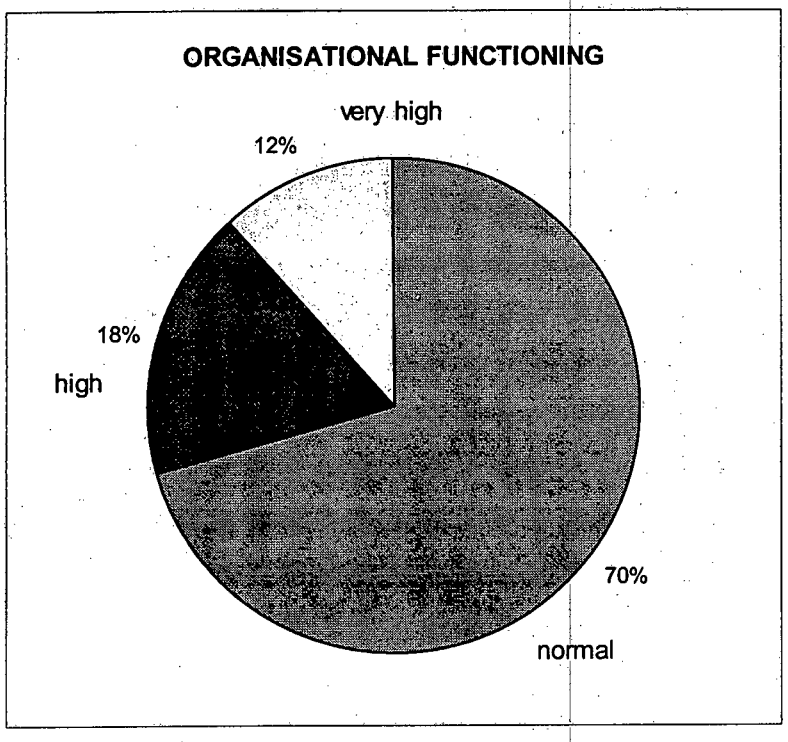
Organisational functioning

Definition

A share in decision making, trust in supervisors, effective organisational structure, a positive management climate, recognition of work done well, and open communication channels with the supervisors.

Results

Normal -	12	
High	-	3
Very High	-	2



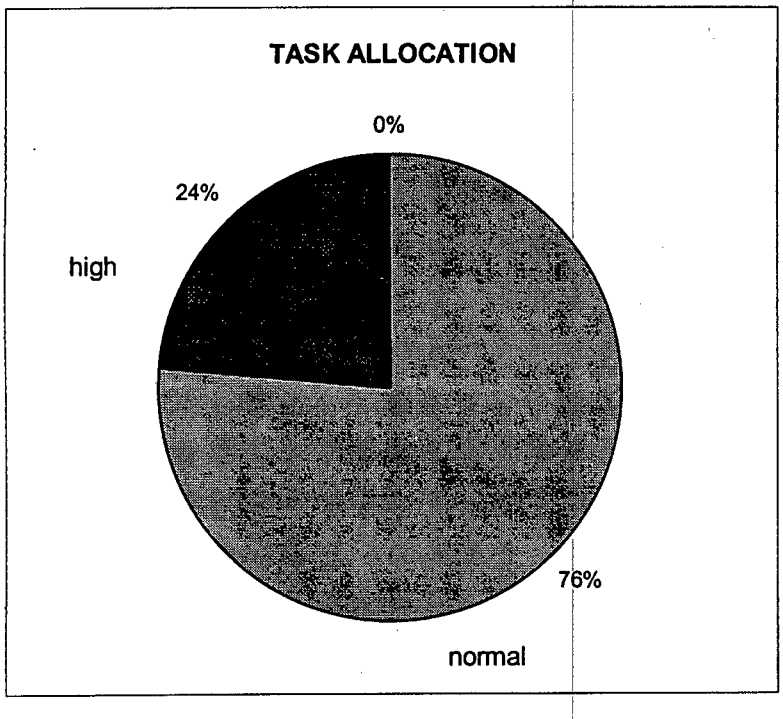
Task allocation

Definition

Getting the work done in time, having sufficient knowledge and information available to do the job, taking full responsibility for a piece of work, applying new ideas, functioning autonomously within one's post, not receiving contradictory instructions, not having to function under unnecessary pressure of time, having enough work to do to stay busy, and performing a variety of tasks as part of one's work.

Results

Normal	-	13
High	-	4
Very High	-	0



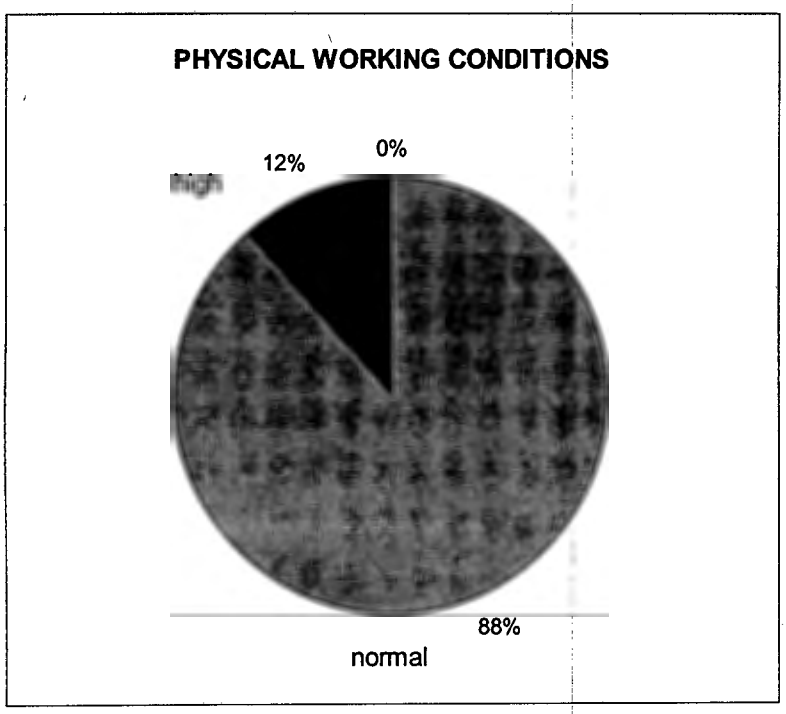
Physical working conditions and job equipment

Definition

The availability of job equipment as well as it being in working order, and being allowed to function in adequate physical working conditions.

Results

Normal	-	14
High		2
Very High		0



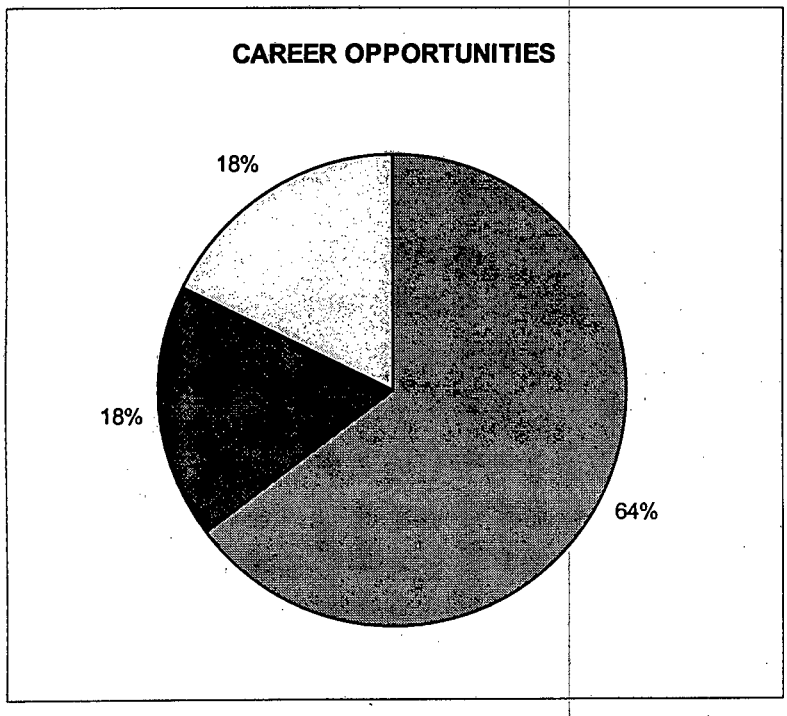
Career opportunities

Definition

The respondent's expectations regarding further training, the use of his/her talents, progress in his/her work, and the security of his/her present job.

Results

Normal	-	11
High	-	3
Very High	-	3



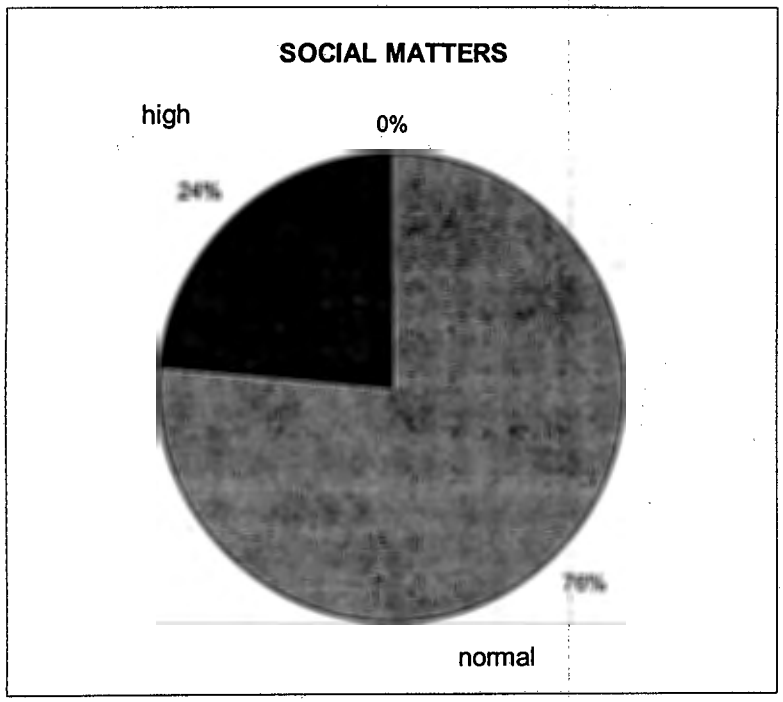
Social matters

Definition

Enjoying a high status in one's job, maintaining positive relations with the manager/supervisor as well as with colleagues, and that the social demands are reasonable.

Results

Normal	-	13
High	-	4
Very High	-	0



Appendix 4 : Competency Levels of West Coast Administration Staff

	Team	Name	Competency Level	Count
Trainee	W8	M Hendricks	0.00%	1
	FT	X Dyakopu	0.00%	2
	FT	C Mkatazo	44.20%	3
	FT	T Africa	48.40%	4
	W7	A Bartnicke	49.60%	5
	W9	S Rosser	49.60%	6
Average	W7	L Kewana	50.00%	1
	W7	A McGregor	53.50%	2
	W6	M Manikivana	55.00%	3
	W7	K de Vries	55.80%	4
	W7	E van Schalkwyk	58.00%	5
	FT	M Doo	58.40%	6
	WN	C Basson	59.00%	7
	FT	A Brookes	60.00%	8
	WN	F Booley	61.20%	9
	W8	M Slarmie	67.00%	10
	W7	G Gideon	67.20%	11
Expert	W8	C Walker	71.00%	1
	W8	L Mphutlane	71.00%	2
	W6	W Paries	72.00%	3
	FT	D Dirk	77.20%	4
	W7	D Hillman	78.00%	5
	W7	F Abrahams	79.60%	6
	FT	B Ismail	80.00%	7
	FT	Z Collinette	80.00%	8
	FT	J Adams	83.40%	9
	W6	G Gcasamba	86.00%	10
	W8	N Girie	88.00%	11
	FT	S Kafaar	95.00%	12
	FT	A Rhode	96.00%	13
	WN	B Croy	100.00%	14
	W8	D Smith	100.00%	15
	FT	C Wannenberg	100.00%	16
	W8	V Lamb	100.00%	17
Total				**34**

Appendix 6 : ROI Assumptions

ROI Assumptions

- **The activity unit costs determined in the Phase 2 analysis as being correct.**
- **The quality of the scheme data extracted from the IBM admin system.**
- **The quality of the asset values and investment portfolios extracted from the Finance system.**
- **ROI calculation assumptions made:**
  - Income
    - Mortality Risk Fee 5,5%
    - Morbidity Risk Fee 10%
    - Mortality Profit 5%
    - Morbidity Profit 10%
    - Investment Fee Income 0.4%
  - Expenses : activity volumes
    - Mortality 1%
    - Morbidity 1%
    - Retirements 1%
    - Withdrawals 10%
    - Medicals 5%
    - New entrants 10%
    - Detail changes 10%
  - Capital requirements
    - Expenditure 44%
    - Mortality 26%
    - Morbidity 71%
    - Guaranteed Fund 4.3%

Appendix 7 : Employee Benefits Merger Announcement

SOUTHERN LIFE

MOMENTUM LIFE

MEMORANDUM

TO: All Southern Life and Momentum Life Staff

FROM: Laurie Dippenaar, Chairman (Merger Steering Committee)

DATE: 15 May 1998

MERGER MAP NO 4

BACKGROUND

In the first Merger Map I indicated that one of the working groups would investigate the future of the Employee Benefits operations of Southern Life and Momentum Life. This working group consisted of Don Brown, Niel Krige (Convenor), Jeff Spinks and Dave Steere.

RECOMMENDATIONS

The following recommendations have been accepted by the Merger Steering Committee :

Synergy

The working group found that, with the exception of risk business, the business units of the two operations were largely complementary to one another.

Business Objectives

The following business objectives were agreed upon :

- Any business line would need to be able to be profitable in its own right (i.e. show a minimum return on investment of 21%);
- All business units would need to be capable of delivering excellent levels of customer service.

It should be noted that the ROI of 21% is set at an assumed inflation rate of11% plus 10% real return. As such 21% remains our target but this may be changed at any time in the future as is deemed appropriate.

Business lines

The following business will be operated in future :

- Risk business
- Direct business (administration, consultancy, actuarial)
- Brokered administration business
- Union business.

Certain support units will be created as is deemed necessary.

Structure

All existing operations are to be consolidated into a single Employee Benefits company through which the FirstRand group will be able to offer a full range of employee benefits services.

Each business unit will be given as much autonomy as possible in order to focus on and develop competitive advantages in their area of speciality.

Decisions will be taken in respect of support functions (eg Information Technology, Human Resources, Legal Advisory) as to whether they are part of the business units or the greater Employee Benefits company. This will be given priority.

The main purpose of the Employee Benefits company will be to establish and manage an overall employee benefits strategy for the Group and to improve co-ordination and maximise synergies among the various interdependent business units.

Company Name

The new Employee Benefits operation will be set up as a separate company. It is still being investigated whether this company should be a 100% subsidiary of the new life company in order to utilize its licence for writing risk and other insurance business, or whether it should have its own licence.

A name for the new Employee Benefits company still has to be finalized. This will be done once the Group's branding strategy becomes clearer. A company (Pentagraph) has been commissioned to conduct research and propose an appropriate name for the new Employee Benefits company.

Target Markets

The target markets for all of the various business units will remain largely unchanged for the foreseeable future.

However it is evident that if we are to achieve an ROI of 21% quickly, changes must be made within certain of the business lines which will ensure the target is achieved in the shortest possible time.

It has been agreed in principle that the elimination of small schemes from the broker administration area will need to be pursued vigorously. As has been previously communicated, in terms of the transformation programme, this will result in there being fewer positions in due course. Also certain changes to the Negotiated funds area to eliminate small and unprofitable business are likely to have a similar result. Approaches will be made to other administrators to establish whether they will be prepared to accept blocks of business. This might offer the opportunity for staff redeployment. Once plans are properly formulated details will be communicated.

Distribution

Separate distribution channels will be set up for brokered and direct business.

The opportunity presents itself to review the manner in which our products are distributed on both a brokered and direct basis. For broker distribution the focus will be on the larger brokerages where the intention is that our broker consultants will be acknowledged as the best consultants in the South African market place. It is the intention to begin working on this redesign as soon as possible.

Location

The vast majority of the Employee Benefits target market is based in and around Gauteng. It is therefore appropriate that the Head Office of the Employee Benefits operation will be in the greater Johannesburg area. Should it be felt desirable that all Johannesburg based operations be based in one centre then consideration will be given to the appropriate location in due course.

Certain technical support functions such as Actuarial, Risk Management and Information Technology will continue to have a significant presence in Cape Town. This applies similarly to an appropriate customer service presence. As a general rule however customer services will be delivered as close to the customer as possible whilst ensuring optimum profitability.

Union Business

It was agreed that suitable Black partners will be sought for a joint venture in the union business. Initial negotiations have commenced with potential partners and this offers exciting potential for the future.

Information Technology

It was agreed that current IT systems need to be investigated with a view to recommending a model IT structure and platform to be used. A project team has been formed with the job of analysing the status quo in terms of the systems and making recommendations in respect of the principles which should guide our IT strategy.

As a general rule the Employee Benefits company seeks to have its own IT operation that operates effectively within the Employee Benefits company and under the umbrella of any FirstRand group guidelines. The principle aim however is to leverage our IT skills for maximum strategic advantage.

Asset Management

Asset managers are to take over ownership of pooled investment portfolios in future. As a consequence the split of investment fees on pooled portfolios will be renegotiated between Employee Benefits and Asset Management. Spotter's fees in respect of future new investment business will be negotiated.

Management Structure

Niel Krige has been appointed Non-Executive Chairman and Don Brown Managing Director of the new Employee Benefits company. The other senior appointments will be made as a matter of priority.

CONCLUSION

Obviously for the employees of the relative Employee Benefits divisions the critical question revolves around themselves and their future. It is acknowledged and regretted that greater clarity cannot be given to many people at this time. However this communication effectively launches a significant and highly talented South African Employee Benefits operation.

Work can now begin on achieving the business goals of superior profitability (ROI 21%) and excellence of service. In the attainment of these goals greater clarity and purpose will be given to individual staff members as their role in this new and exciting company emerges.