

RISK MANAGEMENT AND THE DECISION PROCESS
CRITICAL CONCEPTS FOR BOARD MEMBERS AND TOP EXECUTIVES

THESIS

SUBMITTED IN ACCORDANCE WITH THE REQUIREMENTS

FOR THE DEGREE

DOCTORATE IN BUSINESS LEADERSHIP

AT THE

UNIVERSITY OF SOUTH AFRICA

Presented to the

School of Business Leadership

by

Dr. Altus van der Merwe

JANUARY 1996

UNISA
BIBLIOTEK / LIBRARY

Class 1997-01-3 J
Klas 658.403 VAND
Access
Aanwin



1662247

Copyright

In terms of the Copyright Act No. 98 of 1987, no part of this book may be reproduced or transmitted in any form or by any means electronic or mechanical, including photocopying or by any information storage and retrieval system, without the express written consent of the author, and the School of Business Leadership.

P.O. Box 6007
WELGEMOED
7530

ACKNOWLEDGEMENTS

I am indebted to and thank sincerely the following persons for their assistance in completing this study:

My wife Amanda and our children Nadia & Anchené for their encouragement, understanding and support.

Prof. Murphy, my supervisor for his valuable suggestions and stimulating guidance. Also to Prof. Neaubauer for his thought provoking questions and suggested improvements.

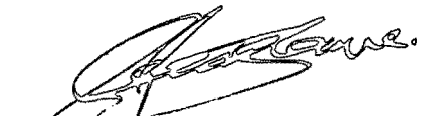
The executives and board members of the various financial institutions for their willingness to share their experience and opinions on this subject with me.

Mrs J. Jordaan for the word-processing of the document.

ALTUS VAN DER MERWE
JANUARY 1996

DECLARATION

I declare that this research is my own work and that all sources that I have used are accurately reported in the list of references.



DR. ALTUS VAN DER MERWE

TABLE OF CONTENTS

	<u>Page</u>
1. Executive Summary	10
- Aims of the research	
- Research findings	11
2. List of Diagrams	13
3. Introduction	15
4. Purpose of the research	18
5. Definition of the problem	21
6. Data Base	21
7. Research Design	24
7.1 Explorative research	24
7.2 Qualitative framework	25
7.3 Research methodology	27

	<u>Page</u>
8. Literature Survey	29
8.1 Introduction	29
8.2 Framework for analysis of the decision process	32
8.3 Concepts from the decision theory	35
8.4 Decision audits	37
8.5 Factors that play a role in the decision process	38
- Bounded rationality	38
- Heuristics	39
- The confirmation trap	40
- Threshold of effective zerohood	40
- Reversible and irreversible risk	41
- Judgemental biases	41
- Complexity of decisions	42
- Managerial values	43
- Uncertainty suppression	44

	<u>Page</u>
- Endogenous risk	44
- Risk domain illusions	44
- Politics	45
- Catastrophe theory	45
- Thought process phenomena	46
- Escalation errors	46
- Hindsight bias	47
- Preference reversal phenomenon	47
- Confirming or conflicting evidence	47
- Tempered expected value decision making	48
- Overconfidence in judgement	49
- Inertial behaviour	49
- Violation of expected utility maximisation	50
- Multiple risks	51
- Topical organisation of mental accounts	52

	<u>Page</u>
- Self preservation	53
- Intellectual miscalculation of probability	53
- Framing effects and frame misalignment	54
- Winner's curse	56
- Problem identification	56
- Perceptual accuracy	57
- Group decisions and group failure	58
- Calibration of subjective judgement	58
- Ignoring contradictory evidence	59
- Social comparison theory	59
- Flexibility	60
- "Success or failure" effects	60
- Decision support systems	61
- Risk attitudes & risk taking	62
- Time delay risk consequences	63

	<u>Page</u>
- Negotiated belief structures	63
- Error tolerance	63
- Devil's Advocacy and Dialectical Inquiry	64
- Inability to learn from experience	64
- Aspiration levels	65
- Satisficing	65
- Groupthink	67
- Multistage inferences	68
- Organisational forgetting	68
- Structure of high risk decisions	69
9. Gathering of the data	71
10. List of Executives interviewed	73
11. Interview structure	77
12. Abstracts from the research interviews	81

	<u>Page</u>
13. Other concepts that came forward during the explorative research.	144
14. Decision process analysis of recent mega-decision failures.	152
14.1 Escalation errors in the European Currency Crisis.	153
14.2 Mutation of decision logic in vanishing premium illustrations.	158
14.3 Credit Lyonnais : Slow Decay in decision making	160
14.4 Lloyds : Competitive Risk taking gone wrong	163
14.5 Metallgesellschaft : Decision making in an industrial company or derivatives speculator?	165
14.6 Organisational forgetting : Decision failure in NASA.	167
14.7 The Barings debacle	172
14.8 Daiwa : A decision process melt-down	175

	<u>Page</u>
15. Analysis of Current Risk Management Models/Methods	178
15.1 Risk Classifications Models	178
15.2 Structural Risk Management Models	184
15.2.1 Structures to manage derivatives	184
15.2.2 The board structure and risk management	187
16. Analysis of decision Process Risk : A board responsibility	190
17. Conclusions drawn from the explorative research.	194
17.1 Introduction	194
17.2 Research findings	195
18. Decision process analysis	204
18.1 How to reduce decision process risk	206
18.2 Framework for decision process analysis	207
- Diagrams A to G	207
19. List of References	215

EXECUTIVE SUMMARY

AIMS OF THE RESEARCH:

- To explore the decision making processes of top management, CEO's and boards of directors - to gain new insights into the causes of management decision failures, management risk and decision process weaknesses.
- To identify important factors that play a pivotal role in effective decision making in business situations.
- To draw up a framework for effective decision making based on the correlations between decision theory and empirical findings amongst senior executives and board members.
- To find ways how management can minimize the risk of decision failure in complex problems, what questions they have to ask themselves about the way in which they make decisions, what decision risks they have to be aware of at each stage of the decision process and how they can gain from available decision theory. The aim is to improve the decision process to obtain better overall quality of decisions produced by knowledgeable senior managers and board members.
- This will provide a framework for effective third generation risk management.

1. EXECUTIVE SUMMARY OF THE RESEARCH FINDINGS

- Board members and top executives rely on **experience** and **personal knowledge** to analyse complex problems and do not consciously involve concepts from **decision theory** (see section 8.5). They describe these phenomena in their organisations, but they have not formally done a **decision process analysis** to minimise decision risk.

- Current **risk management practises** in modern financial institutions focus mainly on **risk classification techniques** and **structural mechanisms** (see section 15) to control risks, with little or no attention to decision process dynamics.

- The Board of Directors and Top Management are generally very good at identifying corporate risks, economic risks and financial risks, but they have **great difficulty in identifying internal decision process risks** within the management hierarchy/system or amongst themselves. Introspective analysis of their own decision process dynamics can help to improve this.

- A **step by step analysis of the decision process in the board and top management team** as described in section 18.2 is proposed as a further contribution to **improve the quality of decision making** in financial institutions. **Structural changes** to boards like those introduced by Cadbury improved second generation risk management practices. This research proposes that **further advances** can be made by third generation risk management improvements in the **decision process dynamics**.

- We teach decision makers about economic and financial analysis and derivatives and risk management, but the fundamentals of decision science and the human decision process seem to be ignored. To prevent the financial failures that so often destroy shareholder value, we need to focus on **decision science** and **financial decision process** analysis. (See section 18).

- **Analysis of the decision process dynamics** is proposed as a way to reduce the number of decision failures in large financial institutions and other organisations. By **increasing the awareness and knowledge** of board members and top executives about the potential causes of decision failure, their own ability to identify and prevent these will be improved.

- New risk management structures and recent changes to board structures have contributed greatly to corporate governance but could not prevent many of the financial failures. **Combining these structural improvements** with an additional focus on **decision process analysis** can increase our ability to manage risk successfully.

-----o0o-----

LIST OF DIAGRAMS

	<u>Page</u>
Diagram 1 - Determinants of Decision outcomes	33
Diagram 2 - Structure of a high risk group decision	70
Diagram 3 - Perception of the risk return relationship	147
Diagram 4 - Risk management structure	179
Diagram 5 - Risk classification model	180
Diagram 6 - A framework for risk management	181
Diagram 7 - Detailed risk map.	182
Diagrams A to G - Flow diagram for decision process analysis. A framework for identification of decision process risk.	208

GLOSSARY OF TERMS

- First generation risk management:

Focus on routine risk that can be eliminated through standardised procedures, policies, and controlled via various auditing systems, including the auditing sub-committee of the board.

- Second generation risk management:

Focus on top level management itself, their personal risk profile in terms of knowledge, experience, skills, risk attitude and composition of the management team and composition of the board of directors.

- Third generation risk management:

Focus on the decision making process itself, the interaction of the decision making team and influencing factors that affect the decision making process, and the internal dynamics of the decision process.

INTRODUCTION ✓

Large institutions and companies operate in an environment of ever changing risks. To be successful top executives and board members in these companies must be able to manage these risks in an optimal way.

For this very purpose companies use many sophisticated risk management systems that control operational risks, monitor routine day to day financial and other auditable risks etc. Internal auditors, external auditors and auditing subcommittees of the board of directors form a safety net to protect the assets of the company against a variety of these risks.

As pointed out in previous research (Van der Merwe 1991 : 56) these above risk management systems constitute the management of First Generation Risk.

The next frontier of risk management research is the investigation of second and third generation risk management requirements.

Second generation risk management systems are necessary to manage second generation risk. This consists of the management team itself, their risk profile, their knowledge base, their experience, skills, risk attitude and **balanced composition**. The composition of the board of directors, the inclusion of independent non-executive directors and other **structural factors** like a one or two tier board is part of second generation risk management systems.

The **internal decision process** and the internal dynamics of the interaction of the different decision makers constitute third generation risk management, and is the main focus of this research.

Research is therefore necessary to determine the views and opinions from top executives, CEO's and board members on these third generation risks. Their experience and judgement on the relative importance of these factors need to be determined, as well as any additional factors that they can identify from their own experience.

Attention to only first and second generation risk management systems will however not safeguard against risk management failures in large companies. Often failure does not result from inadequate risk control systems, or from sub optimal quality of the management team, or from composition or structural defects, (see Cadbury report section 15.2.2) but rather from a defective decision making process. This is the focus of third generation risk management.

It means that large institutions with very experienced senior managers, reputable boards of directors and good CEO's are still susceptible to internal decision risk and sub-optimal decision making processes, and internal decision failure.

This research is aimed at determining the internal dynamics and the critical interaction between senior general management the CEO and board in terms of ensuring an efficient decision making process.

The views of top executives and board members on how this can be improved and their opinions about decision audits, introspective analysis and other decision factors are researched in this study.

By doing an **explorative** investigation on third generation risk management principles and the potential utilisation by boards of directors and senior management teams of this, it is envisaged that a significant contribution to an improved **decision making process** at top management level can be made. This can help to reduce the number of decision process and internal **management failures** in large companies.

-----o0o-----

4. PURPOSE OF THE RESEARCH

Risk management failures are mostly not due exogenous factors like external economic or market conditions or environmental factors, but rather as a result of management failure (Moskowitz 1988, 69).

This means that internal risk management failure and its causes have to be investigated in order to find the answers to this problem.

Although the accomplishments of modern decision making theory are impressive, it has not yet become commonplace in very important top management decisions. Today very few decision makers benefit from the full power of decision analysis (Howard 1988 : 680).

The purpose of this research is to explore the reasons why decision making failure in management occurs. The aim is to determine the factors that play a role in these management decision processes, to identify the reasons why decision making theory often finds little acceptance amongst senior managers and board members and to analyse the prerequisites for optimal control of the decision making process and management risk.

Work done by March & Shapiro on managerial perspectives on risk taking has shown that managers fail to follow the canons of decision theory and that the way they think about risk do not easily fit into theoretical conceptions of risk (March J.G. 1987 : 1414).

Managers treat probability estimates as unreliable, decisions are affected by the framing of attention factors and they look for alternatives to meet targets rather than to assess or accept risks (March JG, 1987: 1415).

Analysis of the requirements for effective risk management has pointed to the following as the most important risks in financial institutions: (Gastineau, GL 1992 : 7)

- Risk of Market Price Discontinuities
- Interest rate and currency risk
- Credit or counterparty risk
- Systems risk, liquidity risk, tax risk and accounting risk
- **Management risk**

Of these risks the most important one is **management risk** (Daly : 1990 P45). Daly points out that the most critical problem is to ensure that management possess the expertise to control the other risks.

His view of the board of directors is that their greatest challenge is to make sure that management has gone through a thoughtful **decision making process** that gave consideration to all relevant risk factors.

The board must ask the relevant questions and they must monitor that management has assessed the risks properly and that management plans to control them effectively.

The magnitude of this question of **how to manage** and control "MANAGEMENT RISK" becomes clear when one tries to find a norm to measure it against. How does the board ensure an effective **decision making process?**

The purpose of this research is to correlate decision making theory with the experience and combined judgement of top CEO's and board members that have vast practical experience of these decision making situations. The purpose is to explore and analyse the important factors that play a role in their risk management decision making and to gain new insights into the important building blocks for an effective decision making process.

The dilemma in which management finds itself becomes clear from a human analogy. If there is something threatening the human body the brain will recognise it and try to get it under control. In the same way the board and top management will strive to control identifiable risks in the company. However, if there is pathology in the brain itself, the brain might not be able to recognise this. Similarly it is very difficult for a board or top management team, to identify management and decision risks within themselves, or to detect a sub optimal internal reasoning process during risk management decisions.

To complete the risk defence system of a company it is therefore essential that management should not only focus on external risks, system risks or auditable risks, but also monitors internal management risk and decision process risk.

The purpose of this research is to explore and analyse these second and third generation management risks, to identify new factors that play a role, and to correlate decision making theory with the practical experience of executives. In this way a framework for decision process risk analysis can be developed.

5. DEFINITION OF THE PROBLEM

- The problem is to find ways to improve the management and control of decision risk and management risk, in order to reduce the number of management failures.
- This is a multi factorial problem, with many influencing factors still unidentified. The present correlations between decision theory and practical experience and opinions of top executives are very limited and needs further exploration. This is necessary to establish decision making principles that have both credibility with senior executives and value in terms of practical application in large companies.
- Purely theoretical concepts from decision making theory needs to be analysed in terms of their impact on risk management. This will be compared to the practical requirements of real life risk management in executive teams and boards of directors.
- The scope of the problem is to explore and describe the requirements and principles of third generation risk management. This incorporates management risk and decision making process risk.

6. DATA BASE

A broad spectrum of large financial institutions in both the local and international arena form the data base for this research. Information from people involved in the following companies were included in the study.

THE SOUTH AFRICAN COMPANIES:

Initial Research: Only CEO's interviewed (V.d. Merwe, 1991)

1. First National Bank
2. Volkskas)
3. Allied) ABSA
4. United Bank)
5. Trust Bank)
6. Cape Investment Bank
7. Rand Merchant Bank
8. Swiss Re-insurance Co.
9. Momentum
10. Sanlam

Horizontal and Vertical expansion of the Research

From the top financial institutions in the world the following international companies were included to broaden the scope and the depth of the research. (Interviews conducted at top management and Board level.)

- | | |
|-----------------------------------|-----------------------|
| 1. Swiss Bank Corporation - | Zurich Switzerland |
| 2. Barclays Bank - | London United Kingdom |
| 3. National Westminster Bank - | London UK |
| 4. Union Bank of Switzerland - | Zurich Switzerland |
| 5. Credit Suisse - | Zurich Switzerland |
| 6. Swiss Volksbank - | Berne Switzerland |
| 7. Kansallis International Bank - | Luxembourg |

- | | |
|-----------------------------|--------------------|
| 8. Kansallis Osake-Pankki - | Luxembourg |
| 9. Bank Julius Bär - | Zurich Switzerland |
| 10. Lloyds Bank - | London UK |
| 11. Kansa Corporation - | Helsinki, Finland |
| 12. United Overseas Bank - | Geneva Switzerland |

The perspectives, personal experience and opinions of senior executives, CEO's and Board members of these companies were obtained via personal semi structured interviews in South Africa, and Europe.

-----oOo-----

7. RESEARCH DESIGN

Does this replace Delphi?

This decision making process research is **explorative** in nature. The perceptions and views of executives with years of experience in top management and the board room were gathered by in-depth personal interviews.

The guidelines used for explorative research are described as follow by the 1988 HSRC report: (Ferreira et al : 140)

7.1 EXPLORATIVE RESEARCH:

- Semi structured interviews
- Use of a research schedule
- Questions or themes from existing literature serve as important guidelines for interviews.
- Questions don't have to be asked in sequence. Further questions may arise during the interview to explore a specific aspect.
- The schedule serve as control to ensure that subtopics are covered.

As formulated by Selltitz et al, the aim of explorative research is:

- To gain new insights
- To identify central concepts
- To determine priorities for further research
- To generate hypotheses

The three components of explorative research as described by Selltitz are

- a literature survey
- interviews with people with practice experience
- analyses of insight stimulating examples

This research project includes all three elements.
(See sections 8, 12 & 14)

7.2 QUALITATIVE FRAMEWORK:

Research of this nature is qualitative by definition. The process is one where

- the findings are conceptualized within a theoretical framework.
- The theoretical frame of reference is guided by a comprehensive literature survey.
- A number of questions orientate the study but further questions can arise during the research interviews.
- Semi structured interviews in the form of extended discussions and organised listening are used.
- The critical incident method are used to compliment the findings. (See section 14)
- These different methodologies are integrated by the research.

The interviews for this research are **semi structured** in order to get the responses of the executives on the central concepts of decision making theory and their application in practise, and also to give enough opportunity for input on **new ideas** and concepts that has been proved to work in real life situations.

The material gathered during the interviews are analysed to find the following.

- **Concepts** that are regarded as of prime importance for successful management decision making
- **Correlations** with decision making theory where theory can be used to enhance decision making in practise.
- **Area's** where CEO's experience problems with risk management decision making
- **New concepts** and **insights** as suggested by the CEO's, executive management and Board Members for improvement of current decision making processes.
- Identification of any promising areas that requires further research.

Through a process of **ANALYTICAL INDUCTION** conclusions can be drawn based on

- Risk management concepts from the decision making theory and literature.

- The real life experiences and decision making processes of top management.

Based on these a framework for effective second and third generation risk management can be drawn up that combines present knowledge on these two domains of decision making management.

Areas that need further research are also identified during the investigation of second and third generation risk management.

The above research design was drawn up according to the guidelines given by Johan W. Buckley in his book "Research Methodology and Business decisions".
(Buckley JW : 1976 : 34)

7.3 RESEARCH METHODOLOGY

Initial research:

- Risk management and the decision making process critical concepts for directors and top executives. (Van der Merwe, 1991)
- This was a limited study and included only South African financial institutions, i.e. commercial banks, investment banks and insurance companies.
- It involved only one level of management - only the chief executive officers were interviewed. It produced only a one dimensional focus on decision making risk.

Expansion of the research:

- Horizontal and vertical expansion.
- Expanded to financial institutions in central Europe and United Kingdom and Scandinavia (Zurich, Bern, Luxembourg, London, Geneva, Helsinki)
- Inclusion of more levels of management:
- Interviews included people at board level, top executives and general management level to obtain a more comprehensive view of the decision process in the company, how it interacts between different levels of top management, and how the internal decision process in the different teams actually function.

-----o0o-----

8. LITERATURE SURVEY

8.1 INTRODUCTION

In 1912 Laplace wrote the following about **systematic reasoning** and human decisions:

"By theory we try to learn what a sound mind feels through a kind of intuition, often without realising it. ~~(X)~~ Theory gives us insight that can guide our judgement. It teaches us to keep ourselves from illusions that often mislead us."

This strive to find the answers to human reasoning and judgement has kept decision making scientists occupied for decades with various degrees of success or failure.

Present day decision analysis stands on a foundation of hundreds of years of thought about uncertainty and decision making. In the early 1700's Bernoulli captured attitudes towards risk-taking in mathematical form and in 1763 Bayes described the decision making power of probabilities (Howard, RA : 1988 : 679).

Decision making theory progressed slowly but steadily from that time.

The foundations for modern ~~expected~~ utility theory was laid by Frank P. Ramsey (1931). Ramsey set forth axioms for preference comparisons between acts with uncertain outcomes. (Fishburn P. 1989 : 388)

In 1944 John Von Neumann and Oskar Morgenstern developed **game theory** which represented a milestone in decision science. (Vatzsonyi, A 1990 : 317). Other major contributions came from the Decision Sciences Institute which was founded in the 1950's to study the application of mathematical models and algorithms to decision making and problem solving in the field of management.

Simon, Ciert, Dill & March started as early as the 1950's to introduce behavioural decision making into Business Schools (Thimm 1987 : 5). His own research efforts gained Simon a Nobel prize in Economics.

Leonard Savage (1952) was a principle founder of modern decision theory based on statistical analysis, subjective probability and utility theory. His theory about inductive inference also contained the first roots of present day **subjective expected utility theory**.

Ward Edwards in his early work on subjective probability (1953) observed that decision making behaviour of people reveal **preferences amongst probabilities** (Fishburn, P : 1989 : 391).

The work of West, Churchman and Russell Ackoff (1954) paved the way for **multi attribute utility theory**, inequality analysis and stochastic dominance.

Maurice Allais an economist, contributed to our understanding of **probability preferences** (1956) with the now famous Allais **certainty effect** and decision paradoxes.

Kenneth Arrow (1963) described a theorem on cyclic social preferences. This led to a valuable brainchild from Gibbard in 1973, namely the **non strategy proof theorem**.

Further useful work on the assessment of personal (objective) probability came from Fishburn (1964), Fine (1973), De Finetti (1978) and the axiom of **absolute preference** from Allais (1979).

In the late 1960's Howard and Raiffa (1968) further developed decision analysis.

Non linear utility theories followed from Ellsberg and other investigators including A. Tversky (1969), who described the theory of **Intransitivity of Preferences** (Tversky, A. 1969 : 32)

Lichtenstein and Slovic (1971) described the **reversal of preferences** in decisions under conditions of uncertainty.

Multi-attribute Utility theory grew steadily from work by Debreu (1960), Luce and Tukey (1964), and was further refined by Keeney & Raiffa (1976).

In 1979 another milestone in decision science came from Kahneman & Tversky with their **prospect theory** which gives an analysis of human decision making under risk (Kahneman D : 1979 - 262)

Empirical research has found that many areas of human decision behaviour **violates** expected utility theory. This led to many theories that suggest that people replace **probabilities** by **decision weights**.

Then Hogarth and Einhorn developed **venture theory**, which is a model of how people assess **decision weights** (Hogarth RM 1990 : 780). This theory recognises the fact that:

- size of the pay off,
- cognitive factors,
- personal preferences and
- motivational factors

play a role in determining **decision weights**, and not only the statistical probability.

Their contributions led to the development of decision analysis as we know it today - systematic procedures for transforming **complex** decision problems into a sequence of clear and manageable steps.

8.2 FRAMEWORK FOR THE ANALYSIS OF THE DECISION PROCESS

A model adapted from work by Greenhalg gives a framework from which investigations can be made into the decision process and its determinants.

(Greenhalg (1987), 232). This broad framework as presented in **diagram 1** gives a picture of the interactions among the contributing factors in the decision process. See **diagram 1**

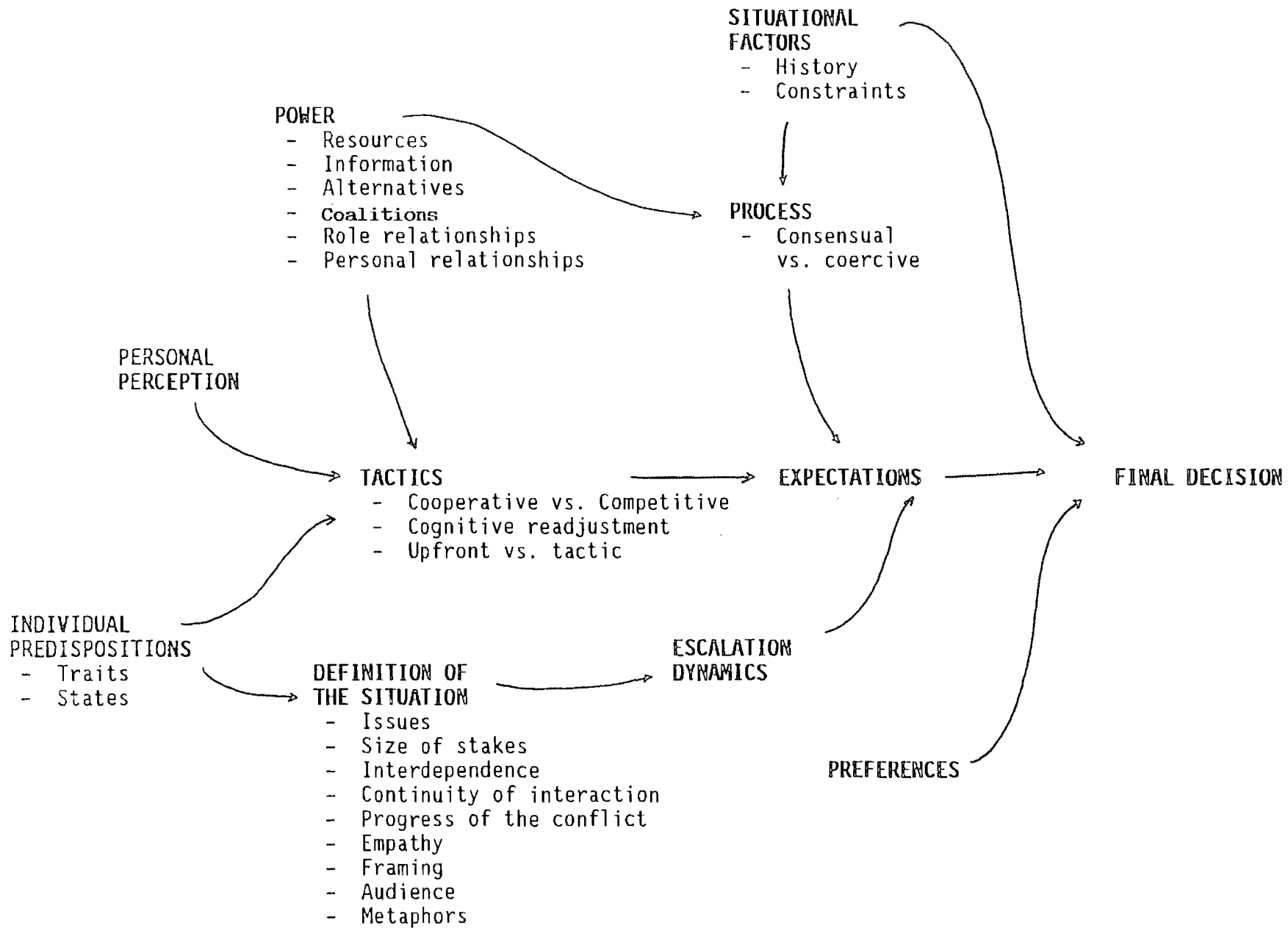


DIAGRAM 1: AN INTEGRATIVE MODEL : THE DETERMINANTS OF DECISION OUTCOMES IN ORGANISATIONS.

Another framework proposed by Kleindorfer, Kunreuther and Schoemaker identifies key aspects of decision making as:

- Procedural and technological intervention
- Decision Aids
- Problem finding, identification and acceptance
- Problem context, institutional constraints and available information.
- Problem solving, clarification of values and beliefs, search and evaluation of alternatives and final choice.
- Legitimation process, impact on stakeholders, rationalization of choice in stakeholder terms and implementation of choice (Kleindorfer PR, 1993 : 9)

-----o0o-----

8.3 CONCEPTS FROM THE DECISION THEORY

In decision theory many concepts have been described that are potentially valuable to modern management.

These include:

- decision audits
- generic risk analysis,
- influence diagrams,
- strategy generation tables,
- decision tree analysis,
- decision framing,
- knowledge mapping,
- tornado diagrams,
- queueing theory,
- stochastic variables,
- venture theory,
- subjective expected utility theory
- prospect theory etc.
- catastrophe theory etc.

Rosso and Schoemaker describes several similar types of errors that most decision makers commit. They believe that the most dangerous decision traps are: **plunging in; frame blindness, lack of frame control, short-sighted short-cuts, shooting from the hip, group failure; fooling yourself about feedback, not keeping track and failure to audit the decision process.** (Rosso, JE et al, 1991, XVII)

Although hundreds of these theoretical and experimental decision making phenomena has been described, the concepts with the **potentially most valuable benefits** to modern management are the focus of this study.

The **relevance** of these decision making theories to modern management and their **potential contribution** to optimal decision making by top executives, are two of the main areas of research of this study. To find the **most important** areas that must be considered during the research **interviews**, a survey of the literature was done to find the areas of where decision theory are **presently** utilised in complex management decisions. The aim is to find those factors which management themselves regard as the most valuable from their own experience. Apart from this the aim is also to find out **why other theories** which look potentially very valuable from a **theoretical viewpoint**, are not utilised by modern managers in their decision making.

The strange finding in the literature is, however, that although the accomplishments of decision theory are impressive, it has not yet become commonplace in very important management decisions (Howard R.A. : 1988 : 679).

The vexing question thus is why we still find a large gap between decision making theory and the practical solution of top management decision making problems?

Theoretically senior executives that face complex decisions should utilize available decision making theories and processes that can **simplify the problem**, and facilitate rational choice.

One of the solutions offered to the above problem is that of Schoemaker.

8.5 DECISION AUDITS

Paul Schoemaker of the graduate School of Business at the University of Chicago advocates DECISION AUDITS as a method of improving decision making in large institutions (Schoemaker : 1989 : 47). Corporate giants like British Petroleum Co. has reported the saving of millions of dollars as a result of a decision audit system.

Top management's judgement of whether a decision was good is very often influenced by the outcome, which could depend on many factors beyond their control. To see what the right decision was, the managers need to ask themselves what they would have done if they had to make the same decision again with the same available information.

The outcomes of decisions depend on both the quality of the decision and on unpredictable environmental influences. To judge the quality of management one has to look at the quality of the decision and not at the outcome.

This focus on decision quality is obtained by decision audits where previous decisions and their outcomes are scrutinised.

8.5 FACTORS THAT PLAY A ROLE IN THE DECISION PROCESS

A decision process audit or an analysis of the decision process itself can only be effective if the views of the executives or board members can be obtained about the factors that they regard as most crucial for optimal decision making, and what the main reasons are for decision process dynamics to go wrong.

Although hundreds of these factors exists, the most prominent ones in the literature are as follow:

BOUNDED RATIONALITY ✓

The Nobel prize winner Simon described the concept of bounded rationality in 1957. Simon reasoned that individual judgement is bounded by rationality, and that we can better understand decision making by explaining actual rather than normative ("what should be done") decision processes.

The bounded rationality concept provides a framework for the studying of deviations from rational judgement. It suggests the following possible deficiencies in decision making:

- Decision makers may lack information on the
 - definition of the problem
 - alternatives
 - criteria for evaluation
- Decision makers may have time and cost constraints.
- Decision maker's perception may limit the quality of the decision.

- Human decision makers can only retain a limited amount of information in their usable memory.

Although the concept of bounded rationality is important in clarifying that judgement deviates from rationality, it does not tell us how judgement will be biased (Bazerman MH, 1987 : 5)

To understand human decision making, we have to determine the specific directional biases that affect our judgement.

The most important work in this field came from Tversky & Kahneman who provided us with specific biases that influence human judgement. Their work elucidated the modern understanding of human judgement. (Kahneman, D, 1984 : 342). They suggested that people rely on a number of heuristics or rules of thumb to make decisions.

HEURISTICS

Tversky & Kahneman (1973) identified the following specific heuristics that affect human judgement:

- The Availability Heuristic

One which leads people to magnify the subjective probability of events that are easily accessible in the processes of memory.

- The Representativeness Heuristic

This leads people to magnify conditional probabilities of events that fit well into a general class of events with which people are familiar.

- The Anchoring and Adjustment Heuristic

This means that managers make decisions by starting from an initial value, and then adjust this to get to the final decision. Slovic & Lichtenstein found that regardless of the initial value, adjustments from the initial value tend to be insufficient.

All these heuristics may lead to biased decisions because neither the availability of similar prior events nor their representativeness necessarily corresponds with their relative frequency in the population of past events. (Gallhover IN, 1986 : 75)

THE CONFIRMATION TRAP

Most of us seek confirmatory evidence about our own ideas and instincts. We tend to **exclude a search for disconfirming information from our decision process**. This behaviour result in a "confirmation trap" where we inappropriately accept ideas for which some confirming information exists, **without a search for disconfirming evidence**. (Bazerman, MH, 1987 : 37).

THRESHOLD OF "EFFECTIVE ZEROHOOD"

- According to Resher people refuse to worry about potential losses where probability is below a certain threshold.
- The human mind treats these probabilities which fall below a certain threshold as though they were zero (Rescher, N., 1983 : 37)
- The implications of this dismissal of serious but very low probability events and their potential effect on board and top executive decisions are investigated in this research.

REVERSIBLE AND IRREVERSIBLE RISK

Research by Jerome Rothenburg examined the effects on decision making of choices that involved irreversible risk.

As compared to reversible risk decisions it was found that irreversible risk increases conservatism of risk choice, and that irreversibility involving human capital being considerably more important in generating conservatism (Chikan A, 1991, 249)

JUDGEMENTAL BIASES

The process of human judgement is affected by two important biases. These are the

- Biases due to retrievability and
- Biases due to illusionary correlation.

This implies that information that can be easily recalled influences our judgement more than other factual information. Our reasoning processes can also falsely tie together information in our minds that have no real correlation. Several other less prevalent judgemental biases are also described in the literature. The important fact in all of them is that we have to recognise that human judgement is biased and not purely probabilistic.

One way of improving decision making in management teams is to find ways of debiasing human judgement. The views of executives on this are obtained in the research.

COMPLEXITY OF DECISIONS

George Chackho describes various degrees of complexity in decision making. These include decisions of

- a single decision maker and a single variable
- a single decision maker facing multiple variables
- multiple decision makers with a single variable, and
- multiple decision makers facing multiple variables.

These decision situations can further be complicated by incomplete information, different frames of reference of decision makers, interacting variables etc. While multiple variables can be analysed statistically or financially, the interaction of multiple decision makers during the choice process depends on numerous factors like different perceptions, risk attitudes, gut feeling, politics etc.

Most executive teams or boards of directors will at one stage or another be confronted by high risk and complex decision problems.

Examples of this include

- Investment decisions
- Takeovers and mergers
- Recruiting a key person
- Purchasing policy
- Diversification
- Decentralization
- Strategic change etc.

From the literature it is evident that various factors can lead to management failure in these circumstances, namely

- I. Complacency - "it worked well last time"
- II. Conceit - "I have a nose for these things"
- III. Time pressure - "The chairman is screaming for action"
- IV. Ambition - "If this comes off it will guarantee promotion"

(Andrews J, 1987 : 5)

The awareness of board members and top management about these factors and their ways of handling these influences are investigated in this study.

MANAGERIAL VALUES

Cooke, Slack & Cooper (1989 : 63) gives a classification of how different values affect managerial decisions.

A value can be described as a primitive or basic preference for certain broad modes of conduct.

Instrumental values include a moral focus like honesty, integrity, loyalty and a competence focus like logical or intuitive behaviour. All these factors play a powerful role in all decision making processes, as they can cause instant rejection or acceptance of certain alternatives.

UNCERTAINTY SUPPRESSION

One of the most widely observed phenomena of management decision making is the general suppression of uncertainty. Managers do not neglect uncertainty entirely as a decision factor, but they seldom give it explicit consideration. (Morris, WT 1987 : 30).

ENDOGENOUS RISK

Endogenous risk exist when a decision maker perceives that his actions can influence the likelihood that a certain event will occur. The individual often believes that he has **substantial control** over risky events, but although he will expend substantial resources attempting to alter the likelihood of a desired state, it is uncertain how productive the actions will be. (Geweke, 1992 : 41).

RISK DOMAIN ILLUSION

Research by IDO Erev (1990) described the way in which probability judgements can bias decisions.

Different processes underlie decision making under **risk** (when all the relevant probabilities can be calculated) and decision making under **uncertainty** (when the exact probabilities are unknown). The availability of objective probabilities shifts a problem from the uncertainty domain into the risk domain.

However, the use of assumed subjective probabilities have a similar effect by creating a risk domain illusion (Geweke J, 1992 : 120)

POLITICS

Management and Board decisions are affected by politics. Research at Stanford has found that politics within top management teams are associated with poor firm performance (Eisenhardt 1988 : 737). The rationing of power by an autocratic CEO or the frustration of the top management team is the usual impetus for politics.

In contrast when CEO power is delegated, other senior managers are empowered and see little need for engaging in politics. Here open constructive conflict is the norm with the CEO acting as referee (Eisenhardt 1988 : 765)

CATASTROPHE THEORY

Research into the choice of similar managers, all of whom face the same environment (e.g. the same data or information) and the same set of alternative choices, has found that it is possible to have divergent choices despite similar characteristics and similar objectives of these managers. This phenomenon is described by the mathematical catastrophe theory. (Bonano, G 1988 : 379).

According to catastrophe theory agents who are very close to each other (i.e. having very similar objective functions) can make very different choices when facing the same information and set of alternatives.

THOUGHT PROCESS PHENOMENA

A survey of management decision making in real life situations has found several **thought process weaknesses** in management reasoning. A research report by Carroll & Bazerman found impeded rational decision making in actual competitive situations. (Bazerman, 1987 : 247). Sub optimal decisions and even management failure occur as a result of **thought process inefficiencies** like:

- competitive blind spots,
- winner's curse
- nonrational escalation of commitment
- over confidence in judgement
- limited perspective and problem framing

(Zajac E. 1991, 40)

ESCALATION ERRORS

A lot of research has gone into the explaining of the paradox of human behaviour with sunk cost decisions.

Many decision scientists have tried to find out why seemingly irrational behaviour occur where managers, having committed to a course of action, subsequently discovers new information which indicates that continuing the present course of action would result in worse consequences than switching in another direction, and then in spite of this managers cling to and even **escalates earlier commitment at considerable cost**. (Kanodia C. 1989 : 60) This phenomenon is known as escalation error or escalation behaviour.

HINDSIGHT BIAS

One of the most frequently found biases in judgement is hindsight bias in probability assessment (Christensen - Szalanski JJJ 1991 : 151)

The practical significance of this is that hindsight bias can be a damaging phenomenon during the life cycle of a project because decision makers cannot ignore outcome knowledge, as they appear unable to empathise with the uncertainty of foresight. (Szalanski J, 1991 : 164)

PREFERENCE REVERSAL PHENOMENON

Economic theories of decision making under uncertainty implies **consistency of choice and valuation**. This seems to be violated by a substantial percentage of subject responses in experimental studies. This puzzling behaviour is known as the preference reversal phenomenon.

This means that when a subject has to decide between two alternatives, one offering a high probability and small monetary payoff, and another offering a low probability high payoff, a preference reversal occurs when the subject attaches a lower minimum selling price to the chosen alternative than to the other one. (Cox, JC, 1989 : 408)

CONFORMING OR CONFLICTING EVIDENCE

The way in which the human mind captures new evidence about a complex problem depends on the way the information is perceived. The mind determines the

"likelihood" of the evidence and tries to match parts of the problem to parts of the evidence. Then the mind tries to fit partial matches together. The critical aspect of this process is, however, the difference between the way in which the mind combines confirming evidence as apposed to combining conflicting evidence. While the accumulation of confirming evidence is usually additive, this is disregarded with conflicting evidence and the tendency is to focus on the single most important contradicting piece of evidence. (Chacko G.K. 1991 : 149)

TEMPERED EXPECTED VALUE DECISION MAKING

Decision theory on rational decision making calls for adherence to three cardinal rules

- I. Maximize expected values
- II. Avoid catastrophes
- III. Dismiss remote possibilities (Rescher N, 1983 : 114)

Modern day business decision making focus heavily on (I) while taking into account the need for (II) in the process.

The mental **conflict** between classifying a potential event under either II or III is a potential source of management decision risk.

Investigation of the effects of executive risk attitude and the need to compete under time constraints can provide further insights into this potential decision risk.

OVERCONFIDENCE IN JUDGEMENT

It has been widely observed that **overconfidence** affects judgement in difficult choice tasks. This means that subjects assign too high subjective probabilities to their own answers in difficult problems. It was found that overconfidence was most severe in spontaneous, quick and less contemplated choices.

Overconfidence decreases as the amount of **cognitive processing** in choice increases (Sniezek, JA, 1990 : 279).

INERTIAL BEHAVIOUR

It is a widespread empirical phenomenon that general tendency exists to delay adjustment from previous decisions. This lead to the proliferation of literature on dynamic decision making

The psychological cost of quickly modifying previous decisions or expectations can lead to habit formation or inertial behaviour.

Utility maximising within a dynamic environment means the **frequent revision** of previous decisions. This introduces **adjustment costs** into the decision equation.

This brings one to the question of **how should decision makers behave in order to regulate decision errors in response to a dynamically changing environment?** (Heiner, RA, 1988, 258)

The author points out in this article that this question is not equivalent to assuming "irrationality". It rather asks what happens when decision makers must cope with errors in decision making beyond those caused by imperfect knowledge

Heiner emphasize that rationality concerns the ability to control the effects of both imperfect information and imperfect decisions.

The risk of imperfect decisions forms the focus of the planned research on second and third generation risk management.

VIOLATION OF EXPECTED UTILITY MAXIMISATION

Human behaviour is expected to be rational and consistent with expected utility maximising.

Research however find recurrent violations of the independence axiom of expected utility theory. Allais, Ellsbury, Khaneman, Tversky, Keller, Ginsberg, Schoemaker, Moskowitz, Herbert and Morrison all found in practical experiments that inconsistent human decisions can be obtained by simply restructuring the same facts in a different reference frame.

Research by Mac Donald & Wall showed that decision makers systematically violated the independence axiom of expected utility theory, irrespective of the level of monetary incentives employed (Mac Donald, DW, 1989 : 51)

The problem of these mirror reverse independence axiom violations is that it holds significant implications for decision making in Financial Markets. It would imply that individuals will be inclined to make less risk averse choices in an option market (negative frame), than they will make in the bond market (positive frame) (Mac Donald, DW 1989, 51).

Kuntreuther report similar research findings on conflicting results of decided risk seeking preferences in one context and risk aversion in others.

The views of senior executives will be obtained in this study on how they perceive the potential effects of these findings in empirical situations.

MULTIPLE RISKS

Elliot and McKee investigated the risk avoidance behaviour of individuals offered the choice of reducing a familiar risk or of reducing a newly presented risk. They found that individuals prefer to reduce familiar risks despite their being below the level of the new risk. (Geweke, J, 1992 : 253) Their results indicate that individuals focus on familiar risk when faced with a menu of possible risk reductions. This suggests that "errors" in decision making can occur when relative risks are evaluated, and this behaviour is consistent with the availability heuristic described by Tversky and Kahneman.

TOPICAL ORGANISATION OF MENTAL ACCOUNTS

Research on prospect theory by Kahneman & Tversky (1984) postulated that mental accounts are organised topically.

To pursue this theory further Gerhard and Newport did two experiments on the effects of sunk cost. Their findings support the idea that in human judgement, **mental accounts are organised topically** where existing investments are compared with a **reference state** in a manner consistent with that prescribed by prospect theory. (Garland, H 1991 : 58)

The underlying question is whether **absolute or relative** sunk costs are more important in any decision to continue or abort investment in any course of action.

According to topical accounting theory, the consequences of an alternative are compared with some relevant **reference state**. This means that people evaluate gains and losses in **relative rather than absolute terms** (Kahneman 1984 : 347)

The results of Garland & Newport confirmed this and showed that sunk cost effects on decision making are a function of the **proportion** of allotted resources rather than the **absolute** expenditures (Garland H, 1991 : 65).

SELF PRESERVATION

Politically oriented theories of organisational decision making have long recognised that managerial decision making in an organisation is more a self preserving process than it is a profit maximising one. (Narayanan & Fahey, 1982, 25)

This self preservation concerns also add greatly to escalation decisions in companies following sunk costs. People have a desire to avoid wastefulness and thus result in actions for self justification after sunk costs.

INTELLECTUAL MISCALCULATION OF PROBABILITY

Many observations by researchers confirm that in decision situations where conditional probabilities are present, the human mind does not utilize it like theory would predict.

In cases where Bayes's theorem is clearly applicable human decisions most often give too little weight to prior information while being overlay influenced by current data. (Bell, D.E., 1988 : 502) Further evidence that human decisions are not always compatible with Bayes's theorem is volatility in the securities and futures markets. Since the value of a long term bond or futures contract is ultimately dependent upon many events which will occur in future, it should theoretically be unresponsive to small bits of current information. However, these markets are notoriously volatile with large movements sometimes occurring in a single day. Research by Cagan and Schiller have also confirmed the incompatibility of observed behaviour with rational expectation and conditional probability theory (Bell, D.E. 1988 : 503)

FRAMING EFFECTS AND FRAME MISALIGNMENT

In certain decisions, the final choice can be affected by shifts in the points of reference. This phenomenon is known as framing. Research by Tversky & Kahneman (1981) shows that reference point manipulations can have a significant and systematic impact on risk preference.

For example, a choice between a safe option and a risky option when framed in terms of money to be saved, may induce risk aversion; but the same choice framed in terms of money to be lost invokes risk seeking (Loevenstein, GF 1988 : 201).

Positive or negative frames of the same information can have a dramatic impact on the final decision that any person makes.

An example which describes this critical human decision making behaviour very well is the medical choice between radiation for cancer or surgery : (Bell, E & Raifa H, 1988, 170).

DECISION SITUATION: (Positive frame - survival)

100 people undergoing treatment for similar cancer.

Surgery:

- 90 live through post operative period
- 68 alive at end of first year
- 34 alive at end of five years

Radiation:

- All 100 live through radiation period
- 77 alive at end of first year
- 22 alive at end of 5 years

Choice:

- Radiation or surgery?

DECISION SITUATION (Negative frame - mortality)

100 People undergoing treatment for similar cancer.

Surgery:

- 10 die during surgery or post operation period.
- 32 dead by end of first year
- 66 dead by end of 5 years

Radiation:

- None die during radiation treatment
- 23 dead by end of first year
- 78 dead by end of 5 years

Choice:

- Surgery or radiation?

The above decision situation shows clearly how the same information in a positive or negative frame can effect human judgement.

Frame misalignment amongst decision makers can also cause poor communication and serious decision errors if corporate leaders are not aware of this risk.

(Rosso JE & Schmoemaker PJH : 1991 : 59)

Investigation of the effects of positive or negative framing and frame misalignment in complex decision situations facing a board of directors or executive management team is one of the areas explored in this research.

WINNER'S CURSE

Research on the winners curse problem illustrates how competitive decision makers insufficiently consider the contingent decisions of others, and thus make judgemental mistakes.

This research shows that under asymmetric information competitive decision makers systematically fall prey to a winner's curse, and they consistently and voluntarily make judgemental errors in their decisions (Zajac, EJ : 1991 : 38).

The implications of this for top management is very clear and the views of the persons interviewed were obtained on how senior executives can prevent this kind of potential judgemental errors.

PROBLEM IDENTIFICATION

Miltrof and Kilman (1978) describes potential errors in the process of problem finding:

- Type I error : Detection of a problem where there isn't one.

- Type II error : Failure to detect a problem when one does exist.
- Type III error : Solving the wrong problem.

(Kleindorfer P.R. 1993 : 44)

The one aspect that remains to be addressed with these kinds of decision errors is the influence of time pressure and the need for sequential outcomes on problem identification and the solution process.

PERCEPTUAL ACCURACY

From the management literature, it is evident that substantial research has been done across the world to determine what factors play a role in the performance of companies.

Greiner and Bhanbri investigated the decision process during deliberate strategic change in a company. They found that the vital factor in the decision process was the CEO's perceptual accuracy.

(Greiner LE 1989 : 70)

If the importance of perceptual accuracy is accepted, it is clear that the many phenomena described in decision theory that can influence one's perception of a particular problem, can have a dramatic impact on final judgement if the decision maker is not aware of the existence and effects of these phenomena.

GROUP DECISIONS & GROUP FAILURE

Early research by Barnlund (1959) on the value of group decisions claimed that groups where creative error correcting mechanisms.

Later Longe & Solomon (1960) developed the argument that member ability rather than group dynamics accounted for superior group decision making

Further research explored the role of differential expertise and its effect on group decisions.

Rosso describes the phenomenon of "Group failure" resulting from the assumption that with many smart people and experienced experts involved, good decisions will follow automatically. Group failure follow because they do not manage the group decision making process (Rosso, JE, 1991 : XVII)

Recent work by Bottger & Yetton shows that group performance is a function of both member task knowledge and the effective decision strategies for its use.

(Bottger, PC 1988 : 235).

The superiority of groups over their average members arises from using the knowledge of their expert members, and the effective decision making process to use that knowledge.

CALIBRATION OF SUBJECTIVE JUDGEMENT

Human judgement play an indispensable role in modern day organisational decision making Often circumstances arise when objective economic or

actuarial data is not available. Alternatively, a decision maker may anticipate unique events or changes which would render available objective data invalid. This creates the need for subjective probability judgements. The problem however is that from controlled experiments it appears as if we humans are not good at using subjective probabilities. (Geweke, J, 1992, 148) Human responses tend to be **incoherent** (does not obey laws of probability) and are **poorly calibrated**. Calibration errors in judgement can have significant implications for business decisions.

IGNORING CONTRADICTORY EVIDENCE

It is a characteristic of business decision making that people are resistant to change in their **own** ideas and personal viewpoints. They accumulate evidence that support their own views while **ignoring contradictory evidence** and even show extraordinary persistence in the face of such evidence (Schutzer, D, 1991 : 156). There is a conflict between people's expectations and evidence. Potential covariations are taken more seriously when they are based upon **preconceived** ideas according to Schutzer

SOCIAL COMPARISON THEORY

This research places the individual decision maker in a **social context**, often ignored by normative approaches such as expectancy theory.

It is important for top management to know under what circumstances does social information affect choices.

According to social comparison theory, individuals facing important decisions, tend to elicit, and are influenced by the opinions of members in their social peergroups. (Kilduff 1990 : 283).

FLEXIBILITY AND DECISION MAKING

Flexibility is a quality which allows a decision process to respond to change effectively. The flexibility afforded by leaving some options open may be required as a provision against the disappearance of some other apparently feasible option. In his research Mandellhaum presents a model that shows that uncertainty exists in the loss of certain functions of a decision problem, and shows that this uncertainty gives rise to the consideration of flexibility as a criterion in the decision process. (Mandelhaum M : 1990 : 117)

THE EFFECTS OF "SUCCESS OR FAILURE" ON DECISION MAKERS

Judgement by outcomes refer to justifying decisions and rewarding decision makers if they succeed, and condemning them in the case of failure.

Beyth-Maron & Dekel (1985) and Einhorn & Hogarth (1981) criticised this as an inappropriate method of evaluating decisions. (Lipshitz, R 1989 : 380).

However, judgement by outcome remains a fact of life for decision makers in any organisation.

The recommendation by Behavioural Decision Theorists to judge decisions by the quality of their process, assumes that normative decision theory can define what constitutes a "good process", and that decision processes can be evaluated independent of the outcome of the decision.

March and Shapiro (1982) argue that decisions are made by context bound rules and obligations, as much as by preferences, expectations and logic. According to their work decisions can be judged independently of their outcomes by using professional criteria based on doctrines, standard operating procedures and proven decision making processes. (Lipshitz R 1989 : 393).

It should be taken into account that even the best decision making doctrine or process cannot ensure success, it can only improve its likelihood.

GROUP DECISION SUPPORT SYSTEMS

Several authors pointed out in the past that little conclusive knowledge exist regarding how formal structure can be added to a group decision process to yield better decision making (De Sonetis G, 1987 :560)

However, recent research at INSEAD found that group decision support systems structured to implement Bayesian Rationality can improve group decision making (Sinclair Desgague, B., 1990 : 29)

Allan Cox describes a group decision system as the organisational atom. He argues that the "management team" in most companies is usually a case of mistaken identity. To obtain top management team effectiveness, one has to conceive a distinctive team management system (Doulon, JP 1993, 332)

RISK ATTITUDE & RISK TAKING

Risk as a factor in decision making is one of the cornerstones of modern decision theory. Since Allais (1953), research on risk follows a prominent line in the literature with valuable contributions from Arrow, Crouch, Wilson. Vlek & Stallen, Slovic, Fishoff & Schoemaker. This research was mostly theoretical investigations of risk in decision making and generally not focused on managerial behaviour.

Work done by Dyerand (1982) Sarin, postulated that an individual's preference for risky choice alternatives is a combination of the strength of preference the individual feels for the outcome, and his attitude towards risk (Dyer 1982 : 875)

March & Shapiro made a further significant contribution in their research on the relation between decision theoretic conceptions of risk and the conceptions of risk held by executives in real life situations. (March JG, 1987 : 1404).

They identified three major ways in which conceptions of risk held by managers differ from that from a decision theory perspective:

(March JG 1987 : 1413)

1. Managers are insensitive to estimates of probabilities.
2. Decisions are more affected by the way attention is focused on critical performance targets.
3. Managers make a sharp distinction between taking risks and gambling.

TIME DELAY RISK CONSEQUENCES

Frequently decisions involve potential risks on a time-delay basis. (Rescher, N, 1983 : 42) With the exposure of human perceptual accuracy to risks with a considerable period of latency, a "mental discount rate" to quantify the effective magnitude of the particular future risk is essential. We are very familiar with financial discount rates of a fixed X% per annum. However, delayed structural, organizational, environmental or personal risk should theoretically be discounted with a comparable (but variable) "mental discount rate" to obtain effective decision making

NEGOTIATED BELIEF STRUCTURES

- When a group makes a decision, each member holds a knowledge structure or schema for the information domain of that specific issue. A

negotiated belief structure represents the politically enacted collection of schemata employed by the group in their deliberations (Walsh JP, 1988 : 194)

- The importance of these findings is that decisions reflect the schemata employed by the decision making team. Thus the necessity for management to negotiate a combined belief structure before making a complex decision as this will impact heavily on the quality of the final choice.

ERROR TOLERANT DECISION SYSTEMS

We have to accept that humans are making errors of judgement at variable time interials. Systematic error is part of any process. To monitor any activity in order to ensure recovery from disturbance, error detection is essential. However, error detection is not simply a question of monitoring the outcome in comparison to the goal. Most often this will lead to detection far too late (you cannot save the cake when tasting the final result). Error detection requires dynamic process analysis (Singleton, W.T., 1987 : 116). It is important not only to monitor the product, but also to understand, analyse and monitor the process. The implications of this for decision analysis versus decision audits are clear.

DEVIL'S ADVOCACY AND DIALECTICAL INQUIRY

- Recent meta analysis of 16 different research projects studied the effects of these two techniques on managing cognitive conflict in decision making

The conclusions drawn from this were that Devil's Advocacy is more effective than an expert based approach involving no conflict and that Dialectical Inquiry was not superior to the expert approach (Schwenk, CR 1990 : 172)

INABILITY TO LEARN FROM EXPERIENCE

The winner's curse phenomenon is well known. However, one would expect that decision makers would be able to learn from experience and feedback on previous decisions, and how to avoid falling into this trap of human decision making

Research in different experiments by Ball, Byenson & Carrol (1991) showed that neither feedback or previous experience eliminates winners curse. (Ball, SB 1991 : 1). They found that in bilateral bargaining behaviour under uncertainty, decision makers develop inferior strategies because they fail to incorporate information about the decisions of their opponents. Even with feedback of this phenomenon and experience of both roles, neither decision maker escapes the effects of winners curse. This have substantial implications for top management or board members that find themselves in a similar situation.

ASPIRATION LEVELS

Observation of Human Decision making indicate that risk preferences depend on the values of the possible outcomes relative to the aspiration levels of the individuals.

A model described by March shows that risk preferences that vary around aspiration levels produce a greater long run likelihood of survival and higher average return than do fixed risk preferences. The research shows that success (relative to aspiration level) leads to a preference for smaller risks, and that failure leads to a preference for larger risks (March JG, 1988 : P14)

Empirical research at Yale confirms that aspiration level effects influences decisions under uncertainty, and that these decisions will depend on whether the performance is above or below some target level of performance (Mezias, SJ (1988) 389)

SATISFICING

According to the theory of rational economic behaviour the expectation is that individuals will try to maximise utility.

Given expectations and goals, maximising decision making implies evaluating a choice set to locate the best alternative.

Satisficing decision behaviour leads to the adoption of first satisfactory alternative evoked (Van Witteloostuijn (1988) : 307)

It follows that it is of great importance to determine what or when individual or group decision makers maximise or satisfies.

A framework to identify five different decision styles is described by Driver & Brusseau based on the impact of satisfying or maximizing behaviour on unifocus and multifocus solutions. (Driver, MJ, 1993 : 12)

The effects of aspiration levels and self preservation on satisfying or maximising behaviour are additional areas for research in this study.

GROUPTHINK

Analysis of financial literature provides ample examples of decisions made by highly qualified groups or teams of top executives or a board of directors that resulted in fiascos

The making of such decisions that end in disaster is frequently attributed to the groupthink phenomenon.

According to Janis (1982) groupthink refers to a mode of thinking that people engage in when they are deeply involved in a cohesive group, when the members' strive for unanimity overrides their motivation to realistically appraise alternative courses of action (Whyte, G (1989) : 41)

Janis identified eight main symptoms of groupthink:

- an illusion of invulnerability
- rationalisation
- stereotyping
- self-censorship
- an illusion of unanimity
- **Direct pressure on dissidents**
- reliance upon self appointed mindguards

By facilitating the development of shared illusions and related norms, unanimity is kept within the group. The price they pay however is a

- decline in mental efficiency
- decline in ultimate decision quality

MULTISTAGE INFERENCE

It is essential to analyse the decision making process to understand its fundamental implications for any series of business decisions that involves a risk and return relationship. In multistage inference, a series of dependent estimates are made where the output of one inference forms part of the input of the next. Each preceding judgement or estimate, once accepted, is taken as a certain fact when used as input into the next decision. The net result is that decision makers predict with more certainty than the process warrants (Schutzer, D, 1991, 158).

ORGANISATIONAL FORGETTING

Tompkins describes the necessity to adopt organisational communication practises that prevent organisational forgetting. (Tompkins, PK, 1992:11)

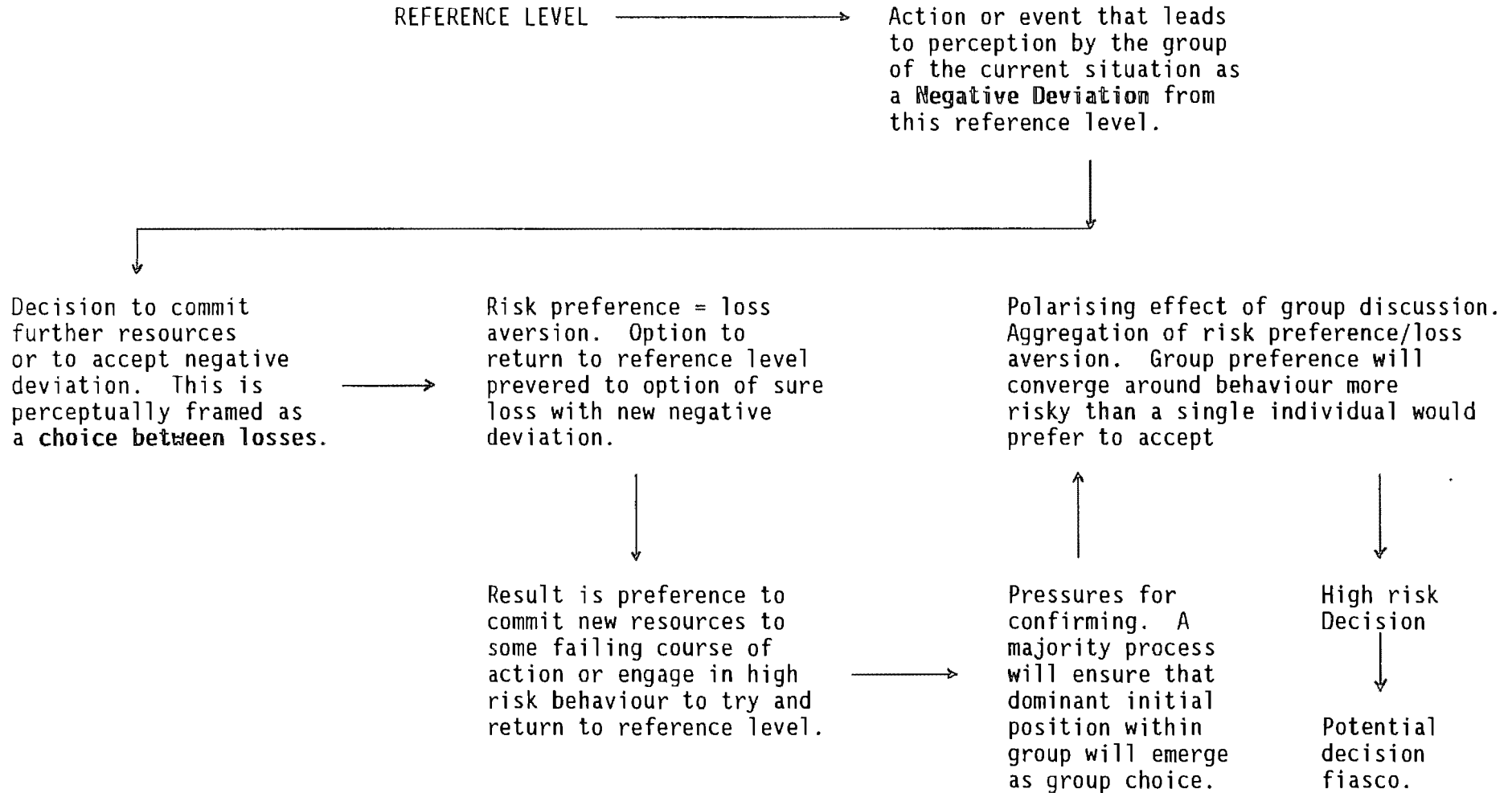
Frequently circumstantial evidence proves that some kind of institutional memory loss takes place over time. This is a gradual process in which essential and well proven practises and procedures are not actively promoted or monitored.

STRUCTURE OF HIGH RISK GROUP DECISIONS

Whyte proposes a structure of high risk group decisions, based on prospect theory (Whyte G, 1989 : 4), as shown in diagram 2. This gives a possible explanation of why sub optimal decision making occurs.

-----o0o-----

DIAGRAM 2: PROPOSED STRUCTURE OF A HIGH RISK GROUP DECISION.



9. GATHERING OF THE DATA

- Personal semistructured interviews with board members, CEO's and executive management committee members were utilized to obtain data on the research subject.
- Interviews with executives at more than one level of management were used to obtain a better and non-biased and independent view the of decision making process. (Vertical expansion of the research.)
- Interviews for the research were done in
 - Zurich
 - Bern
 - Geneva
 - Luxembourg
 - Helsinki
 - London
- It is essential to provide a forum for open discussion by the different managing directors and board members without them having any fear of being quoted personally for honest but controversial views. For this reason the views of the different CEO's are not linked to their names or companies. The institutions are referred to only by a randomly chosen number (I, X, V) etc. that is known only to the S.B.L. and myself. Declarations of secrecy and non disclosure of vital company information had to be signed before any interviews in several of the financial institutions. All interviews were audiotaped.

- Interviews are **semi structured** to find correlations with relevant decision theory, but also **open ended** to create opportunity to discuss any **new insights** from the **experiences** of the CEO's and board members, and to capture the content and resolution of **unanticipated factors, theories or ideas.**

-----o0o-----

10. LIST OF EXECUTIVES INTERVIEWED FOR THE RESEARCH

- Rudolf Boshard : Member of the Group Executive Board
Swiss Volksbank
Berne
- Karl Janjori : Member of the Group Executive Board
Union Bank of Switzerland
Zurich
- Dr. Hans Geiger : Member of the Group Executive Board
Swiss Bank Zurich
- Hans-Joachim Heun : Member of Senior General Management
Head of Commercial Credit Suisse
Zurich
- Walter Knabenhans : Head of Global Treasury
Member of Senior General Management
Credit Suisse
Zurich
- Peter J. Widmer : Member of the Management Committee
Bank Julius Baer
Zurich
- Eberhard R. Herde : Director
Private Banking Division
Kansallis International Bank
Luxembourg
- Franz Schneider : First Vice President
Swiss Volksbank
Berne
- Werner Bonadurer : First Vice President
Union Bank of Switzerland
Zurich
- Roger Cave : Senior Executive
Group Credit Risk
National Westminster Bank
London

- Dr. Daniel U. Albrecht : Vice President
Bank Julius Baer
Zurich

- Keith N. Hatton : Group Executive
Corporate Accounts
National Westminster Bank
London

- Ann Millington : Group Risk Management Executive
National Westminster Bank
London

- Daniel Habegger : Vice President
United Overseas Bank
Geneva

- Barry Hamilton : Assistant Group Treasurer
Barclays Bank
London

- Edward C. Cade : Divisional Director
Central Advances - Credit Risk
Barclays Bank
London

- Martin A. Cruttenden : General Manager
Risk Management Division
Lloyds Bank
London

- Peter Mc Namara : Head of Strategic Planning
Lloyds Bank
London

- Markku Eriksson : Director
Treasury Division
Kansallis-Osake-Pankki
Luxembourg

- Dr. Alfred Signer : Vice President
Union Bank of Switzerland

Personal informal discussions with the following people also contributed to the exploratory search and our understanding of how we handle risk and make decisions.

- Prof. Friedrich Neubauer : International Institute for
Management Development
Lausanne
- Prof. Paul Strebel : Prof. of Business Administration
International Institute for Manage=
ment Development
Lausanne
- Prof. Pierre Casse : Director of the Program of
Executive Development
International Institute for Manage=
ment Development
Lausanne
- Dr. Ada Demb : Vice Provost for International Affairs
The Ohio State University
Columbus
- Matti Packalén : President
Kansa Corporation
Helsinki Finland
- Dr. Hennie van Greuning : Registrar Deposit Taking
Institutions
South African Reserve Bank
Pretoria
- Prof. Ahmet Aykac : International Institute for Manage=
ment Development
Lausanne
- Bernard Strakis : Chief Executive
Cumberland Life Assurance
Windsor
- Kurt A. Wettenschwiler : Actuary, Senior Vice President
Swiss reinsurance Company
Zurich

- Jorma Riipinen : Vice President
Domestic Insurance
Kansa Corporation
Helsinki Finland

- Hannu Talvio : Vice President
Projects & Strategic Planning
International Division
Kansa Corporation
Helsinki Finland

-----o0o-----

11. INTERVIEW STRUCTURE

- 11.1 The assurance was given that personal statements by the individuals would not be directly linked to their names or companies. Institutions are only referred to by a random number (I, X, V etc.)
- 11.2 Interviews lasted for one to two hours per individual. Apart from the questions asked the executives were also allowed to provide input on their own ideas on improving the quality of decision making.
- 11.3 The Executives were questioned on the following aspects during the semi-structured interviews:
 - 11.3.1 How does your organisation evaluate the quality of decisions made by top management and the board of directors?
 - 11.3.2 What are your views on the value of a formal decision audit in a financial institution?
 - 11.3.3 How do you believe the quality of decisions in large organizations can be improved?
 - 11.3.4 If we assume that for general managers to be promoted to top management or board level, they must be good quality decision makers with a good track record, why does some financial institutions that have good people in top management, still run into financial difficulties?

- 11.3.5 What are your views on **escalations errors** in top management or board decisions?
- 11.3.6 How does your top management team or board **prevent bias** in decision making?
- 11.3.7 How do you think the decision making **process** should be **managed** to
- **ensure** quality in decision making?
 - **improve** quality in decision making?
- 11.3.8 Can you describe the way in which your organisation will handle **complex decision situations**?
- 11.3.9 How can one determine the quality of decisions in a **high risk environment** in your opinion?
- 11.3.10 Is there any form or system of decision process management in your company that might contribute to our understanding of the **determinants of quality decisions**?
- 11.3.11 In your experience how does top management view the importance of the decision making **process** itself?
- 11.3.12 If we want to **improve the quality** of decision making in financial institutions, **where** in your opinion **should** academic **research focus** to find the most significant **potential improvements**?
- 11.3.13 What in your view are the **major causes of poor quality decisions** in financial institutions?

- 11.3.14 What in your opinion causes financial institutions to repeat the same mistakes of the past and not to learn from previous experience?
- 11.3.15 How can a board of directors or top management team prevent a slow decay in the quality of their decisions over a period of time?
- 11.3.16 If the aim is to ensure good quality decisions in organisations, what criteria in your view should be used to promote junior managers into senior positions?
- 11.3.17 What are your views on the role that judgemental errors by senior management play in decision making?
- 11.3.18 What role do you think does the effects of framing (positive and negative framing) play in the process of making complex decisions in financial institutions?
- 11.3.19 What are your views on confirming versus disconfirming evidence in decision making?
- 11.3.20 What are the effects of self preservation behaviour versus profit maximization behaviour in decision making according to your experience?
- 11.3.21 How does psychological sunk cost influences the quality of decision making in your experience?

- 11.3.22 What are your opinion about the value of **introspective analysis** to analyse and improve the quality of decisions?
- 11.3.23 Often when a company is facing financial failure, the managers involved will only recognise the seriousness of the situation when it is too late. Why does this happen to experienced decision makers? How can one prevent this?
- 11.3.24 In you experience, how does satisficing behaviour versus profit maximization behaviour influence the quality of decisions in financial institutions?
- 11.3.25 What in your opinion are the **main causes of financial failures** in large institutions?
- 11.3.26 How do you believe can the decision making process be improved to obtain better quality risk management?
- 11.3.27 Organizational forgetting. How valid is this concept with respect to risk management in your opinion?
- 11.3.28 In what areas do you believe, will the next generation of improvements come from in the managerial ability to produce quality decisions?
- 11.3.29 Are there **any other factors** in your opinion that might affect the quality of decisions in financial institutions?

12. ABSTRACTS FROM THE RESEARCH INTERVIEWS

HOW SHOULD ONE MANAGE THE DECISION MAKING PROCESS AND HOW CAN ONE ENSURE QUALITY IN DECISION MAKING?

- It is very difficult to specifically manage that, very very difficult. Risk is your constant enemy. If you forget this, you will not stay in business. So it does not help to make a few good decisions and then allow bad decisions in between to ruin the whole effort. You have to maintain quality all the time.

(I)

- Whenever possible, involve the ones concerned at the next lower level of line management. Unless it is a very urgent decision, always try to involve the next lower level of line management. Request these managers to come up with their solutions to the problem involved. Then you compare it with your own judgement. This will help to ensure a good final decision.

(I)

HOW CAN ONE DETERMINE THE QUALITY OF DECISIONS IN A HIGH RISK ENVIRONMENT IN YOUR OPINION?

A decision (all other things being equal) with a positive outcome is subjectively judged as some kind of a better decision. One also tends to be less critical about decisions which end up with a positive outcome and one tends not to analyse them afterwards to assess their real quality. I think to ask yourself what are the real reason why a particular decision is made can help a lot to distinguish between good decisions and decisions that are made for the wrong reasons.

(I)

HOW DOES YOUR ORGANIZATION EVALUATE THE QUALITY OF DECISIONS?

Generally top management are not so critical (and I would not exclude myself) in analysing positive outcomes. Giving second thoughts to how the original decision was taken is not a general part of the day to day management process, unless there is something negative in the outcome. Even then it is often accepted as part of the normal risk of doing business. I think we can learn many things if we can find the time to analyse our bad decisions. The Japanese seem to have mastered this art.

(II)

IF THE AIM IS TO ENSURE GOOD QUALITY DECISIONS IN THE ORGANISATION, WHAT CRITERIA SHOULD BE USED FOR PROMOTION OF JUNIOR MANAGERS INTO SENIOR POSITIONS? WHAT ARE YOUR VIEWS ON THIS?

I think you should focus a lot on soft factors, leadership or personality, rather than on hard quantitative ones.

I have never promoted anybody purely based on results, but someone with a good track record would be difficult to overlook.

(I)

How do you judge the good track records of managers? Is any distinction being made between good outcomes as a result of good judgement versus good outcomes based on external environmental factors over which the manager had no control?

No, it would be exaggerated to say any distinction are made in modern day business between what a manager accomplished himself or what happened coincidentally without his personal doing. In almost all instances the manager is judged by the mere fact that the outcome of his decision was good and not so much about the positive impact of external factors.

(I)

THE ROLE OF JUDGEMENTAL ERRORS IN DECISION MAKING

Decision outcomes can be classified as follow:

1. Sub-optimal decisions due to incomplete information.
2. Sub-optimal decisions due to unforeseen changes in external/economic or market conditions.
3. Sub-optimal decisions due to internal management decision errors or judgemental errors.

In your experience how important is this last category in modern day business practise?

I think it is a fairly small percentage, may be 5% or so. They are few in number, but their consequences at top management level are serious.

(I)

CONFIRMING EVIDENCE VERSUS DISCONFIRMING EVIDENCE

When management teams face a **complex** decision task, there can be a tendency to focus on confirming evidence, i.e. the managers can look for information which would support their line of thinking.

How often in your experience would managers search for disconfirming evidence?

This is **not** a general way of finding solutions. I would say it is very rare to find managers who would look for disconfirming evidence. The same old truth holds for everybody, we try to win support for our own views.

(I)

CONFIRMING VERSUS DISCONFIRMING EVIDENCE (Continued)

I think, even when managers are asked to look for disconfirming evidence which could potentially contradict their proposals, the tendency is to ask these questions in a subjective or biased way so that the likelihood of finding this information is reduced. I do not know if one can prevent this.

(I)

IN YOUR VIEW, HOW CAN ONE PREVENT BIAS IN THE JUDGEMENT OF MANAGERS WHO ARE MAKING IMPORTANT DECISIONS?

Managers are not always objectively analysing new business situations. There are definitely factors which lead to more or less biased decisions. As soon as any manager knows what the position or opinion of his superior is or might be, he or she will (generally speaking) not oppose that view, and will be no longer objective and they are practically bound by their superiors' views even when they might have another personal opinion. This is one of the realities of the hierarchical structure in our companies.

(I)

Do organisations consciously keep the views and options of superiors away from subordinates while they investigate a new problem?

If you can manage to achieve this all the time it will be a great advantage, but managers tend to know how their superiors think.

(I)

We have no evidence to say that decisions that have been made in a slow systematic way is any better than fast judgemental decisions by experts. But I believe that a thorough process can reduce the likelihood of error in our judgement.

(I)

SELF PRESERVATION VERSUS PROFIT MAXIMIZATION. WHAT ROLE DOES THIS PLAY IN THE QUALITY OF DECISION MAKING?

There is no doubt that self preservation is a very important factor. Self preservation is more dominating than one would think. I would say it is more than 50% of concerns of any manager.

(I)

SELF PRESERVATION VERSUS DECISION OPTIMIZATION

Current management practises most certainly promote self preservation behaviour amongst decision makers. The knowledge that you will be replaced if something goes wrong badly, forces managers to firstly look at their own "safety" and then only at problems facing the company. I do not think we can change this. This is part of human nature.

(II)

IN YOUR OPINION, HOW CAN THE QUALITY OF DECISION MAKING BE IMPROVED IN FINANCIAL INSTITUTIONS?

I am sure that we all know how decision making can get logged down in a kind of formal committee process. We run too many committees to find enough time to monitor the quality of what we are doing.

What we have to do is to learn the art of managing the management interfaces. We have to monitor the quality of what is flowing between the committees to be able to judge the quality of our decision process.

(VIII)

HOW CAN DECISION MAKING BE IMPROVED IN FINANCIAL INSTITUTIONS?

- I don't think there is any room for any **systematic** improvement in decision making. It is the ability of a good chairman to manage the discussions of the team that produces a good decision. If the discussion does not **test every assumption** you will never be sure of the quality of your decision.

(II)

What in your opinion causes financial institutions to repeat the same mistakes that caused the downfall of many others in the past? Why don't modern business learn from the mistakes of the past?

- | |
|---|
| <p>I think it almost always starts when you concentrate your risks in a certain area or accumulate your risks over a period of time but in a cyclical way. The attractiveness of superior profits tend to camouflage the significance of the risks involved. Psychologically the risks are not seen in perspective.</p> |
|---|
- As long as you have the courage to resist this temptation, and as long as you maintain a balanced exposure, even accepting the fact that you are not maximizing profits over the short term, it usually proves to be the most successful philosophy over the long term.

(IX)

- Never allow yourself to get unproportionately exposed to any risk. It does not pay in the long run. However, the fear of competitors taking the gap and gaining one on you tends to reduce caution amongst managers.

(IX)

WHAT IN YOUR OPINION CAUSES FINANCIAL INSTITUTIONS TO REPEAT THE SAME MISTAKES OF THE PAST AND NOT TO LEARN FROM PREVIOUS EXPERIENCE?

We had a situation recently where a relatively successful division convinced the board that certain exposures were safe and that the likelihood that the counterparty could default was small. Others were not comfortable with this at all. But, with the blessing of the board members, they were allowed to make these mistakes. The other managers could not intervene. The political climate was against them. Politically they could not intervene until it was too late. This was not the first time this ever happened. We all know these risks, but the process somehow repeats itself.

(III)

HOW DO YOU MANAGE THE QUALITY OF THE DECISION MAKING PROCESS IN YOUR SPECIFIC FIELD OF RISK MANAGEMENT?

The institution looks at risk relative to the market in which we operate. We are not paid to be in and out of markets all the time.

The way risk is measured is by deviation from the market index. Our business is to outperform the market in a relative sense and not in an absolute sense. If the index goes down 3% we should go down less than 3% and if the market goes up 4% we should go up more than 4% for example.

The second criterion is your standing within the universe of comparable institutions. So there are two yardsticks for effective risk management - firstly your performance relative to the chosen index and secondly your performance relative to other risk managers/competitors.

(III)

HOW CAN WE IMPROVE OUR RISK MANAGEMENT DECISIONS?

The quality of decision making is crucial to the design of an effective risk management system. Firstly you have to design your policy "by looking at the moon" i.e. macro economic analysis. This is the "information" stage. The second phase of decision making is the "interpretation" phase. Then we have what we call the "optimiser" meeting where fine tuning takes place. The final step of the decision process is the strategy meeting itself where the decisions are finally analysed and approved.

(II)

Usually it is not one or two or three bad decisions by top management or the board that cause financial disaster in a large institution, but rather a slow decay in the quality of decisions over a long period of time.

HOW CAN SLOW DECAY IN THE QUALITY OF DECISIONS BE PREVENTED?

By forgetting everything you know about the behaviour of markets. Forget everything you said last time. In the financial risk management process one of the biggest risks is that people fall in love with what they said or did last time. They fall in love with markets (like the Japanese equity market) and they don't get out when they should. They believe that this is a wonderful market - it made all this money for me and it made tons of money for our clients and it will perform for me once more.

People fall in love with their ideas and they can't turn around. That's why you must realise that what was right yesterday is probably not right any more.

(III)

HOW DOES PHYSIOLOGICAL SUNK COST INFLUENCES THE QUALITY OF DECISION MAKING IN YOUR EXPERIENCE?

Once people have "invested" their personal opinion in a certain proposal, it is very difficult to withdraw support afterwards. The sooner we can learn to withdraw when we should, the better we will be able to manage fast changing environments.

(III)

The task of the chairman or the chief executive officer is to get managers away from their normal thought process, to ask them if this is logical, if it is consistent with current requirements, or if it is a decision based on a love affair with the old way of doing things?

(III)

WHAT IS YOUR OPINION ABOUT THE DETERMINANTS OF THE QUALITY OF THE DECISION MAKING PROCESS?

All companies believe that they have the best people and therefore expect that their decision making must be superior. In reality it is a combination of many aspects that determines the quality of your decisions. The quality of the people involved is only one of these. You also need someone that can conceptualise the problem, someone that can say I "have been there before" or "I have seen similar situations previously". You need input from someone that can sense opportunities but you also need someone that can say slow it down we cannot quantify the risk involved, and finally you need someone that can act decisively with the information accumulated from this team. When some of these aspects are missing decision making will fail the test of time.

(III)

HOW CAN ONE JUDGE THE QUALITY OF INFORMATION ON WHICH DECISIONS ARE BASED?

Today we are flooded by an abundance of information. We don't need information for our decisions. We need someone that can give an interpretation of the available information. The interpretation of all the related data

and the potential impact of unrelated facts is what adds the real value to the decision process. You don't need computer screens full of management information. You need quality management that can interpret the whole situation.

(III)

ARE THERE ANY INTROSPECTIVE ANALYSIS PROCEDURES BY WHICH MANAGERS ANALYSE THEIR OWN DECISION PROCESSES IN YOUR ORGANISATION?

Managers need to clarify three things about their own thought processes.

Is it logical?

Is it consistent?

Is it correct?

There is no use being logical and consistent but incorrect in your judgement of the changes in the market. Too often managers judge the quality of their thinking by only asking if it was logical and consistent. When we have made an incorrect decision the opportunity is there to analyse and learn from our mistakes. We seldom make time for this analysis process. The whole exercise of asking questions is to make sure that all aspects have been considered. The thought process itself to test this is one of the aspects which you should look at.

(III)

WHY ARE THE MANAGERS OF COMPANIES WHO RUN INTO FINANCIAL DIFFICULTIES OFTEN TOO LATE TO RECOGNISE THEIR OWN PROBLEMS?

Historical analysis shows that many companies have been killed by too rapid growth. Growth in itself is not bad, but when all your attention is focused on how to earn the next \$100 million you often lose sight of the needs of the back office. It is not the market expansion or the growth that kills you, it is often the lack of focus of management on anything other than the potential additional profits or market share. In this way you walk into the trap as if blindfolded.

(III)

When you experience rapid growth, and say you double your assets under management in one year, you need managers that have the ability to say that as much as I may like this, I have to say no.

(III)

HOW DO YOU PERCEIVE THE BALANCE BETWEEN THE NEED FOR PROFIT MAXIMIZATION AS OPPOSED TO THE NEED FOR SELF PRESERVATION WHEN MANAGEMENT IS FACED BY A COMPLEX DECISION?

Maximizing returns will almost always involve great risks which could put your job at stake if you follow this strategy long enough.

Optimizing returns is what the quality manager should aim for. People have to feel comfortable enough to make mistakes. Don't criticize managers for bad decisions if it was well thought through. Sensible people making sensible decisions should have the support of senior management when they make a mistake and they should be confident that that support is there. That is part of the game. If not, self preservation will prevail above all else.

(III)

WHAT OTHER FACTORS INFLUENCE THE QUALITY OF DECISION MAKING IN YOUR EXPERIENCE?

The job of management is to make sure that they do not lose confidence in themselves. All mistakes have a negative impact on your own confidence. To discuss the decision process that previously led to a mistake can help to maintain confidence in your reasoning ability and not to be overwhelmingly influenced by negative outcomes.

(IX)

We know that there are some managers that outperform an up-market, and some managers outperform a down market. Not very often do you find this in one and the same person. The risk attitude of the individual either suits an up or a down going market. The successful switching between the two is not an easy task. Top management should always be aware of this and manage this.

(III)

LOOKING AT THE FUTURE, WHAT SHOULD WE DO TO IMPROVE THE QUALITY OF OUR DECISIONS?

I think we have to look at a longer term of sustained performance and the willingness to accept lower performance over the short term. Common sense dictates that you do not have to win every stage of the Tour-de-France to win the race.

(X)

When focusing on the decision making processes in financial decisions, why do certain groups of executives consistently manage to produce good quality decisions over the long term, while others fail to accomplish that?

I believe, that if a management team does not

- (a) have very strong shared personal values and
- (b) have very clear and strict principles

according to which they conduct their business, they will end up making more serious mistakes than others.

(X)

If you look at credit lending business it is mandatory to stick to very sound business principles. Never ever cross that line otherwise you are courting disaster. In other areas of management the borders of acceptable conduct are not as clear but the principles remain exactly the same. If you bend the rules only slightly it might not show immediate impact but eventually it will catch up with you. In pure financial decisions the results of "bending the rules" are just seen much quicker.

(IV)

By neglecting some lending principles the short term outlook might be very good. You might win very big, but you will also loose very big. **Sound business principles act like a safety net for decision making.** May be there is short term opportunity cost involved in following these guidelines and principles. The long term benefit is that you survive when others don't.

(X)

How does a financial institution ensure that management decisions adhere to the business principles or philosophy of that particular organisation?

We believe that one way of doing this is to use a "four eye" system or matrix. This means that at least two different peers look at an issue in addition to the safety net systems like the credit committee. A matrix scheme means that at least two different people with **DIFFERENT perspectives** will look at the same proposal. Most universal banks nowadays have matrix schemes for certain levels of decision making. Particularly continental European banks and the UK Banks utilize this matrix decision evaluation method for important matters. You find this less in USA Banks.

(X)

An issue which was re-emphasized over and over recently is that financial institutions cannot afford in the least to allow any policy that is "slightly loose" on **business ethics**.

(X)

WHAT IN YOUR MIND ARE THE MAIN CONTRIBUTING FACTORS TO FINANCIAL FAILURES IN LARGE INSTITUTIONS?

Looking at the many financial failures that we have seen in the late eighties and early nineties, those companies certainly had the brightest of people, but they did not have any idea of how to control those people and how to direct the thinking of those people within very clear business guidelines and principles. It is no use have intelligent and smart people and allowing their thinking processes to run wild without checks and balances.

(IV)

IN YOUR VIEW, WHERE DO WE NEED IMPROVEMENT IN OUR DECISION MAKING ABILITY IN FUTURE?

The real challenge today is how to push people hard to generate profits in the short term while you don't push them so hard that they make long term mistakes. Sometimes we are so comforted by current short term successes that we loose sight of the long term problems we are running into. Decision makers have to be aware of this all the time, but in practise you find very few people who can bridge this gap.

(IV)

HOW CAN WE IMPROVE THE QUALITY OF DECISION MAKING AND PREVENT FINANCIAL FAILURES?

The dilemma is that you should be able to tell your managers that although the current figures may look good, you are not happy with the long term prospects of their actions. It kind of goes against the prevailing atmosphere. How do you tell your troops when they are reporting victory, that the battle might still be lost because they are overstretching the resources or are taking slightly higher risks than we are comfortable with? Solving these issues can help to improve long term success.

(IV)

HOW DO YOU BELIEVE CAN THE DECISION MAKING PROCESS BE IMPROVED TO OBTAIN BETTER QUALITY RISK MANAGEMENT?

Controlling risk means that all your people must have a clear understanding of the culture of your organisation. Are we a very conservative institution, are we aggressive, are we a long term thinking institution, are we going for the big bucks, is shareholder profit the only concept we look at, what does it mean in terms of long term outcome? If you have all this mutual understanding in place it helps a great deal to control the risk behaviour of your people. The problem is that we rely today on incentives that are focused on short term performance.

(IV)

We generally do not reward people for long term thinking or for guarding the long term end of the risks we face.

The management style of today is overwhelmingly short term incentive driven. As long as responsibility cannot be allocated for the long term outcome, we don't pay incentives to guard this. This is the problem that we need to solve.

Long term concerns gradually take up secondary priority to the available short term incentives that managers are driven by.

Unless institutions also reward long term thinking they will not cultivate the kind of expertise that can reduce long term risk.

(IV)

To control risk you need to have very clear and strong business policy and principles. You clearly have to state that this institution will do this, but we won't do that, we will accept these kind of transactions at this price but not for that price, we are not going to be in that kind of lending business (even if potential profits might look good), we are not going to be a lender that have more than 10% or 20% (or whatever percent) of the total volume that a particular client needs, and we are not going to lend to companies that are totally dominated by crazy crazy people (like Maxwell),.

As with many other issues, you have to define when you are prepared to give up business simply because you don't want to take that kind of risk.

The dilemma increases when you have to weigh potential short term profits against long term risk.

(IV)

THE FORCES THAT AFFECT A MANAGER'S DECISIONS ARE OWN SELF-PRESERVATION AND PROFIT MAXIMIZATION FOR THE COMPANY. HOW DO YOU VIEW THESE RISK HANDLING ASPECTS OF MANAGERS WHEN THEY FACE COMPLEX DECISIONS?

Well, you see, when someone makes a strategic decision, to buy Bank XYZ for instance, to judge the success of this decision on bottom line performance could take as long as 10 years. In addition to that there are many qualitative factors which are equally as important as the quantitative measurements.

I don't believe that you can always find a correlation between making an intelligent and very important long term decision and being held responsible only on current bottom line performance. When companies focus on short term profits the responsibility for long term risk and long term decisions is not a priority in the minds of the decision makers.

At the end of the day you can make any kind of currently beneficial decision because nobody feels responsible for the very long term risks involved.

Swiss Banks have generally speaking been more successful with long term thinking than their USA counterparts.

(IV)

WHAT IN YOUR VIEWS ARE THE MOST IMPORTANT DETERMINANTS OF QUALITY DECISION MAKING?

Collective responsibility is one of the processes that the current system uses to make complex decisions. Everyone has a chance to ask questions and everyone has a chance to say I don't think so. Exactly how far

conceptualization of future risk goes in the minds of each individual is not clearly defined during a collective decision process. Maybe this is one of the weaknesses of the current way in which we make decisions. A situation even worse than collective decision making and collective responsibility is where one guy dominates the thinking process and the others (may be for egoistical career reasons) say well I hope this guy fails. Clearly this is not a good situation for the company.

In a way I believe that Swiss Banks are much closer to Japanese Banks than to the Anglo Saxon way of thinking. In terms of business principles they are more conservative than the USA Banks for instance, but in terms of the way in which they compete for business they are not. The way we do trading, sales, marketing etc. are not more conservative than any other bank, otherwise we would have been out of the market. We do say, however, that even if we can get the business of a particular customer at competitive rates, we are not going to participate because we do not like the profile of this particular lender. We are not conservative about the rates we charge but we do care a lot about getting back our money. This is a trade-off that shareholders have to understand. This might not always be maximizing shareholder value in the short term, but it prevents you from losing in a big way. It is a problem when shareholders always go for short term maximization on their investments. Then you might be in trouble and may be this is one of the problems that American Banks have. They are very much challenged by shareholders. We have not so much of it over here.

HOW DO YOU BALANCE THE NEED TO HAVE A CULTURE THAT ALLOWS MISTAKES, BUT ON THE OTHER HAND HOLDS PEOPLE RESPONSIBLE FOR BOTTOM LINE PERFORMANCE?

To measure someone is a good way to focus his mind. We do this all the time. If you want someone to act in the Bank's best interest, you also have to make sure that he can rely on management support when very good intentions produce totally unforeseen results.

(IV)

WHAT IS YOUR OPINION ABOUT CONDUCTING DECISION AUDITS IN THE TOP MANAGEMENT OR BOARD ENVIRONMENT?

This is a very sensitive issue and not popular in all circles. More and more people are realising that there can be a lot of benefit in such a process, provided that it is done in a proper and professional way. By reviewing their own previous decisions, management or the board can benefit from an analysis of the reasons why some past decisions turned out to be wrong. The idea of a periodic management or board retreat to review past decisions is gaining more acceptance as a method to improve the capability of the team. I think you can regard this as a form of decision audit or self assessment.

(IV)

DO YOU HAVE ANY GOOD EXAMPLES OF PREVIOUS DECISIONS THAT TURNED OUT TO BE WRONG WHEN ANALYSED RETROSPECTIVELY?

Lets look at what was happening in the mid eighties in the London market prior to the big bang. You might say now, six, seven years down the road, that it was absolutely

ludicrous how much money banks, almost all banks, spent to gain a foothold in the London market. If you look at the numbers and the returns, it was probably a very bad time to buy anything in the London market. On the other hand, from a strategic point of view, the question around 1985 was if you really had any other options. All your competitors were doing it, so you had to follow. Now retrospectively it is clear that it was a series of very bad decisions. One year down the road there was deregulation and a clean up of the market. A shake up, and then the crash of the market in 1987. All this was difficult to forecast and paying that much prior to the crash now seems ludicrous. But, you had to do what all the other banks were doing.

(IV)

WHAT ROLE DOES COMPETITIVE BEHAVIOUR PLAY IN TERMS OF QUALITY OF DECISIONS?

Generally, competition should improve quality of decisions. But, one fact is that you do many things what you see and believe other banks are doing. This chain reaction that you become part of can easily deteriorate into a cycle of reasoning where you are not sure, so you look at what competition does. Then at the end of the day everyone kind of believes that well we got to go, we got to lend money in that market, you have to be in London, you have to be global, you have to have an office in all the places. If you want it or not, a lot of decisions are influenced by competitor behaviour. This can often lead to seemingly irrational decisions. This can easily trigger a cycle of "competitive reasoning" where there is almost blind acceptance of the quality of decisions made by other competitors.

(V)

SOME ACADEMICS POSTULATE THAT ORGANISATIONS CAN FORGET LIKE HUMANS. CAN "ORGANISATIONAL FORGETTING" INFLUENCE THE QUALITY OF DECISIONS IN YOUR OPINION?

In many cases of financial collapse it can be demonstrated that the same mistakes were repeated by the same institution over a period of time. This apparent inability to learn from experience has drawn the attention of academics who studied this phenomenon. It appears that a particular generation of management who was exposed to a previous incident of say over-exposure to a certain kind of risk, will remember this bad experience and prevent the company from repeating it. Research indicates that where a particular generation of management retires from an organisation, and new management takes over who had not been personally exposed to that kind of risk, they will generally not prevent the company from repeating the same past mistakes.

(Personal statement, Prof Paul Strebel, 1994)

ESCALATION ERRORS OFTEN OCCUR IN FINANCIAL DECISIONS. YOUR VIEWS ON WHY THIS HAPPEN, HOW TO PREVENT THIS, HOW DO ONE MANAGE THIS?

This very much depends on what kind of problem you are facing. Sometimes you have to change the people and throwing in more money won't help. The fact that you are one level away from the decision can help to look at it more objectively. Escalation usually occurs when the persons involved have to make the further decision themselves. This means that top management have a great responsibility to recognise escalation behaviour amongst their managers. When the top executives find themselves in such a situation it is not always easy for the board to recognise this. This can be a problem.

We have a system that is intended to identify these potential escalation problems. It is a continuous re-evaluation of the **basic assumption why we spend money on something**. This is not always easy because implementation of the plan on which you spend money can take up to five years. You have to monitor your "original assumption" on which your strategy was based, to see if it is still correct and appropriate. If you do not re-examine your assumptions escalation becomes a strong possibility.

(IV)

HOW CAN THE QUALITY OF DECISION MAKING BE IMPROVED IN LARGE FINANCIAL INSTITUTIONS IN YOUR OPINION?

Any organisation needs some "neutral" people in high positions. The role of "independent" people, is to **challenge** other people to **think about issues** and **not** to tell them look I think your strategy is wrong, you should not be selling to this or that market segment. You have to send out these "neutral" people to ask stimulating questions to the line managers. For example "can you explain why we do this in this particular way and not in any other way"? What is our rationale on this specific strategy? If the frontline people are not able to come up with good answers, I think you have to seriously and urgently re-examine your strategy.

(IV)

WHY DOES SOME FINANCIAL INSTITUTIONS WITH GOOD MANAGERS STILL RUN INTO FINANCIAL DIFFICULTIES?

One of the most difficult decisions is to decide to get out of a certain market when everyone is still making profits in it. While your competitors are in a market, it is very difficult to convince your colleagues that it would be better for your own institution to get out of that market. Usually when everyone recognises that a particular market is falling, it is too late to get out.

(III)

HOW DOES YOUR ORGANISATION ENSURE THE QUALITY OF DECISION MAKING IN COMPLEX DECISION SITUATIONS?

For example, in the trade finance unit we have eight people with voting rights. With vacations and with people travelling, illness etc., there have to be at least four voting members plus a member of the internal control unit present to approve a financing decision. There are therefore a 4 + 1 group of decision makers and decisions are carried with a majority vote. The person from the internal control unit however does have a veto right to send the decision up to senior general management level for approval.

(III)

WHAT ARE THE RESPONSIBILITIES OF THE INTERNAL CONTROL UNIT WITH RESPECT TO DECISIONS THAT ARE TAKEN BY MANAGEMENT? DO THEY LOOK AT THE OUTCOME OF DECISIONS, DO THEY LOOK AT THE PROCESSES THAT ARE FOLLOWED TO MAKE DECISIONS?

The control unit only checks that decisions that the managers have taken, correspond to the official authority limits that we have established and these are approved once a year. This control process does not measure the quality of decisions, it only monitors that the decisions fall within the set guidelines and limits.

(II)

HOW DO YOU BELIEVE THE QUALITY OF DECISION MAKING CAN BE IMPROVED IN FUTURE?

My suggestion is that the guy who is controlling the project or the team must continuously keep asking himself why am I doing this and not something else, why am I making profit and what could change that? What he should also get is support to really think about all the issues, to put a systematic approach behind making the decisions. One person can never claim to know all the right answers.

(II)

HOW DO YOU THINK THE DECISION MAKING PROCESS SHOULD BE MANAGED TO ENSURE QUALITY IN DECISION MAKING?

If you look at the example of a financial trader. He is not a controller at all. They don't even know how to put controlling functions down to paper. But you need their intelligence to "read" the market. The control function is a totally different process needed to monitor and to guide what is really going on.

Top management is responsible to control the actions of traders like any other part of the company. Although they don't like to be controlled by a staff function, input from a controller is necessary. Input to say "I think you should look at that issue as well and I think you should not look at it on a crude basis but on a net present value basis, or I think you should use that discount rate and not this discount rate, or I think your hurdle rate should be higher or lower". This helps to increase the quality of their decision making.

(Comment: People know this, and things like the Barings Bank fiasco still occur)

(II)

HOW DO YOU DETERMINE A CUT OFF POINT BETWEEN LOOKING FOR THE BEST POSSIBLE SOLUTION AS APPOSED TO ONLY LOOKING FOR A GOOD ENOUGH SOLUTION OR SATISFICING AS WE CALL IT?

I think this is a very important question and I complain about this issue very often. If an organisation has a lot of capital, like the Swiss Banks, they tend to make a lot of "satisfactory" decisions. If, however you have capital constraints and you have to pick one option out of 25 options, I think you have to go for the best possible option. I think there is a high correlation between having abundant capital or being a capital poor institution, and the type of decisions you make.

"A rich bank tend to make a lot of decisions which add something to the bottom line, but it may not be the very best of available options. You can see that in planning in big organisations. In rich organisations the planning process is not taken very seriously. It is a very bureaucratic approach telling everyone what kind of fancy things you would like to do. But if you don't have money you better seriously think what the hell you want to do with the little capital you have. Then satisficing is not acceptable and the best possible solution might be your only chance of survival."

DO YOU THINK BOTTOM LINE PERFORMANCE CAN BE IMPROVED IN CAPITAL RICH ORGANISATIONS BY SHIFTING DECISION HURDLES TO "BEST POSSIBLE" AND AWAY FROM "SATISFICING"?

The only way of measuring this is to allocate a certain amount of capital to each division or business line and to run them like highly leveraged corporations. This would immediately shift decision making hurdles to accept only best possible solutions. This can improve the bottom line.

(II)

TO OBTAIN QUALITY DECISIONS, WHAT ARE YOUR VIEWS ON FRAMING A DECISION IN RELATIVE OR ABSOLUTE TERMS?

There is probably no-one who can make purely rational decisions. Choosing the right discount rate is not a rational decision. It is trying to make a more or less rational decision but you are biased. You are biased toward the approach that you are used to. Sometimes you don't know if it would be best to ignore certain related factors and look at it in isolation, or to include all possible associated factors. I think most decision makers don't really have an answer to this conflicting viewpoints and have to rely on intuitive interpretation.

(II)

WHAT ARE YOUR VIEWS ON EVALUATING A DECISION VIA POSITIVE OR NEGATIVE FRAMING, AND THE RISKS OF LOOKING ONLY FOR CONFIRMING EVIDENCE AND IGNORING DISCONFIRMING EVIDENCE?

Personally I believe this is what is happening very often. I think there is a "built in" problem in any hierarchical structure. It is a "good news gospel" where people tend to put forward the positive stories much more

forcefully than they would ever point to negative information. You can easily see this in most reports landing on your desk. In this way critical negative information either don't reach the top or are made so palatable that it doesn't cause concern. Managers know that the "bearers of bad news" don't get promoted while strategy supporters do. The hierarchy therefore creates this confirming evidence culture. Maybe if one can learn to reward managers for honest opinions that question the strategy, we can prevent many problems.

(IV)

As a manager you have to accept this "good news phenomenon" as a fact of life. If you want to maintain solvency, you have to define your own role, in being able to go back to your managers and say look, I have seen all the good news or confirming evidence or what you would like to call it, but now give me the bad parts and the problems. This is time consuming but this is often the only way to get the whole story and to accurately define the risk.

In a perfect world you would expect that reports and proposals would be well balanced with both the positive and negative aspects included. This is not what is happening and you don't see this "tough analysis" of reports. That's why I would say that you need top people in head office, in a staff function, who ask very very tough questions and who beat up proposals in a positive sense. That is not by telling people you should do this or that. I mean, I don't have any idea what you should do in Japan or how you should run our business there. I can read the financial news about Japan and talk hours about it but I can't tell our Japanese manager how he should run

his business if I can't do it myself. All I can do to add value is to ask tough questions to allow him to test his own thinking. He must be made aware that someone is looking at it from another perspective. You can call it "management by asking tons of questions".

(IV)

DO YOU BELIEVE THERE COULD BE VALUE IN CONDUCTING DECISION AUDITS WHERE PEOPLE GO AND SPECIFICALLY ANALYSE PREVIOUS DECISIONS, NOT BY THEIR OUTCOMES ALONE BUT ALSO BY THEIR QUALITY OF THINKING?

You see, in this job I have seen the whole spectrum of how people put together business decisions. There are many different approaches like looking at the risks, the opportunities, the profits, etc., but I would say there is hardly ever a systematic decision making approach. I believe in many other industries there are much more sophisticated decision processes where the product lines are standard. In banking it is often difficult to define the product. It is not like a raw material. It is often a hybrid financial product which is interrelated with many other products and it could affect their profitability as well.

The decision you are faced with is also urgent in the sense that if you can make money with this product in that market it is better to do it soon, rather than to wait for someone to put together 25 possible scenarios that can happen in the next 5 years. Decisions are often made on the basis of believing it can be profitable and doing it. I am sure if we would sit down and analyse historical decisions more carefully and the way in which those decisions were made, we might learn many new things about ourselves. May be we won't like what we find too much because I suppose it can get personal.

(IV)

IN YOUR OPINION, ARE THERE ANY NEW AREAS THAT WE SHOULD
LOOK AT IN TRYING TO IMPROVE DECISION MAKING IN FINANCIAL
INSTITUTIONS?

Well we can look at the data which tells us a nightmarish story about banking. You can look at many international organisations, including Swiss Banks, and ask, well what have they done for their shareholders. Basically since 1985, many banks have been large destroyers of shareholder value. Now you might ask why is that? Is it a sick industry or a declining industry, an industry who cannot become mean and lean, an industry that does not even know if they are making money or losing money? Banking is a very complex business and because it is very difficult sometimes to find out where you make money and where you lose money, good decision making is a very complex task in this environment.

Any contributions from business schools which could help us to find solutions in this complex environment, could contribute in a major way to our understanding of why we go wrong sometimes, and why shareholder value is destroyed in so many instances.

(IV)

IN YOUR EXPERIENCE, HOW DOES YOUR BANK GO ABOUT ENSURING
GOOD QUALITY DECISIONS?

First let me explain. The group executive board is a collegial system. We do not have a chief executive. We have a president of the executive board who is co-ordinating. The most important decisions are always taken by many people coming together from different backgrounds of experience. Therefore we get different views in from different experience, and in my opinion that allows better judgement than when you have only one

person, the CEO to decide on it. That is one thing. The other thing is that we give everybody a set of rules, be it with regard to credit policy, be it in regard to taking positions in securities, or foreign exchange. For all these things we have very clear rules which one have lengthily discussed and decided upon .

We also believe that in handling any risk, you have to have rules to keep proportions with regard to the borrowers, to the counterparty risk, but also rules with regard to yourself. You should never think because you are a triple A rated bank that you can do everything.

We have a rule here that in general no complex decision is taken by only one person. By obeying to this kind of system a lot of failures can be avoided.

(V)

IN A LARGE NUMBER OF CASES WHERE FINANCIAL FAILURES TOOK PLACE, IT IS CLEAR THAT SLOW DECAY OF THE QUALITY OF MANAGEMENT DECISIONS TOOK PLACE OVER TIME AND THAT IT WERE NOT ONE OR TWO BAD DECISIONS THAT CAUSED THE FAILURE BUT RATHER A STRING OF POOR QUALITY DECISIONS OVER TIME. WHAT IS YOUR VIEW ON SLOW DECAY OF MANAGEMENT DECISIONS?

One of the biggest safeguards is to have a periodic inflow of new people with new thinking on the board or executive team. New people coming in bring in a fresh input which critically analyses things from a new perspective. Also you have to look at who the people in this group are. Although they have a good personal relationship, they are very hard at facts, and don't mind to give their own opinion fiercely. They don't conform easily.

The main purpose should be to give your honest views openly, and not withholding them for fear of creating a negative atmosphere.

(V)

FORMAL EXECUTIVE BOARD MEETINGS, ARE THEY ALWAYS ABOUT THE MATTERS OF THE BANK AND PROBLEM SITUATIONS FACING THE BANK, OR ARE THEY SOMETIMES ABOUT THE TEAM ITSELF AND THE WAY IN WHICH THE TEAM FUNCTIONS AND MAKES DECISIONS? (IN DECISION THEORY WE CALL THIS INTROSPECTIVE ANALYSIS.)

Yes, we have very often, (may be too much but at least 2 - 3 times per year) we have lengthy sessions discussing only how we function, and how we make decisions. Is it appropriate? Is it good enough, should we change? How should it ideally be? This is rethinking of the way in which we do things - rethinking of how we make our decisions.

(V)

Our institution has grown enormously over the last 25 years. Last year we had to change the structure and create more decentralised regions and delegate more authority to the regions. But we did not allow our risk to increase by delegating authority. We maintained the four-eyed matrix principle. I am looking after the country risks all over the world. My colleague, the chief credit officer is looking at all the credit or counterparty risks. Therefore we have to discuss all common issues together. Very often one of us would like to do the business while the other would say the risk is not acceptable. Similarly you may have people who is responsible for the product "swaps" but they cannot do transactions without consulting the person responsible for credit risk. In this way you combine the responsibility for quality decision making between two people who act as controllers of each other.

I do not say that we do not sometimes make totally wrong decisions, but we try to put a system in place that would reduce the chances of this happening. By having a dialogue between at least two senior people who are responsible for the **different aspects of the same risk**, we can avoid some wrong decisions.

(V)

HOW DO YOU ENSURE QUALITY IN HIGH RISK FINANCIAL DECISIONS?

In the credit authority we have different levels of controls. The review of credit decisions takes place periodically and looks if there were **fundamental mistakes in the decision making**. We have a set of rules, the credit policy and these rules cover many aspects. There are rules for country exposure, rules for counter party exposure etc. The credit review is to see if the decisions were within the set guidelines.

(V)

ARE THERE ANY OTHER QUALITY CHECKS DONE ON DECISIONS EXCEPT TO COMPARE THEM WITH THE SET CREDIT POLICY?

Not in particular, but we believe the policy rules do keep decision makers within the risk parameters of the bank.

(V)

It is impossible in the complex world we are living in, to leave big decisions for one person alone to decide. It is just impossible for one person to know everything.

(V)

The cross-functional process of managing risks that you have described, is it only by persons involved in the same risk area, or do you get cross functional input from "independent" experts not working directly in that particular risk area?

You see, for example my colleague responsible for credit risk, even if he must make the final decision, the proposal have to be discussed with me from a country risk perspective before it can be approved.

When I am not here then it goes to one of the my colleagues who is in charge of investment banking or who is in charge of the treasury. So in this way it would then be evaluated by independent persons who have no gain out of it for their profit centre.

SO DOES THIS MEAN THAT THERE ARE DIFFERENT DECISIONS PATHWAYS AT DIFFERENT TIMES WHICH WOULD INCLUDE DIFFERENT PERSONS IN THE DECISION CHAIN FOR SIMILAR TYPE DECISIONS?

Yes, it is not always the same "team" who evaluates and approves a certain decision.

(V)

(COMMENT:

Normal decision procedure: Routine evaluation by credit risk manager and country risk manager. Only if one of the team members is not available, the proposal is evaluated by an independent expert like the investment banking chief or the chief treasurer.)

IS THERE ANY DIFFERENCE IN THE WAY IN WHICH TOP MANAGEMENT MAKES ROUTINE DAY TO DAY FINANCIAL DECISIONS AS APPOSED TO HANDLING NON-ROUTINE OR ONCE-OFF COMPLEX DECISIONS?

There is no set rules on this, but I would expect that all non-routine decisions of a significant nature have to be approved by the executive board.

(V)

THROUGH WHAT KIND OF PROCESS WOULD THE EXECUTIVE BOARD GO TO MAKE A COMPLEX BUSINESS DECISION?

First of all, if it is a very complex matter it would be important for the specialists to prepare documents or proposals on the matter. This needs to be distributed well in advance to everybody so that they have time to study it carefully. If the time allocation is not enough you should not expect good decisions. Though, I think, if it is a very complicated matter, each individual should have the opportunity to ask other experts their opinion. In this way all the colleagues together can come up with a well prepared decision. This enables the board to know the important information about the matter, (or at least we think we know,) so that we can discuss it in depth and with competence.

(V)

LOOKING AT THE SPECTRUM OF WHAT IS HAPPENING TO FINANCIAL INSTITUTIONS TODAY, WHAT DO YOU THINK THOSE ONES THAT ARE SUCCESSFUL ARE DOING CORRECT, AND WHAT DO YOU THINK THOSE WHO ARE IN TROUBLE ARE DOING WRONG IN TERMS OF THEIR DECISION MAKING. WHERE DOES THE DIFFERENCE LIE IN TERMS OF THEIR DECISION QUALITY?

Well, first of all, one should keep in mind only very logical principles. If your head are not quite sure, then you should rather say no.

Secondly you should never ever do business just for prestige, never.

You must always ensure that it is within the scope of your business risk guidelines. If you want to make exceptions, it is a unique case and it must be discussed within the board.

I have the impression that sometimes things go wrong because people look too much at the competition and say they do this and we should also do it, but better. You should rather ask: "Are we in the same position, can we afford to do this?" Today the competition in banking gets very tough, and some institutions are not so well placed, and then they seek to do business that they have not done before and which they do not have the experience for.

To mention one good example, (it is now a few years back), a certain German Bank was a very good institution, but it was domestically oriented. They had no experience in international business, but they were rich and strong and it was fashionable also to do international business.

So they went into international business, forcefully, but with lacking the expertise to manage the risks involved, and they lost hundreds of millions and even billions. I think the lesson is that **you can make good decisions only on things you know**. If I am confronted with a transaction that I don't have the knowledge for, lets say a decision on complicated financing comes to my table, for which the Bank does not have the necessary experience, I **must be responsible enough to admit this and to say no** and to find the right person that does know. I must be sure that we have at least two or three guys on whom we can rely and who really knows this business. Because we are a locked in country, for example, we must admit that we do not have the best experience in ship financing, so we don't do it on large scale because our risks would be more than for those who really know this business.

Or, if I think about the financing of aircraft, we have to ask, in this specialised kind of financing, do we know enough to do it, and if we feel we don't have enough experience, we must be fully aware of the risks involved before we try to do it.

<p>You should never do something where you lack the experience and knowledge to judge the risks involved. Knowledge alone is often not enough.</p>
--

(V)

WHAT IN YOUR OPINION ARE THE EFFECTS OF MARKET PRESSURE AND COMPETITION ON THE QUALITY OF DECISIONS?

You must realise that you will always be under pressure from the market. But you have to be **strong enough to say no**. Because to say yes, we compete in that segment and on that terms, is much easier than to say no. And like my

colleagues on the board know, I am not afraid to say no, even if sometimes people think I am not courageous enough. But I believe you have to know when to do this. You also don't have to follow every gimmick which is started in the market. The other thing which makes a big difference is when you are forced to become short term oriented and are measured on performance from quarter to quarter like the American banks. We do not have to publish our results quarterly. We do it yearly. This allows you better judgement on complex decisions, than when you are under constant pressure of results for every quarter.

(V)

THE "ABILITY TO SAY NO", WHICH YOU SAY IS IMPORTANT FOR GOOD QUALITY RISK DECISIONS, IS IT SOMETHING THAT IS CULTIVATED BY FINANCIAL INSTITUTIONS? IN GENERAL, THE SYSTEM BY WHICH MANAGERS ARE PROMOTED, DOES IT ACTIVELY PROMOTE PEOPLE WHO HAVE THE ABILITY TO SAY NO?

An example I can give is the following. It was when I were put in charge of all our branches abroad, and when we started in New York. I will never forget this meeting, it was on a Sunday, with the older management of the New York branch.

Then they said well, corporate business, we have to do more to be successful and this and this etc.. But, I said, you have to go slowly and carefully.

Then one of the very good credit officers asked. "How do you measure my performance if I don't produce substantially more. I said to him, I will measure your performance not only on what you bring in but also on how

much we have to write off. So I told him very clearly, don't just think of volume, think of quality. Because we are not in this for one day only. We are business in to stay, we are now more than 130 years old, and we want to stay at least another 130 years. So this is the case where you have to give guidance to your colleagues who report to you, that they should not try to do everything. They may miss some opportunities with this approach, but as they say

"It is better to regret a business not done, than to regret a ~~wrong~~ business done".

This decision rule is very valuable if you want to stay in business for another 130 years like us.

(V)

IF WE LOOK FROM TODAY INTO THE FUTURE, IS THERE ANYTHING WHICH YOU BELIEVE WE SHOULD DO DIFFERENTLY TO IMPROVE THE QUALITY OF OUR DECISION MAKING?

These days financial transactions are much more complicated. And if you think of derivatives, you must be absolutely sure that you have the right controls in place. You can delegate authority but you have to control derivatives very very carefully. Bad decisions on derivatives can be very serious.

One of the things which banks did wrong in the past years is that the banks did the recycling of the petrodollars. They were praised for doing it, and they granted to a large extent, balance of payments finance. I think both these activities were ~~overdone~~, and were not the business of a normal commercial bank.

Balance of payments finance is a matter for governments and not for commercial banks. Being able to say no to the risk of recycling petrodollars dollars and balance of payments finance, could have helped dramatically. We should have put more burden on those with the petrodollars and they should have shared the risk.

(V)

ANY MORE GUIDELINES FROM YOUR EXPERIENCE AS TO HOW WE CAN IMPROVE RISK DECISION MAKING? ✓

One thing I would stress in the management of risk is to have a very good understanding with the people who report to you. If something goes wrong, they must tell you and not try to cover it. You can only achieve this if there is a trust between a manager and his senior. This is extremely important to avoid any cover-up. So you have to accept that mistakes can happen, and you should not cut their heads because of a mistake done. The only ones who does not make mistakes are those who does nothing!

(V)

WHAT ARE THE IMPORTANT DETERMINANTS OF QUALITY DECISION MAKING IN YOUR OPINION?

Normally social and personal elements are more important than the technical or number crunching aspects of the decision process. Good quality managers are not easy to find. It goes without saying that you need good quality management material if you ever want good quality decisions. Then only can you start working on the process of making good decisions.

(VI)

The question of ~~who~~ draws up the proposal is often more important than the technical elements in the proposal itself. Also important is ~~who~~ carries the responsibility and what rewards and potential "punishment" are involved.

(VI)

HOW DO YOU ENSURE OPTIMAL DECISION MAKING SEEN AGAINST THE BACKGROUND OF THE NEEDS FOR PROFIT MAXIMIZING AND SELF PRESERVATION?

Normally it is in one's own interest to make good decisions, or good recommendations. This does not mean that you should not take any risks. If the risk reward ratio is OK, I don't mind if managers take risks. However, for the individual the ultimate goal is self preservation and not the profit of the firm. To align these two issues will not be the same in all business areas. It is essential to recognise the fact that you cannot allow the same risky attitude in all sectors of your business. What might be an acceptable risk attitude in one area of your business might cause disaster in another.

(VI)

LOOKING AT FINANCIAL INSTITUTIONS THAT RUN INTO TROUBLE, IT IS CLEAR THAT IT IS NOT ONE OR TWO MAJOR WRONG DECISIONS THAT CAUSE THE DOWNFALL, BUT A STREAM OF LOW QUALITY OR DECREASING QUALITY DECISIONS. IN YOUR OPINION, WHAT ARE THE CAUSES FOR THIS SLOW DECAY IN DECISION QUALITY?

Personally I believe that the notion that a good manager in one area can be a good manager anywhere, is not always right. You should also have ~~ex~~perience in that

business area. You should understand the business cycles of the area in which you are active. Frequently good managers become overconfident in a new area of responsibility while all is going well, only to be caught off balance when the business cycle changes. This sends them into a downward spiral for which they were not prepared and which they had no experience or no background to handle.

(VI)

Ten years ago it was held that a manager is a manager and regardless if he is in the steel business or in retailing, he will perform well. If he is good at delegating, controlling and managing people he will be good in a new environment too. I don't believe that. If you don't understand the insurance cycle of the aviation business, you cannot succeed in the underwriting of aviation risks. The banking industry is very complex, that is why experience is so valuable.

(VI)

IN YOUR OPINION ARE ESCALATION ERRORS A SIGNIFICANT FACTOR IN MANAGEMENT DECISIONS?

It is important that if your manager has taken a position in securities for instance, and realises it is seriously wrong, that he should be able to go to his superior and tell him, listen I have a position which is no good. They should be able to openly discuss this risk position and manage it in the best possible way.

But very often it happens that people are afraid to tell and the situation then gets worse. We have seen many of these cases where mistakes were hidden for too long a time. The Bank for Economic Affairs of Russia had a dealer who did a lot of deals and kept the telexes in his cupboard. It was not until very late before his escalation of errors and trying to correct them and creating even more errors were discovered.

The final cost of this trader's escalation errors was between \$FR 60 mill and \$FR 100 million.

Similar magnitude mistakes were also seen in Germany. So it does happen that you do make mistakes, that you loose money, but it should never be allowed to escalate.

(V)

IN YOUR OPINION, HOW CAN DECISION ERRORS BEYOND THOSE CAUSED BY INCOMPLETE OR WRONG INFORMATION BE PREVENTED?

Sometimes on important international financing decisions, it may be difficult to assess the credit risk for instance. If there are different assessments of the possible situation provided by your staff, it is really a management decision to decide if they want to do the financing or not. Top management should never allow that bad judgement complicates a situation where information is not good.

(IV)

HOW DOES THE RISK MANAGEMENT PROCESS IN YOUR ORGANISATION ENSURE GOOD QUALITY DECISIONS?

Well, if the quality has been good, you will see it in the results. It is very difficult to say while you are taking decision if it is a good one or not. Sometimes you feel very comfortable, but in many cases you know that you are taking a risk. Running a financial institution means taking risk.

We have to deal with the decision making process in a way that we feel comfortable with the risk we take. When the real situation is not taken into account for whatever reason someone will usually not feel comfortable about the decision. You should never overlook or ignore it when one of the team is uncomfortable.

This might be your only indication that the quality of the proposed decision is not good.

(VI)

HOW DO YOU EVALUATE THE QUALITY OF A DECISION?

Faced with a complex problem, you have to ensure that you reach a level of comfort with the proposed decision. The decision process starts when you ask for a very detailed examination of all factors concerned. It is your duty to ensure that the information which you get is factual and objective. But it is useless if you have only the details and you do not "have a feeling" for the situation. You can measure a room with sophisticated instruments up to a thousandth of a millimetre. This will not prevent you from hitting your head against the wall if you walk with your eyes closed and you do not "have a feeling for the dimensions of the room".

This is the reason why once all the technical elements have been established, the management team have to interpret the dimensions of the complexity of the situation.

You come into a number of areas where things simply can't be measured any more like changes in the market or how international competition will develop. This is where the experience and the intellectual quality of the team members determine how the problem is viewed. Each one will look at the problem from his own angle and the way in which these opinions are converged will determine the quality of the decision.

(VII)

Once the decision process departs from the field of measurable things it requires a special knowledge and experience to interpret the situation. One person cannot know all this. So you have to put together in your team the different kinds of knowledge and experience to ensure that you look at any problem from different angles. That is the only way a decision in a complex situation can be taken.

(VII)

IF WE COMPARE DIFFERENT FINANCIAL INSTITUTIONS, IT CAN BE ACCEPTED THAT THEY ARE ALL MANAGED BY GOOD QUALITY PEOPLE. A PERSON WILL NOT BE PROMOTED THROUGH ALL THE DIFFERENT LEVELS OF MANAGEMENT UNLESS HE IS A GOOD QUALITY THINKER. HOW DOES IT THEN HAPPEN THAT CERTAIN FINANCIAL INSTITUTIONS MANAGE TO OVERCOME COMPLEX SITUATIONS, AND OTHERS FALL VICTIM TO THE SAME SITUATIONS? WHAT DETERMINES THE DIFFERENCE IN QUALITY OF THEIR DECISIONS?

In the end any complex decision becomes subjective. You can remain objective during the initial analysis, but in the end the team must make a subjective judgement. You have to do this out of your experience, your view of the situation and also out of your attitude towards risk taking.

You will find top management teams who are non-aggressive, and others who are aggressive and who will take more risk.

When aggressive conduct or maybe greed (and not so much ignorance or inability) are stronger than need to control risk exposure, then the judgement of a team might not be such as to make good quality decisions.

You must always ask what would happen if the risk would materialise. You can never ignore the situation that you might have to live with the unexpected results of a decision. Some risks do materialise and you loose everything that you had put at stake. Decisions that could involve a large portion of your free reserves holds substantial risk. It is here where the risk attitude of the different companies determine their long term success.

(VII)

WHAT YOU HAVE DESCRIBED ABOVE CORRELATES WITH THE DECISION THEORY ON POSITIVE AND NEGATIVE FRAMING WHERE DECISION MAKERS SHOULD NOT ONLY LOOK AT THE POTENTIAL PROFITS IN A POSITIVE FRAME, BUT ALSO LOOK AT THE POTENTIAL CONSEQUENCES IN A NEGATIVE FRAME. IN YOUR EXPERIENCE, DO DIFFERENT MANAGEMENT TEAMS ALWAYS USE POSITIVE AND NEGATIVE FRAMING TECHNIQUES FOR DECISION MAKING?

There are two problems. Sometimes they only focus on the positive side and the potential profits and seem to ignore the negative side. The bigger problem is that they look at the problems from both angles, but they underestimate the chances that the negative will materialise.

We are programmed to take risks and make profits, we are not programmed to avoid losses. I think successful companies have learnt better how not to be seduced by potential profits into taking bigger risks than they ought to.

(II)

You should always look at the worst case scenario. What would happen if this does go wrong? The problem is that people often misjudge the worst case scenario in a complex situation because they do not look at all possibilities of sequential mishaps or a combination of misjudgements.

(IV)

IN YOUR OPINION, WHAT ROLE DOES THE COMPOSITION AND THE STRUCTURE OF THE BOARD AND VOTING POWER OF MEMBERS/GROUPS PLAY IN THE QUALITY OF DECISION MAKING AT BOARD LEVEL?

In our case the board members are elected by the annual general assembly. The board members represent all important members of the Swiss economy, politics and main regions. They are a twenty person group and meets every ± six weeks. The committee of the board meets every three weeks. This board then elects the executive board.

The above structure prevents any situation where a certain group can exercise too much power. We have the "one-man one-vote system".

This means that even if you buy 10 000 shares you will have only 1 vote and not 10 000 votes. In other companies 10 000 shares will give 10 000 votes.

(VI)

HOW DOES THE ABOVE AFFECT DECISION MAKING?

There is certainly a big effect on decision making. You are free in your decision making, you do not have to take special note of any large group, you are free in your decisions. The negative side is that you do not have a strong control.

(VI)

HOW DOES THE BOARD PREVENT BIAS IN DECISION MAKING?

When we take a decision where one of us is also a member of the board of the other company that takes a loan with our bank, he will not vote on that decision. Personal interests that can lead to bias is always taken out of decisions.

(VI)

WHERE DO YOU THINK THE ATTENTION OF FINANCIAL INSTITUTIONS SHOULD BE FOCUSED IN FUTURE TO IMPROVE THE QUALITY OF OUR RISK MANAGEMENT CAPABILITIES?

Obviously, financial derivatives is one area where risk management skills must be improved.

People try to re-allocate risk with many kinds of new financial instruments. This does not mean that the need for quality decisions can be reallocated. Now, more than ever before, do we have to control the quality of decisions and the process whereby risks are handled by the company itself.

(IX)

CAN YOU DETECT ANY CHANGE IN THE DECISION PROCESS AFTER A
DECISION PROCESS AUDIT OR A GROUP SESSION WHERE
INTROSPECTIVE ANALYSIS WAS DONE ON THE GROUP'S DECISION
MAKING?

The decision process is updated constantly. We use each occasion to see if we still make decisions in the right way. This is the only way you can survive in the modern world. We can come to conclusions on how to make decisions on something, and after a time may detect that this has not been the right way to make decisions, or it was an incomplete decision process, then we change it immediately.

We normally reserve 3 to 4 days during the year to meet separately outside the bank to discuss decision process issues.

These decision analysis meetings have no fixed agenda. We do not always know beforehand what we will discuss at that time. But sometimes during a meeting we come across a decision point where we would detect a critical decision issue that we will have to study much more thoroughly, and we will then revisit it during the next decision analysis workshop.

(VII)

WHAT DO YOU BELIEVE ARE THE EFFECTS OF THE PHYSIOLOGICAL
SUNK COST INVOLVED IN CHANGING THE WAY YOU HAVE MADE
DECISIONS PREVIOUSLY?

A good manager should never be married to his decisions. When he makes them he should be sure that he takes the right one. But afterwards he should be honest enough to acknowledge that the decision needs to be changed if necessary.

(VII)

WILL THE BOARD OF DIRECTORS EVER VERIFY THE DECISION PROCESS THAT THE TOP MANAGEMENT USED TO COME TO A SPECIFIC DECISION OR DO THEY JUST DEBATE THE RECOMMENDATIONS AS PUT FORWARD BY MANAGEMENT AND DECIDE ON THAT?

Our board directors will ask from time to time how our decision process works. They will approve certain decision or authorization levels, but they will almost never investigate or analyse how a specific decision evolved from the management decision process. In our case very few credit decisions will ever be taken by the board of directors.

Only for very high amounts will board approval be obtained. A safeguard is that the chairman of the board is also a member of the credit committee and in this way, there is a free flow of information about the decisions and decision process of the credit committee, to the board of directors. The credit committee and its decision process is totally open to the board.

(VI)

HOW DOES YOUR ORGANISATION ENSURE A GOOD QUALITY DECISION PROCESS?

Each decision, irrespective if taken by a committee or an individual, will always go one level up for information purposes.

When we have decided on these complex cases, this information will go to the next level and we can be questioned by any of them on our decisions.

Likewise we will look at a paper about all the decisions taken in the last week by one single member of the executive board in the international field. We can have a look at it and ask him questions on how he came to that or that conclusion.

We do the same thing. We will give the board of directors information on all decisions that the executive team has taken. They can question any of this but they normally also have a summary of the information that the executive team has used to make their decisions.

The control of decision quality is dependent on the fact that once decision authority has been delegated one level downwards, there must still be a flow of information about decisions up to the level where from it was delegated.

When you delegate any decision making power, you have to know all the time how they are being used. A summary of decisions at the end of every week serves this purpose whereby you have insight in what was decided. If you are uneasy, you must find out how it was decided, and why.

(VII)

DO DECISION MAKERS IN YOUR EXPERIENCE EVER DETACH THEMSELVES FROM THE CURRENT PROCESS AND CRITICALLY EXAMINE THE WAY IN WHICH THEY THEMSELVES MAKE DECISIONS?

At senior management level, we have workshops to find out if we ourselves are still doing things the right way. Even the full board of directors will at least once or twice per year do an internal analysis of how they function. The executive board will do this quarterly.

These discussions might very well lead to a change in the composition of the board or even to a change in the structure of management. You have to keep on asking if you are still doing things in the right way. This includes the process in the executive board as well.

We have to ask if the controls in our financial decisions are still enough. With all the new financial instruments this is essential. If we talk about investments we might ask if we should open an office in Singapore. Then it is not good enough to find which is the most appropriate person in you organisation to do the job. You have to ask yourself if you have the right expertise for that environment at all. Sometimes you must not be too proud to accept that you need guidance from outside experts or university professors.

Even during normal meetings where we might realise that our thinking on a complex problem must be complete, we will ask a university professor to attend that meeting. His value is to give another perspective and to advise if and where he thinks we should look at other aspects as well.

When decisions are complex you must extract all possible knowledge about the problem from different sources. We often ask international consulting firms to do additional studies apart from our own assessment of the situation. Experienced university professors also contribute to the pool of available knowledge on the subject. The lesson is to look from both inside and from outside the bank at the problem when the decision is complex.

Companies that does not go through a frequent process of analysing their own ways of making decisions, can become very rigid in their thinking. This eventually leads to stagnation or wrong choices.

HOW IMPORTANT DOES THE BOARD OF TOP MANAGEMENT REGARD THIS QUARTERLY INTERNAL ANALYSIS MEETINGS? IS IT JUST ANOTHER ONE OF MANY OTHER IMPORTANT MEETINGS, OR HOW HIGH IS IT ON THE PRIORITY LIST?

In our case, the most important new directions that we have taken, came from these internal analysis meetings and not from the normal board meetings!

When we have these board meetings we will review our overall policy of how we do things. We might spend two days on that matter.

We take a critical look at ourselves. We have to review if we do everything right, not in Tokyo or in London, but in our own boardroom!

HOW DOES THE BANK PREVENT ESCALATION ERRORS IN DECISION MAKING?

How does the bank decide when and when not to pour more money into a loss scenario to try and make it work? This is very important. The Bank regularly faces situations where loans turns sour. It is very difficult if not impossible for the branch who made the decision to assess such a situation objectively.

Normal practise is to allow the same office to follow a loan and revise it as long as it is good. If it turns to worse and a potential loss situation develops the continuation decision is taken to a different group.

This different group "has no special love" with this particular loan, because it has not taken part in the original loan decision. This is the only way to prevent escalation errors.

(VII)

HOW CAN THE EXECUTIVE BOARD THEN CONTROL THEIR OWN POTENTIAL ESCALATION ERRORS?

This is very difficult. The executive board and even the full board might be in a similar position as the original loan office. I do not know how they can prevent similar escalation errors except by perhaps having more experience with similar circumstances. I believe escalation remains a potential risk. Each one of us has to live with our previous decisions and this will have the effect that we are subjective about what we have decided.

(VII)

DOES THIS MEAN THAT ESCALATION ERRORS ARE LESS LIKELY AT LOWER LEVEL IN THE BANK THAN AT GENERAL MANAGEMENT OR BOARD LEVEL?.

The practise of taking a loan or credit arrangement away from one office to another is only below the level of general management. Once we take a decision to the general management level, we must decide ourselves and live by it. In theory, escalation here can happen.

(VII)

WILL THE BOARD OF DIRECTORS EVER PLAY THE ROLE OF INDEPENDENT EXPERT ARBITRATOR FOR AN EXECUTIVE BOARD DECISION WHERE AN ESCALATION ERROR MIGHT BE POSSIBLE?

No, the final responsibility for this remains with the executive board.

(VII)

WHAT ARE YOUR VIEWS ON CONDUCTING DECISION AUDITS IN FINANCIAL INSTITUTIONS?

We do financial audits every day. We are all used to auditing of results over different terms. An audit of the decisions that lead to the results is not easy. It is time consuming and people might feel threatened about the exposure. To learn from your own mistakes is painful. If it is done with the aim to learn and benefit and not to allocate blame then it improves the way we think.

(VIII)

WHAT IN YOUR OPINION IS THE DETERMINANTS OF QUALITY IN HANDLING COMPLEX DECISION SITUATIONS?

One must recognise the fact that there are many variables and many uncertainties. There are also many decision makers involved during the discussion. The number of possible iterations are endless and only by a process of elimination can you reduce the number of available alternatives. You must ensure that you do not loose the best alternative along the way of elimination. Your duty is to find and support the alternative with the best overall expected benefits. When the complexity of the problem brings forward difficult choices, the responsibility of the team is to allocate time and energy not only in relation to the importance of the matter, but also in relation to the risk involved.

(VIII)

IN YOUR EXPERIENCE, ARE THERE ANY FACTORS THAT CAUSES A BIAS IN THE JUDGEMENT OF EXPERIENCED EXECUTIVES?

We are all biased by our own knowledge and our own background.

We believe the way we see things is valid and accurate. In a team of decision makers you also learn the biases of other people towards certain things. If you truly want a decision that reflects the real situation of a problem, personal bias should always be secondary to objectivity. If the chairman believes the decision is more biased than objective, he should force more discussion and interaction. A biased chairman would aggravate this risk.

(VIII)

WHAT ARE THE CAUSES OF MANAGEMENT FAILURES IN YOUR OPINION?

Everybody that knows his business well, and who understands his industry can see where the big risks are. We all know them well enough and the successful institutions would not be here if they did not know how to protect themselves against these potential risks. When you see a successful institution run into problems it usually comes as a result of something that everybody believed would not happen, or something that they knew could happen, but ignored to serve another purpose.

If we want to improve our management ability we should try to focus on those risks where people are quick to assume it would not happen. It is strange that intelligent managers can sometimes disregard certain risks totally because they want to achieve something else. I think we have all seen enough cases where the "totally unimaginable" or the "this will never happen syndrome" were precisely the cause of the downfall.

(VIII)

IN DECISION THEORY THE CONCEPT OF "THRESHOLD OF EFFECTIVE ZEROHOOD" ARGUES THAT THE HUMAN MIND TREATS PROBABILITIES WHICH FALL BELOW A CERTAIN LEVEL AS IF THEY WERE ZERO. HOW DOES THIS FIT IN WITH YOUR EXPERIENCE?

I think this is true even in sophisticated financial environments. The problem is how to convince management to spend money on something which in all probability is very unlikely to happen. Resources are allocated "rationally" where the high probabilities are. To allocate resources to protect against low probability risks is not "logical". As long as rational decisions follows this logic it will be the low risk or perceived zero risk events that surprise us. If your institution can survive a potential low probability event it is OK. If you cannot survive such an event, even if the probability is very low, you have to allocate resources to protect the institution. I do not think this is always true in many boardrooms and the theory which you referred to warrants closer attention in my opinion.

(VIII)

In these cases it is your duty not to trust blindly, but to ask what evidence exists that this proposal might not work. You have to insist that the negative elements (or what you call disconfirming evidence) be collected analysed and interpreted. I am not easy when I see any proposal that do not have the potential shortcomings or risks clearly spelt out.

I am sure it would not be wrong to say that many mishaps can be prevented if people would analyse the potential downside more careful before making a big decision.

(VIII)

WHAT ARE YOUR EXPERIENCE ABOUT THE RISK OF EXCLUDING ANY SEARCH FOR DISCONFIRMING EVIDENCE IN A PROPOSED DECISION OR WHAT WE CALL IN MANAGEMENT THEORY "THE CONFIRMATION TRAP"?

You have to rely on people all the time. You have to trust their judgement and their way of summarising the information that they bring to you. However, as you experience more and more business situations, you realise that the younger managers will more easily add up the positives and filter out the negatives than what older and more experienced managers will do.

(VIII)

WHAT ROLE DOES RULES OF THUMB PLAY IN COMPLEX DECISIONS?

In most management teams there are embedded ways of doing things. Ways to find solutions that have worked well in the past, slowly gain acceptance as rules that have made

the team successful. It is not wrong to live by certain "team rules". The problem is to detect when they are no longer applicable. What you call a rule of thumb can be very beneficial and time saving, but it can also be the cause of serious oversight. I believe management or the board should always scrutinize the logic and validity of any decision by historical rule of thumb.

(VIII)

WHAT ARE YOUR VIEWS ON CONDUCTING DECISION AUDITS IN AN INSTITUTION?

It is difficult to quantify the value of a decision audit in terms of money saved or potential losses prevented or additional profits made.

The real value lies in the exercise of re-visiting the previous decision logic of the management team and analysing this as a way to improve discussion the next time around. From this perspective I believe it is a valuable tool.

(VIII)

WHAT ARE YOUR VIEWS ON CONDUCTING DECISION AUDITS IN FINANCIAL INSTITUTIONS?

Executives in high profile positions don't like the idea of being monitored on the way in which they made their previous decisions. Bad results are quickly forgotten and replaced by new good prospects or other issues. I think if academics can convince them that there are advantages

in learning from previous decisions we might see a drastic change in methods of approval. Olympic athletes study videos of their previous performances and fine-tune on it. Financial decision makers should be able to benefit from a similar process. It will take a good chairman to manage the sensitivities of any decision audit system.

(IX)

WHAT IS YOUR EXPERIENCE REGARDING THE EFFECTS OF FRAMING ON DECISION OUTCOMES?

Someone has said that you can lift up the earth if you have a long enough lever system. I suppose that you can say it also holds for the way in which you describe the background of a particular problem situation. If you can manage to include enough positive elements in your frame of reference you should theoretically be able to swing any decision.

(VIII)

IN YOUR OPINION, HOW CAN DECISION ERRORS BEYOND THOSE CAUSED BY INCOMPLETE OR WRONG INFORMATION BE PREVENTED?

Managers accept with difficulty that no alibi exists for a decision that have gone wrong. Usually it is attributed to the incorrectness of information or unforeseen factors or other external circumstances. To accept something as a "mistake by the team" is risky from a personal viewpoint. It will help if ways can be found to overcome this.

(VIII)

IN YOUR OPINION HOW CAN FINANCIAL FAILURES IN LARGE INSTITUTIONS BE LIMITED OR PREVENTED?

Ensuring growth in a financial institution, requires a focus on how to make profits. This depends on taking calculated risks, and choosing between financing different projects with different ROI's.

Reports always go into great detail about the expected returns and different scenario's for higher or lower return. The focus is always a positive cash flow of smaller or bigger magnitude. I think if more attention is given to analyse the potentially wrong assumptions or potential areas where things might go wrong, we might prevent many problems.

(X)

WOULD THIS MEAN THAT FAULT TREE ANALYSIS COULD HELP FINANCIAL INSTITUTIONS IN THE SAME WAY IN WHICH IT HELPS ENGINEERS?

In any complex situation more than one thing can go wrong in sequence or in combination. Banks face many complex problems of how the market will change or how interest rates will move and what the exchange rate might be next year etc.

I think we spend a lot of time on how to make money amongst all this, and not so much ask what can go wrong in all this. As I understand fault tree analysis will require a lot of time to quantify all the variables, but such a system could in all probability prevent some of the financial problems that companies run into.

(IX)

13. OTHER CONCEPTS THAT CAME FORWARD DURING THE EXPLORATIVE RESEARCH AS POTENTIAL CONTRIBUTORS TO IMPROVE QUALITY OF THE RISK MANAGEMENT DECISION PROCESS IN FINANCIAL INSTITUTIONS:

- RISK TOLERANCE ASSESSMENT

Classifying people in two categories, risk tolerant vs. risk averse, is not sufficient. It oversimplifies real life decision making because some decision makers will handle a similar risk situation better than others.

- The impact of a manager's risk tolerance on his new position after promotion must be evaluated.
- A risk tolerant investment manager that is used to risky investment tactics within the boundaries of the investment policy set by his superior, might have a dramatic impact on investment policy decisions when he is promoted and requested to draw up the future investment policy himself.

It is common knowledge that more than 80 to 90% of investment performance can be attributed to the investment policy decision and the rest to tactical allocations within the policy guidelines. Setting the overall policy in a way that safeguards the interests of the company versus making tactical optimum yield investment decisions within the boundaries of the policy, requires totally different risk tolerance behaviour from the respective managers.

(X)

- CORPORATE GOVERNANCE REGULATION

Walter Salmon, Harvard professor, has laid the groundwork for some pragmatic changes in boardroom practises to improve decision making. Due to the decline in the overall competitive position of the USA, the never ending search for scapegoats has lead to corporate boards and their structures as the potential causes. The appointment of more independent outside directors and the enhancement of their role is main thrusts of this movement to improve the quality of board decisions.

(Harvard Business Review, January, February 1993 : 76)

- DECISION MAKING HORIZON

The time frame in which a decision maker operates, has a direct effect on the quality and type of decisions which he makes.

Michael Porter argued in his HBR Article "Capital Disadvantage" (Sept. - Oct. 1992) that US managers are not more competitive internationally because their decision making is forced into short terminism by the quarterly demands of capital markets. He favoured a "long term" decision time frame like those applied in Japan and Germany to improve the system.

- THE SURVIVAL QUESTION

Management should never forget to ask the survival question. It is not only important to know how much you will gain if things work out as planned, but also what will happen if it doesn't.

You must always ask yourself: Can I live with this risk if by remote chance it should materialise?

The Business of Banks is taking risk. We look at risk-return relationships and to make money we have to take risks. If a single large risk or multiple small risks can harm you, you should never take them on unless you are also prepared to live with them.

(IX)

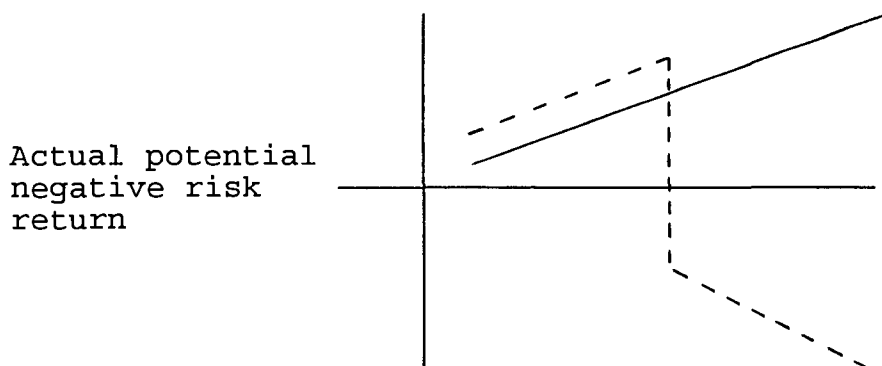
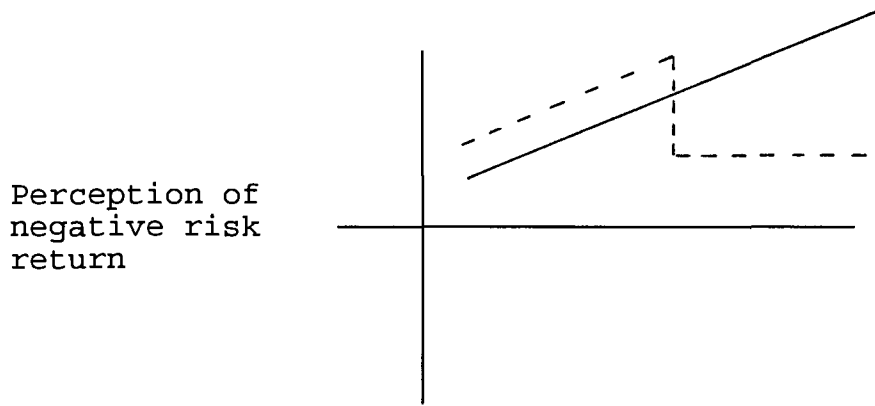
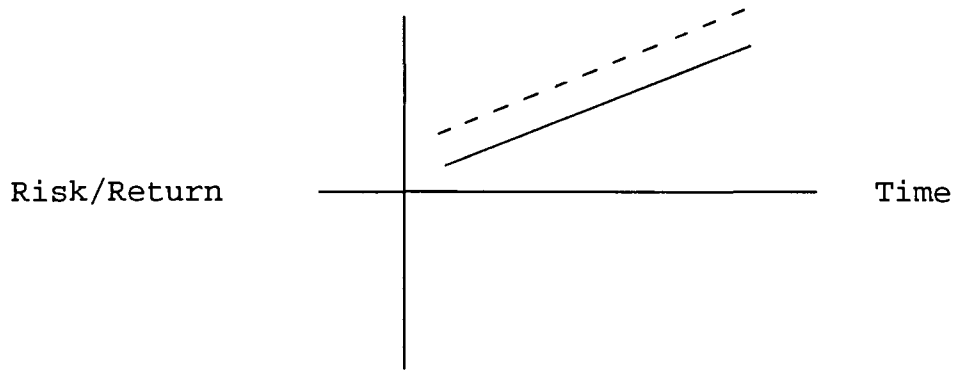
- INCORRECT PERCEPTION OF THE RISK-RETURN RELATIONSHIP

We all believe in a risk return relationship. Bigger risks normally means higher returns. We should never loose sight of the fact that risk-return is not a linear relationship.

Psychologically, management decisions are often based on the perception that risk/return is linear. This is not so. There is a cut-off value in the risk return relationship and beyond a certain threshold it gives **disasterous negative returns**. **Many people have fallen victim to this**. As people become more successful by taking bigger and bigger risks, they either **forget** that a cut-off point exists, or they ignore it completely. (See diagram 3)

(X)

DIAGRAM 3 : RISK RETURN RELATIONSHIP



- FAILURE TO MANAGE THE FEAR-GREED PENDULUM IN
SPECULATIVE MARKETS

Tough market competition and incentive systems geared to outsmart competitors are the driving forces that seduce dealers into taking bigger risks than what is healthy.

Exactly where management defines the border between taking a calculated risk and pure greed, is essential to prevent eventual self destruction.

Greed rewarded by massive profits makes even the best talent believe they are beyond reproach. Overconfidence is instilled in this way and when this leads to a big error (in a financial world where there is no room for failure) the greed pendulum changes to fear. The only alternative that remains is to keep the error a secret, hide the losses and try to deal out of the situation. Decision making then becomes almost ignorant of the risks involved and further collapse is inevitable.

Unless top management and the board build controls into each phase of the decision process, it is almost impossible to prevent greed-fear-cycle-errors. Transparent investment decisions and immediate reporting of any substantial loss situation is essential. As long as decisions were within the policy guidelines, no fear of reprisal from top management should exist.

- FOOTBALL PHENOMENON DECISION MAKING

This is the scenario where a management team or board of directors are involved in lengthy discussions for hours. Then five minutes before the chairman have to catch his plane, "all hell breaks loose and grand conclusions are reached that bear little resemblance to the discussions of the preceding three hours. Carl Di Pietro, a consultant in electronic enhanced meetings, describes this football phenomenon as the blow-out solution to complex and difficult decision situations. The obvious question is what the quality and reliability of these quick-fix decisions are. When nobody questions the decision "because the chairman has to catch his plane" one should never expect good quality decisions.

- THE POWER OF THE IDEA

All experienced decision makers know that it is not only the idea or statement or question that influences the decision process, but also ~~who~~ said it. The power therefore lies not only in the ~~contents~~ but also in ~~who~~ said it. In Boardrooms across the world this is reality.

A concept which is changing all the above is electronic brainstorming. The anonymity of such a system deletes the ~~who~~ from the equation and ideas can be seen "naked" for what they are worth inherently.

Alice La Plonte describes the tremendous power of electronic meeting systems to "disarm the meeting bully". Someone who might not be as respected because of lower status, gets an equal voice with electronic meeting systems.

The future impact of this on the way in which the human mind was up till now used to make decisions (by integrating all factors of raw data, deductions, politics, powerplay etc.) has not been fully grasped by decision makers in the financial world.

Once an idea has been stripped of it's halo of **who said it**, it stands as a naked truth to be tested and evaluated on its own.

The real value of electronic decision making in a board room environment might not be to make a final choice - here power and politics will always play a role. The real value will therefore be in generating potential alternatives, eliminating the sub-optimal ones and identifying the final two or three that needs thorough debate and person-to-person boardroom discussion.

- SUPPORT-THE-BOSS PHENOMENON

Often people don't argue for what they believe in, because politics dictate that they agree with what their superiors believe in. The saying that "it is better to be wrong with your boss than to be right and your boss is wrong", is certainly a reason for bias in decisions.

(IX)

- PRESENTATION OF RISK INFORMATION

As early as 1972 Slovic and Lichtenstein illustrated how concrete thinking takes place through a process whereby decision makers use only the information that is explicitly displayed in the formulation of the problem. Information that has to be inferred from the display or created by mental transformation tends to be ignored.

The tendency for considerations that are out of sight to be out of mind, imposes a serious burden on those who are entrusted with the presentation of risk information. (Bell, Raiffa & Tversky, 1988 : 153)

-----o0o-----

14. DECISION PROCESS ANALYSIS OF RECENT MEGA-DECISION FAILURES/PROBLEMS

Our normal questions about financial failures are what caused it, or who should be blamed. This is a totally different perspective than to focus on the decision process that lead to the problem, and finding the flaws in the decision process. The aim of this research is not to find the flaws in the person or the structure, but in the process. In this way the quality of future decision processes can be improved.

INTRODUCTION

Recent financial failures draw our attention to the fact that even with the best minds applied to manage the complexity of modern markets, periodic failures do occur. If hindsight analysis showed that these failures were not preventable, there would have been no purpose for further research to find ways of improving our decision skills. However, the examples usually show that most of the time these failures were preventable. We should be asking "how we can learn from this and how we can prevent this in future?"

To find the "pathophysiological cause" of failure in the derivatives area, one has to look at the pathology of the decision process in the derivatives control system. The same basic decision principles can be applied to most of these decision situations.

Only by investigating the common factors in many different cases can one gain a deeper understanding of the real process defects behind the different and fundamental causes.

14.1 ESCALATION ERRORS IN THE EUROPEAN CURRENCY CRISIS

Analysis of the currency crisis in Europe on black Wednesday September 16, 1992, highlights several of the underlying decision process defects that are also present in other financial failures.

Black Wednesday saw the attempts of the British Government to support sterling, escalate to levels where the logic of the decision making could be seriously questioned. Massive support buying of the currency (estimated at £10 billion) used up nearly half of Britain's foreign currency reserves.

The Exchange Rate Mechanism (ERM) that was introduced by the EEC in 1992, required governments to maintain currencies within agreed bands of movement. Taking into account the enormous magnitude of global money markets, one should ask if this was realistic.

The following sequence of events is the kind of decision behaviour which requires our attention.

On 16 September 1992, the pound dropped through the ERM "floor" of DM2,778 in Asian markets. The London market opened with the pound dropping below the ERM floor to DM 2,777.

- The Bank of England intervened to buy sterling for D. marks. The official duty of the central bank was to support the pound if it dropped below the ERM floor.

- At 10 am the Bank of France intervened with another £2 billion to support the pound and shortly after that the Bundesbank also intervened.

- Between 8 am and 11 am the Bank of England had bought £3 billion pound sterling at the floor rate in support. This failed, and was followed with an immediate 2% rise in interest rates (from 10 to 12%). This could not stop the slide either.
- At noon the Bank of England spent another £3 billion trying to reverse the tide, but to no avail.
- At 2.30 pm. the Bank announced that rates were to be raised again, this time with three percent with immediate effect. Never before did the Bank raise interest rates twice in one day.
- At 15H00 the Bank of England spent another £3 billion. As long as the Bank continued their escalation behaviour by buying billions of pounds sterling at the ERM floor, speculators could not loose.

For the first time in British history interest rates rose by 5 percentage points within 24 hours. The Bank of England spent ± £10 Billion - roughly 40% of its foreign currency reserves in buying sterling for D-marks.

The chancellor, Norman Lamont declared that Brittain would take whatever measures to maintain sterling's ERM parity. Escalation behaviour to the extent of £10 billion (or 40% of foreign currency reserves) had no more effect on the market than the first billion pounds spent initially.

After a humiliating climbdown the end of sterling's membership of the Exchange rate mechanism was announced and the pound was left to float at the mercy of the markets. In effect this meant that the pound would be devalued against the D-mark before rejoining the ERM. (Exchange Rate Mechanism)

WHAT CAN WE LEARN FROM DECISION BEHAVIOUR LIKE THE ABOVE?

From the viewpoint of stabilizing the currency the decision was to support sterling. The decision taken at the meeting between Norman Lamont, officials of the treasury and the Bank of England was to engage in open support buying of the pound when markets opened on Wednesday 16 September 1992.

The elements of their decision were the following:

- The ERM required that the pound be maintained above the "floor" of DM2,778.
- Even though economic analysis suggested that the pound was overvalued, they believed there was no reason why it could not be cured by making sure that prices in Britain would rise less rapidly than those overseas.
- High interest rates would hurt Britain more than they would hurt other European countries as a result of a much higher debt situation in Britain.

From the **viewpoint of the financial markets** the decision elements were:

- The pound was overvalued. Prices and costs in Britain were about 10% higher in Britain than overseas, when calculated by the existing ERM rate.
- The previous week the Italian currency was devalued by 7% in spite of purchases of £15 billion worth of lire by Italian authorities to try and prevent this.
- The markets "scented blood" and speculators regarded the situation of the pound as a "one-way-bet".
- The decision to engage in open support buying of the pound and speculators who perceived this as a **one-way-bet** situation, was a true recipe for **escalation behaviour** on the side of authorities.
- Speculator actions snowballed quickly into an irresistible force of downward pressure on the currency, knowing that **profit** was certain. The authorities **escalated** their support buying to a level of almost 40% of Britain's foreign exchange reserves before accepting defeat.
- The question is how much of this type of escalation behaviour will still occur if decision makers can learn to evaluate their decision problems not **only** from their **own perspectives**, but **also** from the perspective of people who sit outside their own particular sphere of thought.

The difference between the two groups was only the way in which they perceived and evaluated the same risk information.

- Presentation of the risk information to the decision makers who made the "open-support-buying" decision, in the same way in which the risk information was summarised by the speculators, could have a significant impact on the extent of escalation.

- If decision makers in the financial world are to learn how to minimize escalation behaviour and how to prevent decision failures, they have to investigate the potential benefits of familiarising themselves with decision science and decision principles. By creating an awareness about potential decision risk areas, one can improve the reasoning process and avoid many of the pitfalls like the above escalation behaviour.

We teach decision makers about economics and financial analysis and derivatives, but the fundamentals of decision science and human decision behaviour seems to be ignored to a great extent. This research clearly highlights the need to focus much closer on decision science as a way to improve financial decision making and to prevent the financial failures that destroy shareholder value.

14.2 MUTATION OF DECISION LOGIC IN VANISHING PREMIUM ILLUSTRATIONS

When a business process is designed, a set of very logical and essential control systems is usually built into the process. As the decisions are replicated in the marketplace, normally the control system should monitor the process as originally intended.

The problem is that competitive forces have enormous potential to mutate the decision process and the control systems.

The vanishing premium concept that was marketed during the 80's by most USA insurance companies is an excellent illustration of this mutation of decision process and control system logic. Insurance companies initially comfortably projected a 10 year vanish on premiums on a client's whole life policy, based on high interest rate illustrations. What began as a single, logical and understandable concept in the marketing department of the now defunct Executive Life insurance company in Los Angeles, mutated in the heat of competition. Agents, able to generate illustrations on their personal computers, mutated the concept due to competitive forces in the marketplace. What started as "agent abuse" of the initial decision logic gradually became part of the built in policy illustration mechanics. By plugging in high interest rates into illustrations a 7 - 10 year "vanish" could be achieved by agents.

The fact that the original product design became flawed when high interest rate illustrations was used while in actual fact, interest rates were declining steadily, lead to a situation where decision logic in companies refused to label this as "a big lie", according to Roger Heath of Towers Perrin Management Consulting in Dallas.

As with other interest sensitive calculations, any small adjustment in an interest rate will amplify over time, resulting in an enormous difference between reality and expectations. The fact that some companies after 10 years had to visit each of more than 35 000 policy holders, to explain that the initial 10 year vanish would maybe take up to 18 years, and that the original high interest rate illustrations was "not logical", emphasize the point that market pressure can mutate all logic in decision- and control systems. In August '94 an Alabama State judge upheld a \$25.4 million dollar award against Prudential Life in favour of 2 clients who claimed that they were defrauded by the company and its agent who told them that their policy would be paid in 10 years, only to find after 10 years that premiums would be due for the rest of their lives. "The policy premiums wasn't vanishing, the policy was cannibalizing itself".

Richard Weber, chairman of the American Insurance Society's illustration task force confirmed in '94 that "there wasn't a single illustration that had been based on the assumptions in 1985 - 1989, that was going to come true".

The control system and decision logic in the original design of vanishing premium products, were not immune to the new strains of mutated high interest rate illustration variants that were born in the market place. They defied normal logic and normal controls and created a catastrophe for policy holders that can be compared to the derivatives debacle on a personal scale.

The lesson is to continuously re-examine all decision logic and control system logic to detect "mutant" strains that needs new controls!

14.3 CREDIT LYONNAIS - SLOW DECAY IN DECISION MAKING

- If fraud and corruption were the main causes of financial failure, then management and the auditors would have a much easier task to trace and/or prevent the problems.
- Frequently case studies show that the main cause is not any of the above, but rather a slow decay in the ability of management to focus on a problem area, and to rectify the situation sooner rather than later.

Gradually over a period of 3 years from 1990 to 1993, Credit Lyonnais of France, the giant of European banking, accumulated bad debt of more than 3,2 billion dollars. In 1994 the French government in a bailout attempt, had to take over \$7 billion in risky loans from Lyonnais.

Starting with an expansion binge in 1990, the then chairman, Haberer, sent Credit Lyonnaise on a dizzying growth spurt. He first bought banks around Europe, then entered the market for U.S.A. Corporate lending, and also bought big equity stakes in French companies. Credit Lyonnaise granted large loans to a list of shaky clients like Robert Maxwell, Olympia and York, and the Italian financier Parretti. Parretti's ill fated take-over of Metro Goldwyn Mayor left Credit Lyonnais as the reluctant owner of the troubled studio with an exposure of \$2,3 billion to a single client.

As the recession began to take effect, Haberer's headaches started when losses and bad debt provisions soared to more than \$3,2 billion.

It is easy to blame the problems on the actions of an over ambitious chairman or on a global recession. However, during the whole process, management were fully aware of the situation. The question remains, what causes the management decision process to evolve into a 3 year continuous stream of high risk choices, without being questioned or being brought to a halt before it is too late?

The new chairman Peyrelevade argues it is nothing more than "bad management". For example, lack of awareness by the risk management function for interrelated exposures, caused several Lyonnaise units to make loans to Maxwell and competing with each other without knowing it.

A freewheeling Lyonnais investment banking unit lost \$475 million on currency speculation alone.

"Bad management" is a phrase which allows us to allocate blame for failures, without a making a real diagnoses of the causes of decision failure. Like telling a patient he is sick, "bad management" only indicates something is wrong, but not what causes the illness.

The diagnostic problem is to identify why the large group of financial experts in Credit Lyonnaise allowed their decision process to produce a recurrent stream of bad decisions, which eventually destroyed most of their own careers. What caused their combined discretion to malfunction? Prof Neubauer at IMD calls this the cozy club phenomenon. (Demb, A et al 1992 : 131) Members don't question issues or are too afraid to challenge the chairman. This is a common finding in the early phase of development of a management team's decision process. What needs to be emphasized is that somewhere down the line, the downward trend becomes so obvious that managers should realise that challenging the "cozy club" is less risky than to be at the bottom of the avalanche when the final collapse occurs. If the cozy club is left unchallenged, the quality of their decision process undergoes slow decay.

The problem of slow decay in quality of decision making is that the gradual increase in risky behaviour does not cause concern before it is to late.

14.4 LLOYDS : COMPETITIVE RISK TAKING GONE WRONG ✓

Analysis of the financial difficulties experienced by Lloyds, one of the world's most famous insurance houses, gives a perspective of what can go wrong in financial decision making.

The scale of losses in Lloyds in the early 90's approached £2 - £3 billion. Disaster related losses in the insurance industry is not unknown, but recurrent losses over 3 - 4 year periods indicates that there are fundamental flaws in the decision processes, be it in underwriting or in risk management or a combination of both.

The question posed by Rymond Nottage of the investigation committee of Lloyd's members, was why management allowed exposure to expand rapidly, at a time when the market was having great difficulty in finding good quality business. Nottage noted that it did not comply with commercial logic or good business practise. The response from Lloyds was that it was necessary for Lloyds to expand its exposure to take advantage of the expected turn in business.

From a decision analysis viewpoint, the Lloyds saga produced a significant "change of attitude" about decision principles and guidelines within the organisation. Lloyds was built on a reputation for integrity and fair dealing.

A gradual decline in underwriting standards and a laissez fair attitude slowly replaced the original prudence of the organisation.

Essential decision logic to ensure objective decision making, were slowly pushed aside by market forces.

These risks in the marketplace did not go unnoticed. Already in 1980 Sir Henry Fisher, a high court judge, headed an enquiry into self regulation of the market. The situation in the market at that time, where more than half of the Lloyds syndicates were broker controlled, was unacceptable to Fisher. This conflict of interest could not be ignored and Fisher reiterated the view that "brokers should reduce their involvement in underwriting".

(Rapball, 1994 : 68)

These recommendations were partly implemented but it did not prevent a decline in underwriting standards. With the vast expansion of the market in the 1980's it was easy to hide other conflicts of interest and for the declining standards of underwriting to go unchallenged.

This caused Lloyds to fail in the basic insurance tasks of assessing, quantifying and spreading of risk.

Even in a case of suspected fraud (the Savonita affair : Raphael 1994 : 60) the Lloyds committee and chairman did not protect underwriters from market pressure. The fear was that if the Savonita claim was resisted or compromised, a great deal of new business would be put in jeopardy.

Commenting on this during a later investigation the British member of Parliament, Jonathan Aithen commented that

"The only thing necessary for the triumph of evil is for good men to do nothing".

The lesson for modern day decision makers is clear:

If integrity is not maintained at all times, and if nobody is prepared to stand up and defend it when it is bound to be compromised, then failure cannot be prevented.

It is not always possible to predict economic trends correctly or to predict unforeseen external risks. This is exactly what management need to prepare for. However, when the internal decision process that runs the financial institution's risk decision system is fundamentally flawed, then we have no hope of preventing failure when economic cycles change.

14.5 METALLGESELLSCHAFT : DECISION MAKING IN AN INDUSTRIAL COMPANY OR DERIVATIVES SPECULATOR?

Financial analysts looking at any company in any industry always try to quantify the risk exposure of the company in its particular market and type of operations.

Dealing in derivatives can change the nature of the risk exposure of a company. Because derivatives are off-balance-sheet financial instruments, it might not always be clear to outside parties, exactly what is happening to the risk exposure of a particular company.

A good example is Metallgesellschaft, a metals, mining and industrial company. Creditors of this company was shocked to find that they were not lending to a metals/mining/industrial company, but to an energy derivatives speculator. (Loomis, 1994 : 31)

This is how it happened.

Metall gesellschaft, the 14th largest industrial corporation in Germany at the time, lost approximately DM 1 billion in futures trading. A subsidiary of metallgesellschaft, MG corp lost \$800 million playing in derivatives. MG corp was entering into long term fixed price contracts to supply oil products to gasoline stations. It then negotiated long term contracts to buy oil, but did not live up to 100% of its requirements. So it was left exposed to oil price fluctuations. MG Corp then put on a pseudohedge by buying quantities of oil derivative contracts on futures exchanges and from OTC dealers. The aim was to benefit from a boost in the value of derivatives when the oil price increases, and to use this to offset losses on the fixed price oil contracts.

"The fatal flaw in the plan was that the derivative contracts were short term and could not be a true hedge against the long term oil supply contracts. This mismatch caused ± \$800 million in losses when the derivatives turned into dreadful losers when the price of oil fell in 1993.

The question is how top management and the board would have reacted to the above scenario if they had done a proper analysis of the decision logic of the whole process.

Decision analysis predicts that it is likely that decision makers are prepared to expose themselves to bigger risks in an attempt to offset potential losses as a result of prior and even smaller risks. This is also seen in the Daiwa affair (see further discussion).

It might not always be possible to prevent this behaviour, but by sensitizing the board about these kinds of decision risks, their awareness and recognition of this will increase when these risks do present themselves for approval on the board agenda.

<p>Non-recognition of decision process risk is a significant factor in modern day management.</p>

14.6 ORGANIZATIONAL FORGETTING : DECISION FAILURE IN NASA

Business Science is very sophisticated. Business successes are numerous but, unfortunately, so are major financial failures in large organisations.

To increase the likelihood of preventing these major financial failures, it can be argued that valuable lessons are available from other sciences like medicine or engineering. It is no use to do surgery on a patient for back pain if the patient ends up being paralysed. Likewise it is not worthwhile to build a new aircraft that is not absolutely safe. All things possible must be done to ensure success during spinal surgery or during aircraft design.

In the same way financial institutions must do all things possible to prevent financial failure. From the numerous case studies this is unfortunately not the real situation. The argument is therefore that business science should investigate and analyse the potential benefits of engineering science.

A very good example of this has been described by Joseph T. Trento who reconstructed the decision process that lead to the Challenger space shuttle disaster. In his book "Prescription for Disaster : From the glory of Apollo to the Betrayal of the shuttle" he describes how caution was overruled in the decision process that produced solid fuel boosters for the shuttle.

Ironically, it usually takes a disaster before the system will acknowledge that it was not doing enough to prevent failure.

In another case study organizational forgetting is postulated by Tompkins as another contributor to the challenger disaster.

He describes the risk of "organizational memory loss" in his book "Lessons from the space program". According to this, organizational forgetting can over a period of many years, slowly erode the strengths in the decision processes of large organizations. If active attention is not given to maintain the quality of information flows, the content of management reports becomes "sterile".

There is security in routine for people in a risky business argues Tompkins. Bureaucratic routine creates the illusion that all is well. When memo's and control reports are regular and on time, few managers worry that the content might be deceiving, or that the system might be flawed.

(Tompkins, PK, 1993, P175)

Even in the financial arena it leads to a feeling of security to blame a particular disaster on "failure in communication". It does minimal damage to the system, and the decision process can get on with other business of a more important nature.

Tompkins describes the main causes of the Challenger disaster, namely:

1. A serious flaw in the decision making process that lead up to the launch of Challenger flight 51-L.
2. The waiving of launch constraints at the expense of flight safety.
3. There was no control system in the decision process that required the input of all managers of launch constraints, to be considered by all levels of management.

4. Management at the launch site contained the potentially serious problems, and attempted to resolve them internally rather than to communicate them forward.

(Tompkins, PK 1993, P136)

5. Management of a sub-contractor reversed their initial position and recommended the launch of challenger flight 51-L, contrary to the views of their own engineers, in an attempt to accommodate their major customer.

All of these causes found by the Commission of Enquiry are as applicable to large financial institutions as to NASA.

What makes "organizational forgetting a very valid argument" is that all the knowledge that should have prevented the challenger disaster was available inside the organization.

The top quality expert opinions and well documented concerns about the "risks of O-Rings at very low temperatures in the solid fuel booster", were discussed by the engineers. In spite of these warnings by the engineers, the risks were not communicated forward through the decision making process. The decision process weaknesses at launch control then lead to the disastrous error to launch in spite of the low temperature concerns amongst the engineers. One NASA employee interviewed by Tompkins made the statement that "self imposed time pressures within NASA, had more to do with causing

the challenger accident than other factors. We may very well draw a parallel with self imposed management pressures in financial institutions and the potential risks involved in that.

The question is therefore why good managers allow themselves to be trapped by the same old patterns of behaviour. If top management or the board of directors in a company knows these risks, and remind themselves constantly that these risks should not be allowed to take hold of any situation, large institutions should be able to prevent more problems than what they are currently able to achieve.

Compared to what March and Simon described as early as 1958 about "uncertainty absorption, it seems that modern day organizations have not improved much in terms of the risk that organizational exceptions drop off in quality with each subsequent relay of the message.

Potential risks are made more palatable each time they are relayed another level up the hierarchy. This is further complicated by what Tompkins argue as the dilution of embedded controls by Attrition.

If a substantial percentage of your employees are replaced through Attrition every year, the uncultured control system is eroded, and decision errors will start to occur.

14.7 THE BARINGS DEBACLE

MANAGEMENT'S FAILURE TO ENSURE QUALITY AND CONTROL OF DECISION MAKING

Financial derivatives have long been described as "The Risk that won't go away". The Barings Bank debacle re-emphasized this. Bank of England governor, Eddy George regarded the collapse of London's oldest investment Bank, Barings, as the failure of top management to control the decision process which allowed risk exposures to accumulate to levels far in excess of the capital base of the Bank. The whole Japanese market knew that Barings had made an unusually high bet on the rising of the Nikkei Dow 225 equity index. The Osaka exchange published weekly figures which showed Barings' net holding of Nikkei Dow contracts leaping from 3 000 to more than 20 000 in a month. Yet Barings seemed not to react to the escalation behaviour which intrigued all other operators in the Japanese and Singapore markets for two months. Management at Barings did not react to what their dealer Leeson was doing before it was too late.

With or without top management knowledge, a situation was allowed to develop where cumulative decisions increased the Bank's risk exposure to levels of self-destruction.

It is not enough to have financial controls and limits of authority. It has to be fully implemented and meticulously monitored. It is inconceivable that management can allow a decision making process where a dealer (like Baring's Leeson) can be running billion dollar positions, far in excess of the capital base of the organisation. The world's derivative markets are too complex for management to allow such decision making without stringent controls and real time information feedback about potential exposures.

As long as the decision process in financial institutions allow these kinds of decisions to escape scrutiny, there will be decision errors that destroy shareholder value. In the case of Barings more shareholder value were destroyed in a month than what have been accumulated over the previous 238 years.

This example illustrates that it is not a case of people falling victim to derivatives without being fully aware of the risks involved. As seen in numerous previous examples, derivative disasters can lead to self-destruction. Orange county, one of the US's most affluent municipalities, lost up to \$2 Billion in derivatives transactions by it's treasurer. Similarly in Germany, Metallgesellschaft lost almost \$1 Billion through futures dealings. Locally in South Africa's Sechold disaster R200 million was lost on an option position on equity futures. Surely, more derivative disasters will follow in future.

During one of the interviews for this research a board member of a large international bank commented as follow:

Institutions try to re-allocate risk with new financial instruments, but this does not mean that the need for quality decisions can be re-allocated.

(IX)

Re-allocation of risk with derivatives can only work when the primary decision is correct.

One can hedge yourself against various financial risks with numerous types of derivatives but you can never hedge yourself against a poor quality decision process.

(IX)

The temptation is to be lenient on risk controls when profits are good. Information from the Baring's case indicates that top management relieved risk managers of their duties to oversee dealers like Leeson, because he could not make the profits they relied on with a risk manager watching over his shoulder all the time. Clearly top management and the board cannot expect to rely on proper risk management if they themselves are reducing its ability to monitor and report on risk exposures.

The responsibility of board members with respect to proper risk management functions in the organisation will be highlighted when the Leeson/Barings case comes to trial.

14.8 DAIWA : A DECISION PROCESS MELTDOWN

- The Daiwa Bank of America lost \$1,1 billion in illicit bond trading by their bond trader in New York, Mr Iguchi.

- This was not the major decision process malfunction however. Two major top management decision errors followed this serious state of affairs.

Firstly the top management failed to take due steps to prevent illicit bond trading after Mr Iguchi confessed to the bank by letter in July 1995. Secondly the top management subsequently tried to cover up the \$1,1 billion losses and **did not inform regulatory authorities** in the U.S.A. about the losses.

The errors/misconduct by an individual who managed to hide \$1,1 billion losses, was not exposed for what it is. The team of **experienced** top managers at Daiwa, including the CEO Mr Fujita, were involved in a **conscious decision process** to hide the **problem** from the U.S. Federal Reserve for more than two months. This lead to the resignation of Mr Fujita.

The question that follows from this research is why the experienced executives put their own careers in jeopardy by making decisions to hide the bond trading losses from regulatory authorities.

The decision process error of Daiwa's own top management, and not so much the bond trading losses, caused the U.S. officials to throw Daiwa Bank out of

America and prosecute the bank on 24 criminal counts. The number of (deliberate) banking offences involved in the efforts of the executives to prevent the Federal Reserve from finding out about the \$1,1 billion bond trading losses in New York defies normal logic.

According to regulatory investigators the bank's management tried to find ways to remove the losses from the books of Daiwa's New York Branch. Transferring the losses to offshore shell companies was considered.

Eventually a series of deals was done from July to August 1995 between the Osaka headquarters of Daiwa and the New York office to try and cover up the losses.

It is a tough test for any management's decision capability when a subordinate confesses to \$1,1 billion bond trading losses. It is a tragedy when the whole management team of one of the world's major banks is incapable of preventing the total internal malfunctioning of their own decision making process.

If the combined expertise, the combined experience and the integrity of the whole team is at stake, the expectation is that logic will prevail and that the correct decision will evolve from the management process. Somehow Daiwa's management team failed the basic tests of bank supervision. Attempts to mislead regulatory authorities and to cover up misconduct by employees is not a testimony for quality decision making.

All the above decision failures in large organisations indicate that we need to improve our ability to make better quality decisions more consistently. The challenge is clear. A logical area to look for potential solutions, is in the risk management decision process.

-----o0o-----

15. ANALYSIS OF CURRENT RISK MANAGEMENT MODELS/METHODS ✓

The way in which modern day financial institutions try to manage risk can be described as mainly risk classification related or structurally related.

Examples of these can be summarised by looking at different models found in present day use.

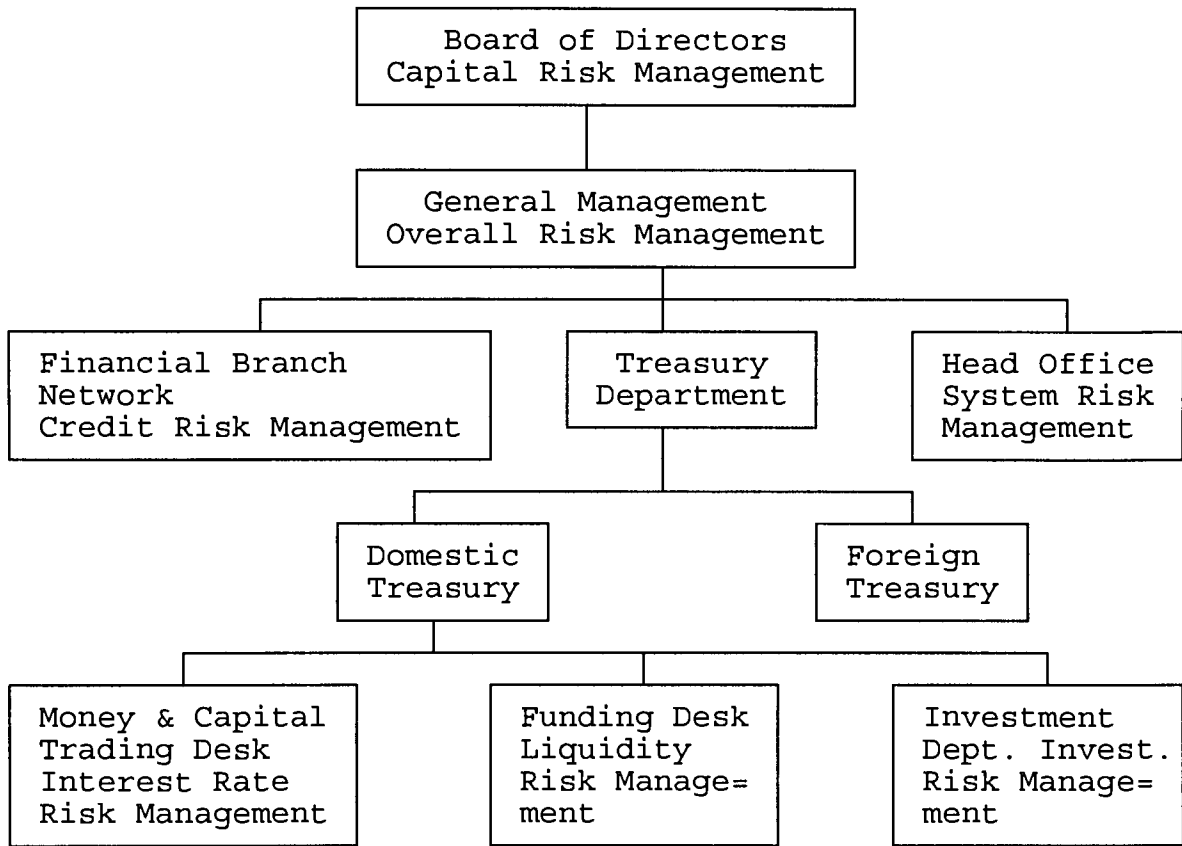
15.1 RISK CLASSIFICATION MODELS

In his book on managing financial risks Smith described the basic classification model for major risk areas (Smith C.W. Et Al 1990, 4-28):

- Credit risk
- Interest rate risk
- Liquidity risk
- Investment risk
- Currency risk
- Capital risk
- Solvency risk
- Operational risk

A similar structure was described by Falkena & Kok in their book on Financial Risk Management in South Africa (Falkena Et al 1989 : 187): The different areas of responsibility are also defined by this model - see diagram 4.

DIAGRAM 4



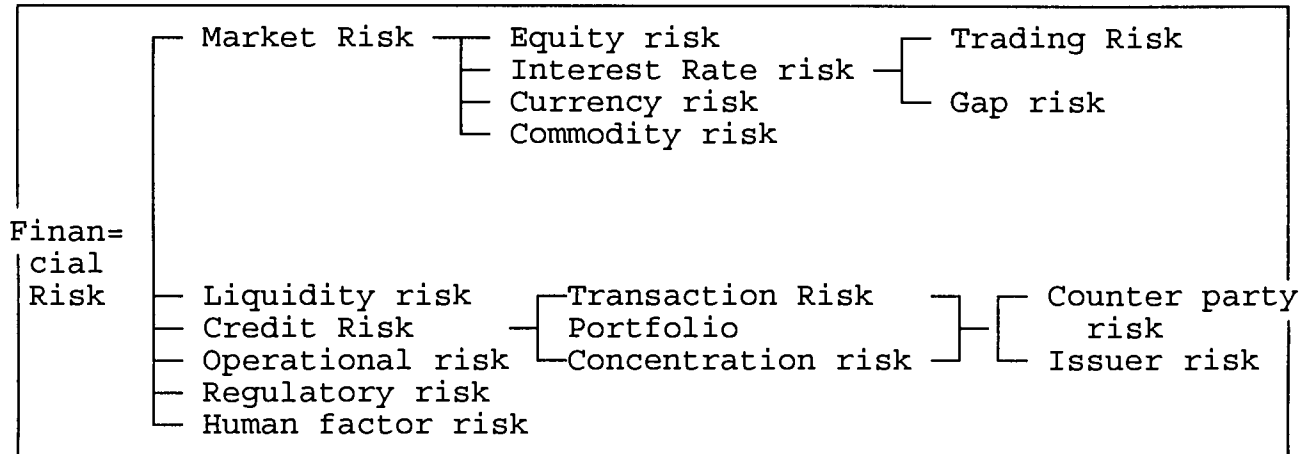
The financial risk management models in use today (1995) resemble these initial structures closely, but are much more refined.

The Toronto based Canadian Imperial Bank of Commerce, a \$116 billion company, is one of the current leading groups in the world implementing new risk management structures and systems. In a 1995 CIBC paper they describe the Multiple dimensions of risk with the following model:

Diagram 5

DIAGRAM 5

RISK CLASSIFICATION MODEL:



Source: Emerging technologies and risk management CIBC paper 1995.

Amongst the multitude of risk areas, only one of the above models refers to what it calls "Human factor risk". This ties in with the whole concept of **decision process risk**. Even more important than **individual human factor risk**, is **combined human factor risk in the decision making process** of a team.

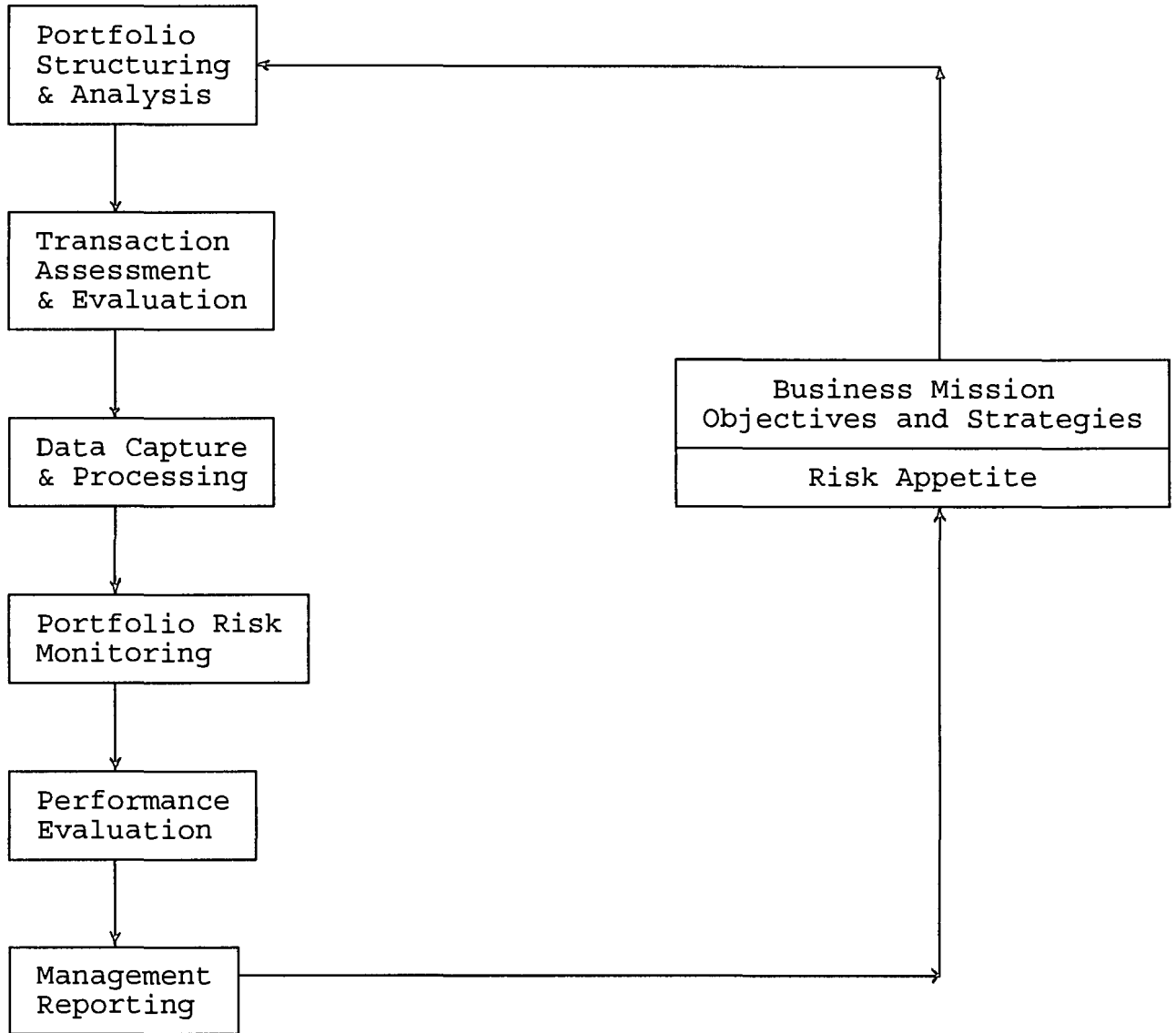
The international group, Price Waterhouse, emphasizes the point that "corporations now realise that their financial risk management activities need to be **structured** and continually reassessed against a **comprehensive framework**"

Another framework for risk management promoted by Price Waterhouse, uses a risk management control cycle and also defines a risk management infrastructure: (Diagram 6):

A FRAMEWORK FOR RISK MANAGEMENT

DIAGRAM 6

RISK MANAGEMENT CONTROL CYCLE



RISK MANAGEMENT INFRASTRUCTURE:

Policies, Procedures, & Guidance	Risk Management Organization	Risk Measurement Methodology
Systems Infrastructure	Management Reporting Framework	Limit Structure

Source: Capital markets and treasury practise Price Waterhouse 1995.

The Coopers & Lybrand 1995 risk map provides another comprehensive overview of risk management issues: See Diagram 7

DIAGRAM 7

RISK MAP

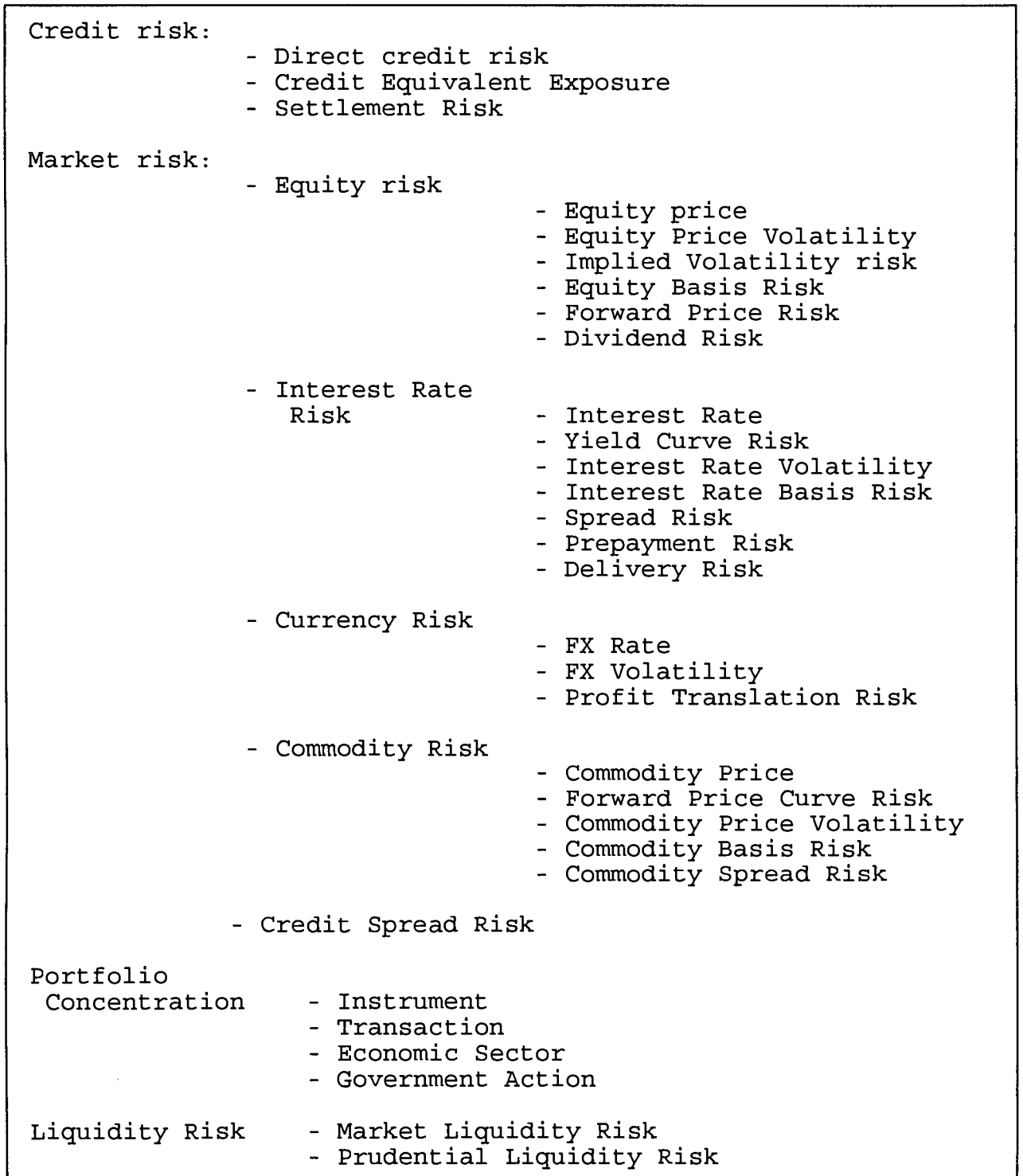
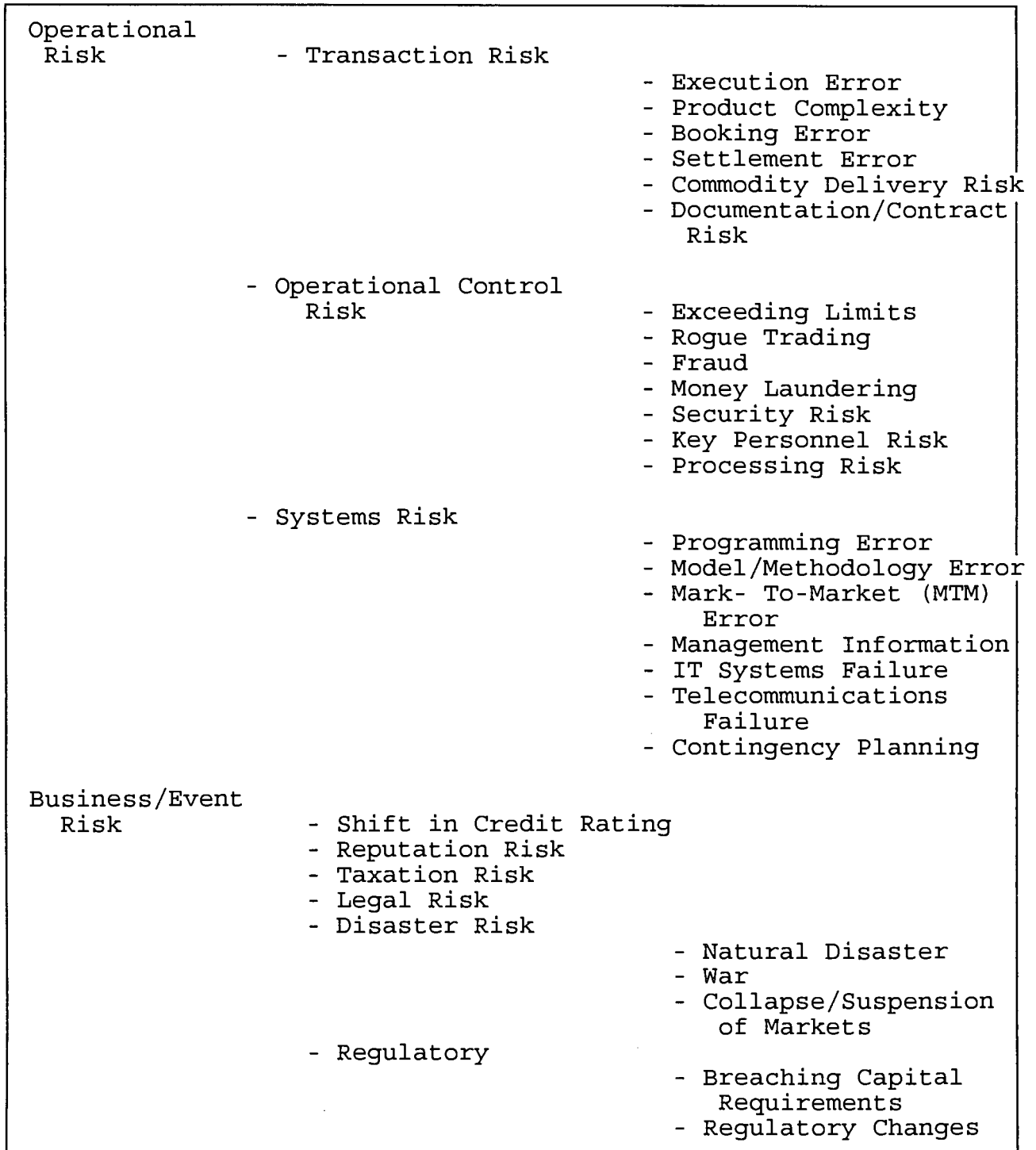


DIAGRAM 7 (Continued)



It is clear that detailed attention had been given by business science to define and classify risk area's in financial institutions. Risk controls and audit systems focus closely on all these risk areas, but as seen in the various examples that were discussed in section 14, it does not always prevent decision failure.

What can then be wrong if we know what all the risk areas are, but can't manage risk effectively? The above models and others provide a sophisticated and comprehensive analyses framework whereby the board of the financial institution can dissect the risk exposures. Their aim is clearly to limit risk as far as possible, and still they don't always succeed. For this reason other structural improvements were proposed by several researches.

15.2 STRUCTURAL RISK MANAGEMENT MODELS

15.2.1 STRUCTURES TO MANAGE DERIVATIVES

Derivatives are posing a challenge to regulators and corporate boards. Some researchers are asking the question if derivatives are not creating systemic risk in financial markets. This refers to the possibility that derivative contracts might directly or indirectly cause some localised problems in financial markets to spread uncontrollably. (Loomis C.J., 1994 : 23) The risk that a crisis at a major dealer might cause a chain reaction bringing down other institutions, can be a potential threat because financial markets live on the expectation of counterparties being able to deliver prompt payment when required to do so.

Derivatives pose a major headache for regulators due to their global interconnections. The laws of some countries have considered some derivative contracts to be gambling bets, in the sense that the outcome of their transaction is not under control of either party to it.

Several groups like the Basle Committee on Banking supervision, the Washington Group of 30 and guidelines by the Comptroller of currency in the USA, have tried to improve the risk management ability of financial institutions. These guidelines focus on almost all aspects of managing derivatives. In spite of this the ability to control derivatives has so far escaped regulators and risk managers alike. The derivatives related failures and losses in several institutions are proof of this. (Drexel Burnham, Bank of New England, Bankers Trust etc.)

The Comptroller of currency clearly stated in its derivatives guidelines that the responsibility to control this falls on the board members of the institution.

The only way in which this would be possible is not only a full understanding of the risk exposures and risk transfer mechanisms of derivatives, but also the decision making process whereby dealers re-allocate risk.

Transferring a risk with derivatives does not make it go away. When institutional investors are buying "puts" to try and protect them against a drop in the stock market, one kind of risk is simply exchanged for another, depending on the movement of the stock market.

Unless board members have a clear understanding of the decision process of risk allocation and risk exposure, they cannot oversee the corporate risk profile of the institution.

The Group of 30, a global derivatives study group, chaired by David Weatherstone, published a report to create some structure in the management and control of derivatives. They made several recommendations to corporate boards to oversee that senior management create risk management structures for dealers. The important recommendation in paragraph 2.8 of the Group of 30's report is that there must be an independent risk management structure with clear authority and independence to monitor the activities of dealers. Stress simulations should also be performed regularly to determine how portfolios would perform under market stress conditions.

In spite of the capital policies set by the board, the overall risk management policies, of the company and the independent market risk management structures etc, derivatives disasters have not declined. The point that is made is that risk management structures alone cannot solve the problem, the decision process dynamics will also need our attention.

15.2.2 THE BOARD STRUCTURE AND RISK MANAGEMENT ✓

Work by Sir Adrian Cadbury in the UK and by Proff Neubauer and Demb in Europe on corporate governance, highlighted the importance of **optimal team structure and composition**. The structure of the board have enormous impact on the quality of decision making. The need to include more independent non-executive directors in boards is seen as a great step to defuse issues like one-man-rule, and also to reduce the potential bias in decision making that originates from a team with a majority of executive directors.

The Cadbury code of best practise is now a requirement for listed companies in the U.K.

In paragraph 2.2 of its guidelines for companies, the Cadbury code requires that "the **majority** of non executive directors should be independent of management and free from any business or other relationship which could materially interfere with their **INDEPENDENT JUDGEMENT**".

In paragraph 11(B) the Cadbury Code stipulates further that audit committees should have a minimum of three members and that **membership should be confined to the non-executive directors**.

In so far as these requirements can provide a structure for INDEPENDENT THINKING and independent judgement, they can contribute to a quality decision making process. Structural factors are however part of second generation risk management.

The question that follows logically from decision failures in companies with optimal board structures, is what additional factors beyond that of structure and composition are causing decision failures. This is where the focus then falls on the decision process itself, which is the subject of this research.

To quote from the work done by Prof Neubauer at the Institute of Management development in Lausanne, "it is clear that a good board is more than the sum of its membership".

"It is possible for a board with very high powered membership to function poorly, while a board of lesser known composition works extremely well. It has to do with INTERNAL DYNAMICS of boards which I suggest, is not well understood or researched.

This clearly indicates that the internal decision process of the board or management team is the remaining frontier for research. This is the focus of third generation risk management.

This research study focus on the potential benefits of a logical framework of decision process risk analysis, and the contribution that can thereby be obtained to improve the quality of decisions. A continuous awareness of the relevant decision risks at each stage of the decision process can increase the ability of top management and board members to prevent decision failures.

-----o0o-----

16. ANALYSIS OF DECISION PROCESS RISK : A BOARD
RESPONSIBILITY

The critical mindshift is to recognise that apart from all the other risk areas (credit risk, currency risk, liquidity risk, operational risk etc.), the financial institution is also exposed to decision process risk.

Due to the nature of decisions at each level in the organisation the biggest impact of decision process errors, is at top management and board level.

Decision process risk increases as one move up the organisational ladder. The need to be aware of and to eliminate decision process risk is therefore the biggest amongst top management and board members.

Board members are familiar with the items on the list of corporate risks. They have learnt to focus on significant risk areas, and to ensure that the audit committee of the board report on a variety of financial risk area's.

Nothing in the organisation escapes their scrutiny, except the decision making process itself. This includes their own decision making process.

The tendency is clear. Business solutions tend to focus more on structure than on process.

Several examples can be used to illustrate this statement. Modern management and business literature is littered with structural solutions to business problems:

- We change organisational structures from functional, to divisional, to business units, to matrix organisations, to network organisations.

- The elimination of layers of management to create flat organisational structures is prevalent.
- The appointment of specific committees to oversee specific risks like the ALCO's (asset liability committees), the audit committees, etc. are structural mechanisms to try and solve these problems.
- The Cadbury report on corporate governance have changed the structure of boards with the appointment of more independent non-executive directors. Salmon at Harvard re-iterates this point (HBR, Feb. '93 : 76)

The trend is clear. If we experience problems with certain risks we change the structure (or the architecture) of the organisation, the management team or the board itself.

If we compare this to the most concrete form of complex decision system that we know, namely computer systems, then we are clearly faced with a dichotomy. When computer systems malfunction or when they don't perform up to expectations, there are 2 possible causes

- (a) Hardware malfunction or architecture problem or capacity constraint.
- (b) Software malfunction or decision logic error in the programming.

It is obvious that most of the time, we can use the same computer hardware, and by correcting the software program or decision logic, we can increase the performance of the system.

By redesigning the decision pathways and decision logic in the software program, one can make provision for new system conditions that can occur during operation, and for the effective handling of different risk conditions. When it doesn't work 100%, you redesign the software decision logic and improve it.

Most of the time it is possible to improve performance by adapting the software program. Only in exceptional cases do you have to upgrade the hardware, increase capacity or change the system network or architecture.

What impact does this have on risk management? The answer is obvious. Our tendency is to rely on structural changes (hardware changes) when we want to improve risk management capability. We appoint more non-executive directors on the board or we appoint audit committees or we change the structure and composition. Not that this won't help, but it will not solve "program/software" problems or what we describe as decision process problems.

Modern organisations prefer to circumvent the question why we don't analyse the "software", the decision process itself? Does the board ever analyse their own decision process, or the decision process of the top management team?

The only way to really improve our total risk management ability is to look at both structural (hardware) factors, and the decision process (software) factors that play a role.

The board should ask itself how their own decision process is functioning. Their internal decision process is the software program or the decision logic that produces the final decisions on which the organisation relies for its survival.

Peter Senge, who did research on the concept of team learning, rightfully asks the question: "How can a team of committed managers with individual IQ's above 120 have a collective IQ of 63?" It is an illustration that the internal decision process dynamics determine the quality of decision output.

The board should start with an analysis of its own decision making process to identify internal risk areas. Then the board should insist that the same decision process analysis is conducted at top executive and senior management level, and downwards throughout the whole organisation.

17. CONCLUSIONS DRAWN FROM THE EXPLORATIVE RESEARCH

17.1 INTRODUCTION:

- Decision failures seen in large financial institutions (see section 14) is a clear indication that **business science** needs to improve our ability to recognise the potential causes of decision failure and to prevent this.
- Significant advances have been made in the **risk classification models** see (section 15) that we use to focus on the different elements of financial risk. Each area of potential risk is carefully scrutinised by these models.
- The complexity of derivatives have drawn the attention of financial authorities and business itself, and changes to the **risk management structures** that handle derivatives (like those proposed by the Washington GROUP OF 30) have followed. These have contributed greatly to the pool of knowledge of modern business science and have improved risk management, but have not been able to prevent the major derivative induced failures that we still see.
- The work on Corporate Governance done by Cadbury, Neubauer and others have increased our understanding of how to handle corporate risk. The changes to board structures and the functioning of the board, that followed from their work, have increased the effectiveness of the board beyond any doubt.

17.2 RESEARCH FINDINGS:

- With the sophisticated risk classification models and the corporate governance structures, we have the **anatomy of a comprehensive risk management structure** in place. The framework is well designed and very sophisticated. **WHAT WE NOW NEED IS THE "physiological" process to make it work effectively, the decision process dynamics** that will turn the risk management structures into an effective decision making system. Business science have learnt how to correct and improve structural (anatomical) defects in large organisations and their boards. We must now learn to correct and improve the **process (physiological) defects** in our decision making in these institutions.

- This explorative research postulates that if we can include the numerous **decision process risks** (as identified by decision science) in the frame of reference used by top executives and board members they will develop the ability to **recognise** these potential decision process risks when they occur during decision making, and in this way learn to prevent decision failure more often.

A comprehensive framework for decision process analysis, based on a literature survey as well as the practical experience of the executives and board members that were interviewed, is proposed as a mechanism to reduce decision process risk amongst board members and top executives in financial institutions. This decision process analysis framework is described in section 18.2.

- The elements that came forward during this research provide **signposts to improved decision making**. They are important observations by executives and board members with extensive experience over many years in the top structures of some of the largest financial institutions in the world. Their views on why decision failures occur and how we can improve the decision making process were not only **valuable guidelines** to draw up the proposed framework for decision process analysis (section 18), but also provided **thought provoking concepts** and ideas which can benefit the development of modern business science. The most important observations found during this explorative research were the following:
 - A "**chain of risk awareness**" needs to be intact throughout the whole decision process. The oversight of potential risk in **one** are can destroy all other efforts along the rest of the decision chain.
 - The acid test for a board or a top management team to apply is to ask the following question: "Can the organisation live with this risk if by **remote** chance it does materialise". This question should be applied to significant risks along **every node** of the decision chain.
 - What we have to do to make good decisions is to learn the art of managing the **management interfaces**. The perception of risk changes as information flows through the different management interfaces. This means that **potential risks are made more palatable** each

time they are relayed another level up the hierarchy. This can result in the board making a decision on a different risk profile than what management knows the reality to be.

- Decision process risk can only be managed if it starts at the board level. The board should go through a process of "introspective analysis" periodically, whereby they can focus on the way in which they make decisions themselves. By analysing their own areas of decision process risk, and then requesting the same from top and senior management, they can create an awareness or an intellectual sensitization for the potential causes of decision failure.

The board of directors should not only ensure adequate risk management structures for derivatives, but should also be aware of decision process risk in the derivatives area. As one of the interviewed board members described it: "Institutions try to re-allocate risk with new financial instruments, but this does not mean that the need for quality decisions can be re-allocated. One can hedge yourself against various financial risks with numerous types of derivatives, but you can never hedge yourself against poor quality decisions."

- The concept of "Organisational memory loss" as described in section 14 is important for top management and the board alike. This phenomenon can over a period of many years slowly erode the strengths in the decision processes of large organisations. If active attention is not given to maintain the quality of decision information flows, the content of risk management reports can become "sterile".

- The risk attitude of key individuals in the risk management process should be scrutinised by the board/top management. A natural tendency of human decision making is to accept exposure to bigger risks in an attempt to offset potential losses due to prior smaller risks. The decision process should ensure that cases where "caution is overruled" are identified early enough. The aim is to escape from the cycle where it takes a disaster before the decision system will acknowledge that it was not doing enough to prevent failure.

- A comment which is as true in risk management as anywhere else is the observation that:

"The only thing necessary for the triumph of evil is for good men to do nothing". Integrity is a non-negotiable item if we want to live up to the corporate governance responsibility.

- Management of the fear-greed pendulum in speculative markets is an essential element of quality decision making. Exactly where top management defines the border between taking a calculated risk and pure greed is the cornerstone to prevent eventual self destruction.

- The **complexity** of a decision problem demands the undivided attention of the decision makers involved. They should give thought to the event that different variables can go wrong **in sequence or in combination**. This is further complicated by the phenomenon of **multistage inference**, where the decision makers make a series of **dependent estimates**, using the output of one inference as the input of the next. Each **preceding judgement** or estimate, once accepted, is taken as a certain input into the next decision. Many decision failures in large financial institutions have resulted from this process whereby top management or the board try to predict outcomes with more certainty than the process warrants. (Schutzer D, 1991, 158)

Decision process audits can be a valuable tool to focus the minds of top management on why decisions can go wrong. "Executives in high profile positions don't like the idea of revisiting the way in which they made their previous decisions, especially when the outcomes were bad. If they can be convinced that there are clear advantages in **learning from previous decision failures and successes**, we can upgrade the quality of the whole decision process". The aim is to **learn and benefit** from it, **not** to allocate blame.

- Rules-of-thumb can be helpful to find quick solutions in many situations. These rule-of-thumb solutions that have worked well in the past can gain acceptance as the "rules that have made the executive team successful."

It is not wrong to use certain team rules, but the problem is to detect when they are no longer applicable.

A quality decision process will scrutinize any rule of-thumb for validity in a particular situation.

- Resources are allocated "rationally" to where the high probabilities of success are. One of the board members pointed out: "To allocate resources in order to protect against low probability risks is not logical. As long as rational decisions follows this logic, it will be the low risk or perceived low risk events that surprise us. It is your duty not to trust blindly, but ask about all evidence why a proposal might not work. One should be very uneasy when you see any proposal that do not have the potential shortcomings and risks clearly spelt out."

- An important determinant of quality in handling complex decisions is the necessity to allocate time and energy not only in relation to the potential profits of the proposal, BUT IN RELATION TO THE RISKS INVOLVED. Inadequate attention to accurate risk assessment means that you can either eliminate the best alternative along the way, or being surprised by underestimated risks.

- The attractiveness of superior profits can easily camouflage the risks involved. Focus on the expected profits causes management to underestimate the magnitude of potential risk.

One board member summarised it as follow: "We are programmed to take risks and to make profits. We are not programmed to avoid losses. I think successful companies have learnt better how not to be seduced by potential profits into taking bigger risks than they ought to".

- Caution was expressed by some board members about the notion that a good manager in one area can be a good manager anywhere. They believe that it is not always true, for the reason that a person need experience in a particular business area to be able to handle the complexities of our fast changing environment. It was pointed out that a manager should understand the business cycles of a particular area. "Frequently good managers become overconfident in a new area of responsibility while all is going well, only to be caught off-balance when the business cycle changes."

- One of the characteristics of good risk management that came from the research interviews is the "ability to say no". One should not believe that the only way to be successful is to take more risks. The policy of one of the oldest and more respected financial institutions (and currently AAA rated), is clear on this issue: "We will measure an exective's performance not only on what he brings in, but also on how much we have to write off. You should not only think of volume, think of quality. We are not in this for one day only. We are in business to stay, we have been in business for more than 130 years, and we want to stay another 130 years." You have to

give clear guidance to your colleagues who report to you. If they argue that the above approach might cause some opportunities to be missed, we say: "It is better to regret a business not done than to regret a wrong business done."

- The financial institutions have realised that they "should rethink the way in which they do things". This would include the way in which they make decisions. One of the current mechanisms used is to introduce a decision process where at least two people are responsible for **different aspects of the same risk**. After several financial institutions incurred huge losses on third world debt, it is now practise in some of the banks that at least two senior executives, one responsible for country risks, and the other responsible for credit or counterparty risk, have to agree on this. If either party is uncomfortable no transaction will be done. The **principle** involved is to **split the different aspects of the same risk**, and have different responsible decision makers cross-reference their own opinions to build a combined decision on the total risk.

- **Overconfidence in judgement** is a significant reality that financial institutions have to be aware of in their internal decision processes. Executives at more than one of the financial institutions emphasized this. The following quote proves the point:

"We believe that in handling any risk you have to have rules to keep proportions with regard to the borrowers, with regard to counterparty risk, but also with regards to yourself. You should never think because you are a triple rated bank that you can do everything."

- What we know as framing effects in decision science plays a vital role in financial decision making. Board members raised their concerns about the lack of a search for disconfirming evidence in many proposals. "Managers tend to put forward positive elements much more forcefully than they would ever point to negative information. You can easily see this in most reports landing on your desk. You have to go back and ask them for the problem areas. Ask very tough questions and beat up proposals in a positive sense. It is the only way to define risk accurately."

- The final quality of the decision process also depends on attention to the time horizon. "When companies focus on short term profits long term risk is not a priority in the minds of the decision makers. At the end of the day you can make almost any kind of currently beneficial decision because nobody feels responsible for the very long term risk involved. Unless institutions reward long term thinking they will not cultivate the kind of process that can reduce long term risk."

- These research findings, based on the concepts from decision theory, and the views and experience of the board members and executives, were used to draw up a framework for decision process analysis as described in section 18.

18. DECISION PROCESS ANALYSIS IN THE ORGANISATION

Decision making risk refers to the risk of malfunction in the decision process.

Decision risk can affect any of the other risk areas in the organisation. Even with very good currency risk/credit risk or other systems, decision process risk can still cause a serious malfunction in the decision outcome of the team of decision makers.

Only by exposing top management and the board to decision theory, and by sensitising them for the potential causes of decision process errors, can we prevent serious malfunction of the corporate governance process. Each step of the decision logic is subject to potential error.

Retrospective analysis of decision process errors is the way in which we can learn why decision processes go wrong. It is however, not the final aim. The goal is to learn from this, so that the board members and top management can pro-actively identify potential decision errors during the process, and take corrective action to prevent decision failures.

The decision logic within a board or top management team is a highly complex interaction of individual thought processes. Like a neural network in the human brain, the decision process also consists of multiple pathways with multiple probabilities of a signal being carried forward or blocked. Similarly contributions by individual members in the team are either accepted and included in the decision building process, or it is rejected.

The acceptance or rejection of decision signals from the individual board members, and the combination of this into a logical and coherent final decision, is **neither an automatic process, nor is it guaranteed** to be successful in finding the optimal solution.

Decision theory has identified several potential causes of decision malfunction, and the explorative research indicate that these decision process errors are prevalent in modern financial decision making. The board members and top executives who were interviewed described decision phenomena in modern organisations which clearly indicate a **lack of awareness** about causes of decision process errors. Decision situations experienced by the people interviewed, suggest that there is no **formal recognition** of the elements of **decision theory** and **decision risk** which are relevant as potential causes of decision failure. Decision phenomena are accepted as a **normal** part of management, when it goes wrong it is described by the blanket term "**bad management**", some scapegoats are "replaced", and the management process continues.

This research postulates that if those cases which are labelled "**bad management**" are scrutinized for the particular decision process errors in the system, it is very likely that **causes** will be **identified** which the board can **rectify**, .

Our assumption in modern organisations is almost always that if a serious problem exist, the only way to rectify it is to change the structure or to replace the people involved. What is argued for here, is to check the **software** (decision process) **first**, before going to the expense of replacing the individuals in question.

Structural change will sometimes affect the decision dynamics, in unpredictable ways. A better result can potentially be achieved by focusing on the decision process itself and rectifying this.

18.1 HOW TO REDUCE DECISION PROCESS RISK?

The first step would be to introduce a **decision analysis framework** in the most critical part of the risk management process of the organisation.

This means starting at the top, where all the different risk elements of the financial institution are maintained - that is the board itself. After that top management and then senior management.

The board should start by a process of "introspective analysis" which means that the board looks at itself periodically, focusing on the way in which they make decisions themselves.

Introspective analysis is the first phase of creating awareness, and sensitizing the board members for the potential decision risk areas in the board.

A formal board retreat two or three times per year, with nothing on the agenda except an analysis of the decision process of the board, is a good way to overcome the initial resistance of board members against something which is unfamiliar, and seen as a potential threat to the comfort zone of some of the board members. Some organisations are already starting to do this with very good results.

Once the board members have found the value of decision process analysis or introspective analysis, it will become part of the way in which they think about complex problems.

As soon as board members are sensitized about decision process risk, the urgent need to learn more about other potential decision process errors will become obvious. The principle of controlling decision process risk is a conceptual trigger which starts their own decision analysis process along each step of the decision path.

18.2 THE DECISION PROCESS RISK MAP : A FRAMEWORK FOR DECISION PROCESS ANALYSIS

The following framework can assist decision makers to identify potential risk areas in the decision process at board and top management level.

Awareness of these risk areas is the key to improvement in decision quality.

SEE DIAGRAMS A TO G

SUMMARY

This research is by no means the final solution to decision process analysis. The hope is that this will be a new direction that will attract future researchers that can contribute to and improve our understanding of the decision process. This thesis is not intended to provide a new formula, it is a new approach to direct our thinking on how to advance along the road to better quality decision making in the very complex financial world. I hope that this framework for decision process analysis will not only stimulate further creative thinking by other researchers, but will also contribute to the quality of decision output at board and top management level.

Decision Process Analysis

Diagram A

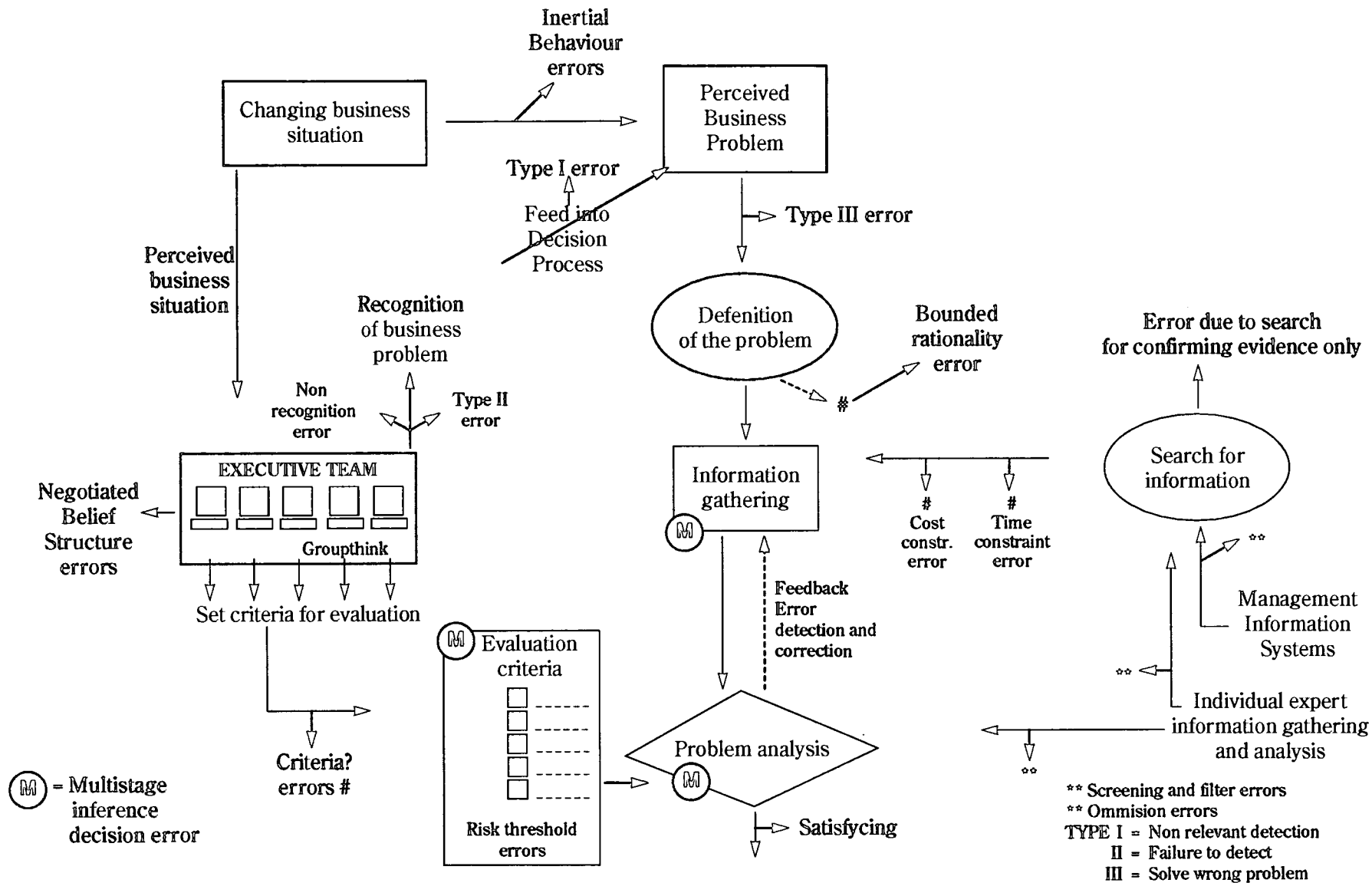


Diagram B

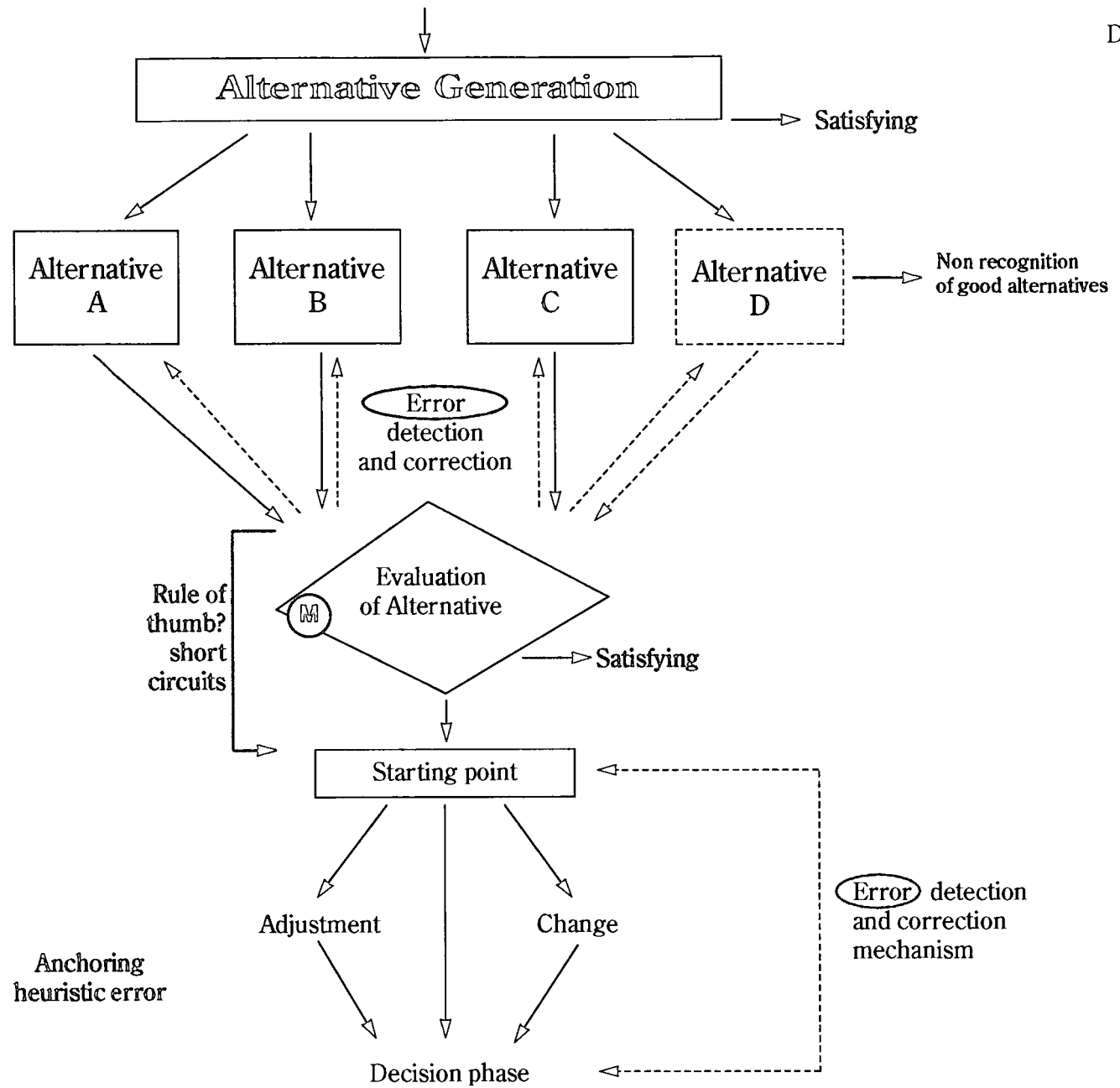


Diagram C

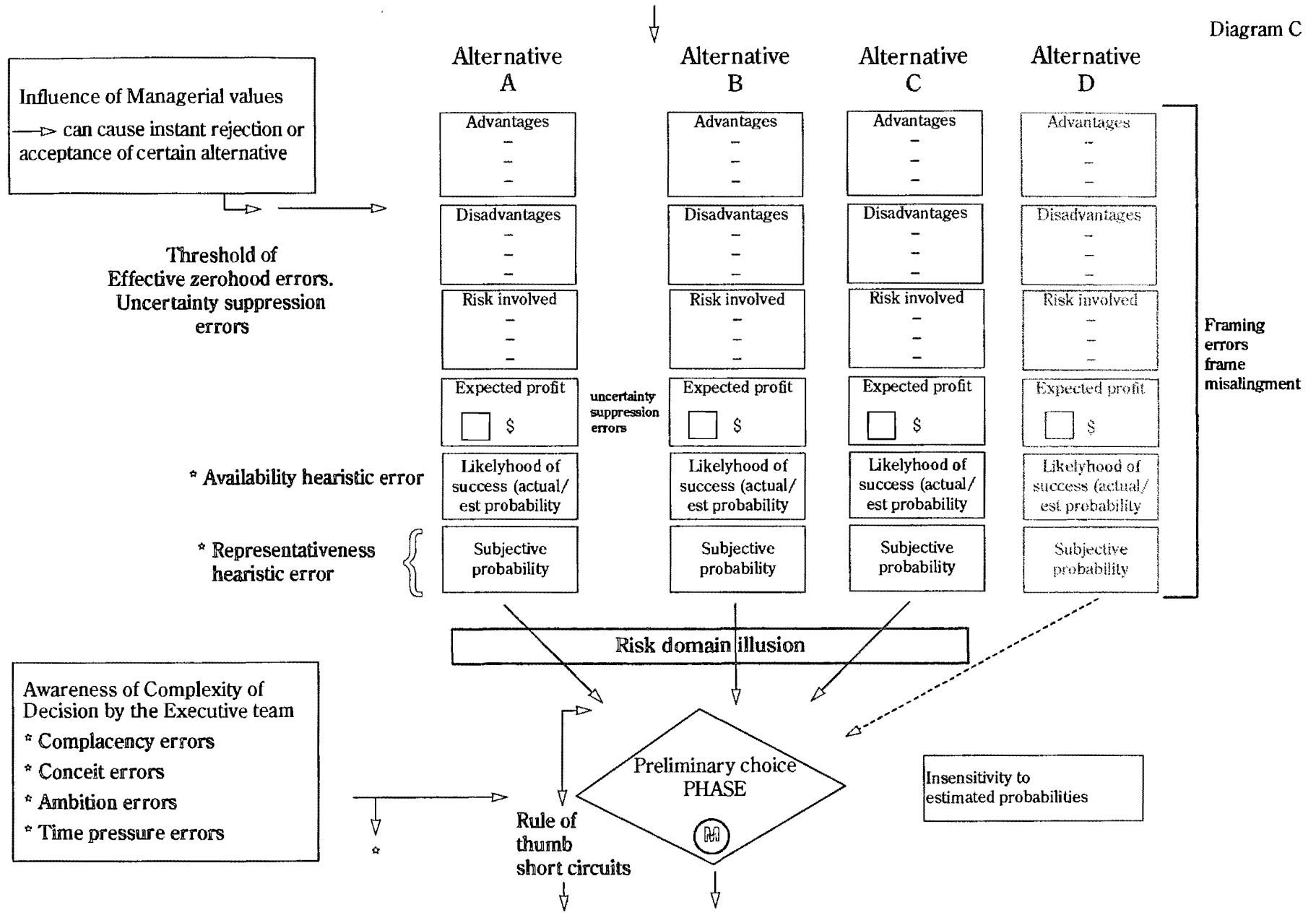


Diagram D

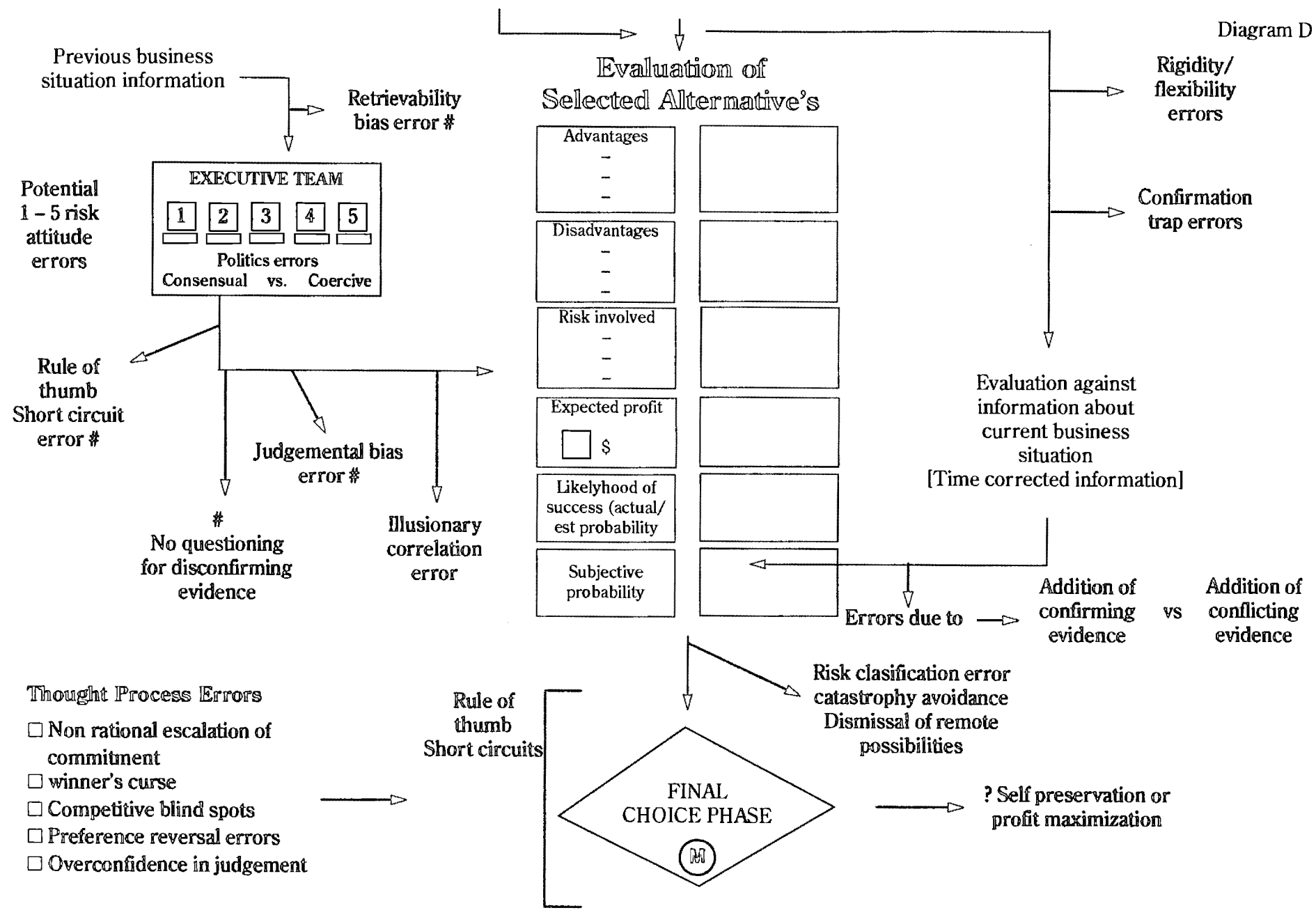


Diagram E

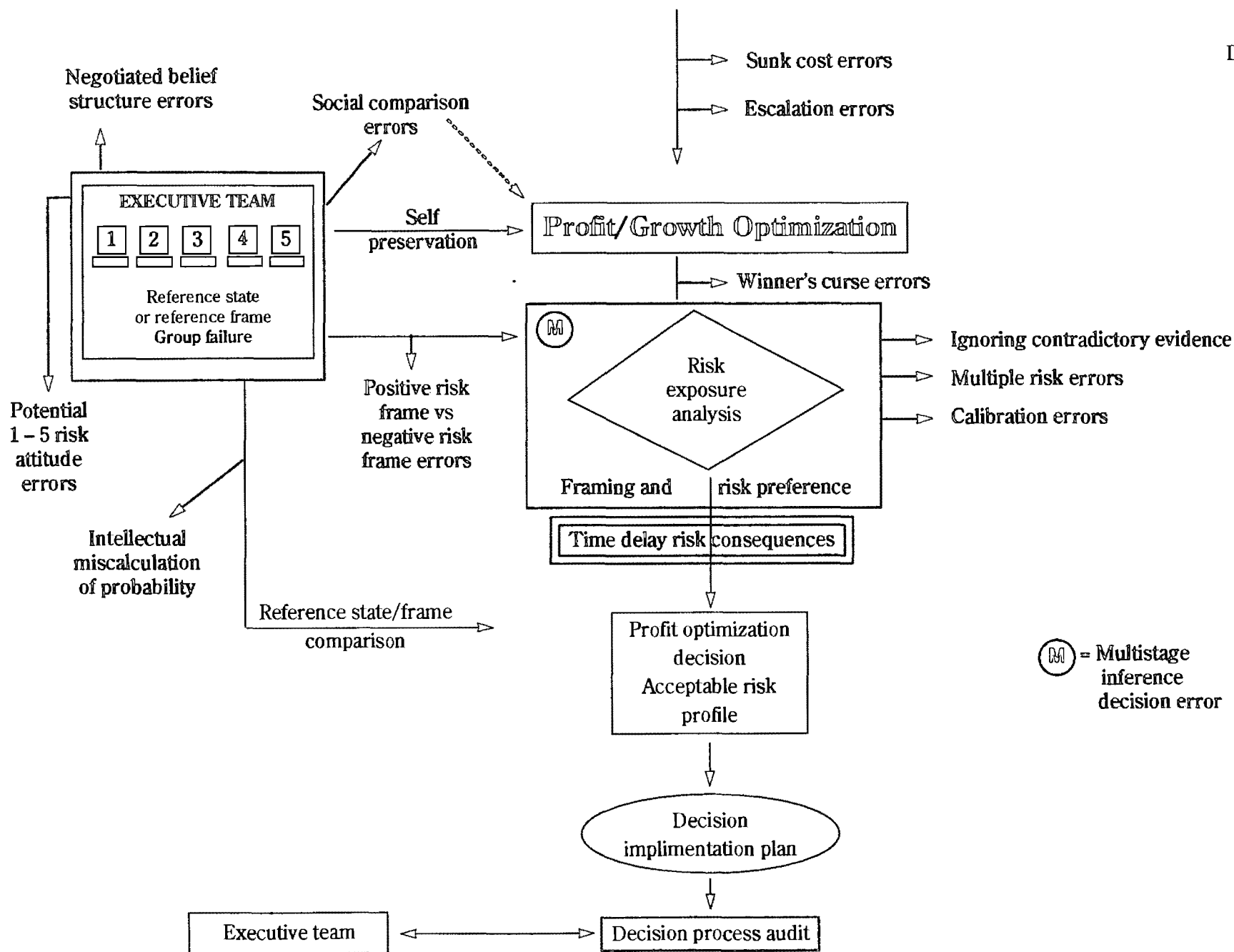
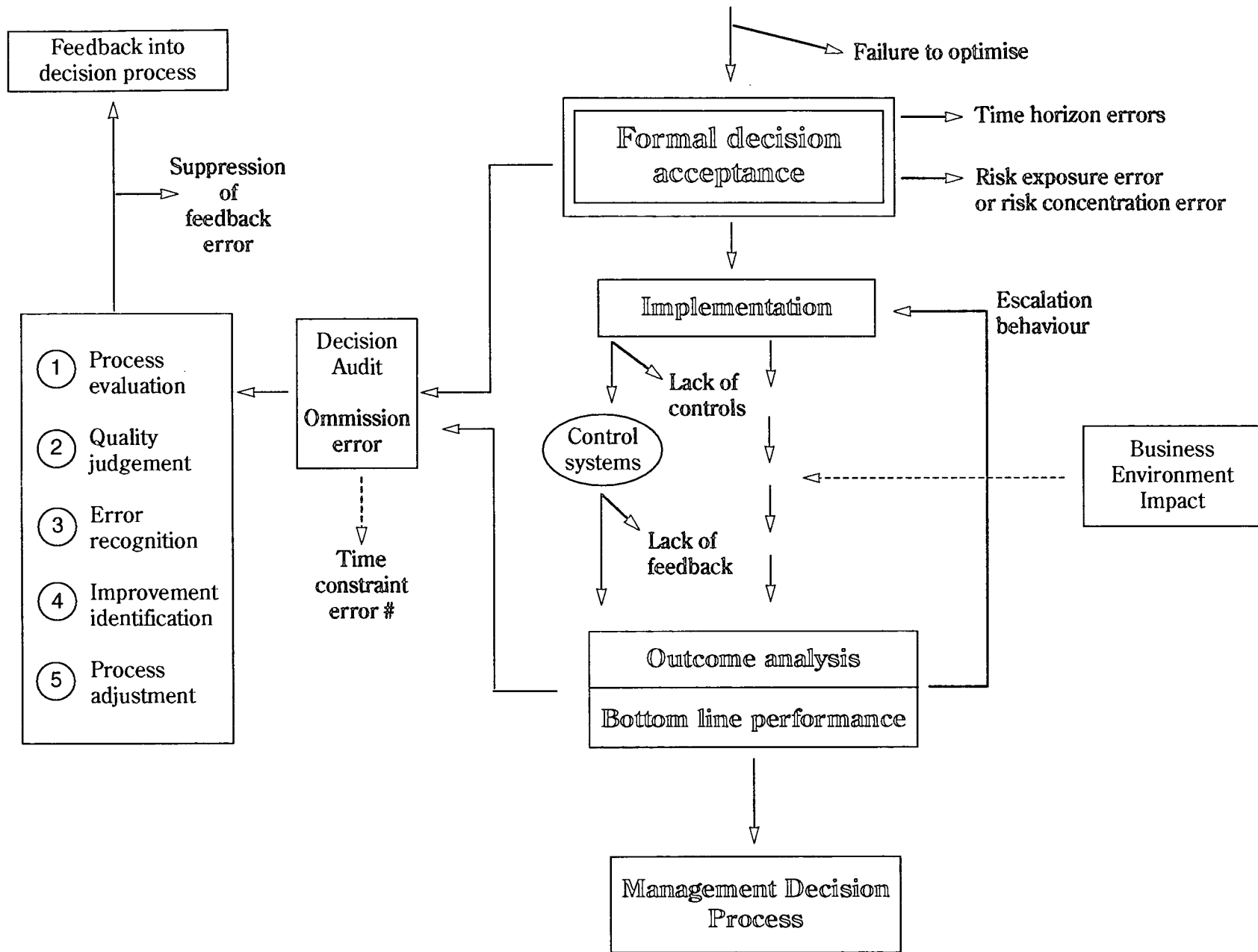
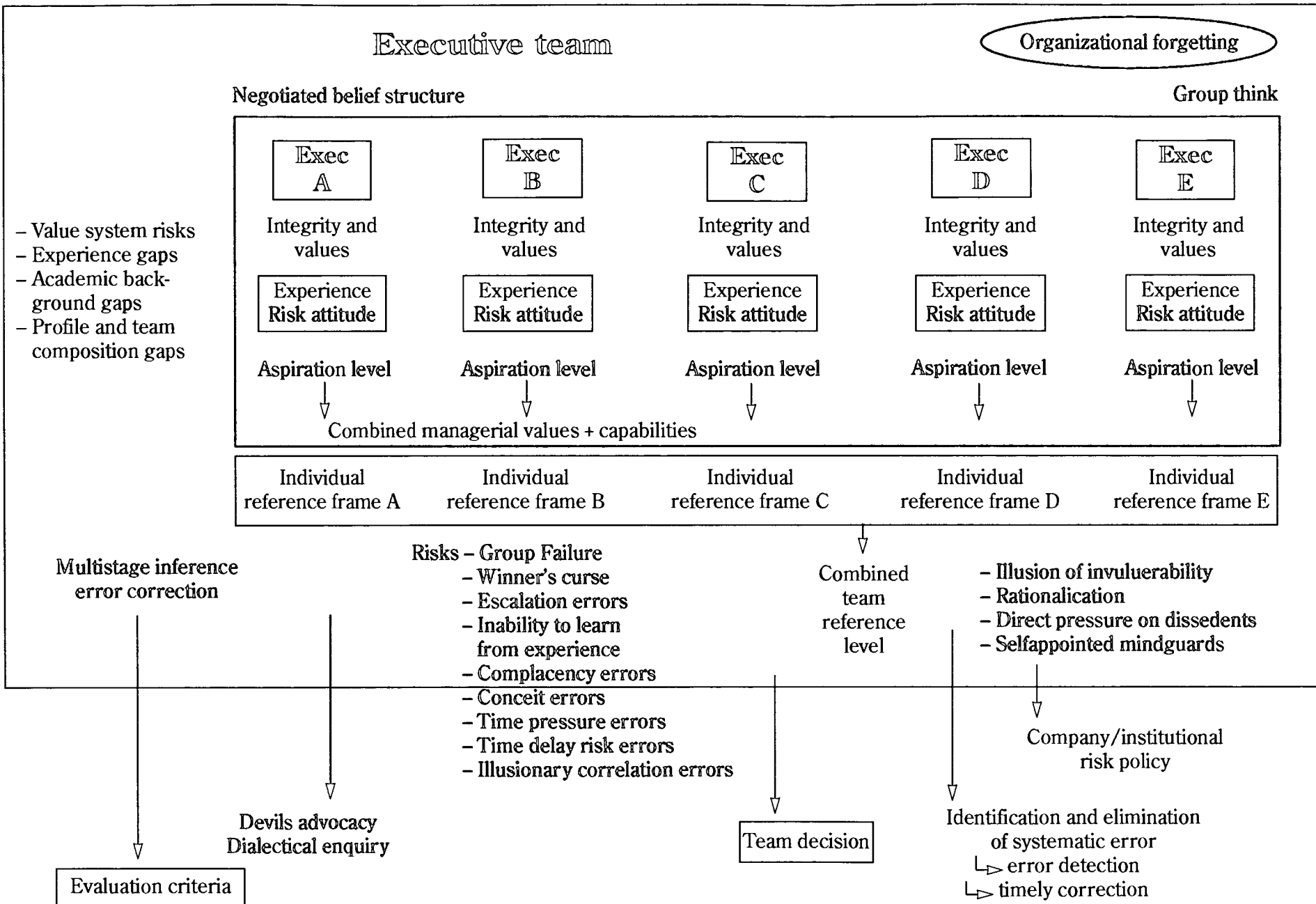


Diagram F





- Value system risks
- Experience gaps
- Academic background gaps
- Profile and team composition gaps

- Risks - Group Failure**
- Winner's curse
 - Escalation errors
 - Inability to learn from experience
 - Complacency errors
 - Conceit errors
 - Time pressure errors
 - Time delay risk errors
 - Illusionary correlation errors

- Illusion of invulnerability
- Rationalization
- Direct pressure on dissidents
- Selfappointed mindguards

Company/institutional risk policy

Identification and elimination of systematic error

- ↳ error detection
- ↳ timely correction

19. LIST OF REFERENCES

- Adair, J., Management Decision making, Gower Publishing Co., England 1985.
- Agor, WH, The Logic of Intuitive decision making Quorum Books, New York, 1986.
- Alexander, WA, 1988, Managing Off-Balance Sheet Risk, The Bankers Magazine Nov/Dec 1988, 10 - 18.
- Antonides, G & Van der Sar, NL, 1990, Individual Expectations, Risk Perception and preferences in Relation to Investment Decision making, Journal of Economic Psychology (1990), 217 - 245
- Andrews, J., Upside Downside, How to take the sting out of Business Risk, Century Hutchison, London 1987.
- Baird, BF, Managerial Decisions under uncertainty, An introduction to the analysis of Decision making, John Wiley & Sons, New York, 1989
- Ball, SH, Bazerman MH & Carroll JS (1991) Evaluation of learning in bilateral winner's curse, Organisational Behaviour and Human decision process 1991, 48, 1 - 22.
- Bazerman M.H. & Carroll J.S. : 1987, Negotiator Cognition, Research in organisational behaviour 1987, Vol.9 : 247 - 288.
- Bazerman, MH, Judgement in Managerial Decision making, John Wiley & Sons, New York 1990.
- Beach L.R., Rohrman B., Vlek C & Watson SR, Advances in Decision Research, North Holland, Amsterdam 1989.

- Bell D.E., Raiffa, H and Tversky A, Decision making, Descriptive Interactions, Cambridge University Press, Cambridge, 1988.
- Bonanno G & Zeeman EC, 1988, **European Journal of Operational Research** Vol. 36 (1988) 379 - 392.
- Bottger PC & Yetton PW (1988) An integration of Process and Decision Scheme Explanations of Group Problem Solving performance, **Organisational Behaviour and Human Decision Process** (1988), 42, 234 - 249.
- Brayant, J, Problem Management, John Wiley. Sussex England, 1989.
- Breeden, R.C., The fight for good governance, **Harvard Business Review** Jan. - Feb. 1993 : 76 - 83
- Buckley JW & Buckley MH - Research methodology and Business decisions, National Association of Accountants, Canada, 1976 : 34
- Casey, JL, The new urgency of Ethics in Banking, **The Bankers Magazine**, March/April 1991 44 - 50.
- Chacko, G.K., Decision making under uncertainty, Praeger New York, 1991.
- Chicken JC & Hayns MR, The Risk Ranking technique in Decision making, Pergamon Press New York 1989.
- Chikán, A, Progress in Decision, Utility and Risk Theory. Kluwer Publishers, Dordrecht 1991.

- Christensen - Szalanski, JJJ & Willham CF, 1991, The Hindsight bias, A Meta analysis, **Organisation Behaviour & Human Decision Processes** 1991, 48, 147 - 168.
- Cox, JC & Epstein S, 1989 : Preference Reversals without the Independence axiom. **American Economic Review**, Vol 79, No. 3 1989 408 - 426
- Cooke, S, Slack N. & Cooper CL, 1989 : Making Management Decisions, Prentice Hall International, London 1989.
- Demb, A, Neubauer FF, The Corporate Board, Oxford University Press 1992.
- De Sanctis G & Gallupe RB 1987, A foundation for the study of group decision support systems, **Management Science** 1987 33 : 589 - 609.
- Donlon J.P., The Best of Chief Executive, Richard Irvin INC, Homewood Illinois, 1993.
- Driver, MJ, Brousseau, KR, Hunsaker, P.L., The Dynamic Decision maker, Jossey Bass Publishers San Francisco 1993.
- Dyer J.S. and Sarin RK, 1982, Relative Risk Aversion, **Management Science** 29 (875 - 886)
- Eden C & Radford J, Tackling Strategic Problems, Sage Publications, London 1990.
- Eisenhardt KM & Bourgeois LJ, 1989, Politics of Strategic Decision making in high velocity Environments, **Academy of Management Journal**, 1988 Vol. 31 No. 4 737 - 770.

- Elliot GS & Archibald RB, 1989, Subjective Framing and attitudes towards Risk, **Journal of Economic Psychology** (1989) 321 - 328.
- Fagley, NS & Miller, PM, 1987, The effects of Framing on choice of Risky vs Certain options, **Organisational Behaviour and Human Decision Processes**, 39, 264 - 277.
- Falkena, HB & Kok WJ, **Essays on Financial Risk Management**, Macmillan Press, Cape Town 1988.
- ✓ - Ferreira M, Mouton J, Introduction to Qualitative research, **Humon Sciences Research council 1988** : 140 - 142
- Fishburn P.C., 1989 : Foundations of Decision Analysis, **Management Science**, April 1989, Vol. 35 No. 4, 387 - 405.
- Frean, DH, **The Board and Management Development**, Business Books, Great Brittain 1977.
- Gallhoferin, Saris WE, Melman M, Different Text analysis procedures for the study of decision making, **Sociometric Research Foundation Amsterdam 1986**.
- Garland, H. & Newports, 1991, Absolute and Relative Sunk Costs on the Decision to Persist with a course of action, **Organisational Behaviour and Human Decision processes** Feb. 1991, Vol 48, Iss 1, pp 55- 69.
- Gastineau, GL, **Dictionary of Financial Risk Management (Swiss Bank Croporation)** Probus Publishing Cambridge England, 1992.

- Geweke, J, Decision making under risk and uncertainty, Kluwer Academic Publishers Boston, 1992.
- Greenhalgh, L. 1987, Interpersonal conflicts in organisations, International Review of Industrial and Organisational Psychology 1987, 229 - 271.
- Greiner LE & Bhambri A, (1989) New CEO intervention and dynamics of Deliberate strategic change, Strategic management Journal, 1989, Vol 10 67 - 86.
- Harrison, EF, The Managerial Decision making process, Houghton Mifflin Co Boston, 1981.
- Hart S, Borouch M, Enk & Horwick W, 1985, Managing complexity Through Consensus Mapping, Technology for the studying of Group Decisions, Academy of Management Review, Vol 10, No 3, 587 - 600
- Heiner, RA, 1988, The necessity of delaying economic adjustment, Journal of Economic Behaviour & Organisation (Netherlands), October 1988, Vol 1 : 10, Iss 3, pp 255 - 286.
- Heller, F, Drenth P, Koopman, P & Rus V, Decisions in Organisations, a three Country Comparative study, Sage Publications, 1988.
- Hogarth, RM & Einhorn, HJ : Venture theory, a model of decision weights, Management Science, July 1990, Vol. 36 P780 - 803.
- Holloman R, 1989, The Light and Dark side of Managerial Decision making, Industrial Management Vol. 31, Iss 4, Aug. '89, P15 - 18.

- Howard, RA : 1988 Decision Analysis, Practice and Promise, **Management Science**, June 1988, 679 - 695.
- Jaffray, some experimental findings on decision making under risk and their implications, **European Journal of Operational Research**, 1989, 38 : 301 - 306.
- Janis, IL, **Crucial Decisions**, The free press, Macmillan New York 1989.
- Kahneman D, & Tversky A, 1973, On the psychology of prediction, in **Psychological Review** 80 : 4 pp 237 - 251.
- Kahneman D, & Tversky A, 1979: Prospect theory: An analysis of decisions under risk, **Econometrica**, 1979 47 : 262 - 291.
- Kahneman D & Tversky A (1984) Choices, values and frames **American Psychologist**, 39, 341 - 350.
- Kameda T & Davis JH, 1990, The function of reference point in Individual and Group Risk Decision making **Organisational Behaviour & Human Decision Processes** 1990, 46, 55 - 76.
- Kanodia, C. Bushman R, & Dickhaut J, 1989, Escalation errors & Sunk Cost Effect **Journal of Accounting Research** 1989 Vol. 27 No. 1, 59 - 77.
- Kharbanda, O.P. & Stallworthy E.A., **Management Disasters and How to prevent them**, Gower 1986.
- Kilduff, M (1990) : The interpersonal structure of decision making, **Organisation Behaviour & Human Decision Process**. 1990 Vol 47 Iss 2 270 - 288.

- Kim, SH, *Essence of Creativity, a guide to Tackling difficult decisions*, Oxford University Press, New York 1990.
- Kleindorfer, PR, Kunreuther HC, Schoemaker PJH, *Decision Sciences, An Integrative Perspective*, Cambridge University Press, 1993.
- Konrath, LF, 1989, Clarification of Audit Risk Factors for Planning & Program Design, *The Ohio CPA Journal*, Winter 1989, 6 - 11.
- Loevenstein, GF (1988) : Frames of mind in Inter temporal choice, *Management Science*, Feb. 1988, Vol 34, Iss 2, P 200 - 214.
- Loomis, CJ, (1994) : The risk that won't go away, *Fortune*, March 1994 : 23).
- Mac Donald DN & Wall JL, 1989, An experimental study of the Allais paradox over Losses, *Journal of Business & Economica*, 1989, Vol 28, Iss 4, P43 - 60.
- Maital, S. 1989, Managing Risk, Were you framed? Traps in decision making *Across the Board*, Feb. 1989 : 60 -61
- Mandelbaum M & Buzacott J (1990) Flexibility and Decision making, *European Journal of Operational Research* (1990) 44, 17 - 27.
- March, JG, *Decisions and Organisations*, Blackwell 1988.
- March JG & Shapiro, 1987 : Managerial perspectives on risk and risk taking, 1987, *Management Science*, Vol. 33 No. 11, November 87, 1404 - 1418.

- March, JG 1988 : Variable Risk Preferences and Adaptive Aspirations, **Journal of Economic Behaviour and Organisation** 9 (1988), 5 - 24.
- Mezias, SJ (1988) Aspiration level effects. An Empirical Investigation, **Journal of Economic Behaviour and Organisation**, 1988, 389 - 400.
- Miller, KD & Bromiley, P. Strategic Risk and Corporate Performance, an analysis of Alternative Risk Measures. **Academy of Management Journal**, Vol. 33, Nr 4, Dec. 1990.
- Morris, WT, Decision analysis, Grid Inc. Columbus, 1987.
- Mouton J, Marais HC, Prinsloo KP & Rhodie N.J., **Metologie van die Geesteswetenskappe**, RGN 1988 Pretoria Insto Print.
- Munier, B, New Models of decision under uncertainty, **European Journal of Operational Research**, 38, 1989, 307 - 317.
- Narayanan VK & Fabey L (1982) The Micro politics of Strategy Formulation **Academy of Management Review**, 7, 25 - 34.
- Pearce J.A. & Zahra, S.A. 1991, The Relative Power of CEO's and Boards of Directors : Associations with Corporate Performance, **Strategic Management Journal** Vo. 12, 1991, 35 - 153.
- Radford, KJ, **Individual and Small Group Decisions**, Springer Verlag Heidelberg 1990.
- Raphael, A, **Ultimate Risk**, Transworld Publishers 1994.

- Rescher, N Risk, And Introduction to the Theory of Risk Evaluation and Management, University Press of America, 1983.
- Russo, JE, & Schoemaker, PJH, Confident decision making Judy Piatkus Publisher, London, 1991.
- Salmon, WJ, Crisis Prevention, How to gear up your board, **Harvard Business Review**, Jan - Feb 1993 : 69 - 75.
- Samson, DA, 1987, Corporate Risk philosophy for improved Risk Management, **Journal of Business Research** Vol. 15, No. 1, Feb. 1987, 128 - 143.
- Schoemaker PJH & Russo JE, 1989, Decision Audits, **Across the Board**, Dec 1989 : 47 - 53.
- Schutzer, D, Business decisions with Computers, Van Nostrand Reinhold, New York 1991.
- Schwenk CR, 1990, Effects of Devil's Advocacy and Dialectical Inquiry on Decision making : A Meta analysis, **Organisational Behaviour and Human Decision processes**, (1990) 47, 161 - 176
- Seechel, JH, Committee Decision making in Organisations, An experimental test of the core. **Decision Sciences** Vol. 21, Nr. 1, Winter 1990, 204 - 214
- Selltiz C, Jakoda M, Deutch M., Research Methods, New York, Holt Rinehart & Winston 1965.
- Sinclair - Desgagne, B, 1990 : Group Decision Support Systems implement Bayesian Rationality, **European Journal of Operational Research** 47 (1990) 29 - 34.

- Singleton WT, Hovden J, Risk and Decisions, John Wiley New York, 1987.
 - Sniezek JA, Paese PW & Switzer S, (1990) The effect of choosing and confidence in choice, **Organisational behaviour & Human Decision Processes**, 1990 46, 264 - 282.
 - Suzuki, Norihiko, 1989, The Attributes of Japanese CEO's, Can they be Trained? **JRNL of Management Development** (UK) Vol. 8 Iss 4 1989 : 5 - 11.
 - Snider, HW, 1990, The Importance of Objectives in Risk Management, **Risk Management Journal**, Jan 1990, 38 - 39.
 - Snider, HW, 1991, Risk Management, A Retrospective View, **Risk Management**, April 1991, 47 - 75.
 - Tarr, G. The Management Barrier, Macmillan, London, 1983.
 - Taylor, RN, Behavioural Decision making, Scott Foreman Co 1984.
 - Thimm A.L., Empirical Decision Theory, **Management International Review**, Fourth Quarter 1987 : pp 5 - 12.
 - Tompkins, P.K., 1993 **Organisational Communication Imperatives**, Roxbury Publisity Co., Los Angeles.
- Trento, J. 1987 **Prescription for disaster : From the Glory of Apollo to the betrayal of the Shuttle**. New York, Crown Publishers. P115

- Tversky A., Intransitivity of Preferences, **Psychological Review**, 1969 (76) 31 - 48.
- Van der Merwe JA (1991) Risk Management Critical Success factors for Top Executive Decision making School of Business Leadership Unisa.
- Van Witteloosthуйjn, A, (1988), Maximising and satisfying, opposite or equivalent concepts? **Journal of economic psychology**, 1988, 9, 289 - 313.
- Vazsonyi, A, 1990, Decision making: Normative Descriptive and Decision Counseling. **Managerial and Decision Economics**, 1990, Vol. 11, 317 - 325.
- Walsh JP, Henderson CM & Deighton J, 1988 : Negotiated belief structures and Decision Performance, **Organisational Behaviour and Human Decision Processes** 1988 (42) : 194 - 216.
- Whyte, G (1989) Groupthink Reconsidered, **Academy of Management Review** 1989, Vol 14 No. 1 40 - 56.
- Zajac E.J. & Bazerman M.H., Blind sports in Competitor Analysis, (MIS) Perceptions for Strategic Decisions, **Academy of Management Review**, 1991, Vol. 16 No. 1, 37 - 56.

-----o0o-----